

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
87238	1.0	18.4	323427	1.1	20.8	328868	1.1	19.3	277405	1.2	20.4	315313	1.3	20.8	368145	1.3	20.3
89157	1.0	19.2	185269	1.1	20.2	524478	1.1	22.0	389525	1.2	21.3	425769	1.3	20.6	421175	1.3	19.9
165634	1.0	20.2	204953	1.1	20.5	182298	1.2	19.5	371914	1.2	21.8	533369	1.3	20.8	316247	1.3	19.9
494942	1.0	20.5	157951	1.1	19.5	393351	1.2	20.1	10192	1.2	18.0	253566	1.3	19.7	211948	1.3	19.6
188571	1.0	19.6	46820	1.1	19.0	218579	1.2	20.2	233341	1.2	19.4	299373	1.3	20.8	487917	1.3	20.4
221993	1.0	20.4	349883	1.1	20.2	313914	1.2	18.0	22753	1.2	18.6	474510	1.3	19.6	15887	1.3	17.6
257889	1.0	20.0	71166	1.1	18.6	152131	1.2	19.6	43790	1.2	18.0	445411	1.3	20.9	28641	1.3	18.6
88255	1.0	20.1	141855	1.1	19.5	110935	1.2	19.4	158982	1.2	19.6	295694	1.3	20.3	184273	1.3	20.3
206152	1.0	19.5	90106	1.1	18.7	164549	1.2	20.3	118621	1.2	20.5	363712	1.3	18.8	313042	1.3	18.8
433681	1.0	20.5	209864	1.1	20.2	523327	1.2	20.1	207551	1.2	20.2	197972	1.3	18.2	539048	1.3	20.4
464997	1.0	21.5	180402	1.1	20.1	338562	1.2	21.0	533319	1.2	21.7	439200	1.3	20.5	477509	1.3	20.1
128075	1.0	19.4	538661	1.1	21.8	260332	1.2	20.1	256313	1.2	19.9	95789	1.3	19.3	444288	1.3	21.0
318186	1.0	19.8	525298	1.1	20.2	57833	1.2	17.9	38223	1.2	18.4	263595	1.3	19.6	313364	1.3	19.6
414119	1.0	20.3	290703	1.1	21.1	303148	1.2	20.5	307045	1.2	19.9	260175	1.3	20.2	366017	1.3	20.6
502274	1.0	20.0	3543	1.1	17.3	31613	1.2	17.7	76483	1.2	17.6	33542	1.3	18.7	38105	1.3	19.0
371458	1.0	19.4	516480	1.1	21.1	430940	1.2	21.1	520580	1.2	21.4	291132	1.3	19.1	44124	1.3	19.8
239608	1.0	20.1	173725	1.1	20.2	509807	1.2	17.9	248649	1.2	19.6	429409	1.3	19.7	317403	1.4	19.6
412689	1.0	19.8	237125	1.1	18.7	132677	1.2	19.4	449024	1.2	21.0	411647	1.3	20.9	9013	1.4	18.0
330294	1.0	19.4	321111	1.1	19.3	190307	1.2	20.9	250933	1.2	19.4	241422	1.3	19.7	187702	1.4	20.3
200252	1.0	19.9	37180	1.1	18.6	349767	1.2	20.7	283335	1.2	19.7	158816	1.3	21.1	338041	1.4	20.0
471825	1.0	19.3	141974	1.1	18.2	339114	1.2	20.4	283251	1.2	19.0	40228	1.3	18.5	127337	1.4	20.2
352283	1.0	20.2	94146	1.1	18.9	453003	1.2	21.2	241556	1.2	20.4	136118	1.3	19.5	222181	1.4	19.5
91902	1.0	19.2	513877	1.1	21.5	439320	1.2	20.8	88841	1.2	18.4	494327	1.3	20.3	282023	1.4	19.9
363239	1.0	19.3	168201	1.1	19.9	199952	1.2	20.6	180408	1.2	19.6	260074	1.3	20.8	506584	1.4	20.4
21983	1.0	17.5	460481	1.1	21.0	324077	1.2	18.6	25659	1.2	17.8	304464	1.3	20.7	326882	1.4	20.2
149914	1.0	19.9	393215	1.1	20.3	354036	1.2	19.9	404266	1.2	22.0	201137	1.3	20.0	227038	1.4	19.8
237594	1.0	20.0	138245	1.1	19.5	361738	1.2	19.1	443451	1.2	21.1	348571	1.3	19.4	175189	1.4	22.3
223373	1.0	19.7	169704	1.1	20.5	78053	1.2	19.3	210349	1.2	19.2	246643	1.3	19.2	70789	1.4	17.7
386460	1.0	20.1	166433	1.1	19.6	279634	1.2	20.8	28968	1.2	19.4	345928	1.3	19.0	286677	1.4	20.4
365345	1.0	20.8	303961	1.1	20.6	19150	1.2	17.1	199299	1.2	19.2	136730	1.3	19.5	28877	1.4	19.0
178122	1.0	20.3	419650	1.1	20.7	242206	1.2	20.0	217362	1.2	19.5	479695	1.3	20.6	530469	1.4	22.2
121479	1.0	18.5	452148	1.1	20.7	254102	1.2	19.8	431408	1.2	21.8	109823	1.3	19.3	344722	1.4	19.2
64677	1.0	17.2	176002	1.1	20.7	24389	1.2	17.6	404581	1.2	21.2	362891	1.3	20.1	37950	1.4	19.0
128937	1.0	19.0	345888	1.1	18.5	428351	1.2	21.7	213648	1.2	19.9	294244	1.3	20.1	62887	1.4	19.0
138981	1.0	19.4	512558	1.1	20.2	294968	1.2	19.9	55261	1.2	18.7	207976	1.3	20.1	404075	1.4	21.6
316103	1.0	20.7	533150	1.1	20.5	316444	1.2	20.3	254317	1.2	19.1	466068	1.3	20.8	288776	1.4	19.6
487088	1.0	20.3	60286	1.1	18.6	29656	1.2	17.8	222600	1.2	18.5	26571	1.3	16.4	380787	1.4	20.1
338504	1.0	20.5	508936	1.1	19.9	95674	1.2	18.4	448079	1.2	20.4	38382	1.3	18.0	288696	1.4	19.3
438520	1.0	19.5	539369	1.1	21.3	111764	1.2	19.3	371504	1.2	20.1	383338	1.3	20.8	365668	1.4	20.4
48955	1.0	16.3	127035	1.1	19.7	434648	1.2	21.2	43356	1.2	16.6	220410	1.3	19.5	503672	1.4	21.8
535884	1.0	20.5	532116	1.1	21.1	371881	1.2	21.0	529977	1.2	21.3	316541	1.3	20.4	68224	1.4	18.6
256461	1.0	19.9	286696	1.1	20.1	163497	1.2	19.2	433749	1.2	21.3	318336	1.3	19.2	449642	1.4	21.3
480778	1.0	20.9	251400	1.1	19.2	317506	1.2	19.7	111948	1.2	19.6	342043	1.3	20.4	56863	1.4	19.2
467925	1.0	21.4	494426	1.1	20.8	12580	1.2	18.0	526511	1.2	20.8	162108	1.3	20.1	280986	1.4	20.2
21951	1.0	18.3	189584	1.1	18.4	382222	1.2	20.9	159784	1.2	19.4	308997	1.3	20.5	146912	1.4	19.9
329395	1.0	21.5	396350	1.1	20.7	454821	1.2	20.3	37682	1.2	18.7	219320	1.3	20.5	342030	1.4	19.2
390884	1.0	19.3	413147	1.1	20.4	360522	1.2	20.0	516120	1.2	20.2	357797	1.3	20.9	332311	1.4	19.7
22841	1.0	18.0	437130	1.1	20.4	5938	1.2	17.2	218424	1.2	19.4	129462	1.3	20.2	499620	1.4	20.9
250589	1.0	19.5	379210	1.1	20.7	1646	1.2	14.4	301776	1.2	20.8	342350	1.3	20.1	349871	1.4	20.1
296011	1.0	21.0	20035	1.1	17.6	153136	1.2	20.0	472012	1.2	20.5	24566	1.3	18.6	42496	1.4	16.2
239355	1.0	20.4	163719	1.1	19.6	426597	1.2	21.5	342228	1.2	20.9	73561	1.3	18.8	192003	1.4	19.6
465868	1.0	20.1	284561	1.1	20.3	313945	1.2	20.8	30021	1.2	18.8	74154	1.3	18.3	315224	1.4	20.5
515247	1.0	21.4	141778	1.1	20.4	530990	1.2	21.6	358891	1.2	20.9	307948	1.3	20.8	11171	1.4	17.1
74200	1.0	19.6	149959	1.1	19.1	483571	1.2	20.3	95594	1.2	19.4	316960	1.3	20.7	262038	1.4	20.1
396096	1.1	20.1	271905	1.1	19.1	26537	1.2	18.7	121546	1.2	19.2	90894	1.3	18.0	319059	1.4	20.2
498527	1.1	21.0	223378	1.1	19.6	367047	1.2	21.7	451838	1.2	20.9	481059	1.3	20.7	472931	1.4	20.7
304775	1.1	20.4	499552	1.1	21.0	277619	1.2	20.2	212761	1.2	19.6	338664	1.3	20.0	457760	1.4	21.5
50537	1.1	18.0	539649	1.1	20.9	326483	1.2	20.2	476936	1.2	19.7	523935	1.3	22.0	401705	1.4	21.1
319407	1.1	20.1	276800	1.1	21.0	191479	1.2	19.6	166368	1.2	20.1	142581	1.3	19.2	319318	1.4	20.2
260260	1.1	19.6	81266	1.1	18.7	245576	1.2	19.9	529173	1.3	21.1	200645	1.3	20.3	321082	1.4	20.5
154182	1.1	19.7	522911	1.1	19.7	198910	1.2	19.0	528619	1.3	21.1	394391	1.3	20.0	330583	1.4	20.0
427962	1.1	19.7	472898	1.1	20.1	295331	1.2	21.0	105207	1.3	18.5	132617	1.3	19.7	445500	1.4	20.7
5189	1.1	19.0	508946	1.1	20.2	144240	1.2	19.4	299208	1.3	20.6	365109	1.3	21.2	532825	1.4	19.6
268900	1.1	18.7	151464	1.1	20.2	97934	1.2	19.0	172887	1.3	19.5	293465	1.3	19.5	412760	1.4	19.9
176752	1.1	20.3	505845	1.1	20.9	391315	1.2	20.7	302853	1.3	20.1	130302	1.3	19.4	278581	1.4	20.0
144085	1.1	20.1	204951	1.1	18.8	524012	1.2	21.2	13409	1.3	18.1	487879	1.3	20.3	476146	1.4	20.2
527604	1.1	22.7	47579	1.1	17.2	159151	1.2	19.1	523000	1.3	20.7	515365	1.3	21.4	199354	1.4	20.7
19605	1.1	16.9	132517	1.1	20.4	450756	1.2	20.7	245522	1.3	21.0	405120	1.3	21.9	152860	1.4	19.4
156372	1.1	18.1	531599	1.1	20.9	388940	1.2	20.6	514816	1.3	20.8	177793	1.3	19.8	541028	1.4	19.3
487332	1.1	21.5	496755	1.1	20.8	221810	1.2	20.8	171131	1.3	20.2	180313	1.3	19.0	55921	1.4	19.3
401620	1.1	20.2	296213	1.1	20.2	259781	1.2	20.6	295425	1.3	20.6						

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
242221	1.4	18.8	187627	1.5	19.7	322628	1.6	21.2	22917	1.6	18.9	311213	1.7	20.4	408360	1.8	21.5
180404	1.4	19.9	383230	1.5	19.7	312741	1.6	20.8	128371	1.6	19.0	435649	1.7	19.5	61099	1.8	18.6
209292	1.4	19.2	54527	1.5	18.6	280448	1.6	19.6	350887	1.6	20.9	224602	1.7	20.7	167915	1.8	20.3
234960	1.4	19.0	295586	1.5	20.5	155756	1.6	19.7	113010	1.6	19.8	133628	1.7	18.7	368276	1.8	21.7
289510	1.4	21.5	200504	1.5	18.4	320070	1.6	20.6	305591	1.6	19.1	60934	1.7	19.1	108416	1.8	20.0
145445	1.4	20.3	461851	1.5	21.7	405846	1.6	20.5	13829	1.6	18.4	472935	1.7	20.3	39788	1.8	18.0
483276	1.4	19.9	92597	1.5	18.1	328664	1.6	21.8	327809	1.6	20.6	230356	1.7	20.0	221809	1.8	20.3
535496	1.4	21.3	328185	1.5	20.9	296756	1.6	20.1	511559	1.7	21.0	329180	1.7	20.8	383990	1.8	20.2
75182	1.4	19.2	24381	1.5	17.5	120899	1.6	19.9	6174	1.7	16.7	171416	1.7	19.2	373215	1.8	20.9
323747	1.4	21.4	530650	1.5	20.2	364084	1.6	20.3	318447	1.7	19.8	411830	1.7	20.7	509856	1.8	20.6
291761	1.4	20.1	37801	1.5	17.8	110145	1.6	19.7	123810	1.7	19.6	283006	1.7	19.7	382117	1.8	21.0
138824	1.4	18.9	257970	1.5	19.5	4225	1.6	15.8	276028	1.7	19.4	263227	1.7	20.0	280878	1.8	20.0
489386	1.4	19.8	469580	1.5	18.4	531218	1.6	21.4	468804	1.7	20.8	213060	1.7	18.9	418020	1.8	20.5
125765	1.4	18.9	221566	1.5	18.8	489922	1.6	21.6	445462	1.7	19.8	53451	1.7	17.6	364494	1.8	20.3
45923	1.4	18.6	440585	1.5	19.6	317228	1.6	20.8	257183	1.7	19.8	450742	1.7	20.7	363372	1.8	19.1
525423	1.4	21.8	388966	1.5	19.8	398097	1.6	20.1	380041	1.7	20.5	278383	1.7	19.3	62535	1.8	18.1
382599	1.4	20.1	399022	1.5	21.1	399022	1.6	21.8	198306	1.7	19.4	476208	1.7	19.9	67648	1.8	18.1
167797	1.4	20.1	528182	1.5	21.9	426937	1.6	19.6	125249	1.7	19.8	513376	1.7	22.1	512633	1.8	20.9
219974	1.4	21.2	358392	1.5	20.7	259054	1.6	20.2	386370	1.7	20.5	404496	1.7	20.4	33250	1.8	18.6
426706	1.4	20.2	401638	1.5	20.6	26702	1.6	17.9	520545	1.7	21.4	137443	1.7	19.6	156624	1.8	19.3
328074	1.4	20.5	75904	1.5	18.0	218912	1.6	20.8	407511	1.7	20.5	482941	1.7	21.1	450065	1.8	21.2
136756	1.4	18.4	448626	1.5	19.4	539192	1.6	21.8	251466	1.7	20.5	82069	1.7	18.9	336752	1.8	19.9
177953	1.4	18.8	431884	1.5	21.1	407896	1.6	21.0	254307	1.7	19.5	435837	1.7	19.9	55583	1.8	18.4
195533	1.4	20.3	266505	1.5	19.5	484469	1.6	20.4	513870	1.7	21.1	307218	1.7	20.6	517507	1.8	21.8
105501	1.4	18.7	261726	1.5	19.4	41335	1.6	18.7	239700	1.7	19.7	189408	1.7	19.4	527056	1.8	20.4
8253	1.4	17.7	21328	1.5	17.5	96119	1.6	18.6	104332	1.7	20.3	50362	1.7	18.4	46963	1.8	18.3
254569	1.4	20.2	121831	1.5	20.3	221571	1.6	20.8	387200	1.7	19.3	209041	1.7	20.9	188940	1.8	20.3
533413	1.4	21.2	202213	1.5	19.4	277649	1.6	21.0	393010	1.7	20.6	274545	1.7	20.1	636250	1.8	21.3
216092	1.4	21.1	352223	1.5	19.7	68621	1.6	19.3	512156	1.7	21.1	92749	1.7	18.8	6842	1.8	17.0
132455	1.4	20.4	76062	1.5	19.0	362864	1.6	20.8	254550	1.7	19.8	39814	1.7	17.3	479582	1.8	20.7
335525	1.4	19.8	319301	1.5	20.3	503534	1.6	20.9	278200	1.7	20.2	514720	1.7	20.8	338488	1.8	21.2
71150	1.4	18.8	124039	1.5	19.0	482122	1.6	19.8	252208	1.7	20.7	417610	1.7	20.8	482200	1.8	20.5
44790	1.4	18.8	401452	1.5	20.3	86325	1.6	18.0	22664	1.7	18.1	221739	1.7	20.3	161710	1.8	19.6
497706	1.4	20.3	450944	1.5	20.9	262353	1.6	19.2	210745	1.7	18.9	436580	1.7	20.9	172441	1.8	18.7
278661	1.4	19.8	501768	1.5	20.7	175019	1.6	20.5	523217	1.7	20.9	279843	1.7	19.1	21455	1.8	18.0
426252	1.4	20.8	98463	1.5	18.4	437240	1.6	20.8	415629	1.7	20.3	513458	1.7	20.4	322066	1.8	21.0
259039	1.4	19.5	49103	1.5	19.4	186573	1.6	19.1	95822	1.7	20.0	413741	1.7	21.1	479622	1.8	20.4
451831	1.4	20.9	338514	1.5	20.6	96494	1.6	19.7	349320	1.7	20.0	443794	1.7	19.5	291324	1.8	20.5
90467	1.4	19.3	295389	1.5	20.8	358942	1.6	20.6	75670	1.7	17.8	304472	1.7	19.7	447220	1.8	20.9
450037	1.4	21.3	258781	1.5	20.2	237564	1.6	20.2	256543	1.7	20.2	472038	1.7	20.5	232171	1.8	20.1
195596	1.4	19.2	150312	1.5	20.3	260607	1.6	19.9	436608	1.7	21.8	4496	1.7	16.8	235708	1.8	19.1
146053	1.4	18.9	348590	1.5	19.9	357427	1.6	19.9	385470	1.7	20.3	49134	1.7	17.4	514378	1.8	20.8
36430	1.4	17.9	398065	1.5	19.8	362869	1.6	21.0	156695	1.7	20.0	143731	1.7	19.3	251621	1.8	19.3
23462	1.4	19.0	54883	1.5	17.8	94767	1.6	18.5	274127	1.7	20.3	85036	1.8	19.5	21224	1.8	17.8
335516	1.4	19.6	284427	1.5	19.7	364142	1.6	21.7	272649	1.7	20.7	340886	1.8	19.7	375903	1.8	20.1
161379	1.4	19.4	478568	1.5	21.1	493589	1.6	21.1	329183	1.7	21.5	70366	1.8	18.0	282687	1.8	20.5
468068	1.4	20.7	527549	1.5	20.0	217411	1.6	19.6	235720	1.7	19.4	266935	1.8	19.7	509803	1.8	20.3
171230	1.5	20.0	453696	1.5	21.0	135628	1.6	20.1	163054	1.7	19.0	333590	1.8	20.3	346470	1.8	20.6
401777	1.5	20.0	192301	1.5	21.4	77108	1.6	19.1	136490	1.7	19.8	75821	1.8	18.7	321648	1.8	19.7
323570	1.5	19.7	449540	1.5	22.0	211289	1.6	19.8	440508	1.7	21.1	191688	1.8	20.5	234317	1.8	20.0
445499	1.5	21.0	84294	1.5	19.3	282257	1.6	21.0	530013	1.7	20.4	382978	1.8	20.5	344016	1.8	19.9
357088	1.5	19.6	532856	1.5	20.1	318328	1.6	20.2	511315	1.7	20.8	346699	1.8	20.2	47567	1.8	18.5
181259	1.5	19.9	247414	1.5	20.1	422916	1.6	21.2	8191	1.7	16.9	295872	1.8	20.0	458404	1.8	20.4
84936	1.5	18.4	469277	1.5	19.7	508585	1.6	20.9	472794	1.7	20.3	522570	1.8	21.0	463207	1.8	21.9
273965	1.5	20.6	172258	1.5	19.9	256512	1.6	20.1	122202	1.7	19.5	430750	1.8	20.2	232919	1.8	19.7
294758	1.5	19.8	131029	1.5	17.8	175152	1.6	19.6	167568	1.7	19.1	387666	1.8	20.7	424016	1.8	20.7
9406	1.5	16.9	345028	1.5	20.0	106460	1.6	18.9	515890	1.7	21.5	120944	1.8	19.0	213553	1.8	20.8
315843	1.5	20.0	65847	1.5	19.3	248595	1.6	20.2	114308	1.7	18.6	81665	1.8	19.0	100981	1.8	19.7
152081	1.5	20.1	322665	1.5	20.2	485200	1.6	20.3	276065	1.7	20.4	93004	1.8	18.4	35816	1.8	18.1
412240	1.5	21.8	263901	1.5	20.6	91901	1.6	20.6	528047	1.7	21.9	474023	1.8	20.4	225925	1.8	19.4
181028	1.5	21.0	45920	1.5	18.2	357232	1.6	20.7	7214	1.7	18.6	381820	1.8	20.8	217969	1.8	19.0
385100	1.5	20.7	220679	1.5	19.8	521417	1.6	20.2	324954	1.7	21.0	438605	1.8	20.6	388645	1.8	20.5
476124	1.5	20.7	46574	1.5	20.0	253486	1.6	19.9	196545	1.7	19.3	397026	1.8	20.8	467950	1.8	20.5
508089	1.5	20.8	519482	1.5	20.7	239972	1.6	19.4	471781	1.7	21.3	109542	1.8	20.7	324482	1.8	21.2
408807	1.5	19.8	499670	1.5	20.0	59702	1.6	18.8	339431	1.7	19.5	404030	1.8	20.4	385003	1.8	20.3
7773	1.5	17.5	433131	1.5	20.7	395040	1.6	21.2	176040	1.7	19.7	129896	1.8	18.6	318910	1.8	19.8
197616	1.5	20.8	529633	1.5	21.1	91085	1.6	18.4	217370	1.7	20.8	485277	1.8	19.9	263972	1.8	21.0
112943	1.5	20.0	44487	1.5	16.9	69723	1.6	18.7	306227	1.7	20.2	158264	1.8	20.0	329759	1.8	20.7
522855	1.5	21.4	392014	1.5	21.4	361932	1.6	22.1	439431	1.7	20.7	319597	1.8	21.3	324107	1.8	20.5
423279	1.5	19.5	444096	1.5	20.2	40292	1.6	17.7	358261	1.7	20.7	102941	1.8	19.1	369762	1.8	20.4
450254	1.5	20.7	31946	1.5	18.9	511512	1.6	21.6	273756	1.7	20.8	496617	1.8	21.9	14		

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
252936	1.8	20.7	45134	1.9	17.4	367236	1.9	20.3	295333	2.0	21.0	245729	2.1	20.9	365286	2.2	19.9
243993	1.8	20.7	29387	1.9	18.1	75496	1.9	18.0	161859	2.0	20.0	243230	2.1	19.2	116602	2.2	19.5
324994	1.8	20.4	342646	1.9	19.5	215441	1.9	21.1	516127	2.0	20.6	175600	2.1	19.5	501553	2.2	20.1
485168	1.8	20.3	176746	1.9	19.7	438847	1.9	20.9	26822	2.0	17.0	476606	2.1	20.8	96391	2.2	18.3
443683	1.8	21.0	668	1.9	15.8	185839	1.9	20.8	401046	2.0	21.0	66115	2.1	19.2	146083	2.2	19.1
115230	1.8	19.2	529962	1.9	20.2	412189	1.9	20.6	371652	2.0	19.2	257776	2.1	19.8	505434	2.2	20.2
283693	1.8	19.5	506198	1.9	21.2	395246	1.9	20.7	405892	2.0	19.8	163341	2.1	19.6	438203	2.2	20.2
62930	1.8	19.0	254920	1.9	20.1	166266	1.9	19.1	246333	2.0	19.1	36550	2.1	17.3	246348	2.2	19.9
11570	1.8	17.5	73742	1.9	19.0	117349	1.9	18.1	7707	2.0	18.0	51412	2.1	18.2	464760	2.2	21.1
448401	1.8	20.8	138878	1.9	19.8	461850	1.9	21.9	208658	2.1	20.2	23076	2.1	17.0	108713	2.2	19.8
240182	1.8	20.2	466069	1.9	20.8	213017	1.9	21.4	497955	2.1	19.3	208791	2.1	18.7	91801	2.2	19.3
362454	1.8	20.5	20135	1.9	18.7	41737	1.9	18.1	127302	2.1	18.9	136876	2.1	19.2	205859	2.2	19.9
320640	1.8	20.3	172882	1.9	19.4	384906	1.9	21.1	342969	2.1	19.8	129539	2.1	19.6	245137	2.2	20.5
342673	1.8	21.3	429888	1.9	20.8	421700	1.9	21.9	33003	2.1	17.1	135970	2.1	18.8	189819	2.2	19.3
422864	1.8	18.4	320105	1.9	20.6	309067	1.9	20.7	251463	2.1	20.1	51208	2.1	17.6	384460	2.2	18.3
248629	1.8	20.4	231767	1.9	20.0	235300	1.9	19.6	336196	2.1	20.0	54441	2.1	18.0	382386	2.2	20.8
436319	1.8	19.0	192345	1.9	20.3	403704	1.9	19.8	326333	2.1	19.0	105475	2.1	17.8	410603	2.2	21.7
455748	1.8	20.5	342046	1.9	20.0	250100	1.9	20.3	192228	2.1	19.6	189340	2.1	19.9	464499	2.2	21.2
286958	1.8	21.1	62903	1.9	19.2	430065	1.9	21.0	2571	2.1	14.8	515670	2.1	21.2	108006	2.2	18.8
527980	1.8	21.8	158846	1.9	20.0	127021	1.9	18.7	447112	2.1	19.5	59609	2.1	19.1	535331	2.2	21.0
489511	1.8	20.8	16486	1.9	17.9	257761	1.9	19.8	319482	2.1	21.4	367769	2.2	19.1	515689	2.2	21.8
340145	1.8	20.4	20791	1.9	17.8	156980	1.9	20.1	452019	2.1	20.2	288230	2.2	19.2	461861	2.2	21.2
266261	1.8	20.3	213915	1.9	19.2	118228	1.9	22.5	472504	2.1	20.7	39972	2.2	18.6	25333	2.2	17.1
400722	1.8	19.9	485856	1.9	20.9	28134	1.9	17.6	260274	2.1	20.2	390457	2.2	20.2	193731	2.2	18.0
292369	1.8	20.1	278671	1.9	20.5	524003	1.9	21.1	34384	2.1	17.2	195475	2.2	20.1	212722	2.2	19.2
149142	1.8	20.4	488083	1.9	20.6	199727	1.9	19.0	451184	2.1	20.4	108389	2.2	19.3	516824	2.2	20.8
204651	1.9	21.0	112457	1.9	19.8	145031	1.9	19.9	355084	2.1	20.7	438612	2.2	19.4	325855	2.2	19.9
78044	1.9	19.7	433668	1.9	20.4	452038	1.9	20.7	323663	2.1	20.3	321955	2.2	20.0	173633	2.2	19.5
250312	1.9	19.5	95616	1.9	18.0	519306	1.9	21.2	494939	2.1	20.1	150596	2.2	19.0	359410	2.2	21.4
36171	1.9	19.9	283703	1.9	19.6	412348	1.9	21.5	11675	2.1	17.6	449786	2.2	20.9	1679	2.2	15.9
3762	1.9	16.1	506322	1.9	20.3	233827	1.9	19.7	263099	2.1	20.5	515695	2.2	21.5	288880	2.2	20.4
507946	1.9	20.7	354789	1.9	20.4	363433	1.9	20.0	400951	2.1	20.6	220693	2.2	19.1	130938	2.2	17.8
55814	1.9	17.5	241468	1.9	20.1	14310	1.9	18.3	320344	2.1	19.0	328896	2.2	19.6	352910	2.2	19.6
216968	1.9	18.6	434153	1.9	21.3	3586	1.9	17.1	473813	2.1	20.9	308632	2.2	19.2	424013	2.2	21.0
315854	1.9	19.9	333166	1.9	19.3	154775	2.0	20.5	526414	2.1	20.9	484978	2.2	18.6	431006	2.2	19.4
423101	1.9	20.0	167423	1.9	19.4	239087	2.0	20.6	151175	2.1	17.7	11703	2.2	18.2	421817	2.2	19.4
243097	1.9	20.2	337978	1.9	20.9	152771	2.0	20.3	531263	2.1	21.1	273883	2.2	19.6	112988	2.2	18.3
262195	1.9	19.7	398177	1.9	21.0	10797	2.0	17.6	472803	2.1	20.2	121666	2.2	18.6	48003	2.2	19.2
357236	1.9	22.0	471122	1.9	20.7	100910	2.0	18.2	509773	2.1	19.7	539116	2.2	21.1	218077	2.2	20.2
112513	1.9	20.4	97380	1.9	18.4	295900	2.0	19.5	403439	2.1	20.4	360928	2.2	20.6	99893	2.2	19.2
53526	1.9	18.5	328204	1.9	21.1	16232	2.0	18.0	178041	2.1	20.3	22391	2.2	17.4	259455	2.2	19.1
335779	1.9	20.8	2515	1.9	16.2	36562	2.0	18.8	343268	2.1	20.6	26202	2.2	17.7	536235	2.2	20.7
208201	1.9	19.9	154576	1.9	19.0	346766	2.0	19.4	107087	2.1	18.9	348408	2.2	19.7	231933	2.2	20.4
328145	1.9	20.1	266755	1.9	21.0	387769	2.0	20.3	242269	2.1	19.8	153221	2.2	18.9	90075	2.2	19.9
162788	1.9	20.1	80614	1.9	20.1	142096	2.0	20.3	488457	2.1	20.6	458703	2.2	21.6	263411	2.2	19.8
121735	1.9	18.7	39459	1.9	18.2	324316	2.0	20.4	14698	2.1	18.6	485222	2.2	19.4	82196	2.2	19.6
21663	1.9	18.5	326855	1.9	18.8	186973	2.0	19.7	56658	2.1	18.5	74170	2.2	20.1	406395	2.2	19.8
296689	1.9	19.8	540885	1.9	20.7	380830	2.0	19.0	311338	2.1	20.6	367976	2.2	20.3	108500	2.2	19.4
287278	1.9	20.5	380833	1.9	19.5	16298	2.0	18.6	114938	2.1	19.6	389699	2.2	20.4	91411	2.2	17.1
255736	1.9	20.9	540252	1.9	20.0	358518	2.0	20.8	111321	2.1	19.4	130574	2.2	18.6	285344	2.2	19.6
187316	1.9	20.7	302129	1.9	19.4	457550	2.0	21.1	67412	2.1	18.6	357155	2.2	20.0	260852	2.2	19.7
445368	1.9	18.7	357910	1.9	21.2	419727	2.0	18.9	537588	2.1	21.7	474397	2.2	20.2	185834	2.2	20.8
312409	1.9	20.2	215883	1.9	20.4	129893	2.0	17.7	40670	2.1	17.9	10267	2.2	17.4	100865	2.2	19.8
46160	1.9	18.8	518338	1.9	20.8	316048	2.0	20.1	73918	2.1	18.3	201742	2.2	19.1	285087	2.2	19.9
105644	1.9	18.7	101467	1.9	18.0	376851	2.0	19.7	171431	2.1	20.3	392813	2.2	20.1	286751	2.2	19.8
468805	1.9	21.7	201120	1.9	20.5	288361	2.0	19.8	355873	2.1	18.8	373458	2.2	20.5	4444	2.2	16.9
306988	1.9	20.1	516822	1.9	20.3	451795	2.0	21.6	37079	2.1	18.2	168769	2.2	19.7	253976	2.2	19.0
294034	1.9	20.8	81063	1.9	18.5	80553	2.0	19.2	180961	2.1	20.8	245352	2.2	20.7	218500	2.2	19.4
435689	1.9	20.6	162504	1.9	19.4	336241	2.0	20.5	61695	2.1	19.4	516444	2.2	20.5	514284	2.2	20.8
314376	1.9	19.6	537245	1.9	20.5	117147	2.0	19.6	205200	2.1	20.6	523244	2.2	20.3	318362	2.2	20.5
374269	1.9	19.5	321070	1.9	20.8	247439	2.0	20.2	385054	2.1	20.6	72781	2.2	20.5	93523	2.2	18.8
470083	1.9	22.5	308621	1.9	19.4	291974	2.0	19.3	512080	2.1	21.0	311449	2.2	20.5	479669	2.2	20.3
458911	1.9	21.2	475643	1.9	20.8	348127	2.0	20.8	531078	2.1	21.0	315095	2.2	20.5	249087	2.2	19.5
242255	1.9	19.3	464861	1.9	22.1	243950	2.0	18.4	481523	2.1	20.7	499629	2.2	20.1	244423	2.3	19.7
56602	1.9	18.6	32318	1.9	19.0	123608	2.0	18.3	134548	2.1	19.0	32479	2.2	16.6	405832	2.3	20.6
37829	1.9	17.6	273912	1.9	21.5	399119	2.0	20.8	451849	2.1	21.1	438747	2.2	21.0	28542	2.3	19.2
168727	1.9	20.0	123699	1.9	19.3	467644	2.0	20.6	42134	2.1	18.4	419654	2.2	20.3	296370	2.3	19.7
192222	1.9	18.8	512832	1.9	21.2	422222	2.0	18.6	461526	2.1	20.8	324708	2.2	20.3	527305	2.3	20.7
193509	1.9	18.4	490118	1.9	20.8	319180	2.0	19.1	121696	2.1	19.0	385113	2.2	20.2	369266	2.3	20.8
420898	1.9	19.2	188948	1.9	19.7	325357	2.0	20.1	383467	2.1	21.2	178833	2.2	19.0	312389	2.3	19.9
388237	1.9	21.0	451181	1.9	20.6	418183	2.0	19.6	470660	2.1	19.4	523620					

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
19855	2.3	18.7	438944	2.3	21.4	407712	2.4	20.1	447410	2.5	20.7	204307	2.5	18.9	408005	2.6	21.1
121623	2.3	19.1	99785	2.3	19.8	449436	2.4	21.0	402808	2.5	21.5	282417	2.5	18.9	283091	2.6	19.4
232485	2.3	19.5	537399	2.3	21.2	499566	2.4	20.6	328181	2.5	21.2	39481	2.5	18.2	106127	2.6	18.3
138203	2.3	18.8	408517	2.3	20.9	469242	2.4	20.2	325425	2.5	20.3	76238	2.5	18.1	514870	2.6	20.2
223376	2.3	19.7	44901	2.3	20.4	476053	2.4	20.2	234278	2.5	18.3	537564	2.5	20.6	48666	2.6	19.7
263841	2.3	20.3	121219	2.3	19.6	482454	2.4	20.3	497617	2.5	21.0	520773	2.5	20.6	112723	2.6	20.3
256740	2.3	19.9	31595	2.3	17.0	435364	2.4	19.6	243626	2.5	18.7	336149	2.5	20.1	174128	2.6	20.2
112080	2.3	18.7	159574	2.3	18.6	6350	2.4	16.5	31022	2.5	17.2	149557	2.5	18.9	181916	2.6	20.1
120722	2.3	20.0	232256	2.3	20.6	250875	2.4	19.7	10895	2.5	16.1	311919	2.5	19.8	210836	2.6	19.0
337994	2.3	20.3	111638	2.3	18.8	88843	2.4	19.0	125998	2.5	19.0	117465	2.5	18.9	104873	2.6	19.6
165967	2.3	19.2	366000	2.3	20.3	19136	2.4	17.9	446202	2.5	20.4	94585	2.5	18.2	504913	2.6	19.4
6076	2.3	17.2	501052	2.3	19.7	524068	2.4	21.1	123959	2.5	19.2	308319	2.5	20.6	432866	2.6	21.1
124021	2.3	19.1	48743	2.3	19.1	154211	2.4	19.7	462820	2.5	21.3	362509	2.5	20.4	172493	2.6	18.3
189053	2.3	18.4	250739	2.3	19.8	21336	2.4	18.1	97094	2.5	18.7	77767	2.6	19.0	408519	2.6	20.9
148464	2.3	19.5	330832	2.3	19.4	299170	2.4	20.1	112953	2.5	19.6	328160	2.6	20.7	171123	2.6	19.2
56538	2.3	18.0	512137	2.3	19.8	97838	2.4	17.8	411493	2.5	20.9	103670	2.6	19.2	25312	2.6	17.0
43847	2.3	18.3	477494	2.3	20.9	367034	2.4	21.0	403706	2.5	20.3	206186	2.6	20.7	539680	2.6	20.7
383994	2.3	20.3	485221	2.4	19.6	461175	2.4	20.6	296474	2.5	21.0	99617	2.6	19.4	317896	2.6	20.1
201581	2.3	19.6	528408	2.4	21.3	396889	2.4	20.2	47615	2.5	18.8	161289	2.6	20.3	251812	2.6	20.8
159049	2.3	19.1	137888	2.4	18.9	178391	2.4	20.0	126996	2.5	18.9	362333	2.6	20.4	232080	2.6	18.9
330632	2.3	20.3	185970	2.4	20.6	374321	2.4	19.6	306230	2.5	20.6	361521	2.6	21.1	508458	2.6	20.0
229479	2.3	19.4	24478	2.4	18.5	449769	2.4	21.2	439608	2.5	21.2	433942	2.6	20.4	140898	2.6	17.4
300759	2.3	20.8	65718	2.4	19.8	38544	2.4	17.9	538662	2.5	20.7	96049	2.6	19.2	2082	2.6	17.6
152122	2.3	18.5	489437	2.4	20.3	46290	2.4	18.8	488177	2.5	20.3	35097	2.6	19.0	328171	2.6	19.9
509700	2.3	20.4	420545	2.4	20.0	17689	2.4	17.6	218603	2.5	20.1	265059	2.6	20.1	242929	2.6	20.0
336749	2.3	20.0	99807	2.4	18.7	217649	2.4	19.6	13747	2.5	18.2	59573	2.6	18.2	12447	2.6	17.4
107375	2.3	17.9	511245	2.4	20.1	241659	2.4	20.0	410687	2.5	20.9	373076	2.6	21.0	260405	2.6	19.1
195267	2.3	19.6	125766	2.4	19.1	399918	2.4	19.3	20162	2.5	16.1	360149	2.6	19.6	2184	2.6	15.6
468071	2.3	21.5	412557	2.4	20.6	262186	2.4	20.3	313664	2.5	19.8	214057	2.6	20.9	524683	2.6	20.6
474121	2.3	20.3	481316	2.4	20.3	140295	2.4	19.6	382369	2.5	20.7	332339	2.6	19.8	57771	2.6	18.2
526259	2.3	20.6	112501	2.4	20.8	238278	2.4	19.5	121320	2.5	19.1	239142	2.6	19.5	33922	2.6	18.3
322706	2.3	21.0	73405	2.4	19.6	170546	2.4	19.3	248616	2.5	20.2	519790	2.6	20.9	483499	2.6	19.8
343397	2.3	20.3	216712	2.4	20.3	450326	2.4	20.7	315093	2.5	20.9	478535	2.6	20.5	90491	2.6	18.2
186	2.3	12.3	301754	2.4	21.3	161066	2.4	19.7	302179	2.5	20.0	296488	2.6	19.9	121407	2.6	19.6
342662	2.3	21.1	345043	2.4	20.2	389414	2.4	20.6	210086	2.5	20.4	360650	2.6	20.2	111293	2.6	18.7
422494	2.3	20.3	315110	2.4	20.7	414092	2.4	20.2	178334	2.5	20.4	343909	2.6	21.3	122226	2.6	18.1
328669	2.3	19.4	442175	2.4	19.9	425782	2.4	19.7	396791	2.5	21.8	134963	2.6	19.2	382927	2.6	18.9
355681	2.3	20.7	366040	2.4	20.1	342385	2.4	20.4	107555	2.5	19.1	152818	2.6	19.3	286238	2.6	20.3
91994	2.3	19.1	26795	2.4	16.9	533217	2.4	21.7	513436	2.5	18.6	278845	2.6	20.5	320485	2.6	19.8
38251	2.3	19.6	88630	2.4	19.6	357806	2.4	20.4	411449	2.5	19.6	116058	2.6	19.1	199440	2.6	20.5
106011	2.3	19.2	477503	2.4	20.8	476177	2.4	20.4	8625	2.5	17.6	302839	2.6	20.5	349594	2.6	19.6
91361	2.3	19.6	378661	2.4	21.3	329775	2.4	20.2	451332	2.5	20.9	144169	2.6	19.5	468584	2.6	21.0
79263	2.3	18.9	399949	2.4	20.3	118473	2.4	17.5	374423	2.5	19.9	187015	2.6	19.3	10435	2.6	16.6
144656	2.3	20.0	428178	2.4	19.5	465090	2.4	20.5	95386	2.5	18.7	210529	2.6	19.4	251925	2.6	19.9
254462	2.3	20.0	26494	2.4	18.0	225230	2.5	19.0	5764	2.5	17.1	299382	2.6	20.4	264930	2.6	19.1
196865	2.3	19.4	395899	2.4	20.5	40202	2.5	18.5	383227	2.5	20.2	85436	2.6	18.8	56829	2.6	18.7
408658	2.3	20.1	80926	2.4	19.1	320262	2.5	19.7	246376	2.5	20.2	43557	2.6	19.3	72381	2.6	19.3
507903	2.3	20.4	31184	2.4	17.3	536402	2.5	20.0	497665	2.5	20.3	260526	2.6	19.4	124618	2.6	18.8
515690	2.3	21.5	154811	2.4	19.6	514332	2.5	19.5	181589	2.5	20.5	363297	2.6	20.3	473876	2.6	20.0
79339	2.3	18.0	13796	2.4	17.6	13137	2.5	16.4	209930	2.5	19.4	327504	2.6	20.7	81109	2.6	17.8
143705	2.3	19.6	306271	2.4	20.1	396962	2.5	20.0	316726	2.5	21.0	87743	2.6	19.2	358501	2.6	21.0
16329	2.3	19.3	6462	2.4	16.9	75603	2.5	18.3	502562	2.5	20.2	473320	2.6	20.6	15542	2.6	17.3
525440	2.3	21.1	9679	2.4	18.4	404850	2.5	20.3	242564	2.5	20.3	440163	2.6	18.7	99553	2.6	18.9
232685	2.3	21.7	471615	2.4	20.2	320558	2.5	20.5	186640	2.5	19.9	250823	2.6	20.1	391544	2.6	20.2
232192	2.3	18.6	444366	2.4	19.6	285593	2.5	18.7	363327	2.5	21.5	238254	2.6	20.4	115958	2.6	18.6
139977	2.3	19.1	269627	2.4	20.1	243751	2.5	19.4	318155	2.5	19.8	325155	2.6	20.9	400708	2.6	20.8
33314	2.3	17.3	439093	2.4	19.8	84978	2.5	18.6	46854	2.5	17.8	354065	2.6	19.3	377317	2.6	21.0
253711	2.3	20.8	95095	2.4	19.1	297132	2.5	20.2	258645	2.5	19.7	192778	2.6	21.1	324769	2.6	20.8
129550	2.3	19.2	256606	2.4	20.1	319380	2.5	20.5	91803	2.5	18.8	359556	2.6	19.4	40735	2.7	18.2
22568	2.3	17.6	331886	2.4	20.9	313599	2.5	19.9	253378	2.5	20.1	3763	2.6	15.5	390197	2.7	19.9
41301	2.3	18.7	121312	2.4	18.4	87865	2.5	19.1	55597	2.5	18.2	366180	2.6	20.6	522852	2.7	21.2
201167	2.3	20.4	218990	2.4	19.4	124981	2.5	19.8	15379	2.5	17.7	257554	2.6	19.7	316911	2.7	19.5
157222	2.3	19.6	516113	2.4	21.3	369695	2.5	19.9	223223	2.5	18.4	472036	2.6	19.6	530844	2.7	21.2
416412	2.3	19.6	108172	2.4	18.7	489055	2.5	20.1	78521	2.5	18.6	396183	2.6	20.0	450425	2.7	20.7
293693	2.3	20.7	291981	2.4	20.1	426390	2.5	20.1	156645	2.5	19.4	100321	2.6	20.6	188562	2.7	20.0
308060	2.3	20.5	355578	2.4	20.9	152124	2.5	19.5	512572	2.5	20.3	523169	2.6	20.6	355387	2.7	20.4
474028	2.3	20.5	130015	2.4	19.2	513974	2.5	21.1	64752	2.5	18.6	7544	2.6	16.7	525480	2.7	20.9
140780	2.3	19.5	74324	2.4	18.2	71137	2.5	19.0	314611	2.5	20.4	529796	2.6	21.2	361910	2.7	20.2
72051	2.3	18.9	63889	2.4	18.9	391589	2.5	20.6	250781	2.5	19.8	290895	2.6	19.5	389725	2.7	20.8
366333	2.3	21.9	395261	2.4	20.5	358819	2.5	21.8	432661	2.5	19.8	46062	2.6	18.3	87624	2.7	18.4
509799	2.3	19.9	521866	2.4	20.6	118922	2.5	18.5	407769	2.5	20.3	530223	2.6	21.5			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

N _o	12	V	N _o	12	V	N _o	12	V	N _o	12	V	N _o	12	V	N _o	12	V
512427	2.7	20.4	503621	2.7	21.9	42116	2.8	17.6	150641	2.9	19.3	532408	2.9	21.1	309615	3.0	20.5
175625	2.7	18.2	308651	2.7	20.9	60480	2.8	19.8	168167	2.9	19.9	445011	2.9	21.1	485727	3.0	19.9
269100	2.7	20.8	42455	2.7	19.1	338498	2.8	20.5	92208	2.9	18.5	524669	2.9	20.4	389697	3.0	20.9
163990	2.7	18.4	472630	2.7	20.9	453679	2.8	20.0	305530	2.9	19.9	45854	2.9	19.1	68924	3.0	18.8
537285	2.7	21.2	303217	2.7	20.5	534643	2.8	20.4	334044	2.9	16.6	183488	2.9	20.4	445490	3.0	21.0
67854	2.7	19.1	220848	2.7	19.0	363926	2.8	20.4	197569	2.9	20.5	537246	2.9	20.6	180781	3.0	20.6
122783	2.7	18.7	266266	2.7	20.4	82335	2.8	19.3	298640	2.9	19.8	285505	2.9	19.7	438914	3.0	20.9
112482	2.7	18.3	323595	2.7	19.7	73049	2.8	18.8	5307	2.9	15.8	362009	2.9	20.5	24775	3.0	16.9
87902	2.7	18.7	178751	2.7	19.7	196500	2.8	19.4	7699	2.9	16.5	527954	2.9	22.3	435229	3.0	21.0
265661	2.7	20.2	218486	2.7	19.0	445360	2.8	20.3	159794	2.9	20.7	469520	2.9	19.4	429490	3.0	21.3
13324	2.7	17.6	154799	2.7	20.2	509134	2.8	18.2	514765	2.9	21.5	516579	2.9	22.0	95409	3.0	19.7
19646	2.7	16.4	527457	2.7	20.4	175526	2.8	19.9	218414	2.9	20.2	459046	2.9	20.1	221927	3.0	18.3
15128	2.7	19.0	292786	2.7	20.9	175523	2.8	20.6	540798	2.9	19.9	8807	2.9	16.3	436889	3.0	19.4
294325	2.7	20.7	29375	2.7	18.2	380942	2.8	20.8	412034	2.9	21.2	200023	2.9	19.2	418971	3.0	20.6
437267	2.7	20.3	536323	2.7	20.4	70927	2.8	18.9	291513	2.9	20.6	54533	2.9	18.4	41547	3.0	17.0
508983	2.7	21.0	115295	2.7	18.4	327499	2.8	17.7	363701	2.9	20.7	244807	2.9	19.4	83267	3.0	18.5
482354	2.7	20.8	67652	2.7	18.4	311899	2.8	20.2	134895	2.9	19.1	295704	2.9	19.3	179646	3.0	19.4
483984	2.7	20.6	366535	2.7	20.2	4584	2.8	15.8	45486	2.9	17.7	208898	2.9	18.9	527753	3.0	20.9
160231	2.7	19.9	283691	2.7	19.4	228029	2.8	21.2	435379	2.9	19.5	96530	2.9	19.3	19509	3.0	18.6
69755	2.7	20.0	431431	2.7	20.6	228816	2.8	18.9	214735	2.9	20.6	271075	2.9	19.9	534358	3.0	19.7
382880	2.7	20.3	461933	2.7	20.9	152361	2.8	19.0	297373	2.9	19.8	2846	2.9	16.4	57809	3.0	17.4
452224	2.7	20.7	447679	2.7	20.6	99806	2.8	18.4	504486	2.9	20.8	51392	2.9	19.6	391282	3.0	21.0
14509	2.7	17.7	165191	2.7	18.5	114808	2.8	18.4	107440	2.9	19.1	16112	2.9	17.8	33323	3.0	17.8
525030	2.7	20.6	443468	2.7	21.1	157371	2.8	19.1	258796	2.9	20.2	404019	2.9	21.0	324571	3.0	20.6
147541	2.7	19.7	499517	2.7	21.3	394972	2.8	20.3	502435	2.9	19.9	296340	2.9	19.5	235186	3.0	19.4
228103	2.7	19.7	39463	2.7	18.8	41151	2.8	19.0	114490	2.9	18.7	245582	2.9	19.2	520622	3.0	20.9
144876	2.7	19.5	169455	2.7	19.9	147	2.8	12.9	521741	2.9	21.0	129904	2.9	19.7	21254	3.0	17.2
410267	2.7	19.7	129458	2.7	18.6	537038	2.8	20.4	472631	2.9	21.3	181825	2.9	20.8	449340	3.0	21.4
206634	2.7	19.4	113463	2.7	19.4	33687	2.8	18.8	263131	2.9	20.0	157779	2.9	18.7	177464	3.0	20.0
10745	2.7	18.2	256680	2.7	19.4	215150	2.8	21.2	282708	2.9	21.2	120377	2.9	19.1	407735	3.0	20.9
446295	2.7	21.6	235701	2.7	20.5	488648	2.8	21.0	401180	2.9	19.8	339375	2.9	19.2	114843	3.0	18.8
378549	2.7	21.4	27875	2.8	18.3	39961	2.8	20.2	330601	2.9	20.9	485718	2.9	20.3	346785	3.0	19.2
34409	2.7	18.1	417524	2.8	19.3	300588	2.8	20.4	385815	2.9	20.8	5603	2.9	16.4	107759	3.0	20.0
300251	2.7	21.2	68288	2.8	18.1	368987	2.8	21.0	198997	2.9	20.3	400483	2.9	20.5	531422	3.0	20.4
63563	2.7	18.3	114819	2.8	18.8	22385	2.8	17.4	121651	2.9	19.8	280110	2.9	20.9	245351	3.0	21.1
477999	2.7	20.6	114959	2.8	18.3	99439	2.8	19.0	437846	2.9	22.1	43640	2.9	19.1	322766	3.0	20.5
526169	2.7	20.2	38283	2.8	18.5	497228	2.8	20.7	66723	2.9	17.2	83058	2.9	18.5	123562	3.1	18.9
515429	2.7	21.8	402827	2.8	20.7	387489	2.8	20.3	385565	2.9	20.6	515993	2.9	21.5	349390	3.1	19.5
76940	2.7	19.6	173889	2.8	19.1	68863	2.8	19.0	198431	2.9	19.2	402459	2.9	20.6	143822	3.1	18.7
154788	2.7	19.8	139121	2.8	20.2	181996	2.8	18.9	141358	2.9	19.9	509884	2.9	21.4	479593	3.1	20.7
185590	2.7	20.3	531197	2.8	21.2	228119	2.8	20.1	6253	2.9	16.5	21985	2.9	18.5	159098	3.1	19.1
505717	2.7	21.2	35738	2.8	18.0	512795	2.8	20.5	313002	2.9	20.3	408635	2.9	19.9	405004	3.1	18.7
489704	2.7	20.0	181617	2.8	19.9	253694	2.8	19.3	218593	2.9	18.1	59566	2.9	18.6	526998	3.1	21.0
15420	2.7	19.6	303149	2.8	20.3	90076	2.8	18.9	303592	2.9	20.2	168843	2.9	18.8	155506	3.1	19.7
117346	2.7	19.1	420419	2.8	19.5	414417	2.8	20.7	61585	2.9	19.0	485340	2.9	21.2	36781	3.1	18.8
250703	2.7	20.5	74002	2.8	19.5	357343	2.8	20.9	71879	2.9	18.0	184254	2.9	20.1	475475	3.1	21.1
497076	2.7	19.4	126442	2.8	19.8	362344	2.8	20.4	476225	2.9	21.0	15788	2.9	22.1	521699	3.1	20.5
861	2.7	14.4	21431	2.8	18.4	184007	2.8	20.4	328645	2.9	19.7	331351	2.9	20.3	388671	3.1	20.0
25046	2.7	17.4	480760	2.8	20.4	198320	2.8	18.9	253671	2.9	19.7	465855	2.9	20.9	22056	3.1	18.1
517865	2.7	19.9	501785	2.8	20.1	321923	2.8	20.8	334340	2.9	18.6	313652	2.9	19.7	280388	3.1	20.5
290983	2.7	20.5	433198	2.8	21.2	251779	2.8	20.2	9751	2.9	17.8	52156	2.9	17.9	438786	3.1	19.6
320286	2.7	20.9	291510	2.8	21.3	448647	2.8	20.4	292337	2.9	20.6	115327	2.9	19.2	357494	3.1	20.5
385331	2.7	19.8	29053	2.8	18.9	459679	2.8	21.3	471778	2.9	19.6	274666	2.9	20.5	191555	3.1	19.3
53079	2.7	18.1	259427	2.8	19.9	67554	2.8	18.4	394215	2.9	20.7	123181	2.9	18.3	22073	3.1	18.7
257371	2.7	20.0	323643	2.8	20.2	97647	2.8	18.2	318032	2.9	20.4	245618	2.9	20.1	230678	3.1	20.3
539343	2.7	21.9	373378	2.8	21.4	542340	2.8	20.8	298193	2.9	19.2	80976	2.9	19.4	106408	3.1	18.8
192522	2.7	18.5	445530	2.8	18.2	491791	2.8	20.3	324272	2.9	20.4	77549	2.9	19.1	239123	3.1	20.1
211048	2.7	19.4	346011	2.8	19.4	232957	2.9	20.9	96123	2.9	17.8	117810	2.9	19.2	323235	3.1	19.9
509559	2.7	20.6	274877	2.8	20.4	320965	2.9	20.6	259341	2.9	21.0	420787	2.9	21.9	266274	3.1	19.5
356952	2.7	19.5	15697	2.8	17.7	523830	2.9	20.7	117841	2.9	20.7	445529	2.9	20.1	189922	3.1	20.0
116698	2.7	19.7	146103	2.8	18.9	26847	2.9	19.1	244940	2.9	19.3	296445	3.0	20.2	256458	3.1	19.6
416292	2.7	20.3	62496	2.8	18.2	493789	2.9	19.6	537034	2.9	21.2	37960	3.0	19.9	441330	3.1	20.5
178194	2.7	19.5	457797	2.8	19.3	282958	2.9	22.2	150120	2.9	19.7	479534	3.0	20.7	472571	3.1	21.2
322012	2.7	20.1	117283	2.8	19.1	15854	2.9	18.2	358841	2.9	21.4	132697	3.0	20.4	420390	3.1	21.2
249105	2.7	18.7	536513	2.8	21.3	240668	2.9	20.8	321631	2.9	20.7	203316	3.0	19.0	311132	3.1	19.5
396078	2.7	20.7	358834	2.8	20.0	329370	2.9	20.1	403183	2.9	22.0	495877	3.0	21.6	407324	3.1	23.5
257775	2.7	20.5	508838	2.8	20.3	157285	2.9	19.6	369037	2.9	20.8	169585	3.0	19.6	396418	3.1	20.1
124484	2.7	18.1	72620	2.8	18.5	302158	2.9	19.6	130591	2.9	20.4	102630	3.0	18.2	291379	3.1	20.8
21061	2.7	18.1	241315	2.8	21.2	71893	2.9	19.4	315099	2.9	20.4	186332	3.0	19.4	195081	3.1	20.3
89859	2.7	18.8	346968	2.8	20.4	476097	2.9	19.9	247883	2.9	20.5	146022	3.0	19.7	304750	3.1	20.6
470373	2.7	19.7	140831	2.8	19.1	214585	2.9	19.7	371569	2.9	18						

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
426926	3.1	19.1	100894	3.2	19.5	263455	3.2	21.2	436581	3.3	21.0	458320	3.4	20.7	506918	3.4	21.3
317812	3.1	19.8	304632	3.2	20.5	508795	3.2	20.8	77554	3.3	19.5	181841	3.4	20.2	448611	3.4	20.8
445247	3.1	20.2	477166	3.2	20.2	451958	3.2	20.0	466143	3.3	21.6	385839	3.4	20.7	244346	3.4	20.4
71242	3.1	18.1	474406	3.2	19.3	130844	3.2	18.6	300653	3.3	20.5	218350	3.4	19.5	22629	3.4	16.1
446134	3.1	20.6	117292	3.2	18.6	390947	3.2	20.2	367452	3.3	20.6	417389	3.4	20.3	247804	3.4	19.1
12143	3.1	17.4	35867	3.2	18.1	539684	3.2	21.8	174681	3.3	18.9	250719	3.4	19.6	455071	3.4	20.6
99466	3.1	20.1	470673	3.2	20.7	212449	3.2	20.5	262120	3.3	20.2	100798	3.4	19.0	175829	3.4	19.3
270376	3.1	19.8	358867	3.2	20.9	509836	3.2	20.7	262722	3.3	19.3	94551	3.4	19.3	307301	3.4	19.4
430651	3.1	20.6	436146	3.2	21.0	171762	3.2	19.2	74217	3.3	18.5	382601	3.4	21.2	407102	3.4	20.6
283036	3.1	19.7	336488	3.2	19.5	198369	3.2	19.2	44026	3.3	17.4	301729	3.4	21.4	523910	3.4	19.8
355157	3.1	20.7	259424	3.2	20.6	278756	3.2	20.8	181968	3.3	19.4	404857	3.4	19.4	242556	3.4	19.9
379250	3.1	21.2	488287	3.2	20.4	398082	3.2	21.4	142930	3.3	19.3	247968	3.4	18.4	445261	3.4	20.5
7942	3.1	16.8	195233	3.2	19.4	24482	3.2	17.5	495089	3.3	21.4	207407	3.4	19.7	237313	3.4	19.9
230787	3.1	20.3	210281	3.2	19.1	149085	3.2	19.5	288520	3.3	20.2	338017	3.4	21.0	517708	3.4	20.6
58399	3.1	17.6	516268	3.2	19.4	539334	3.2	20.9	308582	3.3	19.8	38425	3.4	17.6	3424	3.4	15.8
250734	3.1	21.0	248041	3.2	19.0	15509	3.2	17.5	288709	3.3	20.6	241744	3.4	18.6	310697	3.4	20.3
448949	3.1	19.9	458153	3.2	21.4	40226	3.2	18.1	224597	3.3	20.1	1769	3.4	15.5	477899	3.4	21.1
51382	3.1	18.8	7587	3.2	17.7	199318	3.2	20.2	121299	3.3	18.3	250374	3.4	20.1	488365	3.4	19.6
334902	3.1	19.8	520582	3.2	21.0	400223	3.2	20.8	443467	3.3	21.0	472624	3.4	21.2	430976	3.4	20.1
247477	3.1	20.0	404415	3.2	20.6	321904	3.2	21.0	250009	3.3	19.3	123132	3.4	19.1	293627	3.4	20.3
447270	3.1	21.3	342759	3.2	18.9	538962	3.2	21.6	143725	3.3	19.7	476278	3.4	20.7	307017	3.4	18.7
345929	3.1	20.0	439257	3.2	20.8	60138	3.2	19.3	240210	3.3	21.0	385326	3.4	19.9	313148	3.4	19.8
404097	3.1	20.6	63899	3.2	18.3	301978	3.2	20.2	437707	3.3	19.9	386347	3.4	19.6	469919	3.4	20.4
90732	3.1	18.3	203306	3.2	18.2	415745	3.2	21.6	23166	3.3	16.8	130112	3.4	18.7	34390	3.4	18.1
472770	3.1	21.0	261635	3.2	19.9	273810	3.2	21.4	211073	3.3	20.2	244451	3.4	20.0	48170	3.4	18.3
166230	3.1	19.7	418260	3.2	19.2	65979	3.2	19.3	500214	3.3	20.8	485779	3.4	21.0	132164	3.4	20.0
114821	3.1	19.8	296586	3.2	21.3	10910	3.2	16.9	260478	3.3	20.1	69889	3.4	18.4	343287	3.4	20.9
508949	3.1	19.7	257738	3.2	19.2	471614	3.2	21.1	537313	3.3	21.1	512937	3.4	20.1	523027	3.4	20.6
239340	3.1	20.3	41381	3.2	17.5	20301	3.2	17.3	418032	3.3	21.1	486652	3.4	20.2	243762	3.4	19.6
403416	3.1	20.5	291834	3.2	21.1	46651	3.2	19.9	46852	3.3	18.2	465644	3.4	21.7	389532	3.4	20.4
448397	3.1	21.1	445007	3.2	20.9	503436	3.2	20.8	184229	3.3	19.1	250462	3.4	19.7	60423	3.4	19.9
208859	3.1	19.4	317918	3.2	20.2	294254	3.2	19.0	145252	3.3	19.3	183387	3.4	18.7	66280	3.4	19.2
16151	3.1	18.1	308322	3.2	20.5	343488	3.2	19.7	320339	3.3	18.8	444222	3.4	20.6	483972	3.4	21.6
376894	3.1	19.4	516129	3.2	19.9	220669	3.2	20.0	362690	3.3	20.6	459513	3.4	21.5	513333	3.5	22.0
304302	3.1	19.9	391655	3.2	20.4	429492	3.2	19.6	537242	3.3	21.6	314419	3.4	19.3	422885	3.5	19.8
375782	3.1	19.8	447068	3.2	20.8	538979	3.2	22.9	371625	3.3	19.8	188165	3.4	20.2	399915	3.5	20.2
364168	3.1	20.9	41575	3.2	17.3	216912	3.2	21.0	37119	3.3	19.2	511450	3.4	20.9	390896	3.5	19.9
213078	3.1	20.9	168311	3.2	19.3	319376	3.2	19.7	287308	3.3	18.6	199926	3.4	20.6	153102	3.5	19.5
429875	3.1	21.0	481400	3.2	21.0	23441	3.2	18.6	182539	3.3	18.4	134123	3.4	19.3	4893	3.5	17.3
108331	3.1	19.6	388734	3.2	20.5	452640	3.2	19.9	225484	3.3	20.8	41016	3.4	18.5	531269	3.5	21.8
324150	3.1	19.8	84395	3.2	19.2	293276	3.2	20.3	155860	3.3	19.3	102421	3.4	18.1	98616	3.5	18.0
358400	3.1	20.4	343537	3.2	19.9	356993	3.2	20.9	289755	3.3	20.4	96483	3.4	18.8	47514	3.5	18.1
446558	3.1	21.0	72026	3.2	18.3	180816	3.2	19.2	507405	3.3	21.4	467547	3.4	19.7	290791	3.5	21.0
71206	3.1	18.5	388657	3.2	20.1	417974	3.2	20.0	333296	3.3	19.6	185845	3.4	19.8	512652	3.5	20.7
202259	3.1	18.9	440510	3.2	20.1	496855	3.3	20.6	488049	3.3	20.8	95161	3.4	19.0	251888	3.5	19.7
514213	3.1	20.6	403219	3.2	19.8	384469	3.3	20.6	130551	3.3	19.0	295978	3.4	20.0	468130	3.5	20.2
329952	3.1	21.5	539087	3.2	20.4	318345	3.3	19.6	311136	3.3	19.8	408246	3.4	21.5	9338	3.5	17.8
282377	3.1	18.4	452333	3.2	20.7	257706	3.3	18.9	262130	3.3	18.7	225050	3.4	20.3	255406	3.5	19.8
316050	3.1	21.3	329341	3.2	19.4	462866	3.3	20.2	337113	3.3	18.9	504900	3.4	20.2	36676	3.5	18.2
43717	3.1	19.3	166404	3.2	19.6	88962	3.3	19.3	446561	3.3	20.8	299236	3.4	19.6	529603	3.5	18.7
453623	3.1	20.6	459948	3.2	21.8	408073	3.3	21.0	448394	3.3	21.0	471661	3.4	21.0	155734	3.5	19.4
385827	3.1	20.7	410166	3.2	20.5	501582	3.3	21.6	243073	3.3	20.5	62190	3.4	18.8	485872	3.5	20.7
247419	3.1	20.1	332499	3.2	21.4	461232	3.3	20.5	44957	3.3	19.2	119357	3.4	18.9	189165	3.5	20.0
236734	3.1	21.3	495050	3.2	20.2	336891	3.3	20.1	469025	3.3	20.5	128106	3.4	19.1	136731	3.5	20.8
58768	3.1	19.5	447205	3.2	21.0	13881	3.3	18.8	364992	3.3	20.6	56366	3.4	18.6	37964	3.5	18.4
57400	3.1	18.7	181556	3.2	20.4	212869	3.3	19.2	128092	3.3	18.7	322267	3.4	20.5	346983	3.5	19.9
522929	3.1	20.6	450046	3.2	20.0	355894	3.3	19.6	150266	3.3	19.3	200035	3.4	19.8	477489	3.5	19.8
48174	3.1	18.0	479803	3.2	20.3	299845	3.3	19.9	20388	3.3	18.1	506074	3.4	20.7	90864	3.5	20.0
251892	3.1	19.7	500973	3.2	20.9	449031	3.3	21.1	430732	3.3	19.5	172672	3.4	18.3	487144	3.5	20.2
242515	3.1	18.6	422441	3.2	19.5	157398	3.3	18.4	417493	3.3	19.8	385598	3.4	21.5	419773	3.5	19.7
126926	3.1	18.9	91638	3.2	18.8	283809	3.3	20.0	474708	3.3	21.1	158775	3.4	19.4	119921	3.5	19.1
526442	3.1	20.4	289617	3.2	20.0	371492	3.3	19.4	104125	3.3	18.5	516043	3.4	20.6	174084	3.5	20.4
165653	3.1	18.8	285343	3.2	20.0	60190	3.3	18.0	78417	3.3	19.7	87225	3.4	18.7	478639	3.5	20.3
15516	3.1	18.2	189167	3.2	19.3	18674	3.3	17.0	152714	3.3	19.5	123999	3.4	19.7	7362	3.5	16.1
244702	3.1	20.5	71306	3.2	18.2	41994	3.3	17.6	333477	3.3	20.1	5549	3.4	16.9	383256	3.5	20.8
340423	3.1	20.6	411926	3.2	20.7	472552	3.3	21.3	416686	3.3	20.2	98599	3.4	17.6	121279	3.5	18.8
370418	3.1	20.0	517834	3.2	19.9	319462	3.3	20.3	286814	3.3	20.4	254395	3.4	20.2	426056	3.5	20.8
525083	3.1	19.9	475409	3.2	20.7	52902	3.3	17.4	205745	3.3	20.1	446189	3.4	20.5	71030	3.5	17.8
183181	3.1	18.5	401746	3.2	20.5	72277	3.3	19.6	275241	3.3	19.2	217648	3.4	18.4	391558	3.5	20.9
388633	3.1	20.0	222232	3.2	20.2	441408	3.3	20.9	282066	3.3	19.5	129609	3.4	17.7	396777	3.5	20.4
155788	3.1	20.1	123987	3.2	19.7	418091	3.3	20.3	191698	3.3	20.6	314587	3.4	20.9</			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

N _e	12	V	N _e	12	V	N _e	12	V	N _e	12	V	N _e	12	V	N _e	12	V
401694	3.5	20.0	97416	3.5	18.8	316242	3.6	19.8	163263	3.7	19.3	511306	3.7	20.5	71607	3.8	17.7
293536	3.5	19.7	71936	3.5	17.8	260344	3.6	19.4	463104	3.7	20.4	507114	3.7	21.1	48364	3.8	18.6
176146	3.5	20.2	413215	3.5	20.4	154199	3.6	19.8	385606	3.7	20.1	530517	3.7	21.0	477937	3.8	20.6
310544	3.5	19.9	74352	3.5	18.2	388686	3.6	20.5	436152	3.7	21.0	285018	3.7	20.3	34616	3.8	19.0
86291	3.5	18.8	447362	3.5	19.4	152794	3.6	18.9	365691	3.7	20.0	293922	3.7	20.0	410190	3.8	19.8
296520	3.5	20.2	102253	3.5	18.6	521880	3.6	20.6	86899	3.7	19.0	210292	3.7	19.0	324816	3.8	20.4
392586	3.5	20.8	241750	3.5	18.1	448387	3.6	20.3	217811	3.7	19.3	46083	3.7	18.2	174364	3.8	19.8
457469	3.5	21.2	77988	3.5	19.5	316674	3.6	19.9	70265	3.7	18.8	539510	3.7	21.0	483483	3.8	20.3
142946	3.5	19.4	317537	3.5	20.2	137683	3.6	18.7	453984	3.7	20.5	187300	3.7	19.3	295647	3.8	19.0
68029	3.5	20.1	372917	3.5	19.8	85681	3.6	18.4	336160	3.7	20.1	105891	3.7	19.2	165074	3.8	18.8
14837	3.5	16.4	400440	3.5	21.0	75095	3.6	17.8	88226	3.7	18.0	104431	3.7	20.1	329943	3.8	21.4
132586	3.5	19.2	338507	3.5	20.7	537580	3.6	22.2	327202	3.7	20.6	360735	3.7	20.2	420924	3.8	21.4
457600	3.5	20.5	46100	3.5	19.5	376550	3.6	20.5	149377	3.7	19.1	87651	3.7	17.1	326811	3.8	20.4
446166	3.5	20.3	195187	3.5	20.4	326261	3.6	20.6	203732	3.7	19.6	480395	3.7	20.6	438933	3.8	19.7
27327	3.5	19.1	343818	3.6	21.0	4563	3.6	15.4	377593	3.7	20.0	324542	3.7	20.1	99889	3.8	18.8
139986	3.5	19.3	824	3.6	14.6	444302	3.6	20.6	256462	3.7	19.5	320156	3.7	20.9	383306	3.8	20.9
116950	3.5	19.0	462804	3.6	21.4	472963	3.6	20.5	242572	3.7	20.6	411921	3.7	20.4	518943	3.8	21.0
378217	3.5	20.4	166237	3.6	18.4	199287	3.6	20.2	331564	3.7	20.1	112960	3.8	19.5	330259	3.8	20.5
331321	3.5	20.7	430749	3.6	20.4	5434	3.6	16.9	390137	3.7	20.6	133068	3.8	19.5	349242	3.8	19.4
473304	3.5	20.4	478786	3.6	20.2	528186	3.6	21.2	166547	3.7	19.3	452561	3.8	21.3	529627	3.8	21.7
69364	3.5	19.5	447373	3.6	20.4	271102	3.6	20.8	213068	3.7	21.5	65308	3.8	19.2	141930	3.8	18.8
213513	3.5	20.0	42705	3.6	19.5	487993	3.6	20.7	445254	3.7	19.7	169973	3.8	17.4	349760	3.8	20.1
538584	3.5	20.4	484664	3.6	20.3	147212	3.6	18.6	478580	3.7	22.1	304822	3.8	20.1	340515	3.8	19.7
33215	3.5	18.3	837	3.6	14.9	398045	3.6	21.0	315836	3.7	19.6	157325	3.8	19.1	386305	3.8	19.8
335147	3.5	18.7	468621	3.6	22.0	447969	3.6	20.8	276472	3.7	21.3	516820	3.8	20.2	481408	3.8	21.0
410096	3.5	20.7	76441	3.6	19.0	61545	3.6	19.2	250390	3.7	19.1	537550	3.8	19.5	505111	3.8	21.2
168791	3.5	21.1	162874	3.6	20.2	237031	3.6	19.1	190030	3.7	20.1	130713	3.8	19.3	287068	3.8	20.6
403447	3.5	20.2	89888	3.6	18.2	169735	3.6	19.4	425793	3.7	20.8	11533	3.8	18.0	525512	3.8	21.3
347848	3.5	19.7	416087	3.6	19.2	40587	3.6	18.7	523766	3.7	22.1	322206	3.8	19.5	250368	3.8	21.4
478598	3.5	20.7	388591	3.6	20.1	280323	3.6	19.4	158124	3.7	19.8	228871	3.8	19.6	158697	3.8	20.4
185822	3.5	18.2	266687	3.6	19.7	47875	3.6	17.1	202730	3.7	20.0	3868	3.8	15.4	334476	3.8	20.1
68331	3.5	18.4	534868	3.6	20.8	514867	3.6	21.4	335166	3.7	18.6	159653	3.8	19.3	326940	3.8	19.5
508467	3.5	20.4	92613	3.6	17.6	171299	3.6	19.8	155561	3.7	19.3	378210	3.8	20.5	189400	3.8	20.5
455030	3.5	19.1	216914	3.6	19.9	176710	3.6	19.0	103321	3.7	18.8	379301	3.8	19.3	114751	3.8	19.3
117961	3.5	19.2	411942	3.6	20.7	363078	3.6	19.6	32853	3.7	17.6	360997	3.8	19.4	529923	3.8	21.5
290402	3.5	21.2	44346	3.6	17.2	20165	3.6	17.4	371979	3.7	20.3	336946	3.8	20.7	407294	3.8	19.5
202930	3.5	20.1	519661	3.6	19.9	500903	3.6	21.6	514217	3.7	21.0	164148	3.8	20.1	515073	3.8	20.4
253794	3.5	20.3	203677	3.6	19.6	487040	3.6	21.0	324804	3.7	19.8	515703	3.8	22.3	483296	3.8	20.7
43251	3.5	17.7	141717	3.6	20.9	241734	3.6	18.4	319097	3.7	19.8	323750	3.8	19.6	389172	3.8	20.8
282675	3.5	19.8	375216	3.6	21.0	353756	3.6	20.4	322151	3.7	20.7	89235	3.8	19.5	287941	3.8	19.5
476911	3.5	20.2	451839	3.6	21.1	68674	3.6	18.9	374911	3.7	19.3	535706	3.8	21.4	2930	3.8	16.7
885	3.5	14.6	383999	3.6	19.7	414078	3.6	20.7	510301	3.7	20.6	475347	3.8	21.2	164078	3.8	19.6
417993	3.5	20.2	301342	3.6	20.4	231275	3.6	19.6	417936	3.7	19.6	507166	3.8	20.4	406986	3.8	20.5
75528	3.5	18.9	336321	3.6	19.8	391539	3.6	20.9	515218	3.7	20.0	399590	3.8	20.1	101313	3.8	18.4
254101	3.5	19.0	201432	3.6	19.4	410668	3.6	21.1	419541	3.7	20.1	53696	3.8	18.2	17466	3.8	17.3
499031	3.5	20.5	157333	3.6	20.2	448609	3.6	20.1	437059	3.7	20.6	309201	3.8	19.5	518312	3.8	20.0
169765	3.5	20.4	96284	3.6	19.3	114906	3.6	19.5	136224	3.7	19.4	527592	3.8	20.4	304079	3.8	19.9
517512	3.5	21.6	257234	3.6	21.0	211946	3.7	18.9	336246	3.7	20.2	386461	3.8	19.3	532620	3.8	18.9
166602	3.5	19.6	511150	3.6	18.9	367071	3.7	21.5	239677	3.7	20.0	311834	3.8	20.6	23185	3.8	16.6
129564	3.5	20.0	342490	3.6	19.6	357369	3.7	21.4	28086	3.7	16.8	177669	3.8	20.0	128705	3.8	18.9
62253	3.5	18.9	476086	3.6	20.9	399631	3.7	20.1	105773	3.7	18.8	274820	3.8	19.5	154964	3.8	19.8
412123	3.5	20.9	111464	3.6	19.3	192097	3.7	19.8	276923	3.7	19.0	86162	3.8	16.8	437125	3.8	20.9
286743	3.5	20.2	488563	3.6	19.1	293315	3.7	20.6	250548	3.7	20.3	514300	3.8	21.0	206026	3.8	20.1
309049	3.5	20.9	289781	3.6	20.2	275240	3.7	19.4	318180	3.7	20.2	211521	3.8	20.0	223804	3.8	20.3
417816	3.5	20.5	446215	3.6	19.9	261227	3.7	21.2	454973	3.7	19.8	456202	3.8	20.5	407083	3.8	20.2
122440	3.5	19.5	6353	3.6	16.0	261860	3.7	20.1	268246	3.7	19.8	184010	3.8	19.9	406712	3.8	22.3
345494	3.5	20.3	117792	3.6	19.0	401766	3.7	20.0	123567	3.7	18.5	260891	3.8	19.7	401726	3.8	19.3
152316	3.5	19.4	184253	3.6	19.6	314068	3.7	20.4	441960	3.7	21.2	39082	3.8	17.7	35566	3.8	17.5
302243	3.5	19.6	425771	3.6	20.8	278386	3.7	20.3	263774	3.7	20.5	257146	3.8	19.9	19493	3.8	16.6
298666	3.5	20.1	322335	3.6	20.4	539030	3.7	21.0	362522	3.7	21.1	370297	3.8	21.8	513482	3.8	20.4
1437	3.5	15.1	422411	3.6	20.5	103865	3.7	19.1	227710	3.7	19.2	236870	3.8	20.8	211154	3.8	18.8
197375	3.5	19.0	241212	3.6	20.3	44287	3.7	18.4	241430	3.7	19.6	400461	3.8	21.0	272292	3.8	20.0
346558	3.5	20.5	233772	3.6	21.0	450524	3.7	20.7	184943	3.7	19.5	141623	3.8	20.4	74359	3.8	18.4
6064	3.5	17.0	208135	3.6	20.8	273763	3.7	20.5	414086	3.7	19.5	146835	3.8	20.0	517565	3.8	19.7
437673	3.5	20.2	263975	3.6	19.1	133295	3.7	19.3	396117	3.7	20.2	141102	3.8	18.9	423458	3.8	21.9
96523	3.5	18.9	232819	3.6	18.6	360652	3.7	20.4	463119	3.7	20.8	425164	3.8	20.8	420769	3.8	20.7
49737	3.5	18.4	207222	3.6	19.3	98033	3.7	18.0	402482	3.7	20.1	73147	3.8	20.2	85608	3.8	19.6
516303	3.5	20.4	177351	3.6	19.4	136909	3.7	19.3	421814	3.7	20.5	65149	3.8	19.6	292139	3.8	19.8
8220	3.5	17.8	538836	3.6	20.1	168957	3.7	17.7	185862	3.7	19.9	186936	3.8	19.8	332397	3.8	20.2
127147	3.5	19.5	161274	3.6	19.6	287829	3.7	20.5	479629	3.7	20.2	93151	3.8	19.9	189353	3.8	20.2
198432	3.5	19.3	346604	3.6	20.5	290265	3.7	20.9	349370	3.7	19.3						

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
313354	3.9	19.2	43775	3.9	18.5	344801	3.9	17.3	440492	4.1	20.4	448723	4.1	20.1	28553	4.2	17.9
26805	3.9	18.1	467594	3.9	21.1	173278	3.9	19.7	514383	4.1	19.9	314516	4.1	19.4	287372	4.2	19.8
102316	3.9	19.7	513954	3.9	20.7	394021	3.9	21.1	244767	4.1	19.4	221741	4.1	20.3	197	4.2	13.1
11008	3.9	16.7	409272	3.9	20.6	118912	3.9	18.7	54825	4.1	19.0	218942	4.2	19.9	508506	4.2	19.8
539245	3.9	20.5	147153	3.9	20.1	509416	3.9	21.8	478899	4.1	20.4	75068	4.2	18.8	429437	4.2	19.8
123327	3.9	18.4	214307	3.9	19.4	157034	3.9	19.4	236575	4.1	20.0	291325	4.2	20.8	174680	4.2	19.8
55809	3.9	19.7	257629	3.9	19.8	206346	3.9	19.8	428235	4.1	20.3	448639	4.2	20.2	398161	4.2	20.8
284568	3.9	19.8	480289	3.9	21.4	367958	4.0	20.2	473214	4.1	20.4	320840	4.2	20.9	304405	4.2	20.5
61510	3.9	18.3	472729	3.9	19.3	469060	4.0	20.0	539609	4.1	21.5	287177	4.2	20.3	103873	4.2	19.0
77227	3.9	19.0	227692	3.9	19.8	147921	4.0	20.0	139578	4.1	19.0	139228	4.2	19.9	5888	4.2	16.5
155482	3.9	18.5	42214	3.9	18.4	179356	4.0	19.4	383292	4.1	20.1	91257	4.2	18.5	152086	4.2	19.7
152473	3.9	19.3	339457	3.9	19.9	254866	4.0	20.0	391608	4.1	19.9	93217	4.2	19.1	49739	4.2	19.7
504931	3.9	19.8	285524	3.9	20.2	58890	4.0	19.1	514523	4.1	19.9	127129	4.2	19.5	195615	4.2	19.5
73108	3.9	18.9	17326	3.9	16.6	422679	4.0	18.7	264387	4.1	20.3	298793	4.2	19.9	409310	4.2	18.7
160905	3.9	19.6	222472	3.9	19.0	476287	4.0	19.6	443470	4.1	21.1	459530	4.2	21.0	287948	4.2	19.4
157875	3.9	19.6	25913	3.9	17.8	192040	4.0	18.9	336211	4.1	20.1	446582	4.2	20.4	499561	4.2	20.6
253046	3.9	19.4	314486	3.9	18.3	258633	4.0	19.7	282354	4.1	20.8	525614	4.2	20.8	89764	4.2	17.9
373272	3.9	19.9	503981	3.9	21.0	164257	4.0	20.2	150714	4.1	19.0	132814	4.2	19.8	259972	4.2	19.9
220558	3.9	19.9	94873	3.9	19.7	493497	4.0	21.7	470784	4.1	20.7	393229	4.2	21.0	328209	4.2	21.3
436601	3.9	20.8	87961	3.9	19.4	232211	4.0	18.5	499111	4.1	21.1	232813	4.2	19.5	514019	4.2	20.9
447714	3.9	20.7	60022	3.9	18.7	464799	4.0	20.3	483919	4.1	20.7	234013	4.2	19.5	36059	4.2	18.1
340284	3.9	19.4	145507	3.9	19.7	132303	4.0	19.9	537394	4.1	21.7	68726	4.2	19.3	209801	4.2	20.1
48387	3.9	19.0	445803	3.9	20.6	70632	4.0	19.5	476161	4.1	20.2	102977	4.2	17.8	436959	4.2	20.3
350528	3.9	20.3	40450	3.9	18.3	539878	4.0	20.3	77582	4.1	19.0	23918	4.2	17.7	316107	4.2	20.4
67411	3.9	18.9	188460	3.9	19.4	163811	4.0	19.0	45471	4.1	18.8	504709	4.2	20.5	350474	4.2	20.8
21619	3.9	17.3	70161	3.9	19.6	452386	4.0	21.1	144223	4.1	19.9	339318	4.2	19.4	479605	4.2	20.0
325776	3.9	18.5	63023	3.9	18.2	524584	4.0	20.4	361248	4.1	18.1	508991	4.2	21.4	286694	4.2	20.6
155299	3.9	20.3	364533	3.9	21.1	309550	4.0	19.9	20865	4.1	16.4	490110	4.2	19.4	154249	4.2	19.7
90600	3.9	19.2	539308	3.9	21.0	382913	4.0	19.0	202048	4.1	18.9	7530	4.2	16.0	146860	4.2	19.9
312444	3.9	20.7	158462	3.9	19.9	523126	4.0	21.3	315114	4.1	21.0	109038	4.2	19.2	323704	4.2	20.2
281605	3.9	19.4	448405	3.9	20.0	126350	4.0	17.6	530927	4.1	20.2	512420	4.2	20.6	92426	4.2	18.5
537300	3.9	21.3	341061	3.9	21.0	445353	4.0	20.5	325765	4.1	20.2	368424	4.2	20.3	331506	4.2	17.3
171403	3.9	19.5	118924	3.9	18.9	67829	4.0	17.3	524857	4.1	20.6	87952	4.2	19.4	401681	4.2	20.5
445835	3.9	20.1	260266	3.9	20.3	472164	4.0	20.0	333473	4.1	20.5	347070	4.2	20.5	237183	4.2	19.5
340390	3.9	20.1	72161	3.9	19.2	492297	4.0	17.9	380285	4.1	19.6	510657	4.2	20.8	92679	4.2	19.6
205513	3.9	18.9	36078	3.9	18.0	526867	4.0	21.8	93143	4.1	18.9	325491	4.2	19.7	479484	4.2	20.3
257486	3.9	20.7	391968	3.9	20.6	368545	4.0	19.3	168246	4.1	20.6	322165	4.2	19.1	404081	4.3	20.0
390029	3.9	20.0	45578	3.9	19.3	489671	4.0	20.4	134975	4.1	18.1	94475	4.2	18.5	61465	4.3	18.6
76183	3.9	18.3	521758	3.9	21.3	399352	4.0	20.7	238158	4.1	21.4	1888	4.2	14.2	99020	4.3	19.5
447414	3.9	21.4	395938	3.9	20.0	285883	4.0	19.5	22411	4.1	17.4	497148	4.2	21.1	217719	4.3	19.5
386342	3.9	19.2	17184	3.9	17.2	52158	4.0	19.5	217721	4.1	20.5	1801	4.2	14.8	160776	4.3	18.6
445385	3.9	19.9	98090	3.9	18.5	321487	4.0	21.4	249043	4.1	20.6	296578	4.2	20.3	315551	4.3	20.4
14223	3.9	16.5	327834	3.9	20.6	186361	4.0	19.9	496767	4.1	20.2	524101	4.2	20.1	347118	4.3	20.5
23182	3.9	18.1	36166	3.9	19.1	528663	4.0	20.8	150656	4.1	20.4	252775	4.2	20.1	342212	4.3	19.8
290328	3.9	19.6	92976	3.9	17.6	276071	4.0	20.4	296562	4.1	19.4	12944	4.2	17.8	56	4.3	12.6
237343	3.9	19.7	176147	3.9	19.0	265476	4.0	19.2	485896	4.1	20.7	217369	4.2	20.0	526401	4.3	21.8
245399	3.9	19.9	23607	3.9	16.7	476187	4.0	21.5	199700	4.1	20.4	317919	4.2	20.4	169043	4.3	19.8
34445	3.9	18.6	231336	3.9	19.8	284295	4.0	20.3	82378	4.1	19.0	69744	4.2	20.1	342095	4.3	20.7
255669	3.9	19.5	350277	3.9	20.2	401618	4.0	19.8	533990	4.1	23.1	363294	4.2	21.2	214109	4.3	19.4
226729	3.9	18.9	275380	3.9	20.1	487743	4.0	19.9	84098	4.1	18.9	500135	4.2	21.3	520213	4.3	20.7
253811	3.9	18.5	535611	3.9	21.1	253410	4.0	20.1	255226	4.1	19.8	323087	4.2	20.2	18161	4.3	16.4
255712	3.9	19.5	232225	3.9	19.3	206686	4.0	19.9	168122	4.1	19.6	59269	4.2	18.1	401661	4.3	20.5
491919	3.9	20.0	529045	3.9	19.4	522831	4.0	20.4	158120	4.1	18.9	306288	4.2	19.4	392433	4.3	20.8
218876	3.9	18.9	431978	3.9	20.7	342527	4.1	19.2	47110	4.1	17.1	335	4.2	12.9	261231	4.3	19.5
263279	3.9	20.1	71271	3.9	18.4	5297	4.1	15.5	169009	4.1	18.2	438843	4.2	20.4	22515	4.3	18.0
306028	3.9	20.5	73309	3.9	18.9	284755	4.1	19.2	359710	4.1	20.1	71751	4.2	17.5	25729	4.3	17.7
383976	3.9	20.6	44202	3.9	18.7	479586	4.1	20.2	412633	4.1	19.6	67757	4.2	18.5	448373	4.3	19.8
258011	3.9	20.1	182887	3.9	20.1	35612	4.1	18.4	514508	4.1	20.7	443598	4.2	21.0	75265	4.3	17.9
151488	3.9	19.9	406314	3.9	21.7	52759	4.1	17.5	514626	4.1	20.2	408373	4.2	21.1	132413	4.3	18.2
488917	3.9	20.7	85016	3.9	17.1	398299	4.1	20.3	321119	4.1	19.8	378606	4.2	20.9	174801	4.3	18.2
315939	3.9	20.8	335050	3.9	19.3	450320	4.1	19.8	16124	4.1	17.4	518417	4.2	20.7	7676	4.3	17.2
449078	3.9	19.2	91493	3.9	17.6	479689	4.1	20.4	49248	4.1	18.6	535803	4.2	20.9	152125	4.3	19.7
331132	3.9	19.0	388888	3.9	18.9	521836	4.1	21.3	360970	4.1	20.5	186749	4.2	19.4	435342	4.3	21.1
234823	3.9	20.3	523288	3.9	21.0	470427	4.1	18.5	451382	4.1	19.5	505803	4.2	20.1	218685	4.3	19.6
471605	3.9	21.3	478821	3.9	19.6	27761	4.1	17.8	336184	4.1	20.1	516725	4.2	22.7	60723	4.3	19.7
2556	3.9	15.3	343538	3.9	20.7	72162	4.1	18.3	475511	4.1	20.5	221804	4.2	21.2	342786	4.3	20.2
261159	3.9	19.5	138054	3.9	19.6	413801	4.1	19.5	299751	4.1	20.3	480987	4.2	20.0	525622	4.3	21.4
344714	3.9	20.0	72632	3.9	19.5	365374	4.1	20.7	71502	4.1	18.6	10755	4.2	17.7	106866	4.3	18.4
466744	3.9	21.1	199598	3.9	20.0	291081	4.1	19.8	175723	4.1	20.9	503268	4.2	20.2	109841	4.3	19.9
91991	3.9	19.1	211761	3.9	19.5	115035	4.1	19.0	19779	4.1	17.7	22593	4.2	17.4	109577	4.3	18.3
296324	3.9	19.9	509181	3.9	20.9	180184	4.1	21.1	153189	4.1	18.8	344457	4.2	20.2	321074	4.3	20.4

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
432990	4.3	20.3	97441	4.4	19.3	430579	4.4	20.5	134636	4.5	20.3	427192	4.5	20.3	319263	4.6	20.5
347305	4.3	19.3	537744	4.4	21.9	51389	4.4	19.2	255295	4.5	19.1	521702	4.5	20.4	358629	4.6	20.2
519930	4.3	20.2	15432	4.4	17.5	416400	4.4	21.0	77515	4.5	18.7	257050	4.5	20.5	393631	4.6	21.0
422344	4.3	19.0	913	4.4	15.1	189542	4.4	19.8	400732	4.5	20.9	393748	4.5	20.2	155852	4.6	19.5
105220	4.3	18.8	211778	4.4	19.6	362979	4.4	20.0	130484	4.5	19.1	36280	4.5	18.8	144256	4.6	19.3
198557	4.3	18.9	137180	4.4	20.4	254219	4.4	19.4	71618	4.5	18.8	73	4.5	12.3	142958	4.6	18.8
531540	4.3	19.9	463401	4.4	20.3	120145	4.4	18.9	97493	4.5	19.3	444256	4.5	20.2	255488	4.6	19.3
382464	4.3	19.6	282775	4.4	20.1	429663	4.4	21.2	431040	4.5	20.8	486692	4.5	22.2	93814	4.6	17.9
508414	4.3	21.4	325465	4.4	21.1	193599	4.4	17.9	441948	4.5	20.3	353690	4.6	20.0	288856	4.6	19.6
116707	4.3	18.8	176470	4.4	19.6	307012	4.4	18.8	152387	4.5	20.1	335090	4.6	19.6	8274	4.6	15.7
488102	4.3	20.1	507270	4.4	20.3	300616	4.4	19.5	312590	4.5	20.7	398961	4.6	20.5	513985	4.6	20.7
288024	4.3	19.2	364972	4.4	20.6	124129	4.4	20.1	5975	4.5	15.5	175480	4.6	19.3	410115	4.6	21.1
349303	4.3	19.2	155891	4.4	20.2	287670	4.4	20.7	476153	4.5	21.1	421758	4.6	20.0	524071	4.6	20.1
43818	4.3	19.6	344780	4.4	20.0	224793	4.4	20.1	511288	4.5	21.0	415295	4.6	20.6	244528	4.6	20.1
520085	4.3	20.4	318597	4.4	21.2	22652	4.4	18.0	527580	4.5	20.7	49830	4.6	17.8	257258	4.6	20.6
104518	4.3	19.1	471766	4.4	20.6	70911	4.4	18.5	321197	4.5	19.9	140846	4.6	19.6	279406	4.6	19.3
395978	4.3	20.6	349305	4.4	19.3	92611	4.4	18.5	314044	4.5	19.6	512367	4.6	19.4	213550	4.6	20.2
91518	4.3	18.3	420865	4.4	20.8	66728	4.4	19.2	211109	4.5	19.6	273990	4.6	19.6	456089	4.6	20.9
321148	4.3	20.0	191788	4.4	18.7	130513	4.4	19.5	458734	4.5	20.9	922	4.6	15.7	83897	4.6	19.5
65137	4.3	19.6	361055	4.4	20.2	228342	4.4	19.1	99030	4.5	18.3	255394	4.6	19.7	136798	4.6	19.2
250948	4.3	19.2	229808	4.4	20.1	516317	4.4	20.8	368658	4.5	20.0	313374	4.6	19.5	519375	4.6	21.0
217586	4.3	20.7	526399	4.4	20.8	218581	4.4	20.7	263072	4.5	19.2	408648	4.6	20.3	535748	4.6	21.3
320086	4.3	20.7	393793	4.4	20.7	19168	4.4	17.2	539111	4.5	21.3	516320	4.6	20.3	66711	4.6	18.4
21601	4.3	16.9	303269	4.4	20.7	430666	4.4	20.4	246082	4.5	19.6	165365	4.6	18.5	234067	4.6	20.4
147100	4.3	18.7	187457	4.4	20.1	328071	4.4	20.0	315001	4.5	20.0	510270	4.6	21.8	537560	4.6	21.7
430245	4.3	19.1	408748	4.4	21.8	174683	4.4	18.4	249766	4.5	18.8	11296	4.6	16.2	184893	4.6	19.9
23931	4.3	16.9	399044	4.4	20.7	177981	4.4	19.2	433176	4.5	20.8	515381	4.6	21.2	56662	4.6	17.5
73723	4.3	19.0	178592	4.4	18.7	403845	4.4	20.6	397019	4.5	20.1	250732	4.6	19.7	123319	4.6	18.3
330655	4.3	20.6	209528	4.4	18.7	536456	4.4	21.3	49142	4.5	18.2	174116	4.6	20.0	324763	4.6	19.9
257480	4.3	20.4	122193	4.4	18.7	360939	4.4	20.2	193503	4.5	19.1	412558	4.6	19.6	24512	4.6	16.5
259117	4.3	19.0	155203	4.4	18.1	316970	4.4	20.4	347083	4.5	19.9	236971	4.6	20.2	466272	4.6	20.6
463627	4.3	21.3	278275	4.4	20.0	199796	4.4	19.2	119061	4.5	18.9	78399	4.6	18.0	48054	4.6	18.5
473387	4.3	19.8	198508	4.4	18.9	291350	4.4	20.4	283714	4.5	20.2	82082	4.6	18.9	179375	4.6	19.2
173580	4.3	18.6	72319	4.4	19.2	175310	4.4	19.9	539872	4.5	20.6	314445	4.6	20.2	127808	4.6	19.3
72666	4.3	19.4	195424	4.4	19.7	369710	4.4	20.5	328190	4.5	20.6	317682	4.6	20.5	64165	4.6	18.9
345328	4.3	20.0	153100	4.4	19.9	482999	4.4	20.3	478524	4.5	19.5	487762	4.6	20.2	321413	4.6	19.7
522937	4.3	20.8	411931	4.4	20.6	259412	4.4	19.4	244467	4.5	20.0	25887	4.6	19.6	249061	4.6	19.9
279453	4.3	19.9	300986	4.4	20.2	63296	4.4	19.0	530102	4.5	20.4	96352	4.6	17.8	365271	4.6	20.6
186989	4.3	19.6	324285	4.4	19.8	525375	4.4	20.5	179115	4.5	19.5	81116	4.6	19.5	184683	4.6	20.3
117046	4.3	18.6	444104	4.4	20.0	288793	4.4	19.8	442316	4.5	20.4	313134	4.6	20.6	362286	4.6	21.1
325131	4.3	21.0	76973	4.4	18.8	476234	4.4	20.1	525793	4.5	20.8	260179	4.6	19.6	316136	4.6	20.8
140138	4.3	19.1	335171	4.4	18.9	470602	4.5	21.3	321778	4.5	19.6	63957	4.6	17.4	268989	4.6	21.5
23164	4.3	18.4	62284	4.4	18.2	385794	4.5	20.4	242588	4.5	20.5	336382	4.6	18.8	519469	4.6	21.8
402790	4.3	21.2	417381	4.4	20.6	27602	4.5	19.6	100739	4.5	18.7	406246	4.6	21.1	318990	4.6	20.2
244568	4.3	20.1	409766	4.4	20.5	137316	4.5	19.3	404221	4.5	20.7	434758	4.6	21.2	389077	4.6	20.9
218977	4.3	20.3	171286	4.4	20.3	204084	4.5	19.4	503669	4.5	21.7	35972	4.6	17.7	387974	4.6	21.1
109188	4.3	19.0	460726	4.4	20.0	2977	4.5	16.2	391248	4.5	21.4	175690	4.6	20.3	531066	4.6	21.0
25790	4.3	17.0	370532	4.4	20.6	452759	4.5	20.9	192662	4.5	19.2	487797	4.6	20.2	538685	4.6	21.9
86173	4.3	18.6	136641	4.4	20.4	444084	4.5	21.6	250984	4.5	20.5	291086	4.6	20.6	18198	4.6	18.3
358920	4.3	20.4	518291	4.4	20.0	167725	4.5	20.0	393862	4.5	20.8	232177	4.6	19.9	129453	4.6	19.0
471780	4.3	21.6	39518	4.4	18.4	394197	4.5	20.0	314598	4.5	20.1	541032	4.6	19.6	226053	4.6	19.5
223406	4.3	19.5	385356	4.4	20.1	151507	4.5	19.3	330581	4.5	20.0	245321	4.6	19.8	241697	4.6	19.0
3535	4.3	15.9	425787	4.4	20.7	89705	4.5	17.3	119017	4.5	18.1	470650	4.6	19.9	218079	4.6	19.7
525044	4.3	20.7	262983	4.4	19.6	36010	4.5	17.3	253581	4.5	19.6	34006	4.6	18.3	491773	4.6	20.8
536126	4.3	21.4	206057	4.4	20.1	163731	4.5	19.7	484679	4.5	20.7	441321	4.6	20.4	442477	4.6	20.4
319086	4.3	20.8	317456	4.4	21.0	65046	4.5	19.2	148028	4.5	18.8	276018	4.6	18.8	403760	4.6	19.7
438827	4.3	19.6	172729	4.4	19.9	157797	4.5	20.7	357497	4.5	20.4	301413	4.6	20.0	214780	4.6	19.9
307190	4.3	21.3	78298	4.4	19.1	190319	4.5	19.0	485146	4.5	19.6	332487	4.6	21.5	97328	4.6	18.4
335075	4.3	20.2	296307	4.4	21.0	293951	4.5	20.5	526930	4.5	21.9	535486	4.6	21.0	290192	4.6	19.9
122884	4.3	18.7	208243	4.4	19.3	43547	4.5	18.5	259756	4.5	19.5	498954	4.6	21.1	470627	4.6	19.2
92284	4.3	19.8	207271	4.4	20.1	41680	4.5	16.9	352470	4.5	20.2	496204	4.6	21.5	90858	4.6	18.7
315933	4.3	20.0	364990	4.4	20.1	4660	4.5	13.0	51688	4.5	18.7	240962	4.6	20.3	426496	4.7	19.1
202546	4.3	19.4	290631	4.4	20.1	364170	4.5	22.0	85635	4.5	19.7	41688	4.6	18.9	165061	4.7	19.0
203698	4.3	19.9	94105	4.4	18.1	403532	4.5	21.0	300481	4.5	20.6	244780	4.6	19.6	202576	4.7	19.3
364712	4.3	21.0	319459	4.4	20.3	205495	4.5	18.7	254937	4.5	20.4	321109	4.6	19.4	531225	4.7	21.6
285099	4.3	19.8	531093	4.4	20.0	123936	4.5	18.5	373172	4.5	21.6	370857	4.6	20.8	224764	4.7	20.1
436595	4.3	20.5	295440	4.4	20.3	521830	4.5	21.2	217640	4.5	20.6	397027	4.6	19.1	280160	4.7	20.7
481594	4.3	20.3	512423	4.4	19.8	472414	4.5	20.4	342671	4.5	21.0	400679	4.6	20.0	457761	4.7	21.3
440405	4.3	20.6	31610	4.4	16.7	505368	4.5	21.0	366728	4.5	19.3	422873	4.6	20.9	234373	4.7	20.2
521854	4.3	21.4	348205	4.4	20.4	45622	4.5	18.0	260317	4.5	19.3	208289	4.6	19.8	19299	4.7	22.7
476826	4.4	19.1	29214	4.4	18.3	364541	4.5	19.6	318649	4.5	21.4	319279					

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
407551	4.7	19.1	61562	4.7	18.4	404579	4.8	21.2	448719	4.9	19.9	80837	4.9	20.7	225836	5.0	18.2
428736	4.7	21.3	316026	4.7	20.8	491716	4.8	20.0	43913	4.9	17.3	443300	4.9	20.6	225019	5.0	21.0
353776	4.7	20.0	262631	4.7	20.2	224200	4.8	20.8	68868	4.9	19.7	69154	4.9	19.5	40364	5.0	18.1
175517	4.7	19.6	94633	4.7	18.1	143782	4.8	19.9	260286	4.9	19.2	504706	4.9	21.0	167242	5.0	20.4
148211	4.7	19.6	443016	4.7	20.9	67441	4.8	18.6	513446	4.9	20.2	445456	4.9	20.0	362902	5.0	20.1
390481	4.7	19.2	539756	4.7	21.6	439954	4.8	19.3	39231	4.9	18.7	359025	4.9	21.2	99268	5.0	18.3
205168	4.7	19.8	151410	4.7	19.8	480193	4.8	20.7	73176	4.9	19.1	342763	4.9	20.1	16413	5.0	16.3
198173	4.7	19.5	225809	4.7	19.5	487215	4.8	19.4	117380	4.9	18.1	450565	4.9	20.5	465292	5.0	20.6
137468	4.7	18.9	284719	4.7	20.8	110307	4.8	19.7	480604	4.9	20.7	36702	4.9	17.9	514845	5.0	21.1
358876	4.7	21.3	363417	4.7	20.2	134566	4.8	18.4	337172	4.9	19.9	348711	4.9	21.5	412843	5.0	21.6
460953	4.7	20.6	180779	4.7	20.9	356632	4.8	20.3	350092	4.9	20.1	158148	4.9	19.2	115443	5.0	18.5
192141	4.7	20.2	508811	4.7	18.3	193651	4.8	19.8	249376	4.9	20.2	384058	4.9	19.6	104338	5.0	18.4
468064	4.7	20.6	285174	4.7	20.6	445274	4.8	19.7	41545	4.9	17.1	15736	4.9	16.0	235193	5.0	20.3
178497	4.7	19.8	347225	4.7	20.7	283330	4.8	20.3	496971	4.9	20.5	367671	4.9	20.1	20058	5.0	18.0
318281	4.7	18.8	143891	4.7	19.8	284771	4.8	19.7	261818	4.9	19.9	279261	4.9	19.9	428651	5.0	19.6
136661	4.7	20.1	89502	4.7	19.3	206614	4.8	19.3	525575	4.9	20.6	404416	4.9	21.1	71987	5.0	18.4
220822	4.7	19.6	256070	4.7	20.3	287943	4.8	20.2	121443	4.9	18.7	25131	4.9	19.0	78490	5.0	19.4
10498	4.7	17.7	409026	4.7	20.7	211825	4.8	21.3	258728	4.9	19.6	95951	4.9	17.8	284334	5.0	18.3
219113	4.7	19.4	403814	4.7	19.4	271659	4.8	20.3	12971	4.9	17.9	35259	4.9	17.1	112926	5.0	20.1
145589	4.7	20.2	383178	4.7	19.4	512835	4.8	21.1	480040	4.9	20.7	12473	4.9	17.9	314619	5.0	20.1
70600	4.7	17.7	13566	4.7	17.6	412769	4.8	20.2	446206	4.9	20.8	516044	4.9	20.4	222502	5.0	18.7
276902	4.7	19.1	441972	4.7	21.0	19660	4.8	17.2	164756	4.9	18.2	132306	4.9	19.4	229569	5.0	20.0
7099	4.7	17.8	477004	4.7	19.0	455594	4.8	22.8	521364	4.9	21.1	406307	4.9	20.1	483347	5.0	20.4
203051	4.7	20.6	164354	4.7	19.4	87181	4.8	18.7	535687	4.9	21.7	20715	4.9	18.7	403396	5.0	21.0
264311	4.7	19.5	487376	4.8	20.4	388243	4.8	20.2	244196	4.9	19.8	530505	4.9	21.5	95649	5.0	18.6
255188	4.7	20.3	244312	4.8	19.7	321676	4.8	20.3	340476	4.9	20.6	218462	4.9	19.2	446536	5.0	19.9
537607	4.7	22.4	423227	4.8	20.6	404589	4.8	20.3	198395	4.9	19.5	178390	4.9	19.5	34378	5.0	18.1
348342	4.7	21.0	68154	4.8	19.0	149879	4.8	18.8	366340	4.9	20.7	222846	4.9	21.2	374290	5.0	19.8
469560	4.7	20.3	392752	4.8	19.5	255842	4.8	19.8	123261	4.9	19.5	373187	4.9	20.6	277172	5.0	20.2
181052	4.7	20.2	350359	4.8	19.9	13364	4.8	17.3	133813	4.9	19.5	186840	4.9	19.8	401269	5.0	20.6
155769	4.7	19.4	216388	4.8	19.9	5854	4.8	17.4	395889	4.9	21.1	487656	4.9	20.4	199918	5.0	21.4
26180	4.7	18.2	41147	4.8	19.4	176113	4.8	20.5	21262	4.9	19.0	289068	4.9	20.1	195476	5.0	19.9
22287	4.7	17.8	88247	4.8	18.2	183806	4.8	19.6	149060	4.9	19.2	175052	4.9	19.6	367466	5.0	20.9
450713	4.7	20.7	446806	4.8	20.7	62392	4.8	18.7	537401	4.9	21.1	126178	4.9	18.0	362306	5.0	20.2
321091	4.7	20.8	60044	4.8	18.9	199229	4.8	20.5	239783	4.9	20.4	80313	4.9	17.2	521649	5.0	20.7
128560	4.7	19.4	367913	4.8	20.1	424462	4.8	19.8	283238	4.9	20.0	517683	4.9	20.6	89446	5.0	19.4
147837	4.7	19.8	12099	4.8	17.2	500858	4.8	21.0	211267	4.9	19.8	1584	4.9	14.0	345449	5.0	21.0
129704	4.7	17.8	511316	4.8	20.0	335740	4.8	21.4	236625	4.9	20.1	59853	4.9	19.2	429496	5.0	20.6
235144	4.7	20.5	307051	4.8	19.3	30424	4.8	17.4	145581	4.9	20.0	370353	4.9	19.8	322140	5.0	19.6
11260	4.7	17.1	230295	4.8	18.4	72750	4.8	18.4	141577	4.9	19.4	321009	4.9	20.8	117481	5.0	19.0
491231	4.7	19.8	342739	4.8	20.0	507945	4.8	20.2	239860	4.9	19.3	333297	4.9	18.6	144456	5.0	19.2
183577	4.7	19.9	439247	4.8	20.2	510519	4.8	20.9	537518	4.9	20.9	86771	4.9	18.6	113421	5.0	18.3
539447	4.7	21.1	518317	4.8	21.3	306254	4.8	21.4	462581	4.9	20.4	46481	4.9	18.2	523752	5.0	21.3
77541	4.7	18.4	336134	4.8	20.4	264528	4.8	20.0	127412	4.9	18.4	510252	4.9	19.8	300566	5.0	20.7
392579	4.7	20.7	450566	4.8	19.5	40983	4.8	18.2	383620	4.9	20.9	516030	4.9	21.1	515413	5.0	22.0
412437	4.7	20.0	236344	4.8	20.5	304449	4.8	20.6	180428	4.9	19.2	488449	4.9	20.1	536243	5.0	20.6
121748	4.7	18.5	523880	4.8	21.3	326897	4.8	19.6	315788	4.9	19.9	243571	4.9	20.5	112511	5.0	19.8
368431	4.7	19.5	187711	4.8	20.9	470304	4.8	20.2	404039	4.9	20.1	155501	4.9	19.5	536591	5.1	20.9
26079	4.7	18.9	362263	4.8	20.6	117713	4.8	20.3	63057	4.9	18.2	535255	4.9	20.5	360869	5.1	20.8
51162	4.7	17.8	325675	4.8	19.9	355686	4.8	21.0	82453	4.9	19.4	439330	4.9	20.1	131915	5.1	19.1
185623	4.7	20.5	99560	4.8	19.2	345452	4.8	21.2	313701	4.9	18.3	123488	4.9	18.8	180310	5.1	19.0
457526	4.7	19.9	124991	4.8	19.6	155261	4.8	20.2	118221	4.9	19.2	374382	4.9	19.8	494302	5.1	21.3
107175	4.7	19.2	480743	4.8	21.0	131873	4.8	19.9	514434	4.9	20.2	343841	4.9	21.1	87855	5.1	17.6
536357	4.7	19.2	43173	4.8	17.2	283031	4.8	20.0	376407	4.9	21.2	312514	4.9	21.0	506444	5.1	21.4
311147	4.7	20.1	241799	4.8	19.7	28047	4.8	18.0	260199	4.9	20.5	369551	4.9	19.9	166204	5.1	19.4
105575	4.7	18.6	517891	4.8	19.7	168359	4.9	19.7	127901	4.9	20.1	23398	4.9	17.6	304052	5.1	19.4
170722	4.7	19.6	448679	4.8	20.5	523135	4.9	20.5	370387	4.9	19.8	467082	4.9	20.2	367679	5.1	19.9
182495	4.7	21.1	283821	4.8	19.5	314542	4.9	20.8	531834	4.9	20.6	401655	4.9	20.7	498987	5.1	20.1
100882	4.7	20.3	313663	4.8	20.0	164561	4.9	19.9	75696	4.9	18.9	16049	4.9	17.6	510576	5.1	20.4
445195	4.7	20.9	324966	4.8	20.1	27619	4.9	18.6	62062	4.9	18.6	475995	4.9	20.2	324241	5.1	19.6
379646	4.7	20.4	468484	4.8	19.0	519521	4.9	21.4	252810	4.9	19.2	395074	4.9	20.8	415338	5.1	20.3
241458	4.7	20.0	120885	4.8	18.4	413149	4.9	19.9	390949	4.9	20.5	291831	4.9	21.3	262223	5.1	20.2
335098	4.7	20.3	319062	4.8	20.5	402440	4.9	20.6	480282	4.9	20.6	331166	4.9	19.7	518332	5.1	20.6
93859	4.7	17.7	127224	4.8	18.7	500893	4.9	21.0	347081	4.9	20.0	21104	4.9	15.7	7057	5.1	15.8
392242	4.7	20.7	452040	4.8	19.9	497949	4.9	20.9	223444	4.9	19.1	377673	4.9	20.0	256521	5.1	19.5
125312	4.7	18.8	217651	4.8	19.3	432895	4.9	20.8	496137	4.9	20.3	37896	4.9	18.5	251498	5.1	20.1
319257	4.7	20.7	28963	4.8	19.1	254299	4.9	21.1	232538	4.9	19.9	97161	4.9	18.9	538449	5.1	21.0
537488	4.7	21.3	513809	4.8	21.3	358826	4.9	20.7	142224	4.9	20.5	142751	4.9	20.3	145453	5.1	20.0
39177	4.7	17.4	59988	4.8	18.2	358468	4.9	20.3	270064	4.9	20.4	130566	4.9	18.0	256420	5.1	19.6
208557	4.7	18.7	93631	4.8	18.2	46409	4.9	18.4	230370	4.9	20.3	269759	5.0	20.2	233501	5.1	20.1
538743	4.7	21.6	258569	4.8	21.0	472189	4.9	20.2	502337	4.9	19.8	491632	5.0	20.			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
296414	5.1	20.8	366123	5.1	21.0	383286	5.2	19.6	266534	5.3	20.2	366566	5.3	19.6	329012	5.4	19.4
494339	5.1	20.6	519225	5.1	20.1	412915	5.2	21.5	132379	5.3	19.0	315239	5.3	18.9	359979	5.4	19.4
121830	5.1	18.8	107637	5.1	18.9	247570	5.2	19.1	414116	5.3	19.7	262953	5.3	21.1	257695	5.4	20.7
525418	5.1	21.1	366070	5.1	19.7	202110	5.2	20.3	269709	5.3	21.1	170012	5.3	19.9	60314	5.4	19.0
386723	5.1	21.4	205202	5.1	20.4	180690	5.2	20.1	534179	5.3	20.3	302184	5.3	20.0	538681	5.4	20.7
419708	5.1	18.9	25204	5.1	17.9	479652	5.2	19.7	452690	5.3	20.4	426485	5.3	20.8	289571	5.4	20.9
257977	5.1	19.4	441875	5.1	21.8	513789	5.2	21.1	227447	5.3	20.5	289016	5.3	20.4	20158	5.4	18.7
915	5.1	13.4	149023	5.1	19.6	288416	5.2	19.8	245047	5.3	20.9	401672	5.3	21.0	245586	5.4	19.2
514047	5.1	20.7	131895	5.1	18.8	489535	5.2	20.8	425616	5.3	19.9	209455	5.4	19.0	69937	5.4	18.4
289077	5.1	19.7	422838	5.1	21.7	295403	5.2	20.7	188989	5.3	20.6	330631	5.4	19.5	478029	5.4	21.0
439940	5.1	21.3	147744	5.1	18.8	68887	5.2	19.4	297601	5.3	19.1	251864	5.4	18.9	117826	5.4	19.5
281237	5.1	19.9	109815	5.1	20.4	265407	5.2	19.5	489363	5.3	20.5	171806	5.4	19.2	32399	5.4	18.1
360710	5.1	19.8	314654	5.1	20.1	350466	5.2	20.0	435200	5.3	20.5	131592	5.4	19.5	368293	5.4	20.1
333215	5.1	20.0	189259	5.1	19.7	45770	5.2	18.0	369275	5.3	21.6	41345	5.4	17.8	218482	5.4	20.5
119649	5.1	17.0	121225	5.1	19.2	87480	5.2	19.8	40168	5.3	19.2	33924	5.4	17.8	115021	5.4	18.6
451355	5.1	20.2	217827	5.1	20.5	363485	5.2	20.3	395072	5.3	20.4	380169	5.4	19.8	336281	5.4	19.7
473154	5.1	19.9	94126	5.1	18.8	440888	5.2	20.5	480766	5.3	20.3	124023	5.4	20.7	321386	5.4	20.7
171080	5.1	20.2	253733	5.1	19.9	511249	5.2	19.7	221345	5.3	20.5	328494	5.4	20.9	446808	5.4	21.0
19114	5.1	17.8	524611	5.1	22.0	435738	5.2	19.6	74995	5.3	18.8	364130	5.4	20.8	68609	5.4	18.8
342602	5.1	20.2	67279	5.1	20.3	358733	5.2	21.1	438826	5.3	19.6	16423	5.4	17.0	515574	5.4	21.1
505403	5.1	21.3	221494	5.1	20.6	48121	5.2	17.6	293731	5.3	21.1	286123	5.4	19.4	284612	5.4	20.2
452287	5.1	19.2	499596	5.2	20.5	98215	5.2	18.3	397025	5.3	20.5	478210	5.4	20.3	263641	5.4	20.8
213326	5.1	19.9	169672	5.2	20.2	317765	5.2	19.9	11397	5.3	16.8	392023	5.4	19.7	409698	5.4	20.9
137757	5.1	18.2	95487	5.2	20.2	153472	5.2	19.3	193625	5.3	17.7	342719	5.4	21.1	99798	5.4	19.0
475420	5.1	20.7	228158	5.2	19.4	76845	5.2	16.8	58774	5.3	18.3	388738	5.4	20.6	22483	5.4	19.2
24175	5.1	17.8	176624	5.2	20.5	304329	5.2	19.6	422185	5.3	19.5	190569	5.4	19.8	258612	5.4	19.3
390950	5.1	22.2	521889	5.2	20.6	244428	5.2	20.2	519820	5.3	21.3	262744	5.4	20.4	451966	5.4	20.1
285383	5.1	19.6	216331	5.2	18.8	257648	5.2	21.2	185753	5.3	18.9	10239	5.4	17.3	167521	5.4	19.3
446137	5.1	20.0	97077	5.2	19.0	285086	5.2	20.1	31816	5.3	17.5	195505	5.4	19.9	118584	5.4	19.8
505424	5.1	19.6	542676	5.2	20.2	343715	5.2	21.1	382903	5.3	19.6	241535	5.4	20.5	143746	5.4	19.3
539790	5.1	19.4	406985	5.2	20.6	389935	5.2	20.1	315060	5.3	20.8	80946	5.4	18.5	97236	5.4	18.6
160032	5.1	19.4	319042	5.2	19.8	82306	5.2	19.3	387250	5.3	19.9	339459	5.4	19.5	327509	5.4	20.5
317990	5.1	20.0	443484	5.2	20.4	326376	5.2	19.7	155910	5.3	20.0	438527	5.4	21.0	134917	5.4	18.8
513736	5.1	19.9	117561	5.2	19.7	21537	5.2	19.1	420371	5.3	20.2	335168	5.4	20.1	121529	5.4	19.0
84900	5.1	18.8	44703	5.2	17.8	517126	5.2	21.0	223365	5.3	19.6	374807	5.4	20.9	129742	5.4	18.2
16896	5.1	17.3	160213	5.2	19.8	368909	5.2	20.2	380545	5.3	20.1	342466	5.4	18.8	366111	5.4	20.3
239000	5.1	19.9	249515	5.2	19.9	399382	5.2	20.6	468081	5.3	21.7	403996	5.4	20.4	366336	5.4	20.9
496499	5.1	20.2	263294	5.2	18.9	462813	5.2	20.0	393040	5.3	18.0	36486	5.4	19.1	318392	5.4	19.3
472214	5.1	19.8	246999	5.2	19.6	101128	5.2	19.7	306631	5.3	20.1	318553	5.4	19.8	431348	5.4	20.8
251850	5.1	19.6	385535	5.2	20.4	423956	5.2	18.9	536935	5.3	20.7	497715	5.4	20.5	252037	5.5	19.2
479382	5.1	20.6	385333	5.2	21.3	401760	5.2	19.8	186951	5.3	20.0	532997	5.4	19.9	313630	5.5	20.3
211788	5.1	19.1	387643	5.2	20.9	5238	5.2	16.3	271788	5.3	20.9	325038	5.4	20.5	266253	5.5	19.6
7450	5.1	16.5	412727	5.2	20.7	17962	5.2	17.2	402352	5.3	20.9	24621	5.4	19.6	120670	5.5	19.2
524090	5.1	20.4	536167	5.2	22.3	325484	5.2	20.6	157696	5.3	20.0	482124	5.4	19.8	127550	5.5	19.0
322091	5.1	19.0	131570	5.2	18.8	505888	5.2	21.0	208901	5.3	19.7	527747	5.4	20.5	127336	5.5	19.3
269602	5.1	19.5	358293	5.2	19.9	407969	5.2	20.4	170363	5.3	19.6	157737	5.4	19.4	508166	5.5	20.5
260645	5.1	20.3	156743	5.2	17.0	321434	5.2	19.9	17574	5.3	17.7	54972	5.4	16.7	480531	5.5	21.0
447071	5.1	21.0	454647	5.2	21.3	405432	5.2	19.8	130565	5.3	19.4	214197	5.4	19.8	155720	5.5	19.9
482452	5.1	20.8	349207	5.2	20.3	91612	5.2	19.9	280173	5.3	20.3	204605	5.4	20.3	157644	5.5	19.0
516502	5.1	20.9	340302	5.2	20.9	357229	5.2	20.7	234729	5.3	20.4	324100	5.4	19.1	37737	5.5	19.2
133223	5.1	19.3	243907	5.2	20.5	377665	5.2	19.0	404795	5.3	20.4	531508	5.4	21.4	516370	5.5	19.6
122478	5.1	18.1	29338	5.2	16.9	327810	5.2	19.8	270263	5.3	19.4	137553	5.4	18.5	42138	5.5	18.3
9785	5.1	17.4	385581	5.2	19.3	270486	5.2	20.0	266276	5.3	20.0	195416	5.4	20.2	94546	5.5	19.8
317119	5.1	20.0	335536	5.2	20.0	170023	5.2	19.7	310551	5.3	20.0	252951	5.4	18.9	469628	5.5	20.2
210568	5.1	20.1	51450	5.2	19.1	505421	5.2	20.3	280869	5.3	19.7	144126	5.4	19.8	155758	5.5	19.1
236432	5.1	19.7	195430	5.2	18.3	29661	5.2	17.1	10499	5.3	17.1	254165	5.4	19.7	18839	5.5	17.6
299175	5.1	20.3	3840	5.2	16.2	447316	5.2	19.5	482869	5.3	20.8	31549	5.4	17.6	318217	5.5	19.3
16590	5.1	17.9	43798	5.2	20.2	147351	5.2	18.5	130481	5.3	18.6	373199	5.4	20.8	300265	5.5	20.0
229521	5.1	18.4	498919	5.2	20.7	35192	5.2	18.4	139185	5.3	19.8	22661	5.4	19.4	216157	5.5	20.4
321516	5.1	20.6	295287	5.2	20.9	428577	5.3	20.2	376200	5.3	19.9	295393	5.4	20.0	478709	5.5	21.1
503507	5.1	21.9	161074	5.2	19.5	448388	5.3	21.7	103311	5.3	17.8	98935	5.4	19.2	271665	5.5	20.4
136446	5.1	19.7	497676	5.2	21.5	74196	5.3	18.7	492301	5.3	18.4	7965	5.4	17.3	120136	5.5	20.0
448656	5.1	21.0	540088	5.2	20.5	7700	5.3	16.9	320773	5.3	21.0	324473	5.4	21.4	540985	5.5	20.9
539295	5.1	20.8	463569	5.2	21.1	96342	5.3	18.8	218335	5.3	20.2	472761	5.4	20.3	141842	5.5	20.2
37959	5.1	18.3	512437	5.2	20.4	338559	5.3	19.5	60092	5.3	18.7	112709	5.4	20.4	401244	5.5	20.2
322131	5.1	19.1	165015	5.2	18.8	387541	5.3	18.7	23589	5.3	19.0	435645	5.4	20.8	250763	5.5	19.6
113103	5.1	19.6	168672	5.2	18.9	274390	5.3	21.0	373373	5.3	20.4	55839	5.4	18.4	447339	5.5	20.4
184562	5.1	20.1	438421	5.2	20.3	19889	5.3	18.1	77528	5.3	19.2	504369	5.4	20.7	271621	5.5	20.2
103863	5.1	19.2	94037	5.2	18.4	248618	5.3	20.8	137780	5.3	19.4	192347	5.4	19.9	502079	5.5	19.8
375694	5.1	21.4	185579	5.2	19.8	41953	5.3	18.8	655	5.3	13.8	447996	5.4	21.3	74851	5.5	18.5
184959	5.1	19.3	164049	5.2	20.6	172498	5.3	17.7	501114	5.3	20.2	452270	5.4	20.6			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
320221	5.5	21.6	255447	5.6	20.3	172509	5.6	20.0	506973	5.7	20.6	221873	5.8	20.9	20745	5.9	15.9
250328	5.5	19.3	50320	5.6	19.3	275399	5.6	19.6	113553	5.7	19.5	477094	5.8	20.6	283055	5.9	20.9
320103	5.5	20.4	187010	5.6	19.3	466379	5.6	21.1	17792	5.7	17.1	213540	5.8	19.9	261929	5.9	20.1
382674	5.5	18.6	417898	5.6	20.2	227759	5.6	19.6	342933	5.7	19.9	325531	5.8	21.0	41279	5.9	18.5
384875	5.5	19.3	14059	5.6	17.5	28616	5.6	18.6	234812	5.7	20.0	2640	5.8	16.3	325851	5.9	20.1
213520	5.5	20.2	410984	5.6	20.0	38444	5.6	19.0	58988	5.7	18.6	253473	5.8	19.4	256419	5.9	19.8
514261	5.5	21.4	484910	5.6	20.8	284767	5.6	18.8	191699	5.7	20.1	398218	5.8	20.5	448663	5.9	20.1
537250	5.5	21.6	421936	5.6	20.2	447330	5.7	20.7	117205	5.7	18.9	95633	5.8	19.2	112915	5.9	19.6
166901	5.5	19.2	445468	5.6	20.2	1398	5.7	14.6	351414	5.7	20.4	519149	5.8	21.7	254436	5.9	18.9
314549	5.5	20.2	374962	5.6	20.1	147866	5.7	18.9	4022	5.7	16.2	37832	5.8	18.1	69387	5.9	19.1
13034	5.5	16.4	485964	5.6	20.8	36874	5.7	17.3	220995	5.7	21.0	171781	5.8	19.3	526932	5.9	22.2
520464	5.5	21.0	487773	5.6	20.2	91935	5.7	18.9	381099	5.7	21.2	511848	5.8	20.9	128097	5.9	19.3
116662	5.5	18.6	39945	5.6	18.5	348144	5.7	19.0	147893	5.7	19.6	120712	5.8	20.0	429548	5.9	19.9
434374	5.5	19.6	76235	5.6	19.2	52967	5.7	19.3	362449	5.7	20.0	361650	5.8	20.9	535025	5.9	22.8
435222	5.5	21.8	100431	5.6	19.5	88122	5.7	18.9	511694	5.7	19.8	516046	5.8	21.6	445508	5.9	19.5
537400	5.5	20.7	512141	5.6	21.8	255638	5.7	20.1	308	5.7	12.0	198186	5.8	19.5	136598	5.9	20.2
333964	5.5	20.5	396180	5.6	20.9	7929	5.7	16.5	402793	5.7	21.1	289777	5.8	19.8	503551	5.9	20.0
68960	5.5	18.2	5882	5.6	17.5	358848	5.7	21.6	241206	5.7	19.4	119850	5.8	19.4	73189	5.9	19.6
269124	5.5	20.4	295607	5.6	19.8	79759	5.7	19.1	324270	5.7	20.2	232561	5.8	19.7	265939	5.9	19.3
316101	5.5	20.7	124811	5.6	16.9	499229	5.7	19.9	108321	5.7	19.5	492274	5.8	19.7	126820	5.9	19.4
63308	5.5	19.6	425645	5.6	19.8	481048	5.7	21.0	493378	5.7	20.9	172328	5.8	19.2	261005	5.9	20.5
173839	5.5	19.6	463499	5.6	21.4	193339	5.7	18.6	247758	5.7	19.3	72740	5.8	19.1	168629	5.9	20.1
12365	5.5	17.5	131661	5.6	19.0	168610	5.7	18.1	276483	5.7	20.4	217368	5.8	19.3	449855	5.9	20.9
285520	5.5	20.4	121349	5.6	18.9	66247	5.7	19.0	438741	5.7	21.0	173597	5.8	19.4	449746	5.9	19.7
390178	5.5	20.0	485350	5.6	20.9	53522	5.7	18.7	396138	5.7	20.6	6977	5.8	17.3	141936	5.9	19.8
261636	5.5	20.4	537156	5.6	21.9	535808	5.7	20.8	250378	5.7	19.2	384501	5.8	20.2	26284	5.9	18.3
318556	5.5	21.0	146299	5.6	19.5	480667	5.7	20.8	95230	5.7	19.0	214647	5.8	20.1	6314	5.9	15.3
114767	5.5	19.4	266318	5.6	20.1	107224	5.7	18.6	175390	5.7	19.2	194833	5.8	19.3	385576	5.9	19.7
46479	5.5	19.1	343160	5.6	20.5	262410	5.7	19.6	166425	5.7	21.0	516322	5.8	19.9	537423	5.9	21.2
407598	5.5	20.4	234282	5.6	19.3	122225	5.7	19.5	225991	5.7	18.9	221486	5.8	19.4	310224	5.9	19.1
473894	5.5	21.3	142288	5.6	19.0	304384	5.7	19.1	371602	5.7	20.2	461174	5.8	20.6	117417	5.9	19.4
67650	5.5	19.4	361022	5.6	20.4	476102	5.7	20.6	220988	5.7	19.7	155282	5.8	19.1	367043	5.9	20.5
268970	5.5	19.9	519271	5.6	20.5	139823	5.7	19.4	502463	5.7	20.3	435747	5.8	20.6	225257	5.9	19.5
252892	5.5	19.2	84556	5.6	19.3	97989	5.7	17.6	3863	5.7	16.2	342633	5.8	19.4	421807	5.9	21.5
202297	5.5	20.0	314073	5.6	19.3	323516	5.7	19.6	140728	5.7	20.0	500813	5.8	21.6	49738	5.9	18.7
525948	5.5	21.4	126720	5.6	19.4	255212	5.7	19.2	15671	5.7	18.2	535057	5.8	20.2	348149	5.9	19.7
430534	5.5	21.4	36405	5.6	17.2	392369	5.7	19.6	127283	5.7	18.9	85071	5.8	18.6	120686	5.9	19.6
525432	5.5	20.7	162040	5.6	19.3	118964	5.7	19.4	242821	5.7	20.5	307021	5.8	18.8	22051	5.9	18.0
14888	5.5	16.9	509739	5.6	20.0	540287	5.7	20.6	198329	5.8	20.2	158769	5.8	19.4	475387	5.9	20.9
319111	5.5	20.3	432849	5.6	20.8	511859	5.7	20.6	330110	5.8	18.3	133720	5.8	19.2	282428	5.9	19.5
67644	5.5	17.7	446887	5.6	20.4	317302	5.7	20.8	284818	5.8	20.1	104357	5.8	19.8	54683	5.9	17.7
271666	5.5	20.2	109861	5.6	19.5	319983	5.7	20.4	96707	5.8	19.0	86849	5.8	18.5	93262	5.9	18.1
281891	5.5	19.5	251731	5.6	20.2	116856	5.7	19.1	462166	5.8	20.7	9188	5.8	17.8	366349	5.9	20.0
27067	5.5	17.5	374273	5.6	19.7	25943	5.7	18.4	495306	5.8	20.0	472882	5.8	20.8	514	5.9	13.3
59716	5.5	18.0	224242	5.6	20.7	73213	5.7	18.3	283717	5.8	20.1	429902	5.8	21.2	365470	5.9	20.5
128611	5.5	17.8	124454	5.6	19.7	298208	5.7	20.5	370313	5.8	19.7	324360	5.8	19.5	278718	5.9	20.7
274120	5.5	20.2	25539	5.6	18.4	208363	5.7	19.9	140272	5.8	18.7	297177	5.8	19.4	480382	5.9	20.6
126502	5.6	18.7	185769	5.6	18.6	71990	5.7	18.4	146255	5.8	19.5	163704	5.8	19.4	225043	5.9	20.8
22914	5.6	17.6	23710	5.6	18.8	405128	5.7	21.3	408045	5.8	20.1	201687	5.8	19.5	519370	5.9	21.0
185977	5.6	20.3	253582	5.6	20.9	476155	5.7	20.7	521842	5.8	21.2	274902	5.8	19.9	43215	5.9	17.7
315508	5.6	22.5	337117	5.6	19.9	368667	5.7	20.4	448419	5.8	19.1	76286	5.8	19.1	221650	5.9	19.0
451188	5.6	19.0	302162	5.6	20.2	317054	5.7	19.8	318203	5.8	19.7	168253	5.8	19.9	347891	5.9	18.6
7898	5.6	15.8	52029	5.6	18.7	39157	5.7	18.7	240955	5.8	19.4	148471	5.8	20.8	399699	5.9	20.5
315972	5.6	20.5	473767	5.6	20.0	330624	5.7	20.2	222504	5.8	19.3	382461	5.8	19.7	69776	5.9	19.2
210014	5.6	19.6	175231	5.6	20.3	359331	5.7	19.9	228590	5.8	19.0	536112	5.8	20.2	462835	5.9	21.5
209541	5.6	18.7	144266	5.6	19.0	208847	5.7	19.7	365513	5.8	20.5	21770	5.8	17.3	193489	5.9	19.1
150472	5.6	19.0	185123	5.6	19.8	23042	5.7	18.4	260227	5.8	20.8	509804	5.8	19.7	220705	5.9	20.0
129028	5.6	19.5	507242	5.6	20.5	495379	5.7	21.5	314578	5.8	19.7	367001	5.8	20.8	513847	5.9	21.0
387972	5.6	21.0	358861	5.6	20.6	539473	5.7	21.3	457452	5.8	20.4	78081	5.8	19.2	323580	5.9	20.1
224952	5.6	19.0	97748	5.6	18.0	194147	5.7	19.7	249496	5.8	18.2	392470	5.8	19.7	65938	5.9	18.6
475401	5.6	21.5	120115	5.6	19.6	343922	5.7	20.3	403499	5.8	21.1	187134	5.8	21.2	129207	5.9	19.6
88573	5.6	17.8	211123	5.6	21.1	24321	5.7	18.4	62625	5.8	19.2	113063	5.8	19.2	439240	5.9	19.9
539711	5.6	20.7	330608	5.6	20.8	309021	5.7	20.7	477887	5.8	20.9	323015	5.8	20.8	121441	5.9	18.4
364671	5.6	19.7	510221	5.6	21.4	298664	5.7	20.0	450962	5.8	20.6	516333	5.9	21.1	131975	5.9	20.2
200518	5.6	18.7	541052	5.6	19.1	384467	5.7	21.0	202611	5.8	20.4	157071	5.9	18.5	322611	5.9	19.6
200014	5.6	21.3	517542	5.6	21.1	39656	5.7	18.5	295253	5.8	19.9	476241	5.9	20.3	91835	5.9	19.6
131366	5.6	19.9	263834	5.6	20.5	333965	5.7	21.1	253797	5.8	18.5	325581	5.9	20.7	86578	5.9	18.8
395451	5.6	20.3	114342	5.6	18.5	25292	5.7	17.3	511189	5.8	20.3	172807	5.9	19.1	34251	5.9	18.5
172210	5.6	19.9	407059	5.6	21.3	539182	5.7	20.1	341027	5.8	21.5	266289	5.9	18.8	95199	5.9	19.7
336259	5.6	20.1	63399	5.6	19.0	362312	5.7	21.0	117718	5.8	20.4	539400	5.9	21.2	428221	5.9	20.5
20776	5.6	17.3	107248	5.6	19.5	541042	5.7	19.4	255142	5.8	19.6	62438	5.9	18.9	483327	5	

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
8311	5.9	18.0	176117	6.0	20.4	115042	6.1	17.8	148756	6.2	20.6	142822	6.2	19.7	477487	6.3	19.2
519818	5.9	21.6	177961	6.0	17.9	536952	6.1	19.5	382592	6.2	20.1	140484	6.2	19.5	393216	6.3	21.2
34622	5.9	18.2	75579	6.0	18.5	449815	6.1	21.2	477172	6.2	20.5	326764	6.2	19.6	537363	6.3	21.5
252783	5.9	19.9	314627	6.0	20.1	357803	6.1	21.0	67076	6.2	18.5	250380	6.2	19.5	180424	6.3	18.9
476831	5.9	20.6	449025	6.0	20.7	477898	6.1	20.9	234829	6.2	19.7	160544	6.2	20.7	439130	6.3	21.6
421244	5.9	21.0	68045	6.0	18.5	260289	6.1	19.5	474614	6.2	21.2	260211	6.2	19.1	527291	6.3	20.5
384663	5.9	19.6	17591	6.0	16.1	252751	6.1	20.6	508460	6.2	20.7	342457	6.2	21.1	100475	6.3	19.5
335142	5.9	19.7	277640	6.0	20.2	75892	6.1	18.9	9616	6.2	18.0	95950	6.2	19.0	483272	6.3	21.2
495956	5.9	20.9	483287	6.0	20.6	125740	6.1	18.2	171787	6.2	18.2	292524	6.2	20.2	396712	6.3	19.2
362269	5.9	20.5	62875	6.0	18.9	48008	6.1	19.5	286570	6.2	20.3	80471	6.2	17.4	40517	6.3	18.7
224174	5.9	20.7	479733	6.0	20.7	507690	6.1	20.2	385605	6.2	22.4	98380	6.2	18.9	346603	6.3	20.8
174088	5.9	19.0	413424	6.0	19.8	48543	6.1	17.9	216696	6.2	19.3	139290	6.2	21.1	473339	6.3	20.4
213481	5.9	19.2	513143	6.0	20.7	289717	6.1	21.5	285190	6.2	20.2	112081	6.2	19.9	542414	6.3	19.7
514009	5.9	18.9	150805	6.0	19.8	407865	6.1	21.8	210575	6.2	20.8	498327	6.2	19.5	127878	6.3	18.7
135908	5.9	19.7	321268	6.0	21.1	130937	6.1	18.2	367507	6.2	20.4	527081	6.2	20.6	388951	6.3	19.5
396373	5.9	20.7	284072	6.0	19.1	248408	6.1	19.8	1594	6.2	15.2	438553	6.2	19.9	501816	6.3	21.0
316833	5.9	20.3	60473	6.0	18.8	125675	6.1	18.4	2133	6.2	15.7	480571	6.2	21.3	101582	6.3	18.4
294330	5.9	20.3	403180	6.0	21.2	60477	6.1	18.0	236992	6.2	20.0	470720	6.2	20.0	397545	6.3	20.1
9311	5.9	17.0	450040	6.0	20.7	333983	6.1	18.8	130634	6.2	19.6	38484	6.3	18.5	535063	6.3	20.8
133908	5.9	18.1	152409	6.0	17.4	415284	6.1	21.2	252927	6.2	20.5	537559	6.3	21.5	383706	6.3	20.3
512772	5.9	20.1	242004	6.0	19.5	96	6.1	12.2	168434	6.2	18.6	335080	6.3	20.3	206598	6.3	19.3
11787	5.9	16.4	99655	6.0	19.4	218442	6.1	19.6	333178	6.2	21.1	421663	6.3	19.5	508445	6.3	21.7
129889	5.9	19.1	85942	6.0	17.7	73168	6.1	19.4	474329	6.2	20.9	7137	6.3	16.4	87586	6.3	18.2
324333	5.9	19.9	144323	6.0	19.4	41141	6.1	17.8	438966	6.2	20.0	332473	6.3	21.3	220506	6.3	20.4
97269	5.9	17.9	62018	6.0	17.8	241698	6.1	19.1	41536	6.2	17.7	38089	6.3	16.9	242518	6.3	18.9
517773	5.9	21.2	91141	6.0	17.7	401697	6.1	20.1	172934	6.2	19.7	86038	6.3	17.2	1837	6.3	15.8
312442	5.9	20.4	478981	6.0	19.7	164111	6.1	19.5	123242	6.2	17.8	29213	6.3	17.8	62596	6.3	18.1
159931	5.9	18.4	349674	6.0	20.9	185190	6.1	19.7	89783	6.2	19.4	316797	6.3	19.4	308713	6.3	19.1
374246	5.9	21.6	279566	6.0	20.4	115695	6.1	18.7	367312	6.2	19.4	68859	6.3	19.7	408592	6.3	20.4
256527	5.9	20.3	68687	6.0	19.0	219546	6.1	19.1	539377	6.2	21.4	387802	6.3	20.1	523298	6.3	19.9
92282	5.9	17.4	16828	6.0	17.2	343357	6.1	20.5	92356	6.2	19.1	56785	6.3	18.3	457619	6.3	20.3
359969	5.9	20.4	261332	6.0	21.0	445460	6.1	19.0	178370	6.2	20.9	206372	6.3	20.6	428252	6.3	20.5
218415	5.9	19.1	316807	6.0	19.6	349257	6.1	20.2	138484	6.2	19.2	533492	6.3	21.7	167708	6.3	20.6
181647	5.9	20.5	150449	6.0	20.6	4073	6.1	16.6	66472	6.2	19.0	263303	6.3	20.4	435156	6.3	20.5
293820	5.9	21.2	483305	6.0	20.8	405408	6.1	20.2	253766	6.2	19.1	327735	6.3	18.9	192644	6.3	18.2
540514	5.9	20.6	216314	6.0	18.3	150576	6.1	18.0	153035	6.2	20.1	124480	6.3	18.1	322978	6.3	20.7
43850	5.9	18.2	379562	6.0	21.0	21090	6.1	18.9	25626	6.2	18.6	504927	6.3	20.3	362586	6.3	20.0
164052	5.9	19.9	17890	6.0	15.5	494526	6.1	20.1	414051	6.2	19.8	14707	6.3	18.2	511164	6.3	20.3
139890	5.9	19.3	35685	6.0	18.9	358862	6.1	20.8	304778	6.2	20.5	263826	6.3	19.8	70438	6.3	17.0
463451	5.9	21.5	2176	6.0	16.5	532493	6.1	20.0	404670	6.2	22.0	140733	6.3	19.4	234919	6.3	21.1
47607	5.9	18.0	85476	6.0	17.2	89404	6.1	19.5	95551	6.2	19.6	396459	6.3	20.2	402722	6.3	20.1
497272	5.9	19.4	385560	6.0	19.1	266836	6.1	18.6	446350	6.2	21.2	52379	6.3	19.1	74806	6.3	18.5
7285	5.9	16.2	285537	6.0	20.1	161054	6.1	20.2	531684	6.2	22.8	236450	6.3	19.4	28576	6.3	17.6
189533	5.9	19.3	324200	6.1	20.7	70622	6.1	18.2	482319	6.2	20.9	469331	6.3	21.8	291536	6.3	21.2
318169	5.9	20.1	523729	6.1	22.6	98955	6.1	19.2	359334	6.2	20.5	438581	6.3	20.6	470329	6.3	21.0
397110	5.9	20.0	131733	6.1	18.9	70571	6.1	18.3	444232	6.2	20.7	441985	6.3	20.7	22248	6.3	18.4
68577	5.9	18.7	148864	6.1	19.5	421496	6.1	21.3	132540	6.2	19.2	139315	6.3	20.1	489131	6.3	20.8
284825	5.9	20.3	393895	6.1	20.8	38303	6.1	17.5	6885	6.2	18.4	27049	6.3	18.3	232214	6.4	20.8
169635	5.9	17.5	344648	6.1	21.1	23065	6.1	18.7	228658	6.2	19.6	324780	6.3	21.0	203428	6.4	19.2
450556	5.9	20.8	267060	6.1	19.0	219870	6.1	20.6	236512	6.2	20.8	449827	6.3	21.3	408014	6.4	21.1
531279	5.9	20.2	187487	6.1	18.7	329719	6.1	19.6	514831	6.2	21.6	411749	6.3	19.7	439267	6.4	20.9
170911	5.9	19.6	387405	6.1	19.5	434290	6.1	19.9	505461	6.2	18.5	185676	6.3	20.2	127422	6.4	19.1
170661	5.9	19.6	366091	6.1	20.6	117399	6.1	19.2	147178	6.2	18.6	407079	6.3	22.0	319303	6.4	20.3
254113	5.9	20.8	289147	6.1	19.2	380199	6.1	21.1	10782	6.2	16.7	511136	6.3	20.3	385557	6.4	20.5
367346	5.9	18.7	48450	6.1	18.7	439207	6.1	19.9	330379	6.2	19.5	371605	6.3	20.1	357527	6.4	20.0
309205	5.9	20.9	70296	6.1	17.4	94079	6.1	18.8	390930	6.2	21.2	213821	6.3	20.4	187811	6.4	20.5
261918	5.9	21.5	81103	6.1	16.7	174066	6.1	20.1	100610	6.2	20.1	175825	6.3	19.0	515680	6.4	22.0
382049	5.9	19.4	84382	6.1	18.1	168078	6.1	20.6	276196	6.2	19.3	15028	6.3	17.0	524927	6.4	21.6
483249	5.9	20.3	145342	6.1	19.2	175067	6.1	20.0	490052	6.2	20.5	283452	6.3	19.9	259390	6.4	20.2
78295	5.9	18.6	25711	6.1	16.9	191746	6.1	17.8	534626	6.2	22.1	130597	6.3	17.8	3835	6.4	15.3
347844	5.9	18.2	420577	6.1	20.0	293524	6.1	19.8	114763	6.2	19.1	356401	6.3	20.9	242463	6.4	18.8
78549	5.9	18.9	38221	6.1	18.1	132462	6.1	19.1	36934	6.2	18.5	239207	6.3	20.8	236549	6.4	20.9
161911	5.9	20.1	146009	6.1	19.6	442409	6.1	20.8	245730	6.2	19.3	352300	6.3	19.4	514006	6.4	21.2
106440	5.9	19.6	287886	6.1	21.7	229536	6.2	19.4	518011	6.2	20.6	363700	6.3	20.4	34177	6.4	18.0
384903	5.9	20.7	383203	6.1	19.6	266579	6.2	21.1	212455	6.2	21.1	102685	6.3	18.8	514233	6.4	20.7
351852	5.9	20.0	216408	6.1	19.4	331159	6.2	19.7	86939	6.2	19.5	165552	6.3	19.8	459532	6.4	21.1
537482	5.9	21.5	174957	6.1	19.8	378674	6.2	20.7	516075	6.2	20.8	13062	6.3	17.9	537452	6.4	22.4
158593	5.9	19.7	450963	6.1	20.1	343944	6.2	20.5	379906	6.2	20.5	90849	6.3	18.6	476688	6.4	21.4
327199	6.0	21.6	360746	6.1	20.2	166569	6.2	18.8	449004	6.2	21.0	284595	6.3	21.3	426175	6.4	21.9
454622	6.0	21.1	7073	6.1	17.4	165233	6.2	19.7	100674	6.2	16.8	488593	6.3	22.0	128226	6.4	20.2
389936	6.0	20.3	23961	6.1	17.8	235760	6.2	19.1	208558	6.2	19.6	214660	6.3	19.1	356553	6.4	20.3

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
128487	6.4	20.0	508071	6.4	20.8	497035	6.5	20.9	242251	6.6	18.6	304214	6.7	21.2	498172	6.7	20.7
520274	6.4	21.5	384483	6.4	19.9	235297	6.5	19.9	306304	6.6	20.8	264054	6.7	20.8	98984	6.7	19.4
512394	6.4	19.8	468303	6.5	19.7	136114	6.5	20.3	500784	6.6	21.4	59374	6.7	19.3	512395	6.7	20.6
363452	6.4	21.7	446119	6.5	21.0	515254	6.5	21.5	115038	6.6	18.2	20243	6.7	17.9	407926	6.7	20.8
433807	6.4	19.2	459944	6.5	19.9	268387	6.5	19.7	442162	6.6	20.3	39467	6.7	19.3	51170	6.7	18.4
429501	6.4	20.5	435789	6.5	20.8	177256	6.5	19.5	291013	6.6	19.8	220727	6.7	19.8	327380	6.7	19.9
433809	6.4	20.3	443493	6.5	20.6	158780	6.5	19.4	511750	6.6	20.7	178269	6.7	19.7	151371	6.7	20.5
525870	6.4	20.9	339276	6.5	18.8	450150	6.5	21.2	133240	6.6	19.2	329117	6.7	19.4	181270	6.7	20.0
521740	6.4	20.6	538847	6.5	21.6	405819	6.5	21.2	135782	6.6	20.1	219492	6.7	20.8	523749	6.7	21.5
459326	6.4	19.9	260071	6.5	19.3	320110	6.5	19.9	212238	6.6	19.5	510979	6.7	20.6	501869	6.7	20.3
408428	6.4	20.6	335129	6.5	19.8	368874	6.5	21.8	241024	6.6	20.2	438945	6.7	20.4	16153	6.7	17.9
251569	6.4	21.2	223202	6.5	20.0	506846	6.5	19.8	220835	6.6	19.0	435240	6.7	20.1	508848	6.7	22.1
163888	6.4	19.3	4117	6.5	17.0	367238	6.5	19.5	316666	6.6	21.4	1312	6.7	14.5	407665	6.7	20.5
218908	6.4	21.0	531034	6.5	20.6	358331	6.5	20.0	393273	6.6	18.9	448430	6.7	21.0	62280	6.7	19.0
191484	6.4	19.4	132710	6.5	18.4	436577	6.5	20.5	270351	6.6	19.5	102786	6.7	20.4	444280	6.7	20.9
392037	6.4	20.4	317294	6.5	20.5	519470	6.5	20.9	359342	6.6	20.7	515392	6.7	22.2	478577	6.7	21.7
44745	6.4	19.6	406749	6.5	21.9	71942	6.5	18.4	476755	6.6	20.5	134171	6.7	19.7	119655	6.7	18.3
361042	6.4	20.4	535020	6.5	22.3	339501	6.5	19.2	273779	6.6	19.5	107969	6.7	19.5	378235	6.7	21.0
131778	6.4	19.4	505109	6.5	20.6	283107	6.5	20.5	80460	6.6	18.4	330244	6.7	20.9	437179	6.7	20.6
120807	6.4	19.0	263995	6.5	20.1	333589	6.5	20.3	91533	6.6	17.8	427721	6.7	20.8	277648	6.7	20.1
96751	6.4	18.2	231939	6.5	20.4	364005	6.5	20.4	451135	6.6	20.6	145278	6.7	20.1	206090	6.7	19.8
264993	6.4	22.0	2567	6.5	15.7	56219	6.5	17.4	320756	6.6	19.3	438805	6.7	20.7	172117	6.7	19.3
491833	6.4	20.3	394899	6.5	19.8	163426	6.5	18.4	50234	6.6	18.7	154615	6.7	19.9	20217	6.8	17.1
447584	6.4	21.0	131348	6.5	20.1	514673	6.5	21.3	394788	6.6	21.4	424349	6.7	19.7	46179	6.8	17.8
203209	6.4	19.9	54157	6.5	17.7	485838	6.5	20.8	335154	6.6	19.1	189242	6.7	19.1	30453	6.8	17.6
37625	6.4	16.9	35895	6.5	19.0	134288	6.5	18.8	516048	6.6	20.7	78740	6.7	19.3	75637	6.8	18.2
355083	6.4	21.1	92176	6.5	17.7	444243	6.5	21.0	221700	6.6	20.2	368951	6.7	19.5	235564	6.8	21.0
362264	6.4	20.9	142198	6.5	19.6	539303	6.5	20.6	17513	6.6	17.0	487157	6.7	20.9	339478	6.8	19.4
44468	6.4	18.3	173158	6.5	20.3	21045	6.5	17.4	250932	6.6	19.2	514500	6.7	20.7	341033	6.8	20.9
316114	6.4	20.4	231761	6.5	20.2	46501	6.5	17.9	103753	6.6	19.4	447326	6.7	18.7	47159	6.8	19.0
471562	6.4	20.0	4756	6.5	16.7	514060	6.5	21.5	9140	6.6	17.8	481509	6.7	21.2	302189	6.8	21.0
198398	6.4	19.7	427520	6.5	21.6	511209	6.5	20.3	453205	6.6	21.4	260706	6.7	20.2	129866	6.8	19.3
166616	6.4	19.7	396162	6.5	20.9	144132	6.5	19.4	516513	6.6	21.5	281846	6.7	20.0	326218	6.8	21.3
35450	6.4	16.5	382491	6.5	19.6	480373	6.5	20.5	36154	6.6	17.7	364162	6.7	20.5	535630	6.8	21.1
29851	6.4	17.0	252188	6.5	19.6	70433	6.5	19.6	228169	6.6	19.6	121619	6.7	19.2	217376	6.8	19.2
187467	6.4	20.0	519920	6.5	20.6	539130	6.5	20.8	360983	6.6	21.2	369683	6.7	20.9	144324	6.8	18.2
455023	6.4	20.4	214975	6.5	20.2	523574	6.5	22.2	124007	6.6	20.3	370903	6.7	21.3	163270	6.8	20.6
317368	6.4	20.0	214629	6.5	19.8	399569	6.5	22.7	225176	6.6	18.9	332500	6.7	19.9	406994	6.8	20.7
517149	6.4	21.6	472509	6.5	21.2	477907	6.5	19.9	322529	6.6	20.7	156704	6.7	19.6	241689	6.8	19.4
156681	6.4	19.7	524005	6.5	20.2	351838	6.5	20.4	366720	6.6	18.6	223897	6.7	19.6	394229	6.8	20.9
521760	6.4	21.1	219287	6.5	19.8	263177	6.5	19.4	479465	6.6	20.3	121842	6.7	18.8	164951	6.8	18.4
394171	6.4	21.0	33799	6.5	18.6	342259	6.5	20.1	330112	6.6	18.8	341064	6.7	20.1	323040	6.8	19.6
118887	6.4	19.3	514116	6.5	19.6	290663	6.5	19.7	213539	6.6	20.5	358711	6.7	20.8	537068	6.8	21.1
497887	6.4	20.6	374855	6.5	18.1	425666	6.5	19.6	488108	6.6	20.1	455074	6.7	20.0	118166	6.8	20.2
389943	6.4	20.4	12698	6.5	16.6	396421	6.5	20.3	43955	6.6	19.3	92221	6.7	18.5	376136	6.8	20.5
333932	6.4	20.7	320077	6.5	20.9	186087	6.5	20.7	66254	6.6	18.6	122553	6.7	19.2	528585	6.8	20.7
239331	6.4	19.9	209106	6.5	19.7	514440	6.5	20.9	271828	6.6	20.8	375762	6.7	19.9	49671	6.8	16.8
384530	6.4	20.7	152396	6.5	20.0	56091	6.5	17.6	185518	6.6	19.3	122611	6.7	18.1	12493	6.8	17.5
518341	6.4	20.7	133242	6.5	19.8	443461	6.5	21.0	103047	6.6	17.8	319241	6.7	19.6	91626	6.8	19.9
350884	6.4	20.1	380814	6.5	18.9	271718	6.5	20.2	40387	6.6	16.4	113429	6.7	18.2	427216	6.8	20.1
149988	6.4	19.1	38006	6.5	18.1	430449	6.5	19.8	219710	6.6	19.4	206485	6.7	19.1	505417	6.8	20.8
2602	6.4	16.2	385231	6.5	19.5	429124	6.5	20.1	428646	6.6	20.7	404095	6.7	20.1	302715	6.8	20.0
162824	6.4	16.9	514989	6.5	21.7	284922	6.5	20.3	93766	6.6	18.0	166367	6.7	20.8	476186	6.8	19.6
399817	6.4	19.6	368336	6.5	21.6	375	6.6	12.3	131161	6.6	19.5	117196	6.7	19.3	28658	6.8	17.9
470378	6.4	20.4	441178	6.5	20.5	86495	6.5	19.4	525422	6.6	21.7	382576	6.7	18.4	293161	6.8	19.7
435735	6.4	20.7	72745	6.5	19.2	152371	6.5	19.2	443522	6.6	20.7	302	6.7	13.5	183842	6.8	19.0
246670	6.4	19.6	6655	6.5	15.3	289543	6.5	20.2	412168	6.6	21.7	41524	6.7	18.3	102638	6.8	19.2
116829	6.4	20.2	235576	6.5	19.5	445440	6.5	20.1	248687	6.6	19.8	154535	6.7	20.3	771	6.8	12.5
247359	6.4	20.0	128086	6.5	18.6	371407	6.5	19.6	4483	6.6	15.8	170499	6.7	18.7	328815	6.8	19.5
316089	6.4	21.0	32204	6.5	17.6	183250	6.5	19.1	513245	6.6	19.7	366549	6.7	21.2	434148	6.8	19.7
419632	6.4	20.3	127539	6.5	18.7	500108	6.5	21.7	524595	6.6	22.4	318329	6.7	20.5	149779	6.8	19.2
287819	6.4	19.4	470341	6.5	19.9	261783	6.5	18.6	12397	6.6	17.2	479691	6.7	20.6	387686	6.8	20.5
335079	6.4	20.8	500909	6.5	21.2	538633	6.5	21.2	156758	6.6	18.6	44331	6.7	18.2	468632	6.8	19.7
28778	6.4	18.7	449826	6.5	20.9	129430	6.5	18.9	328234	6.6	19.4	137929	6.7	19.5	117747	6.8	19.7
511262	6.4	20.3	37047	6.5	18.1	198517	6.5	19.5	315166	6.6	20.3	91475	6.7	19.1	366056	6.8	20.2
266159	6.4	19.8	287660	6.5	20.4	261883	6.5	19.3	48964	6.6	18.6	35978	6.7	18.5	512316	6.8	21.4
479148	6.4	20.5	198352	6.5	20.0	395115	6.5	21.3	54081	6.6	18.6	411654	6.7	20.6	416579	6.8	20.9
471553	6.4	21.0	470560	6.5	21.6	231765	6.5	18.5	272883	6.6	20.2	220789	6.7	20.4	217409	6.8	20.7
280066	6.4	20.6	443341	6.5	21.5	54583	6.5	17.5	258708	6.6	20.1	211336	6.7	19.0	91745	6.8	18.8
482347	6.4	20.9	388720	6.5	20.4	16973	6.5	17.2	318501	6.6	21.3	409714	6.7	20.8	439834	6.8	20.6
483796	6.4	20.3	249403	6.5	20.6	368398	6.5	21.2	251939	6.6	19.5	422184	6.7	19.9			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
501639	6.8	19.4	106283	6.9	18.9	409191	6.9	21.3	191804	7.0	20.4	106745	7.1	18.9	87296	7.2	18.6
59703	6.8	19.5	186270	6.9	19.6	249041	6.9	19.4	239606	7.0	20.0	71661	7.1	19.2	236491	7.2	19.6
141523	6.8	19.6	203528	6.9	19.6	260345	6.9	20.6	47338	7.0	17.5	428279	7.1	20.9	241313	7.2	20.2
131555	6.8	18.5	519806	6.9	20.8	428640	6.9	21.5	446176	7.0	21.1	538835	7.1	21.6	449455	7.2	20.8
30785	6.8	19.1	122900	6.9	18.7	512178	6.9	20.6	436315	7.0	21.5	501164	7.1	19.4	405738	7.2	20.5
537288	6.8	20.9	445367	6.9	20.3	391845	6.9	20.2	533007	7.0	19.8	411632	7.1	19.6	431082	7.2	20.1
92193	6.8	17.9	213891	6.9	18.7	68280	6.9	16.2	537004	7.0	20.9	177143	7.1	19.5	91551	7.2	17.9
152377	6.8	20.1	251770	6.9	18.7	388702	6.9	20.1	239769	7.0	18.6	363462	7.1	20.8	322283	7.2	20.2
218455	6.8	19.5	445511	6.9	19.8	215820	6.9	19.1	428622	7.0	20.2	448395	7.1	20.6	227960	7.2	20.1
184580	6.8	18.9	509849	6.9	20.8	449403	6.9	21.3	268147	7.0	20.3	334018	7.1	19.2	334410	7.2	20.0
71351	6.8	18.3	165599	6.9	19.1	83453	6.9	18.9	64167	7.0	18.1	153263	7.1	19.2	16059	7.2	17.0
391620	6.8	20.3	167502	6.9	18.8	516748	6.9	20.5	448093	7.0	20.4	46941	7.1	18.0	290307	7.2	20.3
319252	6.8	19.9	326036	6.9	19.9	94300	6.9	18.1	168097	7.0	19.6	335478	7.1	19.9	137490	7.2	19.2
377606	6.8	19.3	41991	6.9	17.8	521752	6.9	20.5	18042	7.0	17.7	330356	7.1	19.5	154619	7.2	19.3
444997	6.8	21.0	223402	6.9	20.2	198884	6.9	19.6	470613	7.0	21.0	96254	7.1	19.1	84194	7.2	19.0
350284	6.8	21.1	365754	6.9	20.3	474732	6.9	20.2	17018	7.0	18.1	440287	7.1	19.4	452108	7.2	20.7
241172	6.8	19.8	267389	6.9	18.8	91723	6.9	19.4	86072	7.0	18.4	290046	7.1	19.8	395041	7.2	21.1
407835	6.8	20.5	347881	6.9	19.8	386408	6.9	20.5	280086	7.0	20.6	142001	7.1	19.0	315148	7.2	20.7
260324	6.8	20.5	515694	6.9	21.8	51463	6.9	19.2	47454	7.0	18.2	93192	7.1	18.9	383281	7.2	21.4
68300	6.8	18.9	307135	6.9	19.5	410301	6.9	20.1	193551	7.0	18.6	53416	7.1	18.9	378591	7.2	20.7
241201	6.8	19.5	40082	6.9	19.1	189003	6.9	19.7	318474	7.0	20.7	511637	7.1	20.5	446441	7.2	21.2
508673	6.8	19.7	108385	6.9	19.2	85151	6.9	18.6	128692	7.0	20.2	180985	7.1	20.1	457403	7.2	20.5
163338	6.8	19.7	299160	6.9	20.9	516323	6.9	20.0	387536	7.0	20.4	23253	7.1	17.4	162871	7.2	19.1
468792	6.8	21.4	473380	6.9	19.7	468831	6.9	19.6	163701	7.0	20.0	494416	7.1	21.2	522158	7.2	20.6
216359	6.8	20.7	333998	6.9	19.5	36054	6.9	19.7	329172	7.0	20.9	150610	7.1	19.3	448701	7.2	20.4
357326	6.8	21.0	63960	6.9	19.2	521800	6.9	20.2	50185	7.0	18.2	507637	7.1	20.5	263349	7.2	20.0
511297	6.8	20.5	191642	6.9	20.6	331524	6.9	19.7	130046	7.0	18.9	482311	7.1	21.2	512484	7.2	20.7
434358	6.8	20.1	518747	6.9	20.8	188145	6.9	20.4	446951	7.0	20.1	189151	7.1	20.2	192205	7.2	20.2
471623	6.8	20.6	296625	6.9	20.0	370077	6.9	20.2	467193	7.0	21.1	148426	7.1	19.1	208166	7.2	18.6
168099	6.8	20.0	430751	6.9	20.7	186797	6.9	20.7	186965	7.0	19.6	467359	7.1	19.6	421127	7.2	20.8
327196	6.8	21.1	87609	6.9	18.7	84197	6.9	18.3	42380	7.0	19.4	348385	7.1	19.7	469710	7.2	21.4
206011	6.8	19.7	180962	6.9	19.7	521726	6.9	21.2	515101	7.0	20.5	63898	7.1	18.8	408598	7.2	20.3
396160	6.8	20.6	144072	6.9	19.8	9696	6.9	18.3	159544	7.0	18.5	376977	7.1	21.0	67176	7.2	18.6
43984	6.8	18.9	403999	6.9	21.0	363716	6.9	19.2	507808	7.0	20.1	442148	7.1	19.6	282572	7.2	19.1
487183	6.8	20.5	510334	6.9	21.9	169723	6.9	20.7	35322	7.0	18.6	337128	7.1	20.7	252868	7.2	19.8
121548	6.8	18.3	195011	6.9	19.8	115570	6.9	19.5	364012	7.0	20.2	207850	7.1	20.1	521784	7.2	21.0
367477	6.8	21.0	412198	6.9	20.5	84129	6.9	18.7	469267	7.0	21.0	314656	7.1	20.8	195770	7.2	18.3
508459	6.8	19.7	497600	6.9	22.4	412538	6.9	20.1	14254	7.0	16.8	451172	7.1	20.5	507682	7.2	21.4
518181	6.8	19.7	394241	6.9	21.6	508728	6.9	20.6	283198	7.0	20.7	314048	7.1	19.3	271888	7.2	18.9
268334	6.8	20.3	70461	6.9	18.1	476811	6.9	21.3	481146	7.0	21.0	19671	7.1	17.1	742	7.2	13.6
377568	6.8	21.8	468797	6.9	20.4	147476	6.9	20.2	339298	7.0	19.0	362340	7.1	21.2	174188	7.2	20.8
93891	6.8	18.1	342159	6.9	20.2	157195	6.9	19.4	537243	7.0	21.4	527855	7.1	20.9	99045	7.2	19.7
294132	6.8	20.8	369724	6.9	20.4	5440	6.9	16.5	24768	7.0	18.0	192489	7.1	19.7	96460	7.2	19.2
156620	6.8	19.3	398433	6.9	20.9	288627	6.9	19.5	134540	7.0	17.5	468904	7.1	19.9	262577	7.2	20.3
445350	6.8	20.7	12122	6.9	16.8	485019	6.9	20.1	457495	7.0	19.7	442041	7.1	20.4	214564	7.2	20.8
497827	6.8	20.9	115530	6.9	18.5	129589	6.9	18.5	507115	7.0	20.6	86278	7.1	20.2	488770	7.2	20.1
259987	6.8	19.7	507940	6.9	21.4	313340	6.9	21.0	468629	7.1	21.9	394608	7.1	20.0	235885	7.2	19.6
487828	6.8	20.7	535530	6.9	21.0	127790	6.9	19.0	42478	7.1	16.3	72452	7.1	18.1	450724	7.2	21.7
253774	6.8	18.4	127584	6.9	19.5	465859	6.9	20.6	506077	7.1	20.6	225950	7.1	18.7	5904	7.2	16.7
453471	6.8	20.3	476265	6.9	20.3	146042	6.9	19.2	172610	7.1	20.0	273928	7.1	20.5	62973	7.2	19.2
337341	6.8	20.0	466644	6.9	20.8	478220	6.9	21.4	289019	7.1	19.9	417393	7.1	21.0	513148	7.2	22.0
317963	6.8	19.5	318907	6.9	20.2	128909	6.9	19.9	124939	7.1	18.0	213554	7.1	21.2	466401	7.2	20.3
448444	6.8	20.2	398253	6.9	20.8	313359	6.9	20.8	164055	7.1	19.3	126688	7.1	19.1	388830	7.2	19.5
532957	6.8	19.3	188938	6.9	20.1	186828	6.9	20.6	218468	7.1	19.0	301746	7.1	20.9	59090	7.2	18.9
112531	6.8	19.7	538419	6.9	20.6	172785	6.9	19.9	106307	7.1	19.7	362842	7.1	20.3	418981	7.2	21.0
320203	6.8	21.0	508876	6.9	21.5	436946	6.9	20.9	537504	7.1	21.4	253789	7.1	19.5	259989	7.2	20.2
448607	6.8	21.0	220389	6.9	20.3	314984	6.9	20.1	335548	7.1	19.0	339322	7.1	20.0	409046	7.2	19.9
223560	6.8	21.0	62821	6.9	18.6	240688	6.9	20.1	403750	7.1	20.0	184925	7.1	20.0	96197	7.2	20.3
82096	6.8	19.8	204652	6.9	20.8	450359	6.9	19.4	149105	7.1	19.7	454026	7.1	20.2	15068	7.2	18.2
261933	6.9	20.9	249533	6.9	20.4	274562	6.9	20.8	16321	7.1	18.1	36688	7.1	19.0	285460	7.2	20.1
159904	6.9	18.8	465331	6.9	20.1	467604	6.9	20.8	505184	7.1	20.3	428202	7.1	20.2	440875	7.2	20.9
294064	6.9	19.9	304269	6.9	20.2	326030	6.9	20.0	111394	7.1	19.3	107426	7.1	19.1	176724	7.2	20.0
257329	6.9	20.9	449457	6.9	20.6	72597	6.9	19.2	483849	7.1	20.7	77656	7.1	18.5	233028	7.2	21.1
137461	6.9	19.9	520607	6.9	21.6	274435	6.9	20.9	452106	7.1	20.7	260254	7.1	20.0	498082	7.2	21.8
167468	6.9	19.0	475992	6.9	20.5	261661	6.9	19.8	315887	7.1	21.1	254176	7.1	19.4	469974	7.2	20.4
473896	6.9	20.9	56334	6.9	18.0	57057	6.9	17.8	111930	7.1	18.6	523972	7.1	23.2	146302	7.2	19.9
271908	6.9	19.8	62448	6.9	19.6	521628	6.9	21.2	227982	7.1	21.0	321396	7.1	20.5	435681	7.2	20.7
315856	6.9	20.7	512362	6.9	20.8	164242	6.9	19.8	257721	7.1	18.6	235138	7.1	18.8	329979	7.2	20.6
466341	6.9	20.1	539486	6.9	21.2	220747	6.9	18.6	250586	7.1	19.6	401912	7.1	20.0	201086	7.2	20.1
72934	6.9	19.7	235398	6.9	19.7	18684	7.0	17.7	218437	7.1	19.8	510052	7.2	21.8	485764	7.2	20.6
205861	6.9	20.5	173285	6.9	20.0	2181	7.0	15.3	184191	7.1	19.9	208893					

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
487816	7.2	19.7	338496	7.3	19.3	65728	7.4	19.2	507683	7.4	20.2	254276	7.5	19.8	495331	7.6	23.3
520122	7.2	21.4	217405	7.3	20.9	367109	7.4	21.5	126512	7.4	19.5	246977	7.5	18.4	537404	7.6	22.3
463440	7.2	21.1	437510	7.3	20.9	293640	7.4	20.7	326230	7.4	20.5	11631	7.5	17.3	47701	7.6	18.2
245537	7.2	20.4	276466	7.3	19.8	134325	7.4	19.2	360396	7.4	21.3	236471	7.5	19.5	527238	7.6	22.3
514561	7.2	18.6	399130	7.3	20.4	472259	7.4	20.3	128848	7.4	19.6	205193	7.5	19.1	137915	7.6	19.3
116903	7.2	21.0	254366	7.3	20.2	502303	7.4	19.8	340217	7.4	19.8	88006	7.5	18.0	515645	7.6	20.9
471250	7.2	21.3	281011	7.3	21.4	272807	7.4	19.5	408085	7.4	20.7	142140	7.5	20.7	71249	7.6	17.6
73191	7.2	19.2	514751	7.3	21.5	539074	7.4	21.6	263186	7.4	20.3	500894	7.5	21.3	397607	7.6	20.4
178424	7.2	19.2	346534	7.3	20.3	286842	7.4	21.5	172201	7.4	20.2	515901	7.5	20.7	71218	7.6	18.6
206046	7.2	20.6	272439	7.3	21.1	513109	7.4	20.1	240647	7.4	20.0	509719	7.5	20.0	396471	7.6	20.0
12652	7.2	19.4	208622	7.3	20.3	251773	7.4	20.1	533746	7.4	20.1	269755	7.5	20.4	50526	7.6	19.1
334001	7.2	17.8	441112	7.3	20.3	301480	7.4	20.1	31618	7.4	17.7	198052	7.5	20.9	63409	7.6	18.9
466467	7.2	21.8	263750	7.3	20.7	307559	7.4	20.0	418207	7.4	19.7	204085	7.5	19.7	539038	7.6	20.5
142387	7.2	19.3	238187	7.3	19.0	212	7.4	12.2	410145	7.4	21.8	441057	7.5	21.5	15710	7.6	17.2
87797	7.2	19.2	362920	7.3	19.8	42955	7.4	19.0	1001	7.4	13.6	406308	7.5	21.5	255471	7.6	19.1
317783	7.2	19.9	291657	7.3	20.7	41485	7.4	17.5	318691	7.5	19.4	132294	7.5	19.4	249102	7.6	19.5
448668	7.2	19.5	326829	7.3	17.4	98543	7.4	19.4	11507	7.5	17.7	485780	7.5	20.0	505398	7.6	20.2
230882	7.2	19.0	112191	7.3	19.1	126625	7.4	19.5	463863	7.5	20.0	472650	7.5	21.3	515388	7.6	20.8
435793	7.2	20.9	359558	7.3	20.7	46442	7.4	18.0	453721	7.5	20.8	382603	7.5	20.7	322022	7.6	19.7
527792	7.2	20.4	187986	7.3	20.3	227298	7.4	20.7	137313	7.5	19.7	469456	7.5	20.6	479754	7.6	20.6
304590	7.2	20.6	532271	7.3	21.2	7694	7.4	16.6	160399	7.5	19.1	191760	7.5	20.2	497307	7.6	20.7
128745	7.2	19.5	449452	7.3	21.1	361440	7.4	20.9	227728	7.5	19.4	257693	7.5	19.6	257366	7.6	19.2
205436	7.2	20.3	442593	7.3	20.4	371607	7.4	20.3	323017	7.5	22.0	516064	7.5	20.1	10718	7.6	17.7
305018	7.2	21.1	308617	7.3	19.3	206569	7.4	19.0	30395	7.5	17.8	416351	7.5	20.4	337984	7.6	20.5
218853	7.2	18.7	211071	7.3	20.0	161202	7.4	19.2	472019	7.5	20.1	520638	7.5	21.6	371425	7.6	20.1
255328	7.2	20.7	449063	7.3	20.4	440891	7.4	21.1	32554	7.5	16.9	513836	7.5	21.9	8949	7.6	17.7
494732	7.3	20.6	205890	7.3	20.4	362544	7.4	20.5	71128	7.5	18.2	514093	7.5	19.7	444919	7.6	20.5
278919	7.3	19.4	189563	7.3	18.9	116110	7.4	18.4	224794	7.5	19.3	311995	7.5	20.6	18474	7.6	16.8
121141	7.3	19.5	98805	7.3	18.9	108039	7.4	19.0	481336	7.5	20.8	338612	7.5	19.8	499516	7.6	20.5
370421	7.3	20.6	393060	7.3	20.5	271681	7.4	20.4	483124	7.5	20.7	512458	7.5	20.6	296490	7.6	20.8
525587	7.3	21.3	444713	7.3	20.0	478920	7.4	19.5	266265	7.5	19.5	129071	7.5	18.9	164737	7.6	20.3
39088	7.3	18.3	254428	7.3	18.4	506942	7.4	21.9	103369	7.5	18.3	196620	7.5	19.6	128124	7.6	19.0
97141	7.3	18.4	86133	7.3	18.4	37777	7.4	19.1	379607	7.5	20.9	103965	7.5	19.3	16629	7.6	18.3
180146	7.3	19.6	319317	7.3	20.3	340527	7.4	18.8	496228	7.5	20.6	96734	7.5	19.5	288727	7.6	20.5
27741	7.3	17.4	43802	7.3	17.8	42040	7.4	18.6	236388	7.5	20.3	444227	7.5	19.8	462625	7.6	21.3
190693	7.3	19.8	525457	7.3	21.0	180767	7.4	20.8	322323	7.5	21.2	408298	7.5	21.1	221738	7.6	20.2
366518	7.3	20.4	161939	7.3	21.3	215201	7.4	19.0	213525	7.5	20.1	42208	7.5	19.0	182793	7.6	19.7
206077	7.3	19.6	449760	7.3	20.3	89488	7.4	19.1	276386	7.5	20.1	212304	7.5	20.0	18377	7.6	17.7
37555	7.3	19.8	298210	7.3	20.2	421459	7.4	20.5	58991	7.5	17.3	307546	7.6	20.4	283702	7.6	20.2
390989	7.3	19.6	100038	7.3	18.1	537200	7.4	21.2	363000	7.5	20.1	514856	7.6	21.0	162848	7.6	19.4
480214	7.3	21.7	179676	7.3	21.1	478895	7.4	20.2	22126	7.5	17.7	452259	7.6	20.8	528152	7.6	20.8
288110	7.3	17.9	13197	7.3	18.1	469625	7.4	21.0	142052	7.5	19.4	244695	7.6	20.2	230820	7.6	18.9
368648	7.3	20.4	236008	7.3	20.3	151328	7.4	19.3	220974	7.5	20.0	286666	7.6	20.5	535454	7.6	21.4
24007	7.3	17.3	537472	7.3	19.7	47569	7.4	18.8	365974	7.5	20.8	93792	7.6	18.1	468078	7.6	21.2
3217	7.3	17.4	108509	7.3	19.8	440188	7.4	20.7	357892	7.5	20.6	195199	7.6	19.7	211389	7.6	19.1
537440	7.3	21.1	163972	7.3	19.9	220362	7.4	19.1	413439	7.5	19.8	304397	7.6	20.6	283627	7.6	21.1
531170	7.3	21.6	274828	7.3	20.3	189142	7.4	20.4	278239	7.5	19.9	43054	7.6	18.7	338607	7.6	20.7
487217	7.3	20.5	85366	7.3	18.8	466291	7.4	21.7	130367	7.5	20.1	170005	7.6	19.6	347055	7.6	21.0
224995	7.3	20.8	368394	7.3	20.3	521801	7.4	20.8	334831	7.5	19.8	303595	7.6	20.4	176771	7.6	19.4
512810	7.3	21.2	92316	7.3	20.4	506287	7.4	20.1	345955	7.5	19.6	8341	7.6	15.7	200637	7.6	18.7
128060	7.3	18.6	499597	7.4	20.9	78934	7.4	17.3	187706	7.5	20.1	161624	7.6	20.7	465032	7.6	22.0
325085	7.3	21.4	385167	7.4	19.3	523315	7.4	20.8	366362	7.5	20.2	313943	7.6	20.6	512927	7.6	20.7
343418	7.3	19.5	526425	7.4	20.6	5285	7.4	17.2	408458	7.5	20.4	133199	7.6	18.7	488053	7.6	20.0
466416	7.3	21.1	284257	7.4	20.5	113561	7.4	19.3	304005	7.5	20.6	130715	7.6	19.7	377598	7.6	19.4
83424	7.3	19.5	495874	7.4	20.9	261312	7.4	20.7	334297	7.5	19.9	301975	7.6	19.9	211383	7.6	20.3
526919	7.3	20.1	410988	7.4	20.0	471593	7.4	19.5	247111	7.5	18.8	355591	7.6	21.4	207322	7.6	19.9
512236	7.3	20.2	475960	7.4	20.8	469656	7.4	20.6	142009	7.5	18.3	479131	7.6	20.4	3503	7.6	17.6
364537	7.3	20.8	322967	7.4	20.9	28559	7.4	18.2	183556	7.5	21.3	140222	7.6	19.8	398301	7.6	20.7
504009	7.3	21.2	374271	7.4	18.6	524428	7.4	20.4	343358	7.5	21.4	410690	7.6	20.6	519828	7.6	21.5
533263	7.3	21.0	279349	7.4	19.8	316497	7.4	20.0	167430	7.5	20.2	499652	7.6	20.5	27294	7.6	17.3
476610	7.3	20.6	160239	7.4	20.5	318983	7.4	20.4	392098	7.5	20.4	37361	7.6	18.6	49203	7.6	18.9
376416	7.3	21.1	447325	7.4	20.6	271823	7.4	20.7	444190	7.5	20.6	126447	7.6	18.8	507090	7.6	20.7
365975	7.3	20.3	154901	7.4	19.2	480309	7.4	21.3	398100	7.5	19.9	116654	7.6	19.8	405866	7.6	20.9
98415	7.3	17.7	388621	7.4	20.2	9510	7.4	18.3	117098	7.5	17.8	210624	7.6	19.8	430565	7.6	20.9
352244	7.3	19.8	432783	7.4	20.9	429706	7.4	20.8	78015	7.5	19.0	280575	7.6	18.7	531116	7.6	20.9
302193	7.3	19.9	17368	7.4	17.8	481484	7.4	20.5	171769	7.5	19.6	306188	7.6	20.8	120158	7.7	19.6
320080	7.3	20.5	436215	7.4	20.2	304461	7.4	20.7	287711	7.5	20.4	523955	7.6	22.8	230353	7.7	19.8
40939	7.3	18.7	235783	7.4	19.7	205184	7.4	19.8	263040	7.5	20.4	234315	7.6	20.0	91052	7.7	18.5
191684	7.3	20.2	384778	7.4	20.3	10496	7.4	16.6	218602	7.5	20.5	452085	7.6	21.3	151357	7.7	19.7
7079	7.3	17.7	265330	7.4	20.4	31222	7.4	18.4	395725	7.5	20.4	215833	7.6	19.6	353772	7.7	21.0
159075	7.3	19.5	28681	7.4	18.4	304318	7.4	20.3	378671	7.5	21.2	31					

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
190677	7.7	17.3	416298	7.7	19.0	507190	7.8	21.7	291336	7.9	19.8	171404	7.9	20.0	7930	7.9	16.7
37505	7.7	19.2	301593	7.7	20.7	473004	7.8	20.9	405407	7.9	19.6	127342	7.9	19.5	37915	7.9	18.7
404057	7.7	20.2	383909	7.7	20.0	44932	7.8	18.9	14612	7.9	17.7	436603	7.9	20.2	61261	7.9	19.0
56287	7.7	18.9	152464	7.7	19.3	314565	7.8	21.2	211168	7.9	19.8	176836	7.9	19.3	218527	7.9	19.6
509758	7.7	20.5	5173	7.7	16.5	173590	7.8	19.0	364552	7.9	20.4	160400	7.9	20.2	351385	7.9	20.8
153713	7.7	19.3	520567	7.7	20.6	64345	7.8	18.4	218800	7.9	18.7	41029	7.9	18.7	66060	7.9	18.2
451997	7.7	19.7	116268	7.7	19.6	507245	7.8	21.5	36632	7.9	17.4	155885	7.9	19.7	26712	7.9	19.8
513878	7.7	21.5	126659	7.7	20.2	111696	7.8	20.4	280411	7.9	20.0	113652	7.9	19.0	424034	7.9	20.0
174069	7.7	20.1	44320	7.7	17.7	405774	7.8	19.9	472891	7.9	20.9	73305	7.9	18.8	443526	7.9	20.7
416671	7.7	21.2	225507	7.7	19.6	343487	7.8	19.9	428625	7.9	20.6	232903	7.9	19.4	270415	7.9	17.3
1680	7.7	15.6	532946	7.7	19.7	16964	7.8	16.4	419662	7.9	20.8	96510	7.9	18.7	18700	7.9	18.2
68289	7.7	17.8	412201	7.7	19.9	78415	7.8	19.3	146488	7.9	19.9	387267	7.9	19.9	180353	7.9	19.4
111480	7.7	18.8	532099	7.7	21.6	401521	7.8	20.4	295157	7.9	21.1	542688	7.9	20.1	483891	7.9	19.0
120052	7.7	19.3	30179	7.7	18.4	35332	7.8	19.2	495316	7.9	25.3	539352	7.9	21.1	13150	7.9	17.7
51407	7.7	19.6	481425	7.7	21.1	107799	7.8	19.3	410270	7.9	19.3	177329	7.9	19.5	326186	7.9	20.5
32170	7.7	18.2	469475	7.7	20.7	254215	7.8	19.7	115492	7.9	18.9	439352	7.9	20.4	256786	7.9	19.9
112455	7.7	19.3	321551	7.7	20.5	143774	7.8	19.4	340275	7.9	19.9	401762	7.9	20.8	5932	7.9	17.4
202722	7.7	20.3	328266	7.7	21.8	258941	7.8	20.3	153265	7.9	20.0	263080	7.9	20.9	182132	7.9	20.0
255492	7.7	19.3	512426	7.7	19.9	261845	7.8	19.8	338546	7.9	20.0	73057	7.9	20.0	486177	7.9	20.8
66442	7.7	18.0	367126	7.7	19.6	110930	7.8	19.5	214679	7.9	20.3	504919	7.9	20.5	95941	7.9	19.1
403783	7.7	21.0	360916	7.7	20.6	276031	7.8	19.6	194946	7.9	19.7	420467	7.9	21.0	424001	7.9	20.4
300817	7.7	20.7	175204	7.7	19.8	220963	7.8	19.6	46163	7.9	18.1	260169	7.9	19.7	485207	7.9	20.1
404468	7.7	20.8	178850	7.7	19.4	323210	7.8	20.6	518303	7.9	20.9	13313	7.9	17.6	518872	7.9	21.0
27597	7.7	18.5	6661	7.7	15.7	332492	7.8	20.8	27250	7.9	17.8	539415	7.9	21.2	209102	7.9	20.2
317458	7.7	20.8	219893	7.7	20.7	531702	7.8	20.8	142395	7.9	20.8	119851	7.9	19.0	214456	7.9	20.5
164835	7.7	20.4	84119	7.7	18.1	316259	7.8	20.7	104817	7.9	18.9	386357	7.9	21.2	307106	7.9	19.7
191876	7.7	19.8	220879	7.7	18.7	188509	7.8	19.8	148675	7.9	20.1	402055	7.9	20.9	359503	7.9	20.1
113476	7.7	19.1	485784	7.7	20.1	35856	7.8	18.4	173625	7.9	19.8	68911	7.9	19.7	300678	7.9	20.1
234303	7.7	19.9	279493	7.7	20.9	199562	7.8	20.2	380265	7.9	19.7	322429	7.9	20.8	25064	7.9	16.7
470299	7.7	21.5	154240	7.7	19.4	516225	7.8	20.0	131168	7.9	19.2	517472	7.9	21.7	412578	7.9	20.8
202255	7.7	19.0	516051	7.7	21.1	239516	7.8	19.9	218983	7.9	20.2	68022	7.9	17.2	48161	7.9	18.6
175699	7.7	19.7	168469	7.7	19.3	174793	7.8	18.3	69233	7.9	18.3	186536	7.9	19.3	185581	7.9	19.8
488332	7.7	19.1	301028	7.7	19.6	149197	7.8	21.2	466807	7.9	20.5	463653	7.9	21.6	292507	7.9	20.1
137032	7.7	20.9	301709	7.7	21.3	212797	7.8	19.6	440363	7.9	19.6	104071	7.9	19.5	1554	7.9	14.5
136946	7.7	20.4	259099	7.7	20.1	153060	7.8	19.6	412307	7.9	20.2	521971	7.9	21.1	239106	7.9	20.0
461478	7.7	20.7	410684	7.7	20.6	42924	7.8	19.0	58377	7.9	19.9	112884	7.9	18.6	200042	7.9	19.9
304460	7.7	20.3	471639	7.7	21.4	207577	7.8	20.1	95918	7.9	19.9	78467	7.9	18.5	204710	7.9	20.1
487804	7.7	20.6	404516	7.8	21.2	269442	7.8	20.2	217355	7.9	19.6	73378	7.9	18.6	207249	7.9	20.2
481499	7.7	21.2	255476	7.8	18.8	186961	7.8	20.3	219912	7.9	20.4	52504	7.9	19.4	216693	7.9	20.8
220832	7.7	19.4	308649	7.8	19.7	355431	7.8	19.5	531173	7.9	21.2	140041	7.9	19.5	115624	7.9	19.2
480635	7.7	21.0	351211	7.8	20.1	44691	7.8	18.0	10423	7.9	17.3	470334	7.9	21.4	236572	7.9	19.6
316974	7.7	20.9	539757	7.8	21.3	362300	7.8	21.1	198844	7.9	19.8	535032	7.9	22.8	448095	7.9	21.4
365336	7.7	20.7	451379	7.8	20.3	70145	7.8	18.5	397787	7.9	20.9	255324	7.9	18.8	127535	8.0	18.8
287176	7.7	20.5	416451	7.8	19.0	124253	7.8	19.5	419788	7.9	20.2	359494	7.9	20.2	510284	8.0	20.9
406316	7.7	20.0	180927	7.8	20.2	253836	7.8	19.4	468353	7.9	20.6	122493	7.9	18.6	400709	8.0	20.1
233916	7.7	20.1	421526	7.8	21.1	513351	7.8	20.7	523876	7.9	20.2	284294	7.9	20.3	471670	8.0	19.7
501745	7.7	20.5	32911	7.8	17.9	389834	7.8	19.3	168983	7.9	18.9	236704	7.9	21.1	235571	8.0	19.1
45515	7.7	18.5	95284	7.8	19.4	180502	7.8	20.5	303222	7.9	19.8	222849	7.9	18.0	191046	8.0	18.6
140044	7.7	19.7	474278	7.8	19.5	242236	7.8	19.3	2862	7.9	15.0	228324	7.9	20.0	343680	8.0	20.8
331194	7.7	20.5	9310	7.8	17.2	359597	7.8	20.2	279048	7.9	20.9	323018	7.9	20.5	438507	8.0	20.6
133788	7.7	18.7	251366	7.8	20.5	342011	7.8	20.5	136175	7.9	19.5	358759	7.9	20.0	537324	8.0	22.1
209351	7.7	19.5	266580	7.8	19.9	229743	7.8	20.1	174380	7.9	19.5	172899	7.9	19.8	69294	8.0	19.4
133976	7.7	19.4	252201	7.8	20.8	512448	7.8	20.3	13682	7.9	18.3	248496	7.9	20.4	526896	8.0	21.5
358716	7.7	20.6	539870	7.8	21.1	254530	7.8	19.6	525142	7.9	20.6	65465	7.9	19.1	204114	8.0	19.3
212196	7.7	19.8	470565	7.8	21.3	349330	7.8	19.9	535142	7.9	19.8	58514	7.9	19.3	65871	8.0	17.1
314544	7.7	19.3	429169	7.8	20.9	238286	7.8	18.9	183813	7.9	20.0	244263	7.9	19.6	412065	8.0	20.9
250327	7.7	19.9	480487	7.8	20.3	277495	7.8	19.7	500218	7.9	20.3	67330	7.9	18.7	188098	8.0	20.2
518966	7.7	20.6	477929	7.8	21.3	423438	7.8	20.3	530423	7.9	20.9	76946	7.9	19.4	346570	8.0	18.5
148780	7.7	22.4	23081	7.8	18.6	45024	7.8	17.9	444985	7.9	21.5	17226	7.9	17.2	184911	8.0	20.2
452991	7.7	21.2	117971	7.8	18.8	128822	7.8	18.7	118240	7.9	19.0	355118	7.9	21.0	170717	8.0	19.6
385558	7.7	20.2	506800	7.8	21.3	90726	7.8	18.4	472309	7.9	20.6	320083	7.9	19.9	66904	8.0	18.7
393786	7.7	20.2	253591	7.8	19.3	447738	7.8	20.6	181579	7.9	19.7	44214	7.9	17.2	183879	8.0	18.7
93117	7.7	19.7	83054	7.8	19.2	496127	7.8	21.1	76431	7.9	18.5	470656	7.9	20.4	418095	8.0	19.5
108532	7.7	18.7	257659	7.8	19.3	127330	7.8	19.1	523878	7.9	20.6	360696	7.9	19.8	251544	8.0	19.9
66585	7.7	19.2	19608	7.8	16.2	303239	7.8	20.7	361593	7.9	19.7	368337	7.9	20.2	104024	8.0	19.6
507702	7.7	21.0	34419	7.8	18.8	518789	7.8	20.5	246657	7.9	20.1	326132	7.9	19.5	387475	8.0	18.7
66862	7.7	17.5	156688	7.8	20.8	478793	7.8	20.1	104390	7.9	19.9	247354	7.9	19.5	130927	8.0	18.2
259771	7.7	19.8	135033	7.8	20.0	219308	7.8	19.1	138096	7.9	20.5	86784	7.9	20.6	8856	8.0	17.8
85667	7.7	18.8	205434	7.8	20.8	473374	7.8	20.4	412453	7.9	19.5	310151	7.9	18.6	357576	8.0	20.6
33092	7.7	18.5	332376	7.8	18.8	92038	7.8	18.2	39602	7.9	18.8	258765	7.9	20.4	465902	8.0	20.2
449752	7.7	21.2	505435	7.8	19.3	324179	7.8	21.3	258834	7.9	20.3	494251	7.9	21.2	2334		

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
264031	8.0	20.1	88120	8.1	19.4	315752	8.2	20.4	163376	8.3	18.2	429537	8.3	20.2	280114	8.4	20.7
97128	8.0	19.5	33515	8.1	18.3	42776	8.2	17.8	217373	8.3	19.1	542402	8.3	21.5	231522	8.4	19.9
350235	8.0	19.7	164979	8.1	17.8	473784	8.2	20.2	105634	8.3	19.4	100419	8.3	19.9	473356	8.4	20.6
299727	8.0	20.9	337147	8.1	19.8	366658	8.2	19.7	448720	8.3	19.2	414001	8.3	21.7	224139	8.4	20.0
55657	8.0	18.6	505757	8.1	20.9	175805	8.2	18.5	491813	8.3	18.9	536524	8.3	21.5	431353	8.4	20.6
376223	8.0	20.1	412451	8.1	20.2	2442	8.2	16.2	423410	8.3	20.7	130179	8.3	18.5	171365	8.4	20.4
449802	8.0	20.3	142147	8.1	20.0	260430	8.2	19.2	180407	8.3	20.3	190022	8.3	20.2	374264	8.4	21.7
236030	8.0	20.2	3064	8.1	16.6	223871	8.2	19.7	236489	8.3	19.7	455075	8.3	19.7	426153	8.4	20.7
400973	8.0	19.3	505784	8.1	19.9	330255	8.2	19.1	169608	8.3	19.7	223875	8.3	20.2	54190	8.4	18.3
357838	8.1	20.7	380786	8.1	19.7	534120	8.2	21.2	254485	8.3	20.3	487137	8.3	20.1	237054	8.4	18.8
428190	8.1	20.6	261665	8.1	20.1	124103	8.2	20.4	342641	8.3	20.6	515253	8.3	21.2	32824	8.4	16.9
286949	8.1	20.0	449374	8.1	21.9	284271	8.2	21.0	399402	8.3	20.7	318931	8.3	20.7	187865	8.4	19.9
62786	8.1	18.6	276866	8.1	20.3	84625	8.2	18.9	482403	8.3	20.3	342112	8.3	20.6	253735	8.4	19.5
319416	8.1	20.5	12527	8.1	17.5	476152	8.2	21.6	309608	8.3	21.2	104310	8.3	19.3	226651	8.4	21.0
164253	8.1	19.7	487030	8.1	20.4	211164	8.2	19.9	180457	8.3	19.9	147501	8.3	19.3	234087	8.4	19.2
128152	8.1	19.6	198412	8.1	18.8	398974	8.2	20.9	532081	8.3	22.4	528813	8.3	21.7	523279	8.4	21.4
239309	8.1	19.9	4123594	8.1	20.7	412336	8.2	21.8	115658	8.3	20.1	294321	8.3	20.3	531549	8.4	19.0
465636	8.1	21.5	434115	8.1	20.4	102046	8.2	17.9	439768	8.3	20.7	400493	8.3	22.4	154054	8.4	20.4
146325	8.1	20.7	40116	8.1	19.1	239869	8.2	20.6	131886	8.3	18.9	167697	8.3	19.5	480112	8.4	21.6
476125	8.1	19.9	4419	8.1	16.6	16491	8.2	18.0	415060	8.3	19.2	479013	8.3	19.2	196184	8.4	19.2
448600	8.1	20.7	524896	8.1	21.8	99492	8.2	19.0	410179	8.3	21.2	530849	8.3	21.3	283877	8.4	18.9
17918	8.1	18.8	481270	8.1	20.2	237585	8.2	20.2	240185	8.3	21.1	349811	8.4	20.1	514169	8.4	21.0
128256	8.1	19.9	323637	8.1	18.7	394327	8.2	21.2	207500	8.3	20.2	103843	8.4	18.2	103715	8.4	18.8
90893	8.1	19.6	46278	8.1	18.7	44966	8.2	18.2	97109	8.3	18.6	416069	8.4	20.6	367977	8.4	20.4
117245	8.1	20.6	290731	8.1	19.6	209282	8.2	19.1	537312	8.3	21.0	103906	8.4	19.4	315892	8.4	20.6
5375	8.1	17.9	139165	8.1	19.9	267212	8.2	19.4	495079	8.3	21.8	423035	8.4	21.4	138886	8.4	18.9
136259	8.1	18.7	37054	8.1	18.2	330343	8.2	21.1	338012	8.3	20.5	538995	8.4	20.4	38528	8.4	18.1
452978	8.1	21.7	219299	8.1	20.1	296549	8.2	19.8	381859	8.3	19.8	477971	8.4	21.6	172106	8.4	19.9
139304	8.1	20.9	176306	8.1	19.1	371938	8.2	21.5	481263	8.3	19.4	388615	8.4	20.1	43766	8.4	18.4
586	8.1	13.4	375268	8.1	21.3	224971	8.2	20.6	501600	8.3	21.2	33365	8.4	16.2	145407	8.4	19.3
393615	8.1	20.7	36947	8.1	18.8	500787	8.2	21.7	507400	8.3	21.7	254942	8.4	19.7	175423	8.4	20.0
315999	8.1	21.8	463212	8.1	20.0	98354	8.2	18.9	72322	8.3	18.8	6834	8.4	18.1	259118	8.4	19.1
45523	8.1	19.4	342710	8.1	19.4	97323	8.2	20.5	379914	8.3	20.8	498123	8.4	20.5	231074	8.4	19.2
278292	8.1	19.9	242875	8.1	20.2	315041	8.2	21.1	132531	8.3	19.8	250073	8.4	20.3	37892	8.4	18.0
19848	8.1	16.2	86802	8.1	19.4	224233	8.2	20.9	499533	8.3	21.5	308536	8.4	20.6	269613	8.4	20.4
293880	8.1	22.1	451623	8.1	20.9	498067	8.2	21.3	81876	8.3	18.6	387958	8.4	20.3	19383	8.4	17.6
361476	8.1	20.4	245728	8.1	20.4	314211	8.2	20.2	513855	8.3	21.5	534625	8.4	22.2	358825	8.4	21.8
182324	8.1	19.4	439759	8.1	20.7	137747	8.2	18.3	511301	8.3	20.8	264512	8.4	19.7	90853	8.4	18.7
392740	8.1	20.0	107876	8.1	19.8	139915	8.2	19.8	97413	8.3	18.7	138421	8.4	20.3	540522	8.4	19.8
451144	8.1	20.2	218056	8.1	20.7	274081	8.2	19.3	384543	8.3	19.6	165014	8.4	19.2	53295	8.4	18.1
333187	8.1	20.9	161435	8.1	19.0	327166	8.2	21.0	441920	8.3	21.9	449640	8.4	21.5	146789	8.4	19.6
54900	8.1	18.2	485205	8.1	20.0	216716	8.2	19.5	12969	8.3	18.4	257264	8.4	21.0	198423	8.4	19.1
43355	8.1	17.7	463949	8.1	19.7	11330	8.2	17.0	419587	8.3	21.0	189560	8.4	19.6	128307	8.4	19.5
133247	8.1	19.4	540981	8.1	20.3	251482	8.2	20.4	102754	8.3	20.5	85773	8.4	17.5	207450	8.4	21.4
273881	8.1	20.0	446948	8.1	21.7	45877	8.2	17.6	438284	8.3	19.5	242297	8.4	21.1	480883	8.4	17.8
318168	8.1	19.9	80848	8.2	19.6	289200	8.2	19.0	487838	8.3	20.7	339206	8.4	20.7	150800	8.4	18.8
108947	8.1	19.5	137126	8.2	21.9	137589	8.2	19.4	206951	8.3	20.1	239955	8.4	20.4	68194	8.4	17.8
482995	8.1	21.2	472099	8.2	20.4	508370	8.2	19.9	192497	8.3	20.8	112552	8.4	19.5	439516	8.5	21.4
313371	8.1	20.4	445853	8.2	19.7	1394	8.2	15.0	77880	8.3	19.2	150211	8.4	20.4	365310	8.5	20.5
300636	8.1	20.3	278937	8.2	21.0	199739	8.2	20.0	291839	8.3	21.3	56624	8.4	19.7	435739	8.5	20.6
258618	8.1	20.3	314016	8.2	19.6	165184	8.2	19.5	208828	8.3	19.1	442020	8.4	20.4	517996	8.5	20.5
42624	8.1	18.6	404420	8.2	21.0	361043	8.2	19.4	319293	8.3	20.9	436617	8.4	21.1	138031	8.5	20.1
134073	8.1	19.5	114403	8.2	18.2	219886	8.2	20.2	451854	8.3	20.8	157463	8.4	19.2	282321	8.5	19.1
234120	8.1	18.2	258967	8.2	19.2	43419	8.2	17.6	474391	8.3	20.2	539808	8.4	20.8	61631	8.5	17.4
517444	8.1	21.5	354592	8.2	19.0	424504	8.2	21.2	97539	8.3	19.5	223315	8.4	21.0	512006	8.5	20.9
6758	8.1	17.8	521967	8.2	20.4	113433	8.2	20.0	237714	8.3	20.5	3539	8.4	17.0	505110	8.5	21.0
487831	8.1	20.9	202671	8.2	19.8	414135	8.2	20.8	322976	8.3	19.6	211175	8.4	19.9	19705	8.5	17.4
337152	8.1	20.4	167557	8.2	19.7	324894	8.2	19.7	525371	8.3	19.8	537737	8.4	20.9	93080	8.5	18.4
67231	8.1	18.7	531812	8.2	20.9	107195	8.2	18.3	519643	8.3	20.8	362298	8.4	21.0	141383	8.5	19.3
478643	8.1	20.3	311118	8.2	20.8	478887	8.2	20.7	246404	8.3	20.1	237920	8.4	20.5	322609	8.5	19.7
327757	8.1	19.4	450459	8.2	21.4	401788	8.2	21.0	296568	8.3	19.8	147277	8.4	19.9	131511	8.5	18.2
520143	8.1	20.0	470587	8.2	22.1	433383	8.2	20.4	524472	8.3	21.6	328147	8.4	20.6	180396	8.5	20.0
465024	8.1	21.8	35645	8.2	18.1	418941	8.2	21.0	430018	8.3	19.1	385345	8.4	21.0	38152	8.5	18.0
520273	8.1	21.0	462207	8.2	19.6	295983	8.2	20.5	450349	8.3	19.7	20544	8.4	17.9	396389	8.5	19.1
263958	8.1	20.9	513493	8.2	21.7	77120	8.2	17.9	114987	8.3	19.8	405737	8.4	20.4	441819	8.5	20.1
296415	8.1	20.8	122780	8.2	18.9	127513	8.2	20.4	215085	8.3	20.5	537171	8.4	22.4	283331	8.5	20.9
516821	8.1	21.1	367492	8.2	20.7	322681	8.2	20.1	525160	8.3	19.9	98065	8.4	17.8	388610	8.5	20.3
323067	8.1	21.0	373816	8.2	19.6	174632	8.2	18.4	110810	8.3	19.2	124013	8.4	18.7	333151	8.5	20.3
36386	8.1	18.8	121721	8.2	18.6	9147	8.2	15.6	238050	8.3	20.2	66232	8.4	19.4	394464	8.5	20.1
503596	8.1	22.0	82483	8.2	18.4	265308	8.2	20.2	499600	8.3	20.4	151421	8.4	19.3	342115	8.5	19.8
511433	8.1	21.1	84146	8.2	17.6	231385	8.2	20.3	444662	8.3	20.2	503582	8.4	20.0			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
333847	8.5	19.7	107005	8.6	18.9	262868	8.6	20.9	417924	8.7	20.2	317359	8.8	20.4	159937	8.8	20.4
233211	8.5	19.6	323088	8.6	20.2	245287	8.6	19.7	46966	8.7	17.4	37269	8.8	17.6	183977	8.8	19.5
109253	8.5	19.3	188500	8.6	19.3	403206	8.6	21.5	473315	8.7	20.4	280853	8.8	20.9	401151	8.8	20.6
285500	8.5	19.5	536878	8.6	21.8	283106	8.6	20.1	306301	8.7	19.7	142168	8.8	19.0	417922	8.8	21.0
69196	8.5	19.9	321916	8.6	20.2	115055	8.6	18.5	6818	8.7	16.4	377710	8.8	20.0	448561	8.8	20.2
409713	8.5	20.6	339321	8.6	19.6	392745	8.6	19.6	68626	8.7	19.8	49297	8.8	17.3	164271	8.8	18.8
207915	8.5	18.3	519905	8.6	20.8	103613	8.6	19.6	14952	8.7	17.9	367249	8.8	19.9	71403	8.8	17.2
93732	8.5	17.7	325475	8.6	21.6	161938	8.6	19.8	119798	8.7	19.9	67069	8.8	16.6	281945	8.8	19.3
294018	8.5	18.4	132200	8.6	19.9	6535	8.6	17.2	340481	8.7	20.8	19611	8.8	18.6	159515	8.8	18.6
519155	8.5	19.7	449940	8.6	20.5	485832	8.6	19.4	181473	8.7	20.2	450423	8.8	20.2	93502	8.8	18.8
502023	8.5	20.7	91150	8.6	20.0	247970	8.6	20.6	514000	8.7	21.4	538664	8.8	21.0	26511	8.8	17.9
154624	8.5	20.2	135560	8.6	20.1	152373	8.6	19.7	360402	8.7	20.5	113427	8.8	18.9	336581	8.8	21.0
444361	8.5	20.0	472051	8.6	20.0	184186	8.6	20.0	463441	8.7	21.5	458345	8.8	19.6	349311	8.9	19.7
466303	8.5	20.9	478844	8.6	20.4	137359	8.6	18.2	92294	8.7	19.3	46847	8.8	18.3	531493	8.9	21.0
515378	8.5	21.0	194038	8.6	19.8	515249	8.6	21.5	12543	8.7	17.6	431769	8.8	21.5	115798	8.9	18.9
349176	8.5	20.6	473400	8.6	20.4	342453	8.6	19.5	196183	8.7	18.6	121760	8.8	18.6	121674	8.9	18.9
426521	8.5	20.8	238233	8.6	19.9	61735	8.6	19.3	218465	8.7	19.7	273896	8.8	20.6	250953	8.9	20.7
485937	8.5	20.5	522523	8.6	21.0	202716	8.6	20.4	500853	8.7	20.5	217327	8.8	20.3	482073	8.9	21.1
431070	8.5	20.0	300499	8.6	19.5	528067	8.6	21.7	537546	8.7	22.3	317214	8.8	20.5	316939	8.9	19.3
168688	8.5	19.3	311569	8.6	19.9	438292	8.6	21.0	78222	8.7	19.6	448657	8.8	20.8	471278	8.9	20.8
524057	8.5	20.9	389884	8.6	20.4	343453	8.7	20.2	14488	8.7	16.7	517133	8.8	21.4	276016	8.9	18.7
172567	8.5	19.5	447328	8.6	20.6	405818	8.7	20.5	270508	8.7	19.7	91836	8.8	19.0	142132	8.9	19.2
35845	8.5	17.6	36201	8.6	17.3	389513	8.7	21.7	13694	8.7	17.5	153191	8.8	19.7	403167	8.9	20.2
20113	8.5	18.4	503538	8.6	20.3	272104	8.7	20.1	330128	8.7	19.4	249201	8.8	20.1	337986	8.9	19.8
321675	8.5	19.9	399110	8.6	21.6	61174	8.7	18.5	446667	8.7	20.9	514388	8.8	20.5	78624	8.9	18.6
339372	8.5	19.0	377307	8.6	20.8	223975	8.7	19.5	76974	8.7	18.5	4714	8.8	15.6	485922	8.9	20.5
290803	8.5	19.9	540716	8.6	20.8	258727	8.7	20.4	128836	8.7	18.9	36715	8.8	19.0	395061	8.9	20.5
478243	8.5	20.9	141888	8.6	19.3	172659	8.7	19.1	444028	8.7	20.5	433062	8.8	21.1	340531	8.9	20.8
104386	8.5	19.1	233987	8.6	20.8	344444	8.7	20.6	278586	8.7	20.4	539490	8.8	21.2	207368	8.9	20.7
130231	8.5	19.5	387277	8.6	20.3	366067	8.7	20.0	325452	8.7	20.1	512122	8.8	21.1	264300	8.9	19.9
484845	8.5	20.9	25217	8.6	18.6	378224	8.7	20.5	249249	8.7	19.3	27762	8.8	17.6	284179	8.9	20.9
274622	8.5	20.2	514072	8.6	22.3	106721	8.7	18.9	106153	8.7	17.6	436317	8.8	21.2	452219	8.9	21.5
123521	8.5	18.2	66596	8.6	19.9	252723	8.7	19.7	67758	8.7	18.2	302177	8.8	20.1	496421	8.9	20.4
192281	8.5	18.2	331401	8.6	19.4	511861	8.7	19.4	477534	8.7	20.8	141079	8.8	20.0	74819	8.9	18.3
472853	8.5	20.6	411832	8.6	21.4	240156	8.7	20.7	431319	8.7	20.5	429542	8.8	20.1	482902	8.9	20.7
293200	8.5	19.0	183290	8.6	19.6	84926	8.7	18.9	435310	8.7	20.0	125596	8.8	18.4	534182	8.9	20.5
186727	8.5	19.3	497562	8.6	21.7	378698	8.7	20.3	136431	8.7	20.6	275408	8.8	21.4	437393	8.9	19.6
256730	8.5	20.9	391893	8.6	20.1	105906	8.7	19.1	321015	8.7	20.0	60085	8.8	19.2	165971	8.9	19.0
108568	8.5	19.3	239669	8.6	19.9	484938	8.7	20.6	186750	8.7	19.8	113094	8.8	19.4	92278	8.9	21.0
183017	8.5	17.9	87438	8.6	20.1	313933	8.7	20.4	316558	8.7	20.4	168897	8.8	18.5	293682	8.9	19.8
257493	8.5	20.9	375209	8.6	21.3	491163	8.7	20.2	394231	8.7	20.8	41111	8.8	18.8	325899	8.9	20.5
9263	8.5	17.6	39660	8.6	18.9	444436	8.7	20.5	424582	8.7	20.3	380018	8.8	21.2	476723	8.9	21.7
409750	8.5	19.9	347853	8.6	21.0	403742	8.7	19.0	72629	8.7	19.1	47831	8.8	17.9	33821	8.9	17.8
367714	8.5	20.9	13788	8.6	18.6	66683	8.7	18.4	306051	8.7	20.5	409711	8.8	20.7	371529	8.9	19.4
223874	8.5	20.2	249770	8.6	18.9	2956	8.7	16.5	442587	8.7	20.3	339400	8.8	19.4	365251	8.9	20.4
132464	8.5	19.8	483614	8.6	19.6	131681	8.7	19.7	284290	8.7	20.6	530519	8.8	21.8	168204	8.9	20.1
146667	8.5	19.0	185466	8.6	20.0	323548	8.7	19.4	377716	8.7	20.0	191288	8.8	20.2	23851	8.9	18.8
242456	8.5	20.7	423074	8.6	20.0	428188	8.7	20.2	291203	8.7	20.4	81039	8.8	19.9	361857	8.9	20.6
295316	8.5	20.9	78965	8.6	19.8	286024	8.7	19.9	322700	8.7	20.2	468627	8.8	20.5	449766	8.9	21.2
177419	8.5	19.6	409100	8.6	21.0	477535	8.7	21.7	41336	8.7	19.7	355664	8.8	21.2	333680	8.9	18.7
445355	8.5	21.1	51745	8.6	18.7	358880	8.7	21.3	251543	8.7	19.5	515656	8.8	21.1	363080	8.9	21.1
468424	8.5	20.7	172991	8.6	20.4	113995	8.7	18.4	38698	8.7	18.2	510396	8.8	21.0	22225	8.9	18.6
411681	8.5	19.4	66031	8.6	19.1	231306	8.7	20.2	279541	8.7	19.4	314069	8.8	19.7	294042	8.9	19.9
315899	8.5	21.8	389421	8.6	20.5	282267	8.7	20.1	388235	8.7	21.1	242575	8.8	21.0	214740	8.9	20.5
24516	8.5	17.2	35741	8.6	17.1	434679	8.7	19.9	160212	8.7	19.7	78207	8.8	18.3	442731	8.9	20.5
452078	8.5	21.8	55332	8.6	18.3	403154	8.7	21.2	372384	8.7	19.8	361945	8.8	20.7	529537	8.9	20.7
102329	8.5	17.9	62566	8.6	19.0	157924	8.7	20.3	317737	8.7	20.8	168638	8.8	20.5	78848	8.9	17.2
319204	8.5	20.4	442831	8.6	21.0	235785	8.7	18.6	364641	8.7	19.7	80937	8.8	19.6	16898	8.9	16.4
387310	8.5	20.2	111273	8.6	18.9	223940	8.7	18.8	136748	8.7	19.9	225116	8.8	21.2	434787	8.9	22.0
421171	8.5	20.9	316851	8.6	20.3	485840	8.7	20.9	456121	8.7	21.2	533684	8.8	21.3	189906	8.9	20.2
342296	8.5	20.9	535726	8.6	20.0	234301	8.7	19.0	185299	8.7	20.2	316473	8.8	19.5	121891	8.9	19.0
161369	8.5	19.6	23222	8.6	15.6	134584	8.7	18.7	112751	8.8	19.2	78154	8.8	18.7	121752	8.9	18.6
521973	8.5	20.7	446266	8.6	20.6	268307	8.7	19.7	516115	8.8	20.9	429534	8.8	20.2	111101	8.9	18.7
346499	8.6	20.3	209901	8.6	18.5	350832	8.7	20.0	377666	8.8	20.5	528066	8.8	21.8	182987	8.9	19.3
168902	8.6	19.4	242684	8.6	19.9	438856	8.7	20.5	185592	8.8	20.1	141816	8.8	20.7	454793	8.9	20.8
447276	8.6	19.8	291964	8.6	19.5	210673	8.7	19.8	509769	8.8	20.3	413770	8.8	20.3	978	8.9	14.0
270849	8.6	19.1	252859	8.6	20.5	181487	8.7	20.3	510068	8.8	21.2	206593	8.8	19.5	384445	8.9	20.1
509900	8.6	20.6	263761	8.6	20.5	269751	8.7	19.6	440472	8.8	20.9	294939	8.8	20.0	2139	8.9	16.2
9409	8.6	16.6	293711	8.6	21.0	393779	8.7	21.5	186063	8.8	20.9	264200	8.8	20.6	531694	8.9	21.0
196528	8.6	18.6	73792	8.6	19.1	446551	8.7	20.8	342140	8.8	19.8	78912	8.8	17.6	387073	8.9	20.9
13003	8.6	18.5	19630	8.6	17.8	189830	8.7	19.9	328548	8.8	21.1	142381	8.8	18.6	43		

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
344450	8.9	20.3	422609	8.9	19.5	115953	9.0	19.0	242056	9.1	20.0	32863	9.2	18.5	212921	9.3	19.5
449274	8.9	21.7	488865	8.9	21.6	212974	9.0	20.1	70101	9.1	19.1	74223	9.2	19.4	187638	9.3	20.3
264890	8.9	18.7	205634	8.9	18.5	261869	9.0	19.8	237464	9.1	20.0	111755	9.2	20.5	508372	9.3	20.9
204718	8.9	19.5	153266	8.9	19.1	451800	9.0	21.2	485969	9.1	21.0	404805	9.2	20.6	128786	9.3	19.0
460125	8.9	21.2	121894	8.9	20.0	44336	9.0	18.2	476276	9.1	20.5	206506	9.2	19.5	535392	9.3	20.3
262875	8.9	21.1	130478	8.9	19.2	105889	9.0	18.8	79163	9.1	18.0	508645	9.2	20.6	225142	9.3	21.5
501808	8.9	19.7	164936	8.9	17.4	289174	9.0	19.4	408091	9.1	19.5	413412	9.2	20.2	342354	9.3	20.7
193746	8.9	20.1	505751	8.9	19.9	408515	9.0	20.6	221641	9.1	19.7	360326	9.2	19.8	387408	9.3	19.4
296429	8.9	20.5	343789	8.9	21.2	423312	9.0	20.1	272435	9.1	19.6	542297	9.2	20.8	166456	9.3	19.9
453709	8.9	19.9	239170	8.9	20.2	283720	9.0	19.2	288033	9.1	19.8	15134	9.2	17.2	341110	9.3	21.9
276465	8.9	21.2	250839	8.9	20.6	51528	9.0	19.7	125550	9.1	19.1	133372	9.2	19.3	529645	9.3	21.7
457370	8.9	20.3	278232	8.9	20.4	310650	9.1	19.9	319066	9.1	20.6	109784	9.2	18.8	10380	9.3	17.4
221023	8.9	19.3	524773	8.9	21.5	527491	9.1	20.3	370067	9.1	20.8	213500	9.2	20.4	444055	9.3	19.8
437082	8.9	20.8	341077	8.9	19.7	14359	9.1	17.9	309075	9.1	20.8	313744	9.2	20.8	424242	9.3	20.4
314434	8.9	20.6	534161	8.9	22.4	60200	9.1	19.9	30690	9.1	19.1	74598	9.2	18.6	281981	9.3	20.0
417954	8.9	20.7	405854	8.9	21.1	254421	9.1	18.8	223308	9.1	20.6	496772	9.2	19.9	438758	9.3	18.7
287990	8.9	19.4	342790	8.9	20.5	457860	9.1	21.0	484827	9.1	20.3	467853	9.2	19.8	169665	9.3	19.7
297573	8.9	19.8	505449	8.9	20.8	173276	9.1	19.0	79559	9.1	17.1	286978	9.2	20.8	476991	9.3	20.9
192416	8.9	19.0	256207	8.9	18.5	152821	9.1	20.0	394286	9.1	20.5	291805	9.2	21.0	281630	9.3	20.4
74955	8.9	18.7	365782	8.9	19.9	505495	9.1	19.0	185849	9.1	20.3	315138	9.2	20.0	321509	9.3	19.8
261576	8.9	20.3	92258	8.9	18.5	456711	9.1	20.8	166920	9.1	21.3	471287	9.2	21.2	453650	9.3	20.8
365091	8.9	19.3	429462	8.9	20.9	250069	9.1	19.9	490802	9.1	19.6	237927	9.2	19.9	91152	9.3	18.2
193193	8.9	20.8	203212	8.9	20.2	99459	9.1	19.1	247985	9.1	19.2	62562	9.2	18.6	161361	9.3	18.9
145436	8.9	19.3	307208	8.9	21.3	92011	9.1	18.5	153878	9.1	19.7	115050	9.2	18.4	446961	9.3	21.1
65883	8.9	18.6	256485	8.9	20.3	154871	9.1	19.9	512814	9.1	20.9	92506	9.2	18.5	159105	9.3	19.8
177604	8.9	20.1	485945	8.9	21.1	320010	9.1	19.9	74772	9.1	19.3	271319	9.2	19.9	468737	9.3	21.0
307996	8.9	20.2	127446	8.9	19.8	484871	9.1	20.8	250301	9.1	19.8	406763	9.2	21.8	181802	9.3	20.3
22016	8.9	17.6	64952	8.9	19.0	356523	9.1	20.4	526654	9.1	21.9	63785	9.2	18.7	319822	9.3	20.7
409731	8.9	20.3	489698	8.9	20.1	67225	9.1	19.1	340280	9.1	21.2	231688	9.2	18.8	180452	9.3	19.9
239072	8.9	20.1	193745	8.9	19.7	61248	9.1	18.9	53523	9.1	18.0	344793	9.2	19.1	405806	9.3	20.0
399691	8.9	21.6	116501	8.9	19.7	11970	9.1	18.2	315808	9.1	21.5	282992	9.2	20.5	99451	9.3	18.9
506548	8.9	20.9	235753	8.9	18.9	208357	9.1	20.1	320252	9.1	21.3	60557	9.2	20.0	161349	9.3	19.4
507066	8.9	18.6	112398	8.9	19.0	30096	9.1	19.3	167814	9.1	19.6	63346	9.2	18.8	9034	9.3	16.6
265218	8.9	19.1	505133	9.0	20.0	167344	9.1	18.0	374955	9.1	19.3	345876	9.2	21.0	505428	9.3	20.1
421821	8.9	19.7	104102	9.0	18.4	22467	9.1	17.4	75803	9.1	19.3	224954	9.2	20.0	273800	9.3	22.0
446240	8.9	20.3	420420	9.0	20.8	439830	9.1	21.1	135012	9.1	20.1	218388	9.2	19.4	349222	9.3	20.9
408547	8.9	21.0	110538	9.0	19.4	58148	9.1	17.2	406666	9.2	21.4	217720	9.2	19.3	299660	9.3	20.6
57346	8.9	18.4	96132	9.0	19.0	339468	9.1	18.6	155310	9.2	19.2	107409	9.2	19.1	510012	9.3	20.5
335108	8.9	20.1	304200	9.0	20.5	47369	9.1	17.1	100849	9.2	19.3	166928	9.2	20.7	184884	9.3	20.5
39046	8.9	18.3	435181	9.0	20.7	76763	9.1	18.9	128870	9.2	19.7	443250	9.2	21.1	134651	9.3	17.3
449720	8.9	19.9	21927	9.0	19.1	185806	9.1	19.3	154184	9.2	19.2	466295	9.2	21.2	430199	9.3	19.6
246559	8.9	20.8	32875	9.0	18.7	434646	9.1	20.1	145171	9.2	19.1	69200	9.2	19.9	355626	9.3	21.1
384748	8.9	20.9	26609	9.0	17.2	235742	9.1	19.1	244960	9.2	19.3	251516	9.2	19.9	64922	9.3	18.9
435189	8.9	20.7	277230	9.0	19.9	163817	9.1	18.7	365735	9.2	20.3	206941	9.2	19.3	482453	9.3	21.7
436598	8.9	19.2	238603	9.0	19.6	60324	9.1	20.2	517514	9.2	21.6	395534	9.2	21.0	20013	9.3	16.7
471259	8.9	20.9	316826	9.0	19.5	447353	9.1	20.9	192017	9.2	20.2	98770	9.2	18.8	281639	9.3	19.7
61879	8.9	18.7	335729	9.0	21.5	423765	9.1	21.1	206193	9.2	19.3	502120	9.2	20.3	402762	9.3	20.7
221022	8.9	19.3	144936	9.0	21.0	437936	9.1	20.0	412088	9.2	20.2	336358	9.2	19.4	161416	9.3	18.3
175849	8.9	19.0	223012	9.0	20.2	344448	9.1	20.7	445014	9.2	21.6	214932	9.2	19.7	125925	9.3	19.1
512579	8.9	20.8	26728	9.0	18.6	75792	9.1	19.8	163833	9.2	20.2	393128	9.2	20.1	313083	9.3	20.0
22979	8.9	16.7	121800	9.0	19.2	449225	9.1	21.2	42	9.2	10.9	34365	9.2	19.0	70074	9.3	18.5
402438	8.9	19.8	206021	9.0	20.2	345868	9.1	19.4	62747	9.2	19.6	350240	9.2	19.6	329215	9.3	19.7
313025	8.9	20.7	210263	9.0	20.0	103892	9.1	19.1	424035	9.2	20.2	122635	9.2	17.9	386118	9.3	21.0
234352	8.9	20.9	170564	9.0	18.5	480263	9.1	20.3	423920	9.2	21.1	215658	9.2	19.2	338679	9.3	19.8
49097	8.9	18.6	257881	9.0	19.5	198340	9.1	20.1	753	9.2	14.1	163951	9.2	19.3	358470	9.3	20.9
303125	8.9	19.6	201606	9.0	19.2	352880	9.1	18.5	187929	9.2	18.9	18497	9.2	17.7	436310	9.3	20.6
217631	8.9	19.8	473628	9.0	20.8	414037	9.1	19.8	449449	9.2	21.0	191027	9.2	19.4	235772	9.3	18.8
316109	8.9	20.1	518424	9.0	18.9	192448	9.1	20.2	452995	9.2	20.2	433863	9.2	20.6	21406	9.3	17.7
5918	8.9	16.7	42988	9.0	17.6	239856	9.1	18.6	310909	9.2	20.2	255661	9.2	19.9	209740	9.3	21.0
243922	8.9	20.1	495012	9.0	20.5	355699	9.1	20.4	527844	9.2	21.3	262286	9.2	20.8	524865	9.3	20.9
208022	8.9	19.9	338037	9.0	20.4	523622	9.1	22.4	339258	9.2	17.6	225023	9.2	20.5	361404	9.3	20.1
389682	8.9	20.8	408096	9.0	20.0	367702	9.1	19.7	139575	9.2	19.9	479606	9.2	21.5	182197	9.3	19.1
111877	8.9	19.3	497731	9.0	20.4	186856	9.1	21.5	151479	9.2	20.3	217737	9.2	19.2	475639	9.3	20.8
281410	8.9	20.0	330683	9.0	21.6	69430	9.1	20.1	447400	9.2	21.1	307098	9.2	19.7	243471	9.3	20.5
49028	8.9	18.3	5849	9.0	15.9	188231	9.1	19.5	344709	9.2	20.3	204143	9.3	18.8	51674	9.3	18.5
436868	8.9	19.7	113757	9.0	18.8	304233	9.1	19.7	195079	9.2	20.4	529636	9.3	21.2	483313	9.3	20.5
185283	8.9	20.0	430996	9.0	20.0	145783	9.1	19.4	301259	9.2	19.9	235847	9.3	19.7	367131	9.3	21.1
387957	8.9	20.9	357313	9.0	20.6	29121	9.1	17.5	61162	9.2	19.5	164017	9.3	18.7	518295	9.3	19.8
125463	8.9	19.2	35083	9.0	17.7	358994	9.1	20.9	356201	9.2	21.7	11923	9.3	16.5	120848	9.3	19.8
41369	8.9	17.2	335057	9.0	20.6	204279	9.1	19.9	135869	9.2	19.3	35173	9.3	18.3	179512	9.3	19.5
348055	8.9	20.4	448492	9.0	21.4	474707	9.1	21.5	35631	9.2	19.0	43836	9.3	18.9</			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
407910	9.3	20.4	422692	9.4	21.4	360382	9.5	20.9	223398	9.5	20.5	108652	9.6	19.3	487978	9.7	19.2
200246	9.3	20.2	157631	9.4	19.3	44040	9.5	19.1	67376	9.5	19.0	184252	9.6	21.0	543488	9.7	20.1
446516	9.3	21.1	14705	9.4	17.2	360873	9.5	19.8	73289	9.5	19.2	290021	9.6	20.3	253359	9.7	21.0
518392	9.3	20.5	483944	9.4	21.7	516133	9.5	20.6	513129	9.5	20.2	522943	9.6	20.5	512645	9.7	20.4
454880	9.3	20.1	162218	9.4	20.0	77662	9.5	19.3	313049	9.5	19.9	247772	9.6	19.0	318520	9.7	20.5
183864	9.3	20.6	92462	9.4	19.0	4486	9.5	20.7	328891	9.5	20.0	92674	9.6	20.3	367090	9.7	20.7
260208	9.3	19.7	328516	9.4	20.6	469512	9.5	20.7	20631	9.5	17.1	161060	9.6	19.8	519814	9.7	20.3
51483	9.3	19.6	365377	9.4	20.4	454527	9.5	20.3	185245	9.6	19.4	3078	9.6	16.1	318342	9.7	19.6
538407	9.3	20.6	357865	9.4	19.9	124040	9.5	19.7	223917	9.6	19.6	15140	9.6	17.8	537011	9.7	21.0
386100	9.3	20.1	6747	9.4	17.2	306519	9.5	20.5	216651	9.6	20.5	116317	9.6	18.8	36683	9.7	19.7
184270	9.3	19.1	522791	9.4	21.4	155240	9.5	20.2	85994	9.6	19.7	400486	9.6	21.4	63727	9.7	18.4
148137	9.3	19.4	422909	9.4	20.6	396178	9.5	20.4	94202	9.6	18.9	327081	9.6	20.3	92910	9.7	17.3
252869	9.3	20.0	365215	9.4	20.9	513266	9.5	21.1	116215	9.6	19.3	487988	9.6	19.1	175341	9.7	20.3
224604	9.3	20.4	92317	9.4	20.0	25207	9.5	19.0	486708	9.6	20.6	536710	9.6	21.3	46031	9.7	19.1
4066	9.3	16.1	307622	9.4	20.0	396825	9.5	20.2	137820	9.6	19.3	171442	9.6	20.3	72329	9.7	18.6
414034	9.3	19.2	512425	9.4	20.6	15145	9.5	18.2	387915	9.6	18.5	307540	9.6	20.0	255388	9.7	19.3
342406	9.3	19.6	515432	9.4	21.2	21906	9.5	17.1	454629	9.6	21.7	65738	9.6	20.2	385090	9.7	20.6
390482	9.3	18.7	143602	9.4	19.6	418964	9.5	21.1	73137	9.6	19.8	261937	9.6	19.0	375749	9.7	20.0
451175	9.3	21.8	275517	9.4	19.7	518314	9.5	20.2	472467	9.6	21.3	533710	9.6	21.2	324189	9.7	20.2
157332	9.3	20.1	530828	9.4	20.6	343610	9.5	19.6	309109	9.6	20.3	479832	9.6	19.4	423847	9.7	20.3
371596	9.3	20.2	181855	9.4	23.1	482994	9.5	20.9	157095	9.6	19.8	521780	9.6	21.1	43553	9.7	17.4
490158	9.4	19.0	451953	9.4	20.4	123025	9.5	18.1	336163	9.6	20.9	289498	9.6	19.1	92042	9.7	19.0
398952	9.4	20.7	82998	9.4	19.7	401273	9.5	20.9	20613	9.6	18.0	300705	9.6	20.4	299228	9.7	20.4
107511	9.4	18.0	453681	9.4	20.6	91547	9.5	18.7	451646	9.6	19.9	14672	9.6	17.2	477576	9.7	20.8
35991	9.4	18.7	319085	9.4	20.9	318012	9.5	20.0	449794	9.6	20.2	523951	9.6	20.8	22011	9.7	17.2
276371	9.4	18.9	58481	9.4	19.8	485212	9.5	20.3	154256	9.6	20.4	399213	9.6	20.3	409281	9.7	21.9
371475	9.4	19.9	539340	9.4	21.2	423886	9.5	20.5	295866	9.6	19.7	200213	9.6	19.8	232833	9.7	20.5
383246	9.4	19.8	492405	9.4	21.0	220492	9.5	20.9	395408	9.6	20.6	379172	9.6	20.9	436651	9.7	20.6
59004	9.4	19.4	247159	9.4	19.0	104305	9.5	19.8	523578	9.6	22.3	298107	9.6	20.6	48544	9.7	18.0
501756	9.4	21.3	207340	9.4	19.8	467196	9.5	20.9	130616	9.6	18.9	399967	9.6	20.4	405429	9.7	20.2
30016	9.4	17.8	244933	9.4	19.3	505433	9.5	20.9	35992	9.6	18.7	186794	9.6	20.9	481275	9.7	20.4
399669	9.4	21.6	462530	9.4	21.0	480754	9.5	20.5	527651	9.6	19.5	371559	9.6	20.3	23964	9.7	18.1
358896	9.4	21.1	198284	9.4	18.6	207241	9.5	19.4	539301	9.6	21.1	131253	9.6	19.5	62146	9.7	19.1
358360	9.4	20.1	159257	9.4	19.6	272907	9.5	19.3	8914	9.6	16.6	75588	9.6	18.3	113115	9.7	19.9
242938	9.4	21.1	149922	9.4	19.6	527912	9.5	20.7	377287	9.6	20.2	266497	9.6	20.4	99676	9.7	18.4
9043	9.4	17.5	144179	9.4	20.2	183164	9.5	19.2	407217	9.6	20.7	256877	9.6	20.8	124053	9.7	19.2
153195	9.4	20.8	360663	9.4	20.9	118846	9.5	19.2	315880	9.6	19.9	183520	9.6	20.7	461913	9.7	21.6
167067	9.4	19.5	112962	9.4	19.3	407580	9.5	20.2	508988	9.6	20.2	22913	9.6	17.2	104631	9.7	19.5
172739	9.4	19.7	313154	9.4	20.3	162122	9.5	18.4	47653	9.6	18.6	163885	9.6	19.3	515086	9.7	21.1
8552	9.4	16.8	356400	9.4	20.9	483995	9.5	20.8	266991	9.6	20.3	351853	9.6	20.9	62817	9.7	19.3
517155	9.4	22.1	153151	9.4	19.7	38392	9.5	18.1	47709	9.6	17.6	92867	9.6	19.6	3817	9.7	17.4
112219	9.4	19.4	68282	9.4	18.7	333860	9.5	19.2	524362	9.6	19.0	94155	9.6	18.5	304241	9.7	20.8
449841	9.4	21.2	5929	9.4	15.3	357085	9.5	21.3	44323	9.6	17.9	445423	9.6	20.7	62860	9.7	18.6
260431	9.4	19.0	399441	9.4	19.5	102195	9.5	18.2	445272	9.6	20.8	16463	9.6	15.2	383546	9.7	20.3
507904	9.4	21.1	516940	9.4	20.6	219289	9.5	19.9	127792	9.6	19.3	459053	9.7	20.9	438947	9.7	21.9
406999	9.4	20.7	314572	9.4	20.5	297128	9.5	20.9	216104	9.6	21.3	321023	9.7	20.9	521550	9.7	20.8
365304	9.4	19.8	160541	9.4	16.7	219513	9.5	20.5	333883	9.6	20.1	156699	9.7	19.6	98654	9.7	19.0
353446	9.4	20.2	329217	9.4	20.9	533764	9.5	19.9	531603	9.6	21.1	263014	9.7	20.6	209808	9.7	20.4
251783	9.4	19.9	387647	9.4	20.5	25690	9.5	18.1	217133	9.6	19.8	149768	9.7	20.1	307197	9.7	20.5
508034	9.4	21.7	437629	9.4	19.4	237118	9.5	18.6	508816	9.6	19.1	204499	9.7	18.7	394506	9.7	20.3
482414	9.4	21.0	151395	9.4	19.9	253498	9.5	18.6	47647	9.6	18.7	191693	9.7	19.5	447737	9.7	20.2
181632	9.4	20.3	525016	9.4	21.5	347141	9.5	20.0	198396	9.6	19.9	251230	9.7	20.6	13233	9.7	17.1
65993	9.4	18.8	157043	9.4	19.7	315866	9.5	20.3	263670	9.6	20.5	530609	9.7	21.6	91566	9.7	18.1
6917	9.4	16.2	52013	9.4	18.0	58521	9.5	18.1	447041	9.6	21.1	365309	9.7	20.0	159907	9.7	19.6
474047	9.4	21.8	375174	9.4	20.7	34387	9.5	18.5	59933	9.6	18.9	508530	9.7	19.7	171441	9.7	20.0
445361	9.4	20.7	237154	9.4	18.8	236840	9.5	20.8	406562	9.6	18.4	13032	9.7	18.0	176229	9.7	19.9
60253	9.4	18.7	50331	9.4	18.4	239079	9.5	19.7	206041	9.6	19.5	463480	9.7	21.6	521071	9.7	20.3
281235	9.4	19.3	356979	9.4	20.9	482425	9.5	19.7	183867	9.6	18.6	337987	9.7	19.8	417926	9.7	20.1
517483	9.4	21.0	516281	9.4	21.0	488947	9.5	21.3	373385	9.6	19.9	330175	9.7	20.6	210365	9.7	20.0
42407	9.4	19.2	1666	9.4	14.9	96964	9.5	17.5	140337	9.6	20.0	254288	9.7	20.2	474318	9.7	20.5
404435	9.4	20.9	139025	9.4	19.7	138239	9.5	18.7	476756	9.6	20.0	85932	9.7	19.4	429577	9.7	20.6
294458	9.4	19.6	315141	9.4	20.2	481432	9.5	20.2	423172	9.6	20.3	481576	9.7	20.4	400971	9.7	21.0
515412	9.4	21.9	43706	9.4	19.0	45819	9.5	18.3	158726	9.6	19.4	469488	9.7	19.9	10110	9.7	18.0
157755	9.4	20.0	513756	9.5	20.6	113130	9.5	18.6	326137	9.6	19.8	400225	9.7	20.7	232514	9.7	20.9
344725	9.4	20.0	257633	9.5	20.0	289250	9.5	17.9	406256	9.6	20.8	129641	9.7	18.5	343768	9.7	21.0
470325	9.4	20.8	21217	9.5	17.2	108959	9.5	20.4	40809	9.6	19.5	291784	9.7	20.5	159156	9.7	20.3
72758	9.4	18.4	168089	9.5	20.2	310377	9.5	20.1	50606	9.6	19.3	427551	9.7	19.9	492371	9.7	20.5
11949	9.4	15.4	194876	9.5	19.8	301782	9.5	20.6	291484	9.6	20.2	216406	9.7	20.7	317858	9.7	19.6
181585	9.4	20.1	127196	9.5	19.8	338553	9.5	22.2	19752	9.6	17.0	532847	9.7	19.5	178971	9.7	20.4
215600	9.4	19.1	487614	9.5	19.3	27684	9.5	19.0	69520	9.6	19.7	471329	9.7	20.7	76486	9.7	18.3
54313	9.4	18.9	416276	9.5	20.9	398070	9.5	21.4	447271	9.6	21.2	265591	9.7	19.9	289083	9.7	

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
196320	9.7	20.5	402830	9.8	20.9	131664	9.9	19.9	461860	9.9	21.4	342071	10.0	20.9	3344	10.1	16.6
363436	9.7	19.7	305948	9.8	19.7	383534	9.9	19.6	399042	9.9	20.5	497667	10.0	21.4	296669	10.1	21.1
294408	9.7	20.2	411481	9.8	20.2	301443	9.9	20.1	100429	9.9	19.1	528620	10.0	20.1	433091	10.1	21.6
22367	9.7	17.8	451161	9.8	20.6	155599	9.9	19.8	512242	9.9	20.3	7800	10.0	17.4	399063	10.1	19.8
277628	9.7	19.7	523284	9.8	20.6	324777	9.9	20.5	74655	9.9	18.1	460846	10.0	21.3	181850	10.1	20.0
102023	9.7	19.5	107247	9.8	18.1	34549	9.9	18.4	313615	9.9	20.5	332318	10.0	20.7	3409	10.1	15.7
80756	9.7	19.3	282741	9.8	20.0	468498	9.9	21.8	5007	9.9	17.1	319039	10.0	19.9	406315	10.1	21.3
497624	9.7	20.4	295080	9.8	20.9	479600	9.9	20.4	114412	9.9	18.1	281830	10.0	19.7	348772	10.1	19.7
378697	9.7	20.1	371916	9.8	20.4	346997	9.9	20.6	351199	9.9	20.6	274880	10.0	19.7	517975	10.1	20.4
223807	9.7	19.6	16156	9.8	17.9	347023	9.9	20.7	45513	9.9	17.4	301375	10.0	20.0	211775	10.1	20.0
59839	9.7	19.1	270488	9.8	20.4	207217	9.9	19.6	126223	9.9	19.5	346054	10.0	20.2	497049	10.1	22.1
410859	9.7	20.5	323552	9.8	20.3	111919	9.9	19.4	470578	9.9	21.9	62905	10.0	18.7	451314	10.1	20.9
203319	9.7	19.4	10863	9.8	17.9	141372	9.9	20.6	79416	9.9	19.5	176143	10.0	19.1	526419	10.1	22.5
249797	9.7	19.0	505457	9.8	20.3	165160	9.9	19.3	126897	9.9	19.3	329935	10.0	20.4	119823	10.1	19.3
405760	9.7	19.4	378692	9.8	21.1	199991	9.9	20.4	31362	9.9	17.8	356378	10.0	20.6	364519	10.1	21.0
142106	9.7	19.3	420297	9.8	18.2	97313	9.9	17.6	332945	9.9	19.8	90002	10.0	20.1	62836	10.1	18.5
113748	9.8	18.9	198115	9.8	20.0	183949	9.9	19.6	152690	9.9	19.0	178494	10.0	18.6	65008	10.1	18.0
178707	9.8	19.7	254516	9.8	19.8	385365	9.9	21.1	454510	9.9	21.0	513312	10.0	23.0	96450	10.1	18.4
459656	9.8	21.3	473351	9.8	19.6	401427	9.9	20.9	316943	9.9	20.9	317752	10.0	20.2	508655	10.1	20.4
360173	9.8	20.0	375025	9.8	20.3	34996	9.9	16.9	307432	9.9	20.2	315982	10.0	21.1	67923	10.1	18.0
79213	9.8	19.0	102576	9.8	18.5	440358	9.9	19.7	521943	9.9	20.4	449061	10.0	20.6	355618	10.1	21.4
262906	9.8	20.4	500847	9.8	21.3	480404	9.9	21.5	511180	9.9	20.2	46935	10.0	17.5	375777	10.1	19.7
298212	9.8	20.9	520725	9.8	21.3	128436	9.9	18.8	528178	9.9	22.6	298694	10.0	20.1	72567	10.1	18.9
19568	9.8	17.6	243588	9.8	19.2	364532	9.9	21.6	7572	9.9	15.7	362598	10.0	20.5	539359	10.1	21.3
426696	9.8	20.4	355094	9.8	20.1	12156	9.9	17.9	247961	9.9	19.2	83530	10.0	18.9	436512	10.1	21.8
477880	9.8	21.8	313363	9.8	20.9	117204	9.9	18.8	314065	9.9	19.6	208711	10.0	19.8	41233	10.1	17.6
440292	9.8	20.2	357580	9.8	20.7	461510	9.9	20.9	285448	9.9	19.5	349227	10.0	20.4	301485	10.1	20.6
474568	9.8	20.2	526200	9.8	20.9	478949	9.9	20.4	210197	9.9	20.1	479503	10.0	20.3	313291	10.1	19.9
117441	9.8	19.4	521374	9.8	21.3	401712	9.9	20.5	105811	9.9	19.1	343974	10.0	21.1	428610	10.1	21.7
74017	9.8	20.0	453608	9.8	19.9	330893	9.9	20.2	244739	9.9	19.5	305817	10.0	20.6	501708	10.1	20.7
525172	9.8	20.4	444272	9.8	21.5	127932	9.9	19.7	185050	9.9	19.3	531022	10.0	19.9	70604	10.1	19.0
57960	9.8	19.0	152689	9.8	19.7	9251	9.9	18.3	300556	9.9	21.0	360736	10.0	20.3	521698	10.1	20.7
124070	9.8	19.3	489323	9.8	20.5	352331	9.9	20.2	453564	9.9	19.3	307093	10.0	20.1	344184	10.1	17.3
539279	9.8	21.9	286517	9.8	19.9	520228	9.9	21.2	284763	9.9	19.6	193402	10.0	19.0	48027	10.1	19.1
522429	9.8	19.0	51497	9.8	19.0	306964	9.9	18.7	289130	9.9	19.6	401715	10.0	20.7	407568	10.1	20.2
123453	9.8	17.6	292853	9.8	20.6	147521	9.9	20.3	479791	9.9	20.6	395077	10.0	20.8	525437	10.1	19.7
407051	9.8	21.0	83337	9.8	18.9	143003	9.9	18.0	434230	9.9	19.3	258492	10.0	19.5	132588	10.1	19.6
151362	9.8	19.2	242839	9.8	19.3	327203	9.9	21.4	402392	9.9	20.9	189576	10.0	19.4	99769	10.1	18.6
328037	9.8	20.1	312821	9.8	20.1	480585	9.9	20.9	152056	9.9	19.5	111199	10.0	18.9	442008	10.1	20.3
195539	9.8	20.2	184477	9.8	20.4	319139	9.9	20.3	174317	9.9	18.1	242881	10.0	19.7	33871	10.1	18.5
421774	9.8	20.1	95529	9.8	19.4	446640	9.9	22.1	166102	9.9	19.5	33295	10.0	17.7	486610	10.1	20.3
262229	9.8	19.3	410725	9.8	19.7	267759	9.9	20.5	387601	9.9	19.5	117859	10.0	19.5	103826	10.1	19.7
112506	9.8	20.6	355772	9.8	20.3	166185	9.9	19.2	147855	9.9	19.7	109627	10.0	18.5	31832	10.1	18.3
303241	9.8	20.7	316972	9.8	20.1	317203	9.9	19.5	86079	9.9	19.6	385846	10.1	21.0	519638	10.1	20.5
519642	9.8	21.1	447224	9.8	19.7	3097	9.9	16.9	439583	9.9	21.1	531020	10.1	21.6	207721	10.1	19.4
228915	9.8	20.2	87616	9.8	18.8	478520	9.9	20.8	464253	9.9	19.0	305833	10.1	21.1	510710	10.1	20.4
448101	9.8	21.1	223346	9.8	18.6	265650	9.9	20.4	412940	9.9	20.2	335113	10.1	20.3	65982	10.1	18.8
451801	9.8	20.4	449761	9.8	21.8	242553	9.9	20.4	1110	9.9	14.3	242310	10.1	19.4	476595	10.1	20.1
281606	9.8	18.9	318258	9.8	20.2	190635	9.9	19.0	126859	9.9	19.0	440218	10.1	21.5	521629	10.1	20.9
177828	9.8	20.8	308368	9.8	20.1	13860	9.9	17.1	321191	9.9	20.1	249588	10.1	20.5	121780	10.1	19.3
72453	9.8	19.7	222194	9.8	20.3	423877	9.9	20.6	525041	9.9	19.1	314586	10.1	19.9	248607	10.1	20.7
398783	9.8	20.7	10786	9.8	17.8	10480	9.9	16.9	387169	9.9	19.5	24781	10.1	17.7	315345	10.1	19.5
41538	9.8	17.8	89289	9.8	19.0	252673	9.9	19.5	62349	9.9	17.6	85554	10.1	17.8	322359	10.1	19.7
77291	9.8	18.5	261765	9.8	19.5	382963	9.9	19.4	288011	9.9	19.8	63398	10.1	19.3	283121	10.1	19.9
278012	9.8	20.0	512380	9.8	20.0	53404	9.9	18.4	55544	9.9	18.0	350356	10.1	19.9	436579	10.1	22.0
448390	9.8	20.4	179482	9.8	19.6	133153	9.9	19.6	482460	9.9	19.4	275391	10.1	20.9	189808	10.1	20.5
237821	9.8	19.4	202315	9.8	20.4	516971	9.9	20.2	62576	9.9	18.6	11611	10.1	17.9	80309	10.1	18.2
45680	9.8	17.4	210414	9.8	20.4	404066	9.9	20.7	132048	9.9	19.3	420772	10.1	20.9	449882	10.1	20.1
117771	9.8	19.6	305880	9.9	20.8	407074	9.9	21.8	14973	9.9	17.3	319384	10.1	20.2	536616	10.1	22.2
19685	9.8	19.3	14807	9.9	18.6	386072	9.9	19.4	454219	9.9	20.9	178728	10.1	19.2	336579	10.1	20.7
62182	9.8	18.4	287615	9.9	21.0	160385	9.9	20.2	484957	9.9	21.6	107989	10.1	20.5	224087	10.1	20.5
404986	9.8	21.3	222918	9.9	20.9	469702	9.9	19.0	78783	9.9	18.3	110141	10.1	19.2	519912	10.1	20.7
306145	9.8	21.5	361052	9.9	19.4	157460	9.9	19.3	505744	9.9	20.7	301017	10.1	21.0	169566	10.1	19.9
362329	9.8	21.5	133271	9.9	19.2	342434	9.9	20.0	84076	9.9	18.3	367116	10.1	20.1	285737	10.1	20.0
508399	9.8	20.9	276853	9.9	19.7	272836	9.9	21.0	72877	9.9	18.8	324793	10.1	20.6	218806	10.1	19.9
342199	9.8	20.8	259038	9.9	19.9	77005	9.9	18.5	485202	9.9	20.9	34451	10.1	18.6	220364	10.1	20.2
68694	9.8	19.0	487013	9.9	20.9	139065	9.9	21.1	453464	9.9	21.3	160641	10.1	19.6	408794	10.1	20.4
199733	9.8	18.9	95937	9.9	20.0	319250	9.9	21.2	195583	9.9	19.4	233291	10.1	19.4	137826	10.1	18.0
35281	9.8	19.3	174742	9.9	20.1	73099	9.9	19.3	447322	9.9	20.8	151933	10.1	19.9	280138	10.1	19.7
236289	9.8	20.5	382957	9.9	19.8	260239	9.9	19.9	149743	9.9	19.9	116106	10.1	18.6	292232	10.1	19.6

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
295428	10.1	20.8	389745	10.2	22.1	291351	10.3	20.6	117670	10.4	20.8	12784	10.4	17.6	396215	10.5	20.7
315702	10.1	20.5	20669	10.2	18.0	205467	10.3	19.0	533171	10.4	20.9	510639	10.4	20.5	537415	10.5	21.6
399866	10.1	20.9	159560	10.2	20.9	221799	10.3	20.5	121180	10.4	18.4	365899	10.4	20.3	470701	10.5	21.0
388624	10.1	20.4	341125	10.2	21.2	512691	10.3	20.8	220484	10.4	20.9	141730	10.4	19.6	2677	10.5	16.0
47293	10.1	19.1	92092	10.2	18.5	533143	10.3	21.1	529489	10.4	21.6	103949	10.4	20.1	514759	10.5	21.1
266648	10.1	20.0	482400	10.2	20.7	327815	10.3	19.9	394540	10.4	18.8	512757	10.4	20.5	46522	10.5	19.0
237185	10.1	19.1	82301	10.2	19.2	69573	10.3	19.5	472203	10.4	20.7	315367	10.4	19.5	81705	10.5	19.1
81638	10.1	18.8	223326	10.2	20.0	99544	10.3	19.4	11224	10.4	17.5	4148	10.4	15.7	315853	10.5	20.5
462212	10.1	21.3	171644	10.2	20.7	375688	10.3	21.1	86044	10.4	18.7	516660	10.4	20.5	117784	10.5	19.5
125862	10.1	18.7	86262	10.2	18.7	73295	10.3	19.1	309845	10.4	20.5	535326	10.4	20.6	328217	10.5	21.4
243875	10.1	19.2	321030	10.2	20.8	250832	10.3	20.8	130092	10.4	18.7	480171	10.4	21.3	33653	10.5	17.4
152359	10.1	20.0	438750	10.2	19.8	153381	10.3	17.5	58918	10.4	18.5	20464	10.4	17.3	41162	10.5	19.1
223447	10.1	21.2	66358	10.2	19.0	442420	10.3	20.4	404564	10.4	20.8	500186	10.4	20.5	39410	10.5	19.9
523177	10.1	20.6	45618	10.2	18.5	530515	10.3	21.3	338503	10.4	20.4	245126	10.4	19.6	167716	10.5	19.5
378643	10.1	21.1	312685	10.2	20.5	350387	10.3	20.2	533128	10.4	21.0	483854	10.4	20.9	465286	10.5	20.3
269241	10.1	21.1	446480	10.2	21.5	41430	10.3	17.8	60421	10.4	19.1	98529	10.4	18.3	527537	10.5	19.9
173769	10.1	19.2	20619	10.2	18.7	40850	10.3	18.4	321384	10.4	20.7	352203	10.4	19.3	112439	10.5	19.0
408066	10.1	19.9	514296	10.2	20.8	136959	10.3	19.9	318671	10.4	21.0	449742	10.4	20.1	132999	10.5	20.3
220424	10.1	19.3	407119	10.2	21.4	319231	10.3	21.0	86363	10.4	19.1	539348	10.4	21.1	175745	10.5	18.7
537311	10.1	21.7	394664	10.2	21.4	43034	10.3	17.0	98660	10.4	18.6	530480	10.4	19.6	60999	10.5	19.8
312453	10.1	19.6	54684	10.2	17.8	374284	10.3	20.6	269747	10.4	20.2	263776	10.4	21.3	514372	10.5	20.9
115767	10.1	18.6	477565	10.2	20.6	188545	10.3	19.6	45036	10.4	18.3	65504	10.4	18.5	223385	10.5	20.2
508404	10.2	22.0	56395	10.2	19.5	250880	10.3	20.0	445445	10.4	20.1	429720	10.4	20.5	326145	10.5	20.1
107579	10.2	19.6	18777	10.2	19.1	399711	10.3	19.9	390750	10.4	19.4	432877	10.4	21.1	324296	10.5	20.6
160543	10.2	19.0	512665	10.2	20.6	251855	10.3	20.0	484984	10.4	20.9	258499	10.4	19.7	506324	10.5	20.9
318617	10.2	21.3	396614	10.2	22.2	481398	10.3	21.3	322349	10.4	21.2	91827	10.4	19.7	468818	10.5	21.0
48135	10.2	19.4	123196	10.2	18.7	461167	10.3	20.5	531171	10.4	20.5	274536	10.4	18.6	191022	10.5	19.1
323052	10.2	20.8	291832	10.2	19.7	244408	10.3	20.4	256066	10.4	19.7	113953	10.4	17.9	514849	10.5	21.3
127250	10.2	19.2	204323	10.2	21.0	528476	10.3	20.0	542353	10.4	20.9	512265	10.4	21.2	502144	10.5	19.7
70004	10.2	18.8	246694	10.2	20.2	81324	10.3	19.3	144296	10.4	19.3	434376	10.4	20.6	436996	10.5	21.3
186825	10.2	21.1	136310	10.2	19.7	213981	10.3	18.1	59554	10.4	19.3	390894	10.4	20.6	50266	10.5	18.6
435191	10.2	20.9	254154	10.2	19.4	221496	10.3	19.2	249093	10.4	19.8	317770	10.4	20.4	266692	10.5	19.7
30353	10.2	18.7	284673	10.2	21.2	387522	10.3	20.9	159310	10.4	20.1	276429	10.4	19.5	92022	10.5	19.3
390506	10.2	19.4	429526	10.2	21.1	507944	10.3	20.4	519447	10.4	20.7	262862	10.4	19.4	99557	10.5	18.8
514425	10.2	21.0	59183	10.2	18.4	338600	10.3	18.9	202789	10.4	20.8	249366	10.4	20.7	412680	10.5	21.0
94600	10.2	17.7	234295	10.2	19.0	392297	10.3	20.8	510615	10.4	21.0	142196	10.4	19.4	166410	10.5	19.1
66227	10.2	17.6	482261	10.2	21.1	342008	10.3	20.5	257756	10.4	20.1	310680	10.5	20.7	500791	10.5	22.1
56330	10.2	17.6	266237	10.2	19.5	316969	10.3	19.7	507653	10.4	21.8	87724	10.5	18.0	329749	10.5	20.6
313958	10.2	20.2	34277	10.2	18.9	445447	10.3	21.6	207178	10.4	20.3	141957	10.5	19.6	9797	10.5	18.5
246446	10.2	20.3	343788	10.2	21.3	315125	10.3	20.0	507399	10.4	21.0	527768	10.5	21.6	415168	10.5	21.6
18763	10.2	18.7	184406	10.2	20.9	160922	10.3	18.3	537296	10.4	21.4	239176	10.5	19.8	241515	10.5	20.0
315100	10.2	19.9	311600	10.2	20.1	94258	10.3	18.6	407974	10.4	21.0	117559	10.5	19.6	28966	10.5	17.7
524074	10.2	20.3	528958	10.2	21.7	9541	10.3	15.7	173589	10.4	19.3	397964	10.5	20.5	369833	10.5	20.8
437943	10.2	20.6	256778	10.2	18.9	247427	10.3	19.6	404413	10.4	21.7	127305	10.5	20.3	252818	10.5	20.0
25012	10.2	16.8	512533	10.2	20.8	37603	10.3	19.4	121574	10.4	18.9	400706	10.5	20.8	114674	10.5	19.9
514632	10.2	20.9	408202	10.2	20.5	127543	10.3	18.8	488663	10.4	21.5	180555	10.5	19.4	255348	10.5	20.4
44719	10.2	18.1	234699	10.2	19.6	171755	10.3	18.7	116778	10.4	19.9	73124	10.5	18.8	454627	10.5	20.8
13801	10.2	17.5	35064	10.2	18.3	514539	10.3	20.8	479609	10.4	20.0	273830	10.5	21.1	255580	10.5	20.1
379220	10.2	20.9	366564	10.2	20.8	134743	10.3	17.9	375153	10.4	21.8	462812	10.5	21.3	21862	10.5	18.8
512434	10.2	21.7	5253	10.2	15.6	291168	10.3	19.4	204826	10.4	19.9	34133	10.5	18.6	230316	10.5	19.7
128842	10.2	18.9	390096	10.2	20.5	318334	10.3	20.3	332468	10.4	21.3	294613	10.5	20.1	299159	10.5	20.9
259920	10.2	20.1	378687	10.2	20.8	318565	10.3	20.4	242500	10.4	19.5	439744	10.5	20.7	310607	10.5	19.2
114212	10.2	18.7	152555	10.3	19.4	154770	10.3	20.4	432897	10.4	22.1	26997	10.5	17.3	170742	10.5	18.8
108328	10.2	20.1	120587	10.3	19.0	224481	10.3	19.3	209863	10.4	20.6	25669	10.5	18.6	283704	10.5	21.0
43500	10.2	19.6	475424	10.3	21.2	516758	10.3	21.4	371524	10.4	21.3	262335	10.5	20.3	498457	10.5	20.4
40988	10.2	18.2	465864	10.3	21.0	525130	10.3	20.2	103455	10.4	19.2	187649	10.5	19.5	382985	10.5	20.7
494444	10.2	22.2	6633	10.3	15.9	195786	10.3	19.8	199049	10.4	18.9	283616	10.5	20.6	341197	10.5	19.7
44716	10.2	19.2	417930	10.3	20.2	235953	10.3	20.8	322566	10.4	20.2	482751	10.5	20.0	434134	10.5	19.9
402137	10.2	19.1	5608	10.3	16.9	374265	10.3	21.2	403195	10.4	21.2	427896	10.5	20.8	38228	10.6	19.1
280968	10.2	18.4	507229	10.3	20.7	261640	10.3	19.3	279416	10.4	21.0	530150	10.5	21.9	390910	10.6	22.2
503741	10.2	20.7	206961	10.3	19.0	143399	10.3	19.4	198933	10.4	19.3	497092	10.5	19.0	433233	10.6	20.1
369815	10.2	21.5	263221	10.3	19.3	247825	10.3	19.7	368950	10.4	20.2	190540	10.5	19.5	395158	10.6	20.8
202597	10.2	19.6	33272	10.3	17.9	53659	10.3	20.3	241267	10.4	19.6	129759	10.5	20.3	398490	10.6	20.4
170915	10.2	18.8	179825	10.3	19.5	342528	10.3	20.0	418314	10.4	20.5	539204	10.5	21.9	509359	10.6	21.6
327111	10.2	20.3	159966	10.3	19.7	271742	10.3	20.8	449788	10.4	19.6	121935	10.5	19.6	180357	10.6	18.3
487368	10.2	21.2	482778	10.3	21.4	18292	10.3	17.9	216122	10.4	20.2	294617	10.5	19.9	450542	10.6	21.2
342628	10.2	19.9	229762	10.3	19.5	443022	10.3	20.6	52920	10.4	18.7	422652	10.5	21.6	508002	10.6	20.7
375205	10.2	20.9	404689	10.3	21.7	71426	10.3	18.1	471532	10.4	21.7	169760	10.5	19.3	142131	10.6	19.9
40132	10.2	18.5	412194	10.3	20.3	301154</											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
287233	10.6	19.3	390888	10.6	19.1	256528	10.7	19.7	84283	10.8	19.5	165610	10.8	19.8	48960	10.9	19.8
164290	10.6	18.8	219281	10.6	19.6	296278	10.7	20.3	299661	10.8	19.6	234853	10.8	20.4	234271	10.9	18.5
333207	10.6	21.0	64925	10.6	19.4	229582	10.7	20.1	74749	10.8	18.5	408011	10.8	20.7	324752	10.9	19.9
206584	10.6	19.5	51510	10.6	18.0	76497	10.7	18.8	330619	10.8	19.6	392029	10.8	21.0	304609	10.9	19.7
280090	10.6	21.3	316183	10.6	20.8	50970	10.7	18.7	59502	10.8	19.6	44162	10.8	18.6	170940	10.9	18.7
448520	10.6	20.2	485215	10.6	18.8	479936	10.7	20.5	243435	10.8	20.3	406294	10.8	21.3	56952	10.9	18.4
91845	10.6	18.6	310647	10.6	20.7	377584	10.7	21.8	46387	10.8	17.6	155864	10.8	19.4	188851	10.9	20.0
386311	10.6	20.4	246695	10.6	20.8	162374	10.7	18.6	42605	10.8	19.6	264018	10.8	20.9	254143	10.9	20.1
155580	10.6	19.2	426678	10.6	20.2	92421	10.7	19.5	378207	10.8	20.4	242614	10.8	20.1	404010	10.9	20.3
437997	10.6	20.4	198534	10.6	18.4	448687	10.7	20.3	304427	10.8	20.3	383296	10.8	20.2	390086	10.9	20.5
249100	10.6	19.9	451380	10.6	20.5	317741	10.7	20.4	324912	10.8	19.4	516681	10.8	20.7	229046	10.9	20.6
245796	10.6	20.6	257806	10.6	19.3	427610	10.7	19.9	310350	10.8	19.9	159345	10.8	20.3	396535	10.9	20.8
137954	10.6	19.4	81074	10.6	18.1	523420	10.7	20.0	38729	10.8	18.4	84328	10.8	17.9	95227	10.9	17.7
186360	10.6	20.0	483070	10.6	19.9	518841	10.7	21.4	526471	10.8	22.1	237589	10.8	21.1	538601	10.9	21.8
496037	10.6	21.2	528444	10.6	21.6	519265	10.7	21.3	126837	10.8	19.6	12761	10.8	18.5	37709	10.9	18.2
338670	10.6	20.9	240690	10.6	19.3	106154	10.7	19.0	262878	10.8	20.9	151877	10.8	19.5	76864	10.9	16.7
356848	10.6	20.9	344957	10.6	21.5	177356	10.7	19.4	196474	10.8	20.8	512561	10.8	20.7	488596	10.9	20.8
93465	10.6	19.7	79122	10.6	17.6	380654	10.7	20.4	356508	10.8	20.0	442138	10.8	20.2	340989	10.9	22.0
452684	10.6	21.2	392753	10.6	20.4	118347	10.7	18.8	286809	10.8	19.2	364074	10.8	20.3	335012	10.9	20.6
398996	10.6	20.5	432	10.6	12.6	346174	10.7	20.5	402842	10.8	21.1	298692	10.8	19.9	475436	10.9	20.4
523748	10.6	22.1	223380	10.6	19.8	356816	10.7	21.1	280121	10.8	20.4	135682	10.8	20.3	45177	10.9	18.7
78141	10.6	19.5	451785	10.6	20.5	241015	10.7	20.5	321654	10.8	20.6	255253	10.8	20.2	256432	10.9	20.5
282374	10.6	19.8	198390	10.6	20.7	209968	10.7	20.8	113384	10.8	18.9	400949	10.8	19.8	22716	10.9	18.7
323545	10.6	19.9	36777	10.6	17.2	135144	10.7	19.1	528544	10.8	21.6	79654	10.8	18.2	382394	10.9	18.3
327164	10.6	21.4	485794	10.6	21.1	432907	10.7	21.8	258693	10.8	20.2	158786	10.8	19.4	284649	10.9	19.3
374263	10.6	21.5	293322	10.6	20.3	454087	10.7	20.1	488496	10.8	21.8	491675	10.8	20.3	481324	10.9	20.6
65749	10.6	19.3	11211	10.6	16.9	169958	10.7	19.7	206671	10.8	19.1	48392	10.8	17.0	499637	10.9	19.9
118398	10.6	19.1	170881	10.6	19.8	179780	10.7	19.3	107651	10.8	20.4	68937	10.8	17.4	311422	10.9	19.6
404505	10.6	21.8	129700	10.6	19.1	159828	10.7	20.0	43231	10.8	17.7	319523	10.8	20.3	512878	10.9	21.0
31952	10.6	18.0	261615	10.6	20.1	283718	10.7	18.5	502376	10.8	19.4	448691	10.8	19.9	537282	10.9	20.8
260890	10.6	20.6	330865	10.6	20.6	516047	10.7	20.4	205611	10.8	20.0	42416	10.8	19.1	523842	10.9	21.3
412512	10.6	19.6	130725	10.6	19.5	400726	10.7	20.3	361657	10.8	20.3	530971	10.8	21.4	173775	10.9	19.6
100100	10.6	19.0	420322	10.6	20.1	471771	10.7	20.9	487981	10.8	21.1	184248	10.8	20.5	46177	10.9	19.2
72340	10.6	18.5	69501	10.6	19.7	501645	10.7	20.3	478691	10.8	21.6	324315	10.9	20.3	254563	10.9	19.4
324302	10.6	20.0	374306	10.7	19.6	52259	10.7	19.2	522743	10.8	20.4	301752	10.9	19.9	503535	10.9	20.9
342342	10.6	19.6	128572	10.7	18.9	156641	10.7	19.6	156655	10.8	18.9	470443	10.9	21.2	19398	10.9	16.9
154719	10.6	20.2	71070	10.7	19.3	112092	10.7	18.7	519509	10.8	21.9	73582	10.9	20.0	258739	10.9	19.6
465293	10.6	18.5	373192	10.7	20.5	110874	10.7	20.0	346686	10.8	20.2	217328	10.9	20.6	73080	10.9	20.1
368919	10.6	21.4	67232	10.7	19.4	98963	10.7	18.8	441227	10.8	21.0	268909	10.9	20.6	299032	10.9	20.2
298556	10.6	18.5	473038	10.7	19.7	28082	10.7	17.9	186988	10.8	19.6	154086	10.9	20.0	251574	10.9	21.3
515651	10.6	21.9	465066	10.7	19.5	36882	10.7	18.2	62383	10.8	18.4	304416	10.9	20.0	378678	10.9	21.3
107973	10.6	19.0	154812	10.7	20.3	542655	10.7	21.6	399836	10.8	21.5	72129	10.9	18.5	471656	10.9	20.0
96908	10.6	18.1	487401	10.7	20.7	121413	10.7	19.9	428670	10.8	20.8	478921	10.9	20.3	496223	10.9	21.2
518330	10.6	20.4	25591	10.7	18.9	168711	10.7	18.8	75790	10.8	19.0	77492	10.9	19.7	97048	10.9	17.8
505255	10.6	20.1	534496	10.7	20.2	391915	10.7	19.8	482456	10.8	20.5	493610	10.9	20.2	99796	10.9	19.1
75575	10.6	18.3	349914	10.7	20.4	87566	10.7	17.6	293512	10.8	20.2	423478	10.9	21.6	96432	10.9	19.5
60430	10.6	18.9	40048	10.7	16.7	537052	10.7	21.9	38177	10.8	18.5	71436	10.9	19.7	347896	10.9	20.0
469682	10.6	19.4	535903	10.7	21.3	423601	10.7	20.8	99058	10.8	20.1	205767	10.9	20.0	22800	10.9	17.7
514967	10.6	20.2	335495	10.7	19.9	323761	10.7	20.8	321712	10.8	20.0	227325	10.9	21.1	486385	10.9	20.5
207353	10.6	19.7	100852	10.7	19.9	9642	10.7	17.9	366662	10.8	20.2	250971	10.9	20.8	150330	10.9	19.3
393027	10.6	20.2	49672	10.7	17.4	209267	10.7	18.9	100804	10.8	19.6	358813	10.9	21.2	206954	10.9	18.8
134373	10.6	18.8	186335	10.7	19.8	529580	10.7	21.3	9652	10.8	16.9	224300	10.9	19.3	285489	10.9	20.2
449055	10.6	19.9	357292	10.7	19.7	182910	10.7	19.7	102873	10.8	21.2	486711	10.9	20.7	40043	10.9	18.7
355108	10.6	21.3	83623	10.7	19.2	117604	10.7	19.5	299109	10.8	20.6	6486	10.9	17.4	251863	10.9	21.5
184894	10.6	20.7	119891	10.7	18.2	186452	10.7	19.1	366110	10.8	19.7	451316	10.9	21.6	11735	10.9	18.4
169569	10.6	20.0	283800	10.7	20.5	313909	10.7	19.3	367628	10.8	19.8	540861	10.9	21.4	32575	10.9	17.8
479838	10.6	20.7	34601	10.7	19.0	384661	10.7	19.9	388679	10.8	20.3	494552	10.9	19.9	308001	10.9	20.7
78064	10.6	20.1	402818	10.7	21.4	323567	10.7	20.0	514492	10.8	21.0	255416	10.9	19.6	254128	10.9	20.2
71963	10.6	18.2	56466	10.7	19.4	77975	10.7	19.6	518619	10.8	21.2	521896	10.9	21.5	195610	10.9	19.7
264286	10.6	19.2	159545	10.7	19.9	70740	10.7	19.1	295135	10.8	21.3	92185	10.9	18.0	389512	10.9	20.5
314988	10.6	20.7	60899	10.7	18.8	16577	10.7	18.4	263451	10.8	20.4	873	10.9	15.7	150644	10.9	19.8
106510	10.6	18.3	24876	10.7	19.3	95344	10.8	19.6	331532	10.8	20.5	137102	10.9	19.6	299237	10.9	20.8
483367	10.6	20.4	487693	10.7	19.7	515011	10.8	20.9	99734	10.8	19.6	256625	10.9	20.8	190647	10.9	18.2
106434	10.6	18.3	261915	10.7	21.3	92133	10.8	17.0	66270	10.8	16.8	56455	10.9	18.7	439661	10.9	20.7
213545	10.6	19.2	13658	10.7	18.8	95085	10.8	19.1	185014	10.8	19.1	84401	10.9	17.8	508637	10.9	20.1
92057	10.6	19.2	275946	10.7	19.1	452709	10.8	20.5	473385	10.8	19.9	107328	10.9	19.5	332515	10.9	21.1
347363	10.6	20.2	75654	10.7	18.8	527071	10.8	21.3	130655	10.8	19.8	362409	10.9	20.6	507125	10.9	21.4
446573	10.6	21.0	489122	10.7	19.5	76335	10.8	19.4	335017	10.8	20.5	250975	10.9	20.7	124192	10.9	20.3
39559	10.6	18.3	501922	10.7	20.1	402005	10.8	20.4	225000	10							

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
469599	10.9	21.2	299191	11.0	19.6	227289	11.1	21.4	304531	11.2	20.5	288066	11.2	19.5	186643	11.3	20.8
94816	10.9	19.3	445805	11.0	20.5	9423	11.1	16.5	175692	11.2	19.7	97369	11.2	18.8	141391	11.3	19.6
126147	10.9	19.2	212876	11.0	19.6	356520	11.1	20.8	406975	11.2	21.3	264953	11.2	19.6	404098	11.3	20.5
36345	10.9	17.8	121974	11.0	18.8	244287	11.1	18.0	59418	11.2	18.5	445223	11.2	21.4	42125	11.3	18.2
71223	10.9	19.3	276973	11.0	20.6	408963	11.1	22.1	311114	11.2	19.9	433191	11.2	21.4	35851	11.3	19.2
162458	10.9	21.0	452655	11.0	20.5	306130	11.1	20.3	335028	11.2	21.5	390746	11.2	20.0	511296	11.3	20.9
293363	10.9	19.8	127405	11.0	19.6	128140	11.1	19.5	170796	11.2	19.7	432778	11.2	21.5	186796	11.3	19.8
405778	10.9	20.5	4091	11.0	16.7	298685	11.1	20.3	24419	11.2	18.2	521648	11.2	20.9	221019	11.3	20.2
19536	10.9	17.5	167303	11.0	19.2	337968	11.1	20.7	92153	11.2	18.2	10432	11.2	17.9	435149	11.3	21.4
58468	10.9	18.1	504713	11.0	20.9	223436	11.1	19.3	39472	11.2	18.6	361059	11.2	21.4	106008	11.3	18.9
526821	10.9	20.6	514449	11.0	20.4	104476	11.1	19.1	127023	11.2	19.9	333202	11.2	20.1	399404	11.3	19.1
541036	10.9	21.1	287597	11.0	20.0	344777	11.1	19.3	279713	11.2	20.4	40294	11.2	18.7	391575	11.3	20.2
207698	10.9	19.5	529070	11.0	22.3	176767	11.1	20.7	178691	11.2	19.0	299346	11.2	21.3	324211	11.3	21.2
468981	10.9	20.9	300544	11.0	20.1	19655	11.1	17.6	299215	11.2	20.2	144356	11.2	19.8	501625	11.3	21.3
484904	10.9	20.7	506756	11.0	20.6	511310	11.1	21.5	20824	11.2	18.4	488146	11.2	20.4	476950	11.3	20.2
41033	10.9	18.5	145656	11.0	22.1	307537	11.1	19.7	112576	11.2	20.1	321694	11.2	20.5	137505	11.3	19.4
44	10.9	9.3	408634	11.0	21.2	78203	11.1	18.6	154279	11.2	19.5	255220	11.2	20.8	3668	11.3	16.3
330637	10.9	20.3	531325	11.0	21.5	313954	11.1	20.5	60445	11.2	18.7	478237	11.2	20.9	20219	11.3	17.1
376870	10.9	20.4	338661	11.0	20.2	438591	11.1	20.3	104065	11.2	19.3	92235	11.2	18.3	27422	11.3	18.9
87137	10.9	18.8	107697	11.0	19.3	445463	11.1	19.7	243867	11.2	19.4	196375	11.2	20.2	84688	11.3	19.4
97869	10.9	19.3	45888	11.0	18.8	331888	11.1	20.8	308949	11.2	20.8	138231	11.3	19.1	304300	11.3	20.5
121311	10.9	19.2	165009	11.0	19.0	248390	11.1	20.4	490148	11.2	20.4	454522	11.3	21.1	92008	11.3	19.3
59938	10.9	18.5	420412	11.0	21.1	17907	11.1	18.6	122467	11.2	18.2	442501	11.3	21.5	366089	11.3	20.6
327787	10.9	20.6	273602	11.0	19.7	399668	11.1	20.3	412764	11.2	20.1	119954	11.3	18.7	465623	11.3	22.3
314595	10.9	20.3	158717	11.0	20.7	328719	11.1	20.0	355529	11.2	20.6	169034	11.3	20.1	262720	11.3	19.3
1188	10.9	13.6	42199	11.0	18.7	25103	11.1	18.8	267183	11.2	20.0	131027	11.3	18.4	36517	11.3	19.3
342338	10.9	18.6	299886	11.0	20.2	296630	11.1	20.1	177744	11.2	20.0	36769	11.3	17.8	215145	11.3	21.5
338676	10.9	20.6	478868	11.0	20.4	63529	11.1	18.1	325562	11.2	21.0	383983	11.3	19.7	358744	11.3	22.4
362779	10.9	21.0	225828	11.0	18.6	370612	11.1	18.7	46225	11.2	19.8	452107	11.3	21.1	284577	11.3	19.6
413016	10.9	20.5	388753	11.0	20.9	310236	11.1	20.1	450091	11.2	21.6	251522	11.3	20.2	315984	11.3	21.2
521870	10.9	20.9	31990	11.0	18.0	471667	11.1	21.2	37093	11.2	18.8	285850	11.3	21.1	407471	11.3	20.6
316251	10.9	20.1	509464	11.0	20.9	223925	11.1	18.9	438118	11.2	20.3	175917	11.3	20.2	360747	11.3	19.6
367162	10.9	20.1	168980	11.0	19.4	311918	11.1	20.2	211036	11.2	19.3	4776	11.3	16.9	105923	11.3	18.9
509110	10.9	20.6	209825	11.0	20.3	374292	11.1	19.2	42313	11.2	18.8	304556	11.3	20.5	8365	11.3	16.6
482196	10.9	21.1	508409	11.0	21.6	449725	11.1	20.8	362564	11.2	20.8	68320	11.3	18.0	358060	11.3	22.4
539253	10.9	20.0	51653	11.0	18.3	508857	11.1	22.6	46836	11.2	18.3	203943	11.3	18.8	12922	11.3	17.5
111303	10.9	18.5	4325	11.0	16.3	172116	11.1	19.3	126105	11.2	18.9	70051	11.3	18.9	133292	11.3	19.2
165397	10.9	18.2	350531	11.0	20.0	518284	11.1	20.5	93578	11.2	18.7	204296	11.3	19.6	92344	11.3	18.5
326161	10.9	20.3	320981	11.0	19.9	28313	11.1	17.9	355082	11.2	20.5	104359	11.3	19.7	247469	11.3	21.0
202201	10.9	19.3	245909	11.1	19.9	483991	11.1	21.5	144901	11.2	20.6	312946	11.3	19.4	288563	11.3	20.8
374308	10.9	20.6	287426	11.1	20.1	339356	11.1	19.5	392059	11.2	20.6	388223	11.3	20.5	61302	11.3	17.1
299921	10.9	19.8	505734	11.1	20.6	388250	11.1	20.7	131075	11.2	19.4	213824	11.3	19.4	304527	11.3	21.0
162147	10.9	17.9	260326	11.1	19.3	407985	11.1	21.0	67588	11.2	17.6	363495	11.3	21.4	491519	11.3	19.9
516132	10.9	20.8	316731	11.1	20.7	431338	11.1	20.2	364260	11.2	21.0	421705	11.3	21.9	329800	11.3	20.1
77065	10.9	18.8	105791	11.1	19.1	515870	11.1	20.9	471938	11.2	19.6	10247	11.3	18.2	379169	11.3	20.0
263422	10.9	19.6	50030	11.1	18.5	477126	11.1	20.8	266713	11.2	19.9	245884	11.3	20.2	226489	11.4	19.6
511167	10.9	19.9	195068	11.1	19.9	364103	11.1	20.4	414032	11.2	20.5	180958	11.3	20.2	347259	11.4	20.1
54015	10.9	18.3	423019	11.1	21.2	525040	11.1	22.1	41245	11.2	17.0	48756	11.3	18.9	109659	11.4	19.4
68785	10.9	19.5	503771	11.1	20.3	491880	11.1	20.2	90704	11.2	19.0	276604	11.3	20.1	445243	11.4	21.2
411811	10.9	20.6	517476	11.1	21.5	415761	11.1	20.9	292485	11.2	20.6	273902	11.3	19.7	218453	11.4	20.6
188516	10.9	19.3	64785	11.1	18.6	93163	11.1	18.2	439379	11.2	20.2	127105	11.3	19.7	190542	11.4	21.0
105617	10.9	18.5	456689	11.1	21.2	135923	11.1	18.9	155901	11.2	19.0	521886	11.3	20.6	325506	11.4	19.8
392133	10.9	20.6	235247	11.1	20.1	392995	11.1	20.7	259673	11.2	19.6	520039	11.3	20.6	175508	11.4	19.8
520841	10.9	20.9	133933	11.1	18.7	141698	11.1	21.3	341341	11.2	18.8	116701	11.3	19.7	326217	11.4	20.3
169753	10.9	19.5	513455	11.1	21.0	375201	11.1	21.1	404477	11.2	20.3	121724	11.3	19.2	536271	11.4	20.6
206127	10.9	19.6	233450	11.1	21.0	62850	11.1	18.4	510832	11.2	20.8	406987	11.3	20.9	73065	11.4	19.3
159101	10.9	20.3	450108	11.1	20.8	262503	11.1	20.6	530264	11.2	21.7	496238	11.3	20.8	423014	11.4	20.4
483667	10.9	21.9	276675	11.1	19.8	523751	11.1	22.0	199157	11.2	20.4	58396	11.3	19.8	13433	11.4	17.7
120330	10.9	19.4	87322	11.1	19.3	448643	11.1	20.6	476250	11.2	20.9	444711	11.3	20.4	155312	11.4	20.3
117521	10.9	19.7	324861	11.1	19.3	99773	11.1	18.7	448649	11.2	20.5	74882	11.3	18.0	330603	11.4	21.1
6693	11.0	15.9	203252	11.1	20.2	407162	11.1	19.7	105622	11.2	18.4	444741	11.3	20.0	284626	11.4	20.5
207950	11.0	20.1	48865	11.1	18.7	42098	11.1	18.5	450500	11.2	20.0	389436	11.3	20.3	407986	11.4	20.8
298722	11.0	21.7	20383	11.1	18.1	241641	11.1	20.1	366471	11.2	20.7	189232	11.3	19.2	338259	11.4	19.0
261674	11.0	19.0	251247	11.1	20.2	166945	11.1	20.7	270404	11.2	18.4	537479	11.3	22.2	420336	11.4	20.9
35380	11.0	17.8	388575	11.1	20.0	255534	11.1	21.0	503359	11.2	21.3	152812	11.3	19.3	434106	11.4	21.6
221851	11.0	19.9	264093	11.1	19.5	430980	11.1	20.2	438723	11.2	20.7	365781	11.3	21.1	448092	11.4	22.0
344719	11.0	20.2	530244	11.1	21.8	190109	11.1	18.7	320208	11.2	21.1	368913	11.3	20.3	280187	11.4	21.2
454847	11.0	21.0	42724	11.1	17.6	315008	11.1	20.7	171508	11.2	19.1	87364	11.3	19.8	181106	11.4	19.7
521372	11.0	21.2	151377	11.1	19.3	324133	11.2	20.0									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
381077	11.4	19.5	505729	11.5	20.6	13761	11.5	17.7	308007	11.6	20.9	290940	11.7	20.7	310289	11.7	20.0
444383	11.4	20.2	255614	11.5	19.7	47735	11.5	17.5	287031	11.6	19.1	56990	11.7	18.6	288325	11.7	20.2
404507	11.4	21.5	120797	11.5	20.1	404433	11.5	20.9	240670	11.6	19.7	478857	11.7	20.0	189841	11.7	20.0
221680	11.4	21.3	285879	11.5	19.6	93399	11.5	17.8	79188	11.6	19.8	9322	11.7	17.5	498235	11.7	21.0
394584	11.4	20.1	100154	11.5	19.6	173333	11.5	20.5	232856	11.6	20.5	48029	11.7	19.3	11155	11.7	16.3
210084	11.4	20.2	421733	11.5	22.5	149215	11.5	20.3	379208	11.6	21.2	2021	11.7	16.8	263775	11.7	20.5
214030	11.4	19.2	517946	11.5	21.0	506262	11.5	20.8	360871	11.6	20.3	218870	11.7	19.9	260269	11.7	20.5
122711	11.4	18.9	345516	11.5	21.3	223573	11.5	20.8	365650	11.6	20.4	342764	11.7	19.9	100080	11.7	19.7
187832	11.4	19.4	195175	11.5	19.5	498352	11.5	21.0	41581	11.6	17.4	395036	11.7	20.7	383274	11.7	19.7
369507	11.4	21.0	6618	11.5	15.8	115731	11.5	19.4	239711	11.6	20.0	465003	11.7	20.8	341029	11.7	21.0
122375	11.4	19.5	462583	11.5	21.6	430596	11.5	21.0	316690	11.6	20.5	91202	11.7	19.3	485225	11.7	20.0
207223	11.4	19.7	378833	11.5	19.2	263757	11.5	20.7	123600	11.6	18.4	343703	11.7	21.5	208155	11.7	19.4
308987	11.4	21.1	140430	11.5	20.1	112832	11.5	20.3	246703	11.6	20.5	61375	11.7	18.4	462590	11.7	21.1
339379	11.4	18.6	169625	11.5	20.3	255183	11.5	20.2	73296	11.6	19.4	344158	11.7	19.0	465874	11.7	20.7
28293	11.4	17.1	67778	11.5	19.1	350201	11.5	19.7	123979	11.6	19.7	334380	11.7	19.6	539787	11.7	21.1
145018	11.4	20.6	480249	11.5	20.7	49715	11.5	17.7	503556	11.6	22.1	198547	11.7	18.1	520601	11.7	21.6
316260	11.4	20.4	102854	11.5	19.8	478835	11.5	20.4	499040	11.6	21.6	237207	11.7	20.6	189018	11.7	20.0
108800	11.4	19.7	326058	11.5	20.2	202403	11.5	21.0	437217	11.6	20.7	493724	11.7	22.1	126312	11.7	19.4
16520	11.4	16.5	70485	11.5	20.0	426776	11.5	21.3	342395	11.6	20.3	512885	11.7	20.0	242276	11.7	18.9
477578	11.4	20.9	350204	11.5	18.3	483230	11.5	20.7	436239	11.6	19.7	300816	11.7	20.1	499630	11.7	20.7
376612	11.4	19.2	37949	11.5	18.9	133264	11.5	20.2	483314	11.6	19.7	474327	11.7	19.9	65181	11.7	19.7
216218	11.4	20.8	268843	11.5	20.3	306771	11.5	20.3	142084	11.6	20.4	540793	11.7	21.5	264960	11.8	19.6
371904	11.4	20.4	16443	11.5	18.0	232559	11.5	19.5	387940	11.6	20.5	358802	11.7	20.2	54501	11.8	17.2
496970	11.4	20.8	322771	11.5	20.3	439734	11.5	20.2	336226	11.6	20.2	3755	11.7	15.9	518609	11.8	21.1
538458	11.4	21.6	258815	11.5	19.7	273483	11.5	19.3	390739	11.6	20.3	519854	11.7	20.1	404330	11.8	22.0
406263	11.4	21.5	449330	11.5	21.6	152112	11.5	19.7	363283	11.6	21.5	5574	11.7	15.8	170073	11.8	19.5
477860	11.4	21.6	461209	11.5	20.2	509161	11.5	19.2	259307	11.6	20.4	369352	11.7	20.5	406319	11.8	20.9
262002	11.4	20.2	247073	11.5	19.0	125756	11.5	19.5	407523	11.6	20.7	380096	11.7	20.3	32255	11.8	16.7
411682	11.4	19.8	488121	11.5	20.5	288310	11.5	20.5	48513	11.6	17.6	467394	11.7	22.1	243606	11.8	20.4
242270	11.4	20.5	248309	11.5	20.2	146329	11.5	19.6	67975	11.6	17.1	320131	11.7	20.2	196197	11.8	18.5
247785	11.4	21.1	299666	11.5	20.4	25484	11.5	18.4	466318	11.6	21.5	333666	11.7	19.2	119286	11.8	20.5
246587	11.4	19.9	408350	11.5	20.3	252874	11.6	19.7	389048	11.6	19.7	366482	11.7	20.5	321907	11.8	20.4
257100	11.4	19.9	537364	11.5	20.9	390136	11.6	19.9	26760	11.6	20.1	268027	11.7	20.8	21005	11.8	18.4
145198	11.4	20.0	408290	11.5	21.2	362972	11.6	20.3	207280	11.6	20.4	344769	11.7	20.3	320122	11.8	21.1
513008	11.4	20.7	444172	11.5	22.8	294353	11.6	20.3	153474	11.6	20.3	348089	11.7	18.9	155818	11.8	19.3
248720	11.4	21.4	276112	11.5	20.7	159786	11.6	19.8	540216	11.6	21.3	463993	11.7	21.4	329224	11.8	19.7
485369	11.4	20.3	400939	11.5	20.7	315154	11.6	20.9	257367	11.6	21.0	296069	11.7	20.3	298214	11.8	20.5
280320	11.4	19.7	354684	11.5	20.5	151688	11.6	19.3	365074	11.6	20.7	91051	11.7	18.7	145451	11.8	20.2
260475	11.4	20.5	83077	11.5	20.1	438175	11.6	19.8	346987	11.6	21.3	480730	11.7	21.4	516063	11.8	20.4
129168	11.4	19.5	296225	11.5	21.6	407590	11.6	20.5	36040	11.6	19.1	221906	11.7	19.7	539914	11.8	20.7
419014	11.4	20.5	233994	11.5	20.3	2407	11.6	14.7	203313	11.6	18.7	324839	11.7	20.1	417952	11.8	20.2
329591	11.4	19.8	14700	11.5	16.5	79110	11.6	20.0	472043	11.6	20.2	59491	11.7	18.5	165551	11.8	19.4
90410	11.4	19.6	171121	11.5	19.3	137329	11.6	20.3	367070	11.6	21.6	523943	11.7	21.3	337142	11.8	21.0
218761	11.4	19.4	136631	11.5	19.2	540436	11.6	21.4	252190	11.6	19.1	405839	11.7	20.2	258821	11.8	21.3
376599	11.4	20.1	424513	11.5	19.6	505450	11.6	20.1	168770	11.6	20.4	345432	11.7	21.1	428856	11.8	19.9
231251	11.4	18.7	227211	11.5	18.6	423983	11.6	19.8	173544	11.6	18.3	438752	11.7	20.6	521436	11.8	21.5
286699	11.4	20.5	38007	11.5	19.2	389880	11.6	19.9	360980	11.6	20.5	517878	11.7	21.3	218450	11.8	19.6
314438	11.4	20.6	520631	11.5	20.8	408383	11.6	21.6	446544	11.7	20.1	481655	11.7	21.4	30512	11.8	18.2
205421	11.4	18.5	511429	11.5	20.9	62734	11.6	18.1	202211	11.7	19.3	481273	11.7	19.5	160919	11.8	18.8
384502	11.4	20.7	93252	11.5	17.9	321520	11.6	20.4	343583	11.7	20.6	463946	11.7	21.0	4431	11.8	15.6
445798	11.4	20.7	71883	11.5	18.6	308014	11.6	21.2	471202	11.7	21.2	316885	11.7	19.3	114612	11.8	19.6
28507	11.4	18.5	173271	11.5	20.0	68635	11.6	19.6	247771	11.7	19.2	185914	11.7	20.4	342020	11.8	21.4
184930	11.4	19.7	95470	11.5	19.0	502149	11.6	19.8	203906	11.7	20.2	142077	11.7	19.6	477545	11.8	20.5
475379	11.4	21.6	55553	11.5	19.2	295298	11.6	20.2	365473	11.7	20.1	65256	11.7	19.2	389794	11.8	20.6
45498	11.4	18.1	105174	11.5	18.7	443662	11.6	20.2	273266	11.7	20.6	456149	11.7	21.5	85429	11.8	19.4
402287	11.4	20.5	474464	11.5	19.9	252706	11.6	20.3	35854	11.7	17.4	542589	11.7	21.1	383224	11.8	19.3
386694	11.4	19.7	379234	11.5	20.7	86364	11.6	18.1	322044	11.7	19.5	7831	11.7	17.0	260143	11.8	19.8
123167	11.4	19.4	182131	11.5	19.4	69324	11.6	20.5	150081	11.7	21.1	506562	11.7	20.3	151447	11.8	20.2
224960	11.4	20.4	282758	11.5	20.2	499536	11.6	20.6	365369	11.7	19.6	39283	11.7	17.1	387776	11.8	19.9
497614	11.4	20.2	296215	11.5	20.2	445426	11.6	20.3	465152	11.7	20.4	161523	11.7	20.0	69960	11.8	18.5
76957	11.4	19.1	330203	11.5	21.1	509113	11.6	19.8	260319	11.7	21.1	519831	11.7	21.2	437919	11.8	21.7
237468	11.4	21.2	246137	11.5	20.1	103221	11.6	19.1	192958	11.7	19.4	476107	11.7	19.9	518010	11.8	21.3
28135	11.4	17.1	111264	11.5	18.4	194258	11.6	18.7	324687	11.7	21.3	315964	11.7	20.8	268878	11.8	20.0
238180	11.4	19.3	521496	11.5	20.9	227959	11.6	21.2	158763	11.7	18.9	327706	11.7	18.8	295348	11.8	20.3
324721	11.4	20.4	388729	11.5	20.1	325420	11.6	21.5	320425	11.7	20.2	260722	11.7	20.2	92478	11.8	18.5
93644	11.4	19.3	113952	11.5	20.5	48983	11.6	18.9	296833	11.7	19.8	73217	11.7	19.7	86746	11.8	20.5
224189	11.4	21.2	497796	11.5	21.2	168780	11.6	18.8	189153	11.7	19.5	348007	11.7	20.0	217655	11.8	20.2
422304	11.4	21.0	71345	11.5	17.9	244728	11.6	18.4	96080	11.7	19.4	503285	11.7	20.2	262143	11.8	19.9
434779	11.4	20.5	175330	11.5	20.4	95257											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
511605	11.8	20.3	156707	11.9	20.2	451146	11.9	21.7	208506	12.0	18.8	61796	12.1	18.7	340287	12.2	21.1
62450	11.8	18.4	271737	11.9	20.6	465607	11.9	20.2	58002	12.0	18.5	266744	12.1	19.4	450354	12.2	20.7
39863	11.8	16.6	161058	11.9	20.7	254535	11.9	20.9	539638	12.0	20.3	441756	12.1	20.5	343405	12.2	20.6
428679	11.8	22.2	322613	11.9	21.2	42021	11.9	18.7	40989	12.0	18.8	330199	12.1	20.0	469260	12.2	21.0
83843	11.8	19.2	144337	11.9	19.4	515660	11.9	19.9	179629	12.0	19.0	330566	12.1	20.9	201520	12.2	20.7
445849	11.8	20.0	391591	11.9	20.4	52089	11.9	17.8	34083	12.0	17.8	306221	12.1	21.3	284049	12.2	19.6
498867	11.8	20.3	99046	11.9	19.5	295094	11.9	20.8	128388	12.0	17.7	181782	12.1	20.2	516587	12.2	21.3
62778	11.8	19.1	454983	11.9	20.9	289157	11.9	19.4	370673	12.0	19.4	96003	12.1	19.0	327803	12.2	20.7
476109	11.8	21.7	2966	11.9	17.2	517706	11.9	21.9	319164	12.0	20.6	420438	12.1	19.4	321514	12.2	20.6
215846	11.8	20.1	537396	11.9	21.2	506332	11.9	19.9	318229	12.0	19.6	400940	12.1	19.7	389050	12.2	18.8
94204	11.8	19.1	78713	11.9	19.0	249092	11.9	18.8	391573	12.0	20.7	2104	12.1	14.3	403232	12.2	20.4
395257	11.8	20.9	428203	11.9	20.8	238591	11.9	20.2	72582	12.0	19.5	253631	12.1	20.4	531217	12.2	21.1
286927	11.8	20.9	168124	11.9	20.7	386316	11.9	20.6	210535	12.0	19.8	332082	12.1	20.3	515669	12.2	21.5
243333	11.8	19.7	160412	11.9	17.9	78017	11.9	21.0	48425	12.0	17.8	357905	12.1	19.6	513498	12.2	21.3
40821	11.8	18.7	227636	11.9	20.9	86597	11.9	19.6	472175	12.0	21.1	517428	12.1	21.5	350346	12.2	20.5
100127	11.8	19.9	473902	11.9	20.0	258956	11.9	20.8	147626	12.0	19.7	196296	12.1	20.3	278387	12.2	20.7
207274	11.8	19.7	248304	11.9	20.3	538405	11.9	21.2	224146	12.0	20.6	16209	12.1	17.4	515495	12.2	19.1
443288	11.8	21.4	191405	11.9	19.6	15136	11.9	17.5	68297	12.0	18.7	195398	12.1	19.4	313282	12.2	19.7
4721	11.8	17.2	440392	11.9	23.0	367097	11.9	20.9	302167	12.0	19.9	42065	12.1	17.0	490314	12.2	20.3
96142	11.8	19.2	333591	11.9	20.7	262271	11.9	20.3	364057	12.0	20.0	312120	12.1	19.6	387013	12.2	20.3
272788	11.8	20.6	503994	11.9	18.3	37303	11.9	17.9	359330	12.0	21.4	444252	12.1	21.2	402336	12.2	20.7
506851	11.8	20.3	344699	11.9	19.8	133065	11.9	19.9	397245	12.0	20.5	328276	12.1	20.6	60359	12.2	17.5
473429	11.8	19.7	321475	11.9	20.1	522798	11.9	20.3	78262	12.0	18.7	128268	12.1	18.7	223440	12.2	18.8
35541	11.8	19.0	525514	11.9	21.0	404518	11.9	21.5	3550	12.0	14.7	265455	12.1	19.7	38178	12.2	19.1
145078	11.8	20.5	128347	11.9	20.0	115735	11.9	18.4	140525	12.0	19.2	261313	12.1	20.2	173552	12.2	18.5
206133	11.8	19.2	16096	11.9	19.7	521554	11.9	20.9	465873	12.0	20.8	173128	12.1	21.0	150128	12.2	19.9
233294	11.8	20.0	64719	11.9	18.2	207235	11.9	20.4	133437	12.0	18.6	90607	12.1	19.6	188522	12.2	19.2
504934	11.8	19.8	314029	11.9	19.5	430142	11.9	19.9	329211	12.0	20.3	384594	12.1	20.3	335109	12.2	20.3
289625	11.8	21.4	187654	11.9	19.9	383235	11.9	19.5	489148	12.0	20.9	512698	12.1	20.8	1572	12.2	14.4
200539	11.8	19.1	67278	11.9	19.1	130558	11.9	19.1	487924	12.0	19.7	412434	12.1	20.7	18190	12.2	16.3
365408	11.8	20.7	318612	11.9	21.6	58392	11.9	19.8	448034	12.0	20.4	476105	12.1	20.4	501995	12.2	19.9
290786	11.8	19.8	505388	11.9	21.0	485132	11.9	19.8	272544	12.0	20.1	158557	12.1	19.9	498152	12.2	21.1
255093	11.8	19.8	507880	11.9	20.2	539360	11.9	20.8	488766	12.0	20.3	146886	12.1	19.1	56809	12.2	19.7
514161	11.8	21.3	390688	11.9	19.5	239852	11.9	18.1	857	12.0	14.0	286825	12.1	20.6	411927	12.2	20.6
23446	11.8	17.7	24832	11.9	19.0	509786	11.9	19.9	329346	12.0	20.1	485688	12.1	20.1	86175	12.2	18.3
454822	11.8	20.0	33701	11.9	18.5	224272	11.9	20.8	435544	12.0	21.3	90100	12.1	18.5	519775	12.2	20.8
62041	11.8	18.7	38233	11.9	17.7	451622	11.9	21.1	516330	12.0	21.1	35663	12.1	19.0	481429	12.2	20.8
69547	11.8	19.2	491061	11.9	21.1	471285	11.9	22.3	499642	12.0	19.8	284108	12.1	20.8	515840	12.2	20.1
253452	11.8	19.4	49017	11.9	18.1	289358	11.9	19.6	469451	12.0	20.3	310473	12.1	18.8	479992	12.2	20.8
244381	11.8	20.9	133519	11.9	19.8	504014	11.9	21.5	40987	12.0	18.9	468121	12.1	20.0	537178	12.2	21.2
24759	11.8	16.5	477171	11.9	21.2	120569	11.9	19.5	257907	12.1	19.2	218288	12.1	19.1	324281	12.2	20.4
404620	11.8	20.2	257755	11.9	19.9	33788	11.9	17.9	464957	12.1	20.3	315027	12.1	20.9	99938	12.2	18.0
336252	11.8	20.0	402054	11.9	20.7	326138	11.9	20.0	134534	12.1	19.4	362553	12.1	20.0	448642	12.2	20.3
324117	11.8	19.8	247937	11.9	18.3	45908	11.9	18.4	91149	12.1	18.8	504357	12.1	20.1	142354	12.2	19.8
36840	11.8	18.1	111907	11.9	19.5	293977	11.9	20.4	117256	12.1	19.0	48511	12.1	17.6	504158	12.2	20.4
520504	11.8	20.8	175274	11.9	19.8	406289	11.9	21.9	234928	12.1	19.3	515245	12.1	20.9	408485	12.2	21.2
298650	11.8	20.0	417437	11.9	21.5	323855	11.9	19.3	449822	12.1	20.0	63092	12.1	18.6	372349	12.2	21.2
476173	11.8	20.7	448675	11.9	20.1	521832	11.9	20.7	397142	12.1	20.6	431128	12.1	21.2	218458	12.2	20.7
175243	11.8	19.5	465632	11.9	21.2	13257	11.9	17.4	164417	12.1	20.3	117684	12.1	20.8	318253	12.2	19.9
454532	11.8	20.9	224658	11.9	19.4	460543	11.9	21.2	107669	12.1	19.4	385118	12.1	19.9	107453	12.2	19.4
152781	11.8	18.5	82269	11.9	19.7	32965	11.9	18.1	383257	12.1	20.5	516352	12.1	20.5	466289	12.2	22.3
237899	11.8	20.2	165336	11.9	19.2	20382	11.9	18.9	17387	12.1	17.1	254588	12.1	20.4	362268	12.2	20.9
162892	11.9	19.4	36988	11.9	18.7	135566	11.9	19.9	393627	12.1	21.3	133076	12.1	19.8	101871	12.2	18.7
237974	11.9	21.2	480678	11.9	21.4	91640	11.9	20.5	34391	12.1	17.8	69987	12.1	23.3	210266	12.2	19.2
446565	11.9	20.5	386788	11.9	21.4	511303	11.9	21.4	343257	12.1	19.8	52763	12.1	18.5	449490	12.2	20.8
328215	11.9	21.6	513486	11.9	19.5	160953	11.9	18.8	485189	12.1	20.7	255157	12.1	20.1	122118	12.2	19.4
507905	11.9	20.4	291265	11.9	20.4	33955	11.9	18.4	300668	12.1	20.5	320123	12.1	20.0	25979	12.2	18.3
126065	11.9	18.5	298701	11.9	19.4	487826	11.9	20.7	71209	12.1	18.3	526384	12.1	21.7	315043	12.2	20.4
274557	11.9	21.2	266665	11.9	19.7	366429	11.9	19.2	184011	12.1	20.0	507120	12.1	20.5	470359	12.2	20.3
396407	11.9	20.6	261425	11.9	20.4	515647	11.9	21.4	107850	12.1	20.2	328875	12.1	20.2	362408	12.2	20.9
175598	11.9	20.3	25158	11.9	17.8	337071	11.9	20.4	50364	12.1	17.5	48201	12.1	18.2	380758	12.2	20.2
287258	11.9	18.6	190553	11.9	19.5	538789	11.9	20.7	325527	12.1	20.6	60344	12.1	18.2	300414	12.2	20.4
251854	11.9	20.7	232850	11.9	19.6	273868	12.0	19.6	335134	12.1	20.4	293936	12.1	19.0	59849	12.2	19.1
127378	11.9	20.1	90672	11.9	20.1	194709	12.0	18.3	199990	12.1	20.8	256881	12.1	20.4	429714	12.2	20.6
75902	11.9	17.7	246942	11.9	18.5	124105	12.0	20.1	86818	12.1	18.9	511149	12.1	20.7	451151	12.2	20.3
42463	11.9	19.7	428265	11.9	21.3	3459	12.0	16.0	515431	12.1	21.2	488553	12.1	20.9	234308	12.2	19.5
188250	11.9	19.0	10422	11.9	17.3	4627	12.0	16.6	524182	12.1	20.9	3542	12.1	16.8	479498	12.2	20.3
192491	11.9	19.7	377306	11.9	21.3	527459	12.0	21.1	365603	12.1	20.1	71665	12.1	18.5	144170	12.2	18.8
434362	11.9	20.7	282954	11.9	20.4	423224	12.0	19.6	1								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
123549	12.2	18.3	135042	12.3	19.9	195678	12.4	20.3	20365	12.5	17.7	299439	12.5	19.9	62698	12.6	19.0
115659	12.2	19.1	221935	12.3	20.2	174600	12.4	19.9	348241	12.5	20.4	261988	12.5	20.4	98028	12.6	18.8
79701	12.2	17.3	66492	12.3	19.7	282295	12.4	18.4	234236	12.5	18.4	319365	12.5	20.6	213841	12.6	18.8
246886	12.2	18.2	228561	12.3	19.3	516361	12.4	20.3	363448	12.5	21.1	387256	12.5	20.2	437227	12.6	20.7
361964	12.2	21.0	98182	12.3	18.5	512061	12.4	20.0	220744	12.5	19.8	267169	12.5	20.6	289716	12.6	20.7
314639	12.2	19.9	324223	12.3	19.2	195495	12.4	19.2	155358	12.5	19.5	307551	12.5	20.1	539389	12.6	20.3
15076	12.2	18.0	353691	12.3	20.5	217523	12.4	19.3	241457	12.5	19.6	385000	12.5	21.2	50534	12.6	18.3
168131	12.2	20.9	36436	12.3	17.9	440489	12.4	21.3	280603	12.5	20.6	137073	12.5	18.1	35880	12.6	17.5
149545	12.2	19.8	335107	12.3	20.6	34229	12.4	18.4	317289	12.5	20.6	332122	12.5	19.6	159324	12.6	20.4
424630	12.2	20.0	137778	12.3	18.8	402526	12.4	20.9	169008	12.5	19.2	519141	12.5	21.5	283299	12.6	19.7
496211	12.2	21.1	193678	12.3	18.8	254955	12.4	20.4	287477	12.5	19.7	46263	12.5	18.1	246188	12.6	19.6
321524	12.3	20.1	87413	12.3	18.1	121861	12.4	19.2	316113	12.5	20.9	359983	12.5	18.8	295214	12.6	20.2
142400	12.3	19.9	434638	12.3	20.0	174788	12.4	18.4	275978	12.5	18.3	532990	12.5	20.6	220680	12.6	18.9
409728	12.3	19.5	435849	12.3	21.0	489589	12.4	20.0	61577	12.5	19.4	309717	12.5	19.3	407177	12.6	21.3
524862	12.3	20.8	240399	12.3	19.9	390760	12.4	20.7	127223	12.5	20.5	40084	12.5	17.7	305810	12.6	19.9
335152	12.3	18.2	482767	12.3	21.3	94467	12.4	19.6	332702	12.5	19.6	280102	12.5	18.7	492326	12.6	19.6
150026	12.3	19.5	479372	12.3	20.1	176664	12.4	20.4	476305	12.5	20.3	408611	12.6	19.5	115140	12.6	18.0
354701	12.3	20.4	198262	12.3	19.2	85992	12.4	19.1	126131	12.5	19.2	138372	12.6	18.9	226572	12.6	18.8
177720	12.3	20.2	321327	12.3	20.8	24047	12.4	17.4	454917	12.5	20.2	321419	12.6	20.0	444110	12.6	20.6
130060	12.3	19.1	207471	12.3	19.9	200045	12.4	19.5	106763	12.5	18.6	305721	12.6	21.1	487359	12.6	20.7
264776	12.3	19.9	443110	12.3	20.1	443242	12.4	20.3	246512	12.5	19.6	91538	12.6	17.0	343861	12.6	20.2
496135	12.3	20.6	115313	12.3	18.8	174689	12.4	18.9	189897	12.5	20.3	73791	12.6	18.9	68563	12.6	18.0
192283	12.3	18.7	188441	12.3	19.9	163892	12.4	19.0	39600	12.5	17.9	300697	12.6	19.6	284293	12.6	21.2
48590	12.3	15.9	342642	12.3	20.7	21500	12.4	17.9	136531	12.5	18.8	505410	12.6	21.1	73158	12.6	19.8
245679	12.3	19.7	513977	12.3	20.7	130234	12.4	19.3	279531	12.5	19.7	78711	12.6	19.8	357853	12.6	20.5
363635	12.3	19.8	142200	12.3	19.1	401509	12.4	21.4	62388	12.5	17.7	517130	12.6	20.9	48449	12.6	17.7
281474	12.3	20.8	89814	12.3	18.8	294850	12.4	19.8	438324	12.5	20.7	294647	12.6	20.1	195285	12.6	19.0
492389	12.3	20.1	310603	12.3	19.0	387558	12.4	21.3	422589	12.5	21.5	37733	12.6	17.9	590983	12.6	21.5
454848	12.3	20.1	91421	12.3	17.3	66936	12.4	16.2	452665	12.5	20.4	513660	12.6	21.2	515671	12.6	21.8
168636	12.3	19.7	516015	12.3	20.9	130696	12.4	17.9	23920	12.5	18.7	520198	12.6	20.2	361983	12.6	20.7
525523	12.3	21.7	229160	12.4	20.2	375721	12.4	19.6	502311	12.5	20.3	214945	12.6	19.7	527981	12.6	21.6
183883	12.3	19.8	108631	12.4	18.5	319540	12.4	21.4	441032	12.5	19.7	323828	12.6	20.1	43421	12.6	17.3
509528	12.3	20.1	301772	12.4	20.9	481530	12.4	20.6	442152	12.5	19.5	259743	12.6	19.1	191712	12.6	20.3
309570	12.3	20.2	87925	12.4	16.8	358464	12.4	20.0	436786	12.5	20.9	427561	12.6	19.2	501845	12.6	20.7
326160	12.3	20.0	440942	12.4	19.6	284141	12.4	19.9	153298	12.5	20.2	155760	12.6	19.5	256831	12.6	19.4
516362	12.3	20.2	154095	12.4	20.6	119051	12.4	19.0	306912	12.5	20.1	74740	12.6	18.9	252216	12.6	19.1
421744	12.3	20.9	451359	12.4	21.0	481633	12.4	19.9	483975	12.5	21.4	349778	12.6	19.9	42048	12.6	18.0
41181	12.3	19.1	15708	12.4	17.4	107655	12.4	19.0	291556	12.5	19.7	476269	12.6	19.8	319398	12.6	20.9
510029	12.3	21.7	218290	12.4	19.2	380260	12.4	19.2	277701	12.5	19.6	441949	12.6	21.8	215707	12.6	19.3
1776	12.3	15.6	58854	12.4	18.5	324893	12.4	19.3	518023	12.5	20.9	449889	12.6	21.3	520121	12.6	20.9
477895	12.3	21.1	364714	12.4	20.6	259908	12.4	20.0	298663	12.5	19.9	414371	12.6	20.6	79869	12.6	18.2
539066	12.3	19.7	3092	12.4	16.2	354161	12.4	21.3	401607	12.5	19.8	476308	12.6	20.7	121205	12.6	19.8
410211	12.3	19.6	155892	12.4	19.0	1586	12.4	14.9	210658	12.5	19.9	307574	12.6	20.3	204700	12.6	20.8
356974	12.3	21.1	208946	12.4	20.2	107166	12.4	19.2	405450	12.5	20.0	524932	12.6	21.9	158568	12.6	20.1
11828	12.3	18.2	438957	12.4	19.4	183333	12.4	19.1	405486	12.5	18.9	86154	12.6	19.0	398398	12.6	20.6
95446	12.3	19.3	251063	12.4	19.9	515016	12.4	20.9	78204	12.5	19.1	95203	12.6	17.8	488266	12.6	19.6
201425	12.3	18.9	502370	12.4	20.4	408412	12.4	20.6	75644	12.5	18.0	396871	12.6	20.3	81316	12.6	18.9
509842	12.3	20.7	147003	12.4	18.9	447384	12.4	20.2	123290	12.5	19.1	46520	12.6	18.3	244891	12.6	19.6
317703	12.3	20.9	351837	12.4	19.7	216862	12.4	19.8	108769	12.5	19.8	338707	12.6	19.3	407040	12.6	21.8
287242	12.3	20.1	11912	12.4	17.8	171050	12.4	19.2	221033	12.5	19.7	301132	12.6	20.7	236833	12.6	20.4
220688	12.3	20.2	326767	12.4	20.4	342607	12.4	21.5	428179	12.5	19.9	425646	12.6	20.5	270575	12.6	20.4
315200	12.3	19.6	77408	12.4	18.1	65196	12.4	19.8	430564	12.5	21.0	122844	12.6	19.7	253732	12.6	18.2
540823	12.3	20.9	497905	12.4	20.5	178476	12.4	20.1	343275	12.5	20.0	91489	12.6	19.9	515369	12.6	20.5
440659	12.3	20.7	491720	12.4	21.3	319081	12.4	18.5	96500	12.5	19.1	236350	12.6	19.8	520337	12.6	20.9
528153	12.3	20.6	438526	12.4	20.4	236323	12.4	19.6	324359	12.5	20.0	31644	12.6	16.2	425045	12.6	21.2
168611	12.3	19.6	289341	12.4	18.9	525019	12.4	20.9	520618	12.5	21.5	441713	12.6	20.3	421808	12.6	21.4
192845	12.3	18.5	316675	12.4	19.3	199162	12.4	20.3	252791	12.5	20.0	516098	12.6	21.4	347826	12.6	20.5
311912	12.3	19.7	317416	12.4	21.5	242094	12.4	20.4	297309	12.5	19.1	263783	12.6	19.4	420357	12.6	20.8
196551	12.3	19.1	50029	12.4	18.0	102582	12.4	19.2	68081	12.5	18.4	275687	12.6	19.8	535029	12.6	22.5
538480	12.3	21.3	146288	12.4	19.8	130469	12.4	18.3	62522	12.5	19.2	357701	12.6	20.2	220395	12.6	19.9
351408	12.3	20.1	294960	12.4	20.5	537187	12.4	20.6	342361	12.5	20.5	475418	12.6	21.6	498431	12.7	21.1
432867	12.3	19.8	31350	12.4	17.8	508392	12.4	21.1	191675	12.5	21.0	359359	12.6	20.4	59659	12.7	18.1
473079	12.3	20.7	205166	12.4	19.1	164734	12.4	19.5	164011	12.5	18.1	507698	12.6	20.9	22172	12.7	17.7
421730	12.3	20.0	185728	12.4	19.3	329163	12.4	20.7	510634	12.5	20.3	346532	12.6	20.8	512435	12.7	20.8
332321	12.3	20.3	112937	12.4	19.4	9492	12.5	16.3	238652	12.5	20.0	281683	12.6	19.4	246640	12.7	20.0
9418	12.3	17.7	328135	12.4	20.7	68200	12.5	19.1	408624	12.5	21.5	315139	12.6	20.1	380303	12.7	19.7
481444	12.3	19.7	254073	12.4	20.0	407194	12.5	21.2	540286	12.5	21.1	87546	12.6	18.4	202155	12.7	19.9
205569	12.3	19.6	5322	12.4	16.0	445486	12.5	20.6	514732	12.5	20.9	142189	12.6	17.9	401436	12.7	19.9
259583	12.3	19.7	448418	12.4													

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
247106	12.7	20.7	183510	12.7	19.6	413213	12.8	20.2	130837	12.9	17.8	20427	12.9	17.1	18554	12.9	17.3
220401	12.7	18.9	72776	12.7	19.1	130218	12.8	19.0	448417	12.9	20.2	243172	12.9	19.9	135635	12.9	20.0
338737	12.7	19.1	261993	12.7	19.6	370642	12.8	19.8	63280	12.9	19.1	214127	12.9	19.2	290475	12.9	20.9
296507	12.7	20.3	335037	12.7	21.2	250346	12.8	19.4	374820	12.9	20.5	72897	12.9	18.0	164272	12.9	18.6
128606	12.7	19.1	515710	12.7	21.7	133215	12.8	19.2	302131	12.9	20.1	504494	12.9	20.4	433183	13.0	19.6
218408	12.7	19.9	18539	12.7	16.2	50036	12.8	18.4	317929	12.9	20.1	289118	12.9	20.4	472520	13.0	21.1
45716	12.7	17.6	93136	12.7	18.2	377283	12.8	19.9	6139	12.9	15.8	513898	12.9	19.6	379228	13.0	20.3
325585	12.7	19.9	470511	12.7	19.9	45282	12.8	18.3	360280	12.9	17.9	187768	12.9	19.2	262936	13.0	20.3
97684	12.7	18.3	482363	12.7	20.3	405731	12.8	19.6	516096	12.9	20.8	405088	12.9	19.3	130260	13.0	19.0
62429	12.7	18.8	393359	12.7	22.9	255078	12.8	20.6	371587	12.9	20.3	325466	12.9	20.7	513764	13.0	19.7
428668	12.7	20.5	62198	12.7	18.3	84583	12.8	19.5	18325	12.9	17.2	273739	12.9	19.8	482374	13.0	19.6
423764	12.7	21.6	116613	12.7	18.8	278739	12.8	20.4	253508	12.9	19.6	133265	12.9	19.8	524958	13.0	21.6
285770	12.7	19.5	142717	12.7	19.6	163304	12.8	20.1	476289	12.9	21.2	481622	12.9	21.0	141854	13.0	18.5
273646	12.7	19.5	121904	12.7	18.9	474498	12.8	19.5	154242	12.9	21.1	92362	12.9	19.0	321397	13.0	20.7
351194	12.7	19.7	497782	12.7	18.8	211936	12.8	18.8	34161	12.9	18.4	104264	12.9	18.0	256516	13.0	20.1
266775	12.7	20.4	244562	12.7	19.3	448694	12.8	20.9	335827	12.9	19.7	67458	12.9	17.2	280975	13.0	20.8
452459	12.7	20.4	167254	12.8	18.7	491926	12.8	19.7	364075	12.9	19.9	434656	12.9	19.4	314620	13.0	20.5
209765	12.7	20.5	302893	12.8	19.6	64324	12.8	19.1	17309	12.9	18.2	297	12.9	13.8	423167	13.0	20.9
213066	12.7	19.5	238292	12.8	19.0	284456	12.8	19.7	290972	12.9	19.2	99077	12.9	18.7	81649	13.0	19.3
512035	12.7	21.0	42990	12.8	18.3	384494	12.8	19.4	154937	12.9	18.9	68285	12.9	18.8	83594	13.0	19.3
16346	12.7	18.1	19534	12.8	18.1	102530	12.8	19.1	162478	12.9	20.0	297595	12.9	18.9	316657	13.0	19.2
405124	12.7	21.6	517916	12.8	20.2	46625	12.8	17.6	157145	12.9	20.4	509009	12.9	21.0	315111	13.0	19.9
340845	12.7	19.6	214806	12.8	19.9	99037	12.8	17.9	282278	12.9	19.8	395917	12.9	19.9	57402	13.0	17.7
263837	12.7	20.3	112514	12.8	19.5	363286	12.8	20.2	251836	12.9	19.6	238611	12.9	18.9	36006	13.0	18.6
280395	12.7	20.3	130200	12.8	17.4	414104	12.8	20.1	501696	12.9	20.7	43203	12.9	17.8	205047	13.0	19.2
231449	12.7	20.4	312555	12.8	20.3	160345	12.8	19.4	478745	12.9	21.6	298625	12.9	19.6	511792	13.0	19.0
62659	12.7	18.8	44130	12.8	17.5	392077	12.8	21.4	521916	12.9	21.0	386812	12.9	20.4	468065	13.0	20.3
318435	12.7	20.4	537769	12.8	20.7	401915	12.8	20.2	327773	12.9	19.6	510661	12.9	20.7	343436	13.0	20.9
322233	12.7	19.8	221934	12.8	20.5	102360	12.8	19.0	209294	12.9	19.2	110761	12.9	19.0	116409	13.0	19.3
407725	12.7	19.8	514793	12.8	22.3	480194	12.8	21.2	482435	12.9	20.4	36587	12.9	16.8	86274	13.0	18.5
222407	12.7	20.4	292166	12.8	19.4	324212	12.8	19.8	141668	12.9	19.6	478618	12.9	19.9	400442	13.0	20.3
524597	12.7	20.9	349356	12.8	20.4	501853	12.8	19.9	342714	12.9	19.9	282230	12.9	20.1	20447	13.0	18.3
230322	12.7	20.2	458808	12.8	19.9	226473	12.8	20.5	404020	12.9	20.2	521863	12.9	21.0	161329	13.0	21.0
433977	12.7	19.6	132969	12.8	18.6	444249	12.8	20.3	103898	12.9	19.5	248271	12.9	21.7	198389	13.0	19.2
347267	12.7	21.1	21237	12.8	16.6	321601	12.8	20.1	296477	12.9	20.4	333759	12.9	20.7	287947	13.0	19.3
33084	12.7	17.9	157749	12.8	18.6	421932	12.8	21.3	275577	12.9	21.1	240069	12.9	20.2	352262	13.0	20.3
242918	12.7	20.4	448010	12.8	20.7	342287	12.8	21.6	213486	12.9	19.6	373643	12.9	21.7	407940	13.0	20.7
419743	12.7	19.6	319218	12.8	21.0	185351	12.8	19.9	93377	12.9	19.0	21348	12.9	17.8	3570	13.0	15.6
477876	12.7	21.8	58501	12.8	17.9	338588	12.8	19.3	525597	12.9	21.0	196511	12.9	20.1	255616	13.0	21.2
39566	12.7	17.8	315050	12.8	19.7	42395	12.8	19.5	323227	12.9	19.4	247858	12.9	19.0	360742	13.0	19.6
74940	12.7	18.7	95326	12.8	19.1	260499	12.8	20.5	294413	12.9	21.3	425816	12.9	19.6	20814	13.0	18.2
427981	12.7	20.5	300765	12.8	20.0	416518	12.8	19.2	262416	12.9	20.3	254520	12.9	20.3	392046	13.0	21.2
343590	12.7	20.0	255022	12.8	20.4	47673	12.8	18.3	491718	12.9	20.5	253661	12.9	19.3	362791	13.0	20.7
42243	12.7	18.6	469313	12.8	20.6	315873	12.8	20.0	47075	12.9	17.3	99203	12.9	19.1	435827	13.0	20.3
36090	12.7	18.3	130767	12.8	18.6	449898	12.8	20.4	483000	12.9	20.7	402480	12.9	20.0	448726	13.0	19.3
75978	12.7	18.2	511275	12.8	21.4	162500	12.8	19.9	149086	12.9	19.4	49138	12.9	19.0	343931	13.0	21.3
215004	12.7	21.3	494320	12.8	22.0	347076	12.8	20.8	507406	12.9	21.5	465586	12.9	19.9	212961	13.0	20.1
61009	12.7	18.9	144896	12.8	19.8	129408	12.8	19.3	360720	12.9	19.7	317317	12.9	20.6	439632	13.0	20.2
538682	12.7	20.0	235328	12.8	19.8	114138	12.8	19.7	151028	12.9	19.4	46065	12.9	19.3	529790	13.0	20.2
431788	12.7	20.3	293732	12.8	20.9	56169	12.8	18.3	225816	12.9	18.5	507301	12.9	19.5	268910	13.0	18.8
483936	12.7	20.7	268740	12.8	18.8	473462	12.8	20.6	393382	12.9	20.7	482070	12.9	20.9	383928	13.0	20.1
386917	12.7	20.4	238032	12.8	19.2	139418	12.8	20.7	173613	12.9	20.2	38867	12.9	18.4	38213	13.0	20.5
162825	12.7	21.7	168205	12.8	20.0	524096	12.8	20.4	38994	12.9	18.9	248400	12.9	20.1	48210	13.0	18.2
153026	12.7	18.9	76174	12.8	18.9	472155	12.8	19.8	126526	12.9	19.9	364112	12.9	19.5	363457	13.0	21.5
450535	12.7	20.9	171582	12.8	17.8	196532	12.8	20.2	49831	12.9	18.1	344661	12.9	20.9	13283	13.0	17.8
63215	12.7	18.9	448350	12.8	21.1	242254	12.8	19.8	325724	12.9	20.0	259462	12.9	20.7	95591	13.0	18.9
532863	12.7	19.4	104078	12.8	18.6	505426	12.8	20.0	193371	12.9	19.2	181674	12.9	20.1	163950	13.0	19.2
178221	12.7	20.5	421620	12.8	20.2	9051	12.8	16.4	431808	12.9	21.4	61596	12.9	19.0	175133	13.1	19.6
449797	12.7	20.9	479655	12.8	19.8	294029	12.9	19.5	473943	12.9	21.1	204591	12.9	19.7	101523	13.1	17.6
444268	12.7	20.4	433974	12.8	20.7	63371	12.9	18.8	198455	12.9	18.8	522841	12.9	20.9	67562	13.1	19.3
161809	12.7	19.6	336315	12.8	21.3	514909	12.9	19.0	512024	12.9	20.5	87295	12.9	18.1	495884	13.1	20.0
396419	12.7	18.7	175299	12.8	19.5	425013	12.9	20.8	400146	12.9	20.7	202974	12.9	19.3	98118	13.1	19.0
245155	12.7	19.7	174790	12.8	18.5	128662	12.9	19.8	449932	12.9	21.4	20169	12.9	17.6	88243	13.1	17.0
383925	12.7	20.1	410098	12.8	20.9	360922	12.9	20.0	56461	12.9	17.8	403699	12.9	20.3	269947	13.1	20.3
45378	12.7	17.5	103468	12.8	18.7	368373	12.9	20.5	263648	12.9	20.0	6301	12.9	17.3	301427	13.1	20.0
90791	12.7	20.4	342644	12.8	19.6	292816	12.9	19.3	49112	12.9	18.2	434700	12.9	20.7	97419	13.1	18.0
483312	12.7	20.4	485281	12.8	20.0	447723	12.9	20.6	3513	12.9	16.4	196519	12.9	18.6	310451	13.1	17.8
309559	12.7	20.0	518683	12.8	20.1	412122	12.9	21.6	102319	12.9	18.5	182069	12.9	19.4	93404	13.1	19.7
447282	12.7	20.5	106665	12.8	18.9	397652	12.9	20.0									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
28664	13.1	17.9	319132	13.1	20.3	385368	13.2	22.2	333593	13.3	21.1	20377	13.3	17.8	63069	13.4	19.2
219134	13.1	19.0	532147	13.1	21.1	401270	13.2	20.1	210026	13.3	20.9	474494	13.3	21.1	289277	13.4	20.1
517447	13.1	20.8	390536	13.1	21.1	166347	13.2	20.8	310380	13.3	20.0	95706	13.3	18.9	126287	13.4	19.1
157062	13.1	19.2	342828	13.1	20.1	215446	13.2	20.8	49800	13.3	17.5	416756	13.3	20.2	337956	13.4	20.3
34422	13.1	18.1	342624	13.2	21.2	11919	13.2	16.7	101951	13.3	18.3	41281	13.3	17.3	530240	13.4	20.4
319307	13.1	19.9	486957	13.2	20.7	135027	13.2	19.1	218902	13.3	20.0	344746	13.3	20.0	180470	13.4	19.4
540715	13.1	20.8	137886	13.2	18.5	443301	13.2	20.9	414033	13.3	21.3	451879	13.3	22.0	92156	13.4	19.8
208120	13.1	19.7	90721	13.2	18.4	391033	13.2	23.2	91749	13.3	19.3	281079	13.3	20.5	145965	13.4	19.7
392941	13.1	19.7	501594	13.2	20.7	492192	13.2	20.6	77941	13.3	19.4	451178	13.4	21.0	80726	13.4	18.8
436344	13.1	19.3	126769	13.2	20.1	40022	13.2	16.9	401276	13.3	20.1	59551	13.4	18.0	163237	13.4	19.3
392069	13.1	21.3	319350	13.2	20.8	120975	13.2	18.4	37059	13.3	17.9	36238	13.4	18.4	303605	13.4	20.8
508554	13.1	20.1	261623	13.2	20.1	234765	13.2	21.2	517128	13.3	22.0	8252	13.4	16.8	323291	13.4	19.1
471713	13.1	20.7	387926	13.2	19.0	371420	13.2	21.6	7896	13.3	17.0	415746	13.4	21.9	121872	13.4	19.9
41447	13.1	18.3	448727	13.2	19.3	98235	13.2	17.3	246596	13.3	19.0	162484	13.4	19.1	44427	13.4	18.5
314405	13.1	20.4	112209	13.2	20.3	311903	13.2	20.6	65807	13.3	18.9	501685	13.4	20.2	387425	13.4	17.9
438774	13.1	19.4	540973	13.2	21.1	487082	13.2	20.7	9858	13.3	17.3	154218	13.4	20.2	310468	13.4	18.9
331386	13.1	20.3	55640	13.2	18.6	74881	13.2	18.0	342382	13.3	20.3	40984	13.4	18.9	82496	13.4	18.8
82775	13.1	18.8	112318	13.2	19.9	102734	13.2	19.4	241988	13.3	19.6	145753	13.4	19.5	440449	13.4	21.4
155505	13.1	19.1	160517	13.2	18.9	63554	13.2	19.1	74600	13.3	18.5	187382	13.4	20.7	221505	13.4	19.3
2995	13.1	15.5	270468	13.2	19.4	465903	13.2	20.1	379617	13.3	19.6	388632	13.4	20.7	501821	13.4	20.3
70000	13.1	19.4	348746	13.2	20.8	186698	13.2	19.6	141669	13.3	20.6	165993	13.4	19.1	379844	13.4	20.3
57292	13.1	16.3	77634	13.2	19.4	127586	13.2	18.6	306976	13.3	20.1	280106	13.4	21.4	131022	13.4	18.0
211907	13.1	19.5	451173	13.2	20.9	445441	13.2	21.0	283208	13.3	19.7	74013	13.4	19.3	536983	13.4	21.9
21816	13.1	17.2	451625	13.2	20.0	5446	13.2	15.9	260385	13.3	18.5	84028	13.4	19.1	331966	13.4	19.3
494518	13.1	19.3	399127	13.2	20.7	62904	13.2	18.5	74127	13.3	20.1	190252	13.4	20.6	257165	13.4	20.3
37811	13.1	18.8	154542	13.2	18.9	477905	13.2	21.6	14097	13.3	17.8	369930	13.4	20.5	111289	13.4	18.7
437105	13.1	20.2	123905	13.2	19.0	67265	13.2	19.0	128004	13.3	19.1	445498	13.4	20.6	367480	13.4	21.1
470571	13.1	21.4	44463	13.2	16.9	180391	13.2	19.2	290933	13.3	19.7	76198	13.4	18.1	368855	13.4	21.6
370661	13.1	20.4	323373	13.2	20.2	393113	13.2	20.1	174579	13.3	19.9	342291	13.4	21.2	183047	13.4	19.5
475371	13.1	21.2	302172	13.2	19.5	17141	13.2	16.4	94815	13.3	18.7	403449	13.4	20.4	231906	13.4	19.9
220998	13.1	20.8	163788	13.2	19.8	494309	13.2	21.0	24314	13.3	17.6	482114	13.4	20.3	276919	13.4	20.0
113582	13.1	19.4	168462	13.2	20.2	480894	13.2	20.5	44607	13.3	17.8	325784	13.4	19.7	488477	13.4	19.1
539811	13.1	20.0	207263	13.2	19.9	186841	13.2	18.9	350882	13.3	20.0	112099	13.4	19.8	491830	13.4	20.2
445384	13.1	20.4	13826	13.2	16.4	367993	13.2	21.0	172086	13.3	19.8	438297	13.4	20.4	132581	13.4	19.7
520238	13.1	20.6	94031	13.2	18.3	124010	13.2	19.6	227733	13.3	19.8	37185	13.4	17.8	111988	13.4	18.9
441781	13.1	21.7	352253	13.2	20.2	138440	13.2	20.3	23003	13.3	18.9	307015	13.4	18.4	383530	13.4	20.8
365188	13.1	21.0	531121	13.2	21.0	167914	13.2	19.4	407143	13.3	19.8	405404	13.4	21.2	157066	13.4	20.0
224966	13.1	20.3	179620	13.2	19.5	342218	13.2	21.0	47001	13.3	18.0	400468	13.4	20.5	177083	13.4	19.9
195504	13.1	19.7	160141	13.2	19.7	407825	13.2	20.6	437506	13.3	20.8	271602	13.4	19.9	37187	13.4	17.3
486965	13.1	20.1	504434	13.2	20.9	142407	13.2	19.6	402995	13.3	20.6	319341	13.4	20.5	286676	13.5	20.5
480238	13.1	21.1	431785	13.2	20.0	537211	13.2	21.6	100810	13.3	20.2	185092	13.4	19.0	325511	13.5	20.6
155572	13.1	19.1	188592	13.2	18.9	407221	13.2	20.5	45105	13.3	18.0	489972	13.4	20.3	23995	13.5	17.0
507053	13.1	19.0	44900	13.2	18.9	349723	13.2	20.1	48634	13.3	18.5	249188	13.4	20.4	454439	13.5	21.7
34537	13.1	18.6	62228	13.2	19.0	453232	13.2	20.4	87298	13.3	19.3	207887	13.4	20.0	320383	13.5	18.9
188329	13.1	20.1	239124	13.2	20.2	433876	13.2	20.3	422189	13.3	20.8	150283	13.4	20.0	292634	13.5	20.6
109484	13.1	20.0	21153	13.2	16.3	319796	13.2	19.4	472805	13.3	20.5	215192	13.4	19.1	174767	13.5	19.5
160034	13.1	18.3	433735	13.2	20.2	326647	13.2	20.2	61051	13.3	18.4	260223	13.4	19.5	40006	13.5	18.6
364575	13.1	19.3	295010	13.2	21.0	66630	13.2	19.1	500907	13.3	21.5	100363	13.4	19.8	681	13.5	15.7
221128	13.1	20.5	511664	13.2	21.0	277705	13.2	20.4	338001	13.3	20.6	318623	13.4	21.5	392061	13.5	20.1
421962	13.1	21.2	70909	13.2	18.6	524581	13.2	21.5	38092	13.3	19.5	533572	13.4	22.0	46155	13.5	18.8
51564	13.1	19.3	409343	13.2	19.3	382943	13.3	19.1	276022	13.3	17.9	401279	13.4	20.0	24584	13.5	19.1
210114	13.1	19.6	18154	13.2	18.2	230333	13.3	20.5	535919	13.3	20.2	22394	13.4	18.2	418236	13.5	20.3
108369	13.1	20.0	88063	13.2	18.1	358014	13.3	20.3	341143	13.3	19.9	153270	13.4	19.0	364044	13.5	18.8
509788	13.1	19.9	47323	13.2	18.1	483010	13.3	20.1	322183	13.3	19.0	4748	13.4	15.6	342232	13.5	20.2
388855	13.1	20.5	202988	13.2	19.4	146352	13.3	19.6	408018	13.3	21.0	476128	13.4	20.6	416105	13.5	20.1
391590	13.1	20.3	52570	13.2	18.2	199640	13.3	19.2	33856	13.3	19.1	121444	13.4	18.7	519258	13.5	20.8
202723	13.1	21.6	327205	13.2	20.6	46510	13.3	18.5	50678	13.3	18.5	528124	13.4	21.3	106255	13.5	19.4
337320	13.1	18.9	242935	13.2	20.7	50298	13.3	18.8	177244	13.3	18.4	347812	13.4	20.9	205830	13.5	20.2
265809	13.1	19.1	71354	13.2	18.4	374260	13.3	21.5	195253	13.3	20.0	334395	13.4	19.6	176766	13.5	20.4
297839	13.1	21.3	338874	13.2	18.5	483260	13.3	20.7	202332	13.3	19.3	315995	13.4	19.7	182333	13.5	19.5
357826	13.1	20.1	404003	13.2	20.7	13846	13.3	17.7	289179	13.3	19.3	254616	13.4	20.2	305210	13.5	20.3
121653	13.1	17.6	192480	13.2	19.8	49823	13.3	17.8	537674	13.3	21.4	63384	13.4	19.1	36116	13.5	18.1
303270	13.1	20.6	39489	13.2	18.2	79081	13.3	19.1	75827	13.3	18.4	90370	13.4	19.1	73005	13.5	19.8
177447	13.1	20.1	161734	13.2	20.2	348607	13.3	19.1	364483	13.3	21.0	115496	13.4	18.9	453000	13.5	21.3
437786	13.1	20.2	433047	13.2	20.9	99941	13.3	17.8	521940	13.3	19.4	476065	13.4	20.4	106515	13.5	19.1
288094	13.1	19.7	396190	13.2	20.7	291772	13.3	19.5	180321	13.3	18.8	239475	13.4	20.2	383197	13.5	20.0
47149	13.1	17.5	279155	13.2	19.9	276038	13.3	20.1	380294	13.3	20.4	507112	13.4	19.4	146055	13.5	19.7
275988	13.1	18.9	236561	13.2	19.4	441957	13.3	20.6	236583	13.3	20.0	69142	13.4	18.4	169892	13.5	19.1
163008	13.1	19.7	302112	13.2	20.2	85039	13.3	17.8	231945								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
171253	13.5	20.1	443767	13.6	20.0	454820	13.6	21.0	121695	13.7	18.4	448438	13.8	21.0	439540	13.8	20.4
404576	13.5	21.5	159323	13.6	20.3	126833	13.6	21.4	115792	13.7	19.1	113779	13.8	19.9	477555	13.8	20.7
538251	13.5	20.8	435178	13.6	21.3	126951	13.6	20.1	289606	13.7	19.7	340164	13.8	20.4	218138	13.8	20.1
280359	13.5	20.9	367079	13.6	19.9	179621	13.6	19.8	439574	13.7	21.0	71462	13.8	17.9	408594	13.8	20.3
340528	13.5	20.4	16169	13.6	16.7	86854	13.6	19.1	337184	13.7	20.0	499489	13.8	20.7	354820	13.8	20.2
262033	13.5	20.6	357855	13.6	20.4	12665	13.6	17.2	515650	13.7	21.7	231880	13.8	19.4	137907	13.8	18.5
67542	13.5	18.9	406252	13.6	21.0	467728	13.6	19.2	282720	13.7	19.9	314392	13.8	20.4	508837	13.8	19.2
485503	13.5	21.4	18871	13.6	16.3	257860	13.6	19.0	473183	13.7	19.7	521528	13.8	21.3	454014	13.8	20.6
295439	13.5	19.5	135745	13.6	18.7	191720	13.6	19.6	51940	13.7	17.3	214607	13.8	19.9	469353	13.8	18.8
288547	13.5	21.1	468491	13.6	20.7	345899	13.6	21.1	337992	13.7	20.3	271645	13.8	19.1	342539	13.8	20.6
67887	13.5	18.3	191021	13.6	19.4	195017	13.6	19.2	128188	13.7	19.1	445260	13.8	20.0	440876	13.8	20.7
65765	13.5	17.7	96053	13.6	19.2	298007	13.6	20.3	70950	13.7	20.2	404780	13.8	21.7	100421	13.8	19.2
228344	13.5	19.2	35987	13.6	19.1	336448	13.6	19.3	313934	13.7	20.4	521084	13.8	20.1	507927	13.8	21.1
369528	13.5	19.5	107891	13.6	20.0	208861	13.6	19.5	38683	13.7	16.5	236904	13.8	19.5	362576	13.8	20.5
8992	13.5	16.9	211148	13.6	20.9	41210	13.6	16.7	273936	13.7	20.0	34092	13.8	17.5	397401	13.8	20.7
512889	13.5	20.3	276643	13.6	19.4	263984	13.6	21.6	476856	13.7	20.1	494509	13.8	20.2	524301	13.8	19.9
400711	13.5	19.5	444039	13.6	20.7	527827	13.6	19.2	161039	13.7	20.3	218232	13.8	19.6	281764	13.8	20.4
164090	13.5	19.0	89823	13.6	18.9	211832	13.6	19.3	234338	13.7	19.3	468060	13.8	20.5	410934	13.8	21.7
260206	13.5	20.2	509705	13.6	20.5	291172	13.6	19.6	365763	13.7	19.9	446357	13.8	20.5	159408	13.8	19.3
251713	13.5	21.0	185201	13.6	20.3	422641	13.6	20.3	385545	13.7	18.8	288548	13.8	20.3	508592	13.8	21.1
169557	13.5	20.3	536428	13.6	20.4	145053	13.6	19.7	207218	13.7	20.9	236484	13.8	20.5	365995	13.8	19.8
167414	13.5	18.6	509461	13.6	20.4	82622	13.6	18.7	3019	13.7	15.4	461308	13.8	20.3	413396	13.8	20.0
195274	13.5	20.2	542422	13.6	21.4	367064	13.6	20.2	345482	13.7	20.6	50254	13.8	17.1	117176	13.8	19.3
70122	13.5	19.2	440547	13.6	20.9	539504	13.6	21.3	441190	13.7	20.8	27515	13.8	17.1	198603	13.8	18.2
287057	13.5	21.5	69498	13.6	18.6	349215	13.6	20.3	330576	13.7	20.8	166603	13.8	19.8	207104	13.8	18.8
321821	13.5	20.0	390946	13.6	20.9	128869	13.6	18.5	42135	13.7	18.6	213010	13.8	20.5	329303	13.8	20.5
268916	13.5	21.0	211050	13.6	19.8	494809	13.6	19.8	428586	13.7	21.5	321470	13.8	19.8	511595	13.8	19.4
226549	13.5	20.6	218517	13.6	18.9	440377	13.6	20.1	124742	13.7	18.6	263902	13.8	20.6	329285	13.8	21.3
512637	13.5	20.3	258381	13.6	19.3	324125	13.6	19.6	174724	13.7	19.3	483315	13.8	20.0	399276	13.8	20.3
34158	13.5	19.3	403454	13.6	20.7	29978	13.6	18.3	100793	13.7	18.2	444332	13.8	20.9	288448	13.8	19.7
322948	13.5	20.5	492404	13.6	20.3	535638	13.6	19.9	99144	13.7	19.4	480721	13.8	20.9	517533	13.8	21.5
433031	13.5	22.1	140218	13.6	20.4	168436	13.6	18.3	287899	13.7	20.3	508065	13.8	20.8	185573	13.8	20.0
425656	13.5	20.4	539409	13.6	20.7	253660	13.6	18.9	65616	13.7	18.8	97222	13.8	19.1	516790	13.8	21.0
121828	13.5	18.6	471720	13.6	19.1	418904	13.6	20.1	509860	13.7	19.3	256847	13.8	19.8	133545	13.8	18.7
480640	13.5	20.4	214952	13.6	20.2	223403	13.6	19.4	164740	13.7	19.1	232156	13.8	20.5	510759	13.8	20.0
384711	13.5	19.8	511255	13.6	20.7	61594	13.6	18.9	204463	13.7	18.7	274726	13.8	21.2	221393	13.8	19.8
261391	13.5	20.0	238988	13.6	19.7	411625	13.6	19.5	77251	13.7	19.6	211413	13.8	19.4	314407	13.8	20.8
291447	13.5	19.3	332229	13.6	20.2	259409	13.6	19.2	204361	13.7	19.7	384698	13.8	20.7	235704	13.8	19.1
505670	13.5	19.9	198936	13.6	20.4	335602	13.6	20.3	181844	13.7	19.9	152603	13.8	20.6	412541	13.8	19.9
215876	13.5	19.5	463422	13.6	20.4	28071	13.6	18.5	496860	13.7	17.7	72573	13.8	18.4	243843	13.8	18.6
402806	13.5	19.9	51673	13.6	18.5	260670	13.7	19.8	296277	13.7	20.2	407761	13.8	20.1	229642	13.8	20.7
237970	13.5	21.1	217326	13.6	20.1	508412	13.7	20.0	67158	13.7	17.6	400608	13.8	20.4	207906	13.9	18.3
539832	13.5	20.7	530574	13.6	20.3	253680	13.7	19.8	29842	13.7	18.4	405064	13.8	18.8	23687	13.9	16.4
478985	13.5	20.3	93126	13.6	18.7	337180	13.7	19.3	269792	13.7	19.3	99106	13.8	18.5	474398	13.9	19.8
81200	13.5	19.8	162502	13.6	19.4	200044	13.7	19.5	212409	13.7	21.1	35786	13.8	17.8	316191	13.9	20.0
251866	13.5	18.8	149348	13.6	22.6	126686	13.7	19.8	513189	13.7	21.3	424042	13.8	20.1	138996	13.9	20.1
514432	13.5	20.0	195178	13.6	19.8	24891	13.7	17.4	469428	13.7	19.4	26269	13.8	19.1	226400	13.9	20.4
404021	13.5	19.9	387012	13.6	19.9	439528	13.7	19.7	25429	13.7	18.4	508052	13.8	20.9	221720	13.9	19.9
516941	13.5	21.0	539431	13.6	21.3	469577	13.7	19.9	497071	13.7	20.2	37680	13.8	19.3	32284	13.9	18.1
167375	13.5	19.4	180863	13.6	19.3	447734	13.7	20.8	440595	13.7	21.2	319244	13.8	20.5	418953	13.9	20.8
286928	13.5	19.0	529027	13.6	20.9	184606	13.7	21.0	53072	13.7	19.1	391521	13.8	19.4	317922	13.9	20.1
186387	13.5	20.0	102838	13.6	19.4	423531	13.7	21.4	301313	13.7	20.4	123496	13.8	18.8	446138	13.9	20.7
451351	13.5	20.4	33889	13.6	18.6	333115	13.7	19.8	161034	13.7	20.2	306823	13.8	20.0	22645	13.9	18.6
36412	13.5	17.2	528143	13.6	20.8	253422	13.7	20.5	8148	13.7	16.2	494273	13.8	19.9	102585	13.9	17.7
407019	13.5	20.5	481150	13.6	20.7	285851	13.7	19.5	357784	13.7	20.3	168160	13.8	20.4	534231	13.9	20.4
250345	13.5	20.5	163336	13.6	20.0	169037	13.7	19.1	62050	13.7	17.9	486688	13.8	20.5	302242	13.9	19.4
282260	13.5	20.9	236546	13.6	20.2	183202	13.7	19.8	43857	13.7	16.9	287179	13.8	19.2	88701	13.9	19.3
128104	13.5	20.3	530498	13.6	20.9	18919	13.7	18.9	25135	13.7	18.3	15113	13.8	17.5	255680	13.9	19.8
138913	13.5	19.3	223473	13.6	19.7	13098	13.7	17.7	30787	13.7	17.2	281672	13.8	18.7	278072	13.9	19.7
256593	13.5	19.8	528161	13.6	21.3	512648	13.7	20.9	90572	13.7	20.1	123837	13.8	18.1	69256	13.9	19.7
150864	13.5	19.0	151544	13.6	18.7	212410	13.7	20.4	132459	13.7	20.3	5823	13.8	15.8	221866	13.9	20.3
39805	13.5	17.8	152055	13.6	20.2	52251	13.7	18.5	136001	13.7	19.6	131411	13.8	19.6	15276	13.9	17.3
342666	13.5	18.8	368510	13.6	19.2	88512	13.7	17.7	297170	13.7	20.7	530683	13.8	20.5	537436	13.9	21.6
220372	13.5	19.4	133260	13.6	18.5	432698	13.7	20.4	373151	13.7	21.6	47613	13.8	19.3	22721	13.9	17.9
527584	13.5	21.2	78426	13.6	19.5	120550	13.7	19.4	365008	13.7	20.6	374902	13.8	20.9	468058	13.9	21.8
35650	13.5	18.5	338556	13.6	19.5	279604	13.7	20.6	77190	13.7	19.1	133668	13.8	19.3	200217	13.9	19.4
509754	13.5	20.0	90719	13.6	17.3	517992	13.7	20.8	349259	13.7	19.1	65215	13.8	19.4	56224	13.9	19.3
283068	13.5	20.4	516592	13.6	21.7	144872	13.7	19.4	38772	13.7	17.7	134254	13.8	18.8	88468	13.9	19.4
161834	13.5	20.0	385812	13.6	20.2	244409	1										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
185309	13.9	18.3	41139	13.9	18.6	277464	14.0	19.7	477564	14.1	18.8	403959	14.2	20.6	408333	14.2	21.1
323642	13.9	20.4	278298	13.9	21.4	2109	14.0	15.3	314387	14.1	20.6	162	14.2	12.6	418047	14.2	20.2
266239	13.9	19.6	367100	13.9	19.3	263289	14.0	20.8	196208	14.1	19.0	20298	14.2	18.8	153223	14.2	17.4
479576	13.9	19.4	440480	13.9	19.9	506686	14.0	20.4	308803	14.1	20.1	404064	14.2	19.8	528028	14.2	21.8
452688	13.9	20.5	167424	13.9	19.4	386112	14.0	21.2	159316	14.1	20.7	360205	14.2	21.1	300789	14.2	20.3
47921	13.9	17.1	531176	13.9	21.6	264783	14.0	20.5	412319	14.1	20.7	246355	14.2	19.4	400676	14.2	20.0
523037	13.9	21.1	509778	13.9	20.5	261932	14.0	20.2	235820	14.1	19.2	289401	14.2	20.6	400710	14.2	19.9
526366	13.9	21.4	936	13.9	15.1	258493	14.0	19.6	214953	14.1	19.6	81059	14.2	18.9	261697	14.2	20.0
483223	13.9	20.2	223340	13.9	19.8	253386	14.0	20.3	365324	14.1	20.3	425555	14.2	20.5	28496	14.2	19.6
100210	13.9	20.1	104613	13.9	19.4	478583	14.0	20.9	515633	14.1	20.7	537675	14.2	20.8	16840	14.2	17.2
255276	13.9	20.4	18051	13.9	17.5	479775	14.0	20.6	11274	14.1	18.1	43063	14.2	19.9	61997	14.2	19.6
367754	13.9	20.0	92963	13.9	17.4	289042	14.0	21.2	395944	14.1	20.6	516139	14.2	20.5	516192	14.2	20.0
476307	13.9	19.7	131615	13.9	17.6	40967	14.0	17.4	383835	14.1	20.7	335092	14.2	19.1	501576	14.2	21.1
304537	13.9	20.1	467732	13.9	20.8	30088	14.0	18.6	423437	14.1	21.0	444203	14.2	21.2	425625	14.2	20.9
509142	13.9	19.8	501601	13.9	21.8	42394	14.0	18.9	94832	14.1	18.3	404164	14.2	20.3	404478	14.2	20.6
402061	13.9	20.2	95084	13.9	18.7	173564	14.0	18.8	323961	14.1	20.3	255012	14.2	20.0	408707	14.2	19.3
13052	13.9	17.4	395972	13.9	20.6	241251	14.0	18.7	112116	14.1	19.3	321749	14.2	19.1	396297	14.2	19.9
159390	13.9	19.6	257992	13.9	19.8	161503	14.0	20.2	514783	14.1	20.9	171408	14.2	20.3	488045	14.2	20.6
489591	13.9	18.9	485048	13.9	20.4	134788	14.0	19.5	330685	14.1	21.6	289005	14.2	19.4	126864	14.2	19.1
424192	13.9	21.7	438548	13.9	20.4	72569	14.0	15.6	15511	14.1	17.1	489393	14.2	21.7	387928	14.2	20.7
315220	13.9	19.8	487779	13.9	20.1	330357	14.0	20.2	178218	14.1	19.3	181046	14.2	20.2	133048	14.2	19.6
289304	13.9	19.7	70774	13.9	18.1	515644	14.0	21.2	522738	14.1	20.9	122522	14.2	18.5	392396	14.2	20.6
435644	13.9	19.7	18033	13.9	17.6	77971	14.0	17.5	439527	14.1	18.9	444381	14.2	20.4	62471	14.2	18.9
498226	13.9	20.3	309123	13.9	19.5	374274	14.0	20.0	209835	14.1	20.1	317507	14.2	19.8	515667	14.2	20.9
537051	13.9	21.4	24638	13.9	18.0	240599	14.0	18.9	469663	14.1	20.5	54598	14.2	19.0	113305	14.2	18.2
182630	13.9	19.5	451830	13.9	20.4	96854	14.0	17.9	538725	14.1	21.3	270466	14.2	19.7	246551	14.2	19.5
325125	13.9	20.2	449267	13.9	21.2	478716	14.0	21.5	261156	14.1	21.0	223379	14.2	19.5	84218	14.2	18.7
198379	13.9	18.5	469337	13.9	21.1	91962	14.0	19.2	423143	14.1	21.1	235260	14.2	20.1	455098	14.2	19.9
96836	13.9	19.2	235888	13.9	19.7	449064	14.0	20.3	123503	14.1	19.5	314408	14.2	20.5	512919	14.2	19.9
313624	13.9	19.4	283169	13.9	20.0	251882	14.0	21.0	448396	14.1	21.0	48810	14.2	17.4	220981	14.2	20.5
203249	13.9	20.6	216145	13.9	20.4	502159	14.0	19.6	278575	14.1	20.6	91599	14.2	18.3	332489	14.2	20.7
347264	13.9	20.0	77606	13.9	19.6	526951	14.0	21.4	440747	14.1	19.9	6937	14.2	16.6	167191	14.2	18.5
289680	13.9	20.6	344749	13.9	20.7	346465	14.0	18.9	214701	14.1	19.9	283884	14.2	19.2	264290	14.2	19.0
1450	13.9	14.5	78299	13.9	17.6	256641	14.0	20.3	149693	14.1	20.5	40177	14.2	18.6	78186	14.2	18.3
51627	13.9	18.3	323085	13.9	20.7	115422	14.0	18.8	507173	14.1	20.0	515676	14.2	21.3	224714	14.2	20.3
15152	13.9	16.2	528479	13.9	21.1	98515	14.0	19.1	379157	14.1	21.0	45459	14.2	18.0	284209	14.2	21.4
295864	13.9	19.7	272596	13.9	19.6	304260	14.0	21.7	417725	14.1	20.0	449453	14.2	20.7	541030	14.2	20.3
17208	13.9	18.1	319559	13.9	20.8	376509	14.0	20.9	36230	14.1	17.1	68305	14.2	19.0	237288	14.3	20.0
284250	13.9	21.2	533726	13.9	19.5	260469	14.0	19.1	113253	14.1	18.2	91586	14.2	20.2	519247	14.3	20.5
34924	13.9	18.4	207803	13.9	20.3	271036	14.0	19.3	323074	14.1	20.7	328789	14.2	20.3	86587	14.3	19.2
299752	13.9	20.3	328899	13.9	20.3	293487	14.1	20.0	442176	14.1	19.9	249078	14.2	20.7	142228	14.3	19.7
357531	13.9	20.4	13776	13.9	17.8	195383	14.1	19.5	476840	14.1	20.3	289939	14.2	20.2	155843	14.3	19.5
92911	13.9	17.4	535764	13.9	21.4	526912	14.1	21.3	443728	14.1	21.7	459698	14.2	21.1	294187	14.3	19.6
515250	13.9	21.5	151309	13.9	20.0	211080	14.1	19.8	399320	14.1	21.2	115435	14.2	18.7	211777	14.3	19.4
416294	13.9	21.2	283670	13.9	21.0	504284	14.1	20.6	261758	14.1	19.3	250863	14.2	20.9	478527	14.3	20.7
321351	13.9	20.7	259917	13.9	20.0	390067	14.1	19.7	416346	14.1	21.0	222042	14.2	20.2	235857	14.3	19.0
371894	13.9	20.9	86022	13.9	18.5	260565	14.1	20.7	33710	14.1	17.4	488015	14.2	20.1	162845	14.3	19.1
57031	13.9	17.1	411873	13.9	20.6	249419	14.1	19.8	367183	14.1	19.5	106632	14.2	19.6	245361	14.3	20.0
196259	13.9	18.3	237486	13.9	20.0	502104	14.1	19.6	367017	14.1	21.1	122995	14.2	18.1	232909	14.3	19.5
114764	13.9	18.9	239658	13.9	20.4	171025	14.1	19.9	342471	14.1	20.2	502384	14.2	19.9	542551	14.3	20.0
182222	13.9	23.4	321998	13.9	20.0	331325	14.1	20.5	394572	14.1	20.6	525060	14.2	20.9	92984	14.3	17.4
46130	13.9	18.7	487313	13.9	20.2	151451	14.1	19.8	161309	14.1	18.3	144965	14.2	19.9	141878	14.3	18.0
400892	13.9	20.7	127986	13.9	19.7	415802	14.1	21.6	73784	14.1	17.9	511205	14.2	18.5	3733	14.3	15.3
514448	13.9	20.5	220778	13.9	19.7	128685	14.1	18.3	160691	14.1	20.0	408541	14.2	21.5	36311	14.3	17.7
190567	13.9	20.5	103629	13.9	19.1	352218	14.1	20.7	109868	14.1	19.5	391912	14.2	19.9	53930	14.3	18.3
244546	13.9	19.8	463412	13.9	21.1	36136	14.1	17.8	477154	14.1	19.9	95058	14.2	19.7	94309	14.3	18.1
383330	13.9	20.5	324886	13.9	20.0	316736	14.1	19.9	452260	14.1	20.0	59857	14.2	18.1	146788	14.3	19.1
514633	13.9	21.1	150271	13.9	19.4	74903	14.1	19.3	303123	14.1	20.6	98218	14.2	17.7	424541	14.3	20.3
72540	13.9	19.9	360083	13.9	20.3	139321	14.1	19.9	12274	14.1	16.3	405110	14.2	20.6	112069	14.3	20.5
485306	13.9	20.5	313905	13.9	20.5	364152	14.1	21.4	508945	14.1	19.0	104647	14.2	19.0	161645	14.3	19.7
226531	13.9	19.3	400908	14.0	20.8	350113	14.1	20.1	217508	14.1	19.9	72410	14.2	17.8	117958	14.3	18.7
43417	13.9	17.1	392019	14.0	20.8	56327	14.1	18.6	537240	14.1	21.5	404815	14.2	21.3	260176	14.3	19.9
438877	13.9	19.8	241359	14.0	20.0	116065	14.1	18.8	241380	14.1	19.5	254378	14.2	20.5	143374	14.3	18.8
534138	13.9	19.7	423503	14.0	21.6	404772	14.1	20.2	515860	14.1	19.9	342428	14.2	20.6	536746	14.3	20.3
167093	13.9	19.3	85292	14.0	17.0	62409	14.1	18.1	255374	14.1	19.2	289175	14.2	19.9	497790	14.3	19.7
439631	13.9	19.8	368285	14.0	21.3	89580	14.1	19.9	263640	14.1	20.2	525310	14.2	20.3	406967	14.3	20.6
177335	13.9	18.2	91627	14.0	18.1	497720	14.1	20.3	32465	14.1	17.5	366345	14.2	20.9	253006	14.3	19.5
501597	13.9	21.1	209944	14.0	20.2	433321	14.1	20.0	407089	14.1	21.0	403384	14.2	21.0	204041	14.3	19.3
451637	13.9	20.6	43530	14.0	18.8	379571	14.1										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
226693	14.3	20.9	164132	14.3	19.2	148305	14.4	19.3	279089	14.5	19.0	318347	14.6	19.8	268457	14.6	19.1
67732	14.3	18.0	537403	14.3	21.9	17590	14.4	17.6	257826	14.5	20.3	93871	14.6	16.8	105884	14.6	18.5
20128	14.3	18.2	331561	14.3	20.9	388592	14.4	20.2	185780	14.5	20.4	447681	14.6	20.0	418023	14.6	20.1
37714	14.3	19.0	500827	14.4	21.8	447420	14.4	19.5	451149	14.5	20.7	262278	14.6	20.7	370242	14.6	21.0
338808	14.3	18.4	264011	14.4	20.1	301638	14.4	21.1	487876	14.5	20.4	244669	14.6	19.7	104216	14.6	18.5
166056	14.3	19.4	447367	14.4	18.8	73914	14.4	18.1	231466	14.5	20.5	134056	14.6	20.0	5962	14.6	16.2
395514	14.3	20.7	454642	14.4	20.6	511208	14.4	20.5	169782	14.5	19.9	35625	14.6	18.1	166442	14.6	20.1
393764	14.3	20.9	245786	14.4	20.5	383514	14.4	20.0	428521	14.5	20.0	539841	14.6	20.1	91959	14.6	19.0
290783	14.3	19.8	377723	14.4	19.3	368003	14.4	21.6	305685	14.5	21.2	508391	14.6	21.3	23864	14.6	18.0
41359	14.3	18.8	81058	14.4	19.3	514756	14.4	21.6	152802	14.5	19.2	128079	14.6	19.2	258376	14.6	19.4
94154	14.3	18.1	38623	14.4	17.8	434088	14.4	19.7	426014	14.5	20.1	97829	14.6	19.4	158135	14.6	19.3
57016	14.3	19.3	149774	14.4	18.3	405053	14.4	20.9	335084	14.5	20.0	224748	14.6	19.7	315966	14.6	18.7
136019	14.3	19.1	260592	14.4	21.1	434672	14.4	19.8	354318	14.5	18.9	46658	14.6	17.4	12166	14.6	16.9
107168	14.3	18.0	476222	14.4	20.6	536549	14.4	21.9	77183	14.5	19.0	185714	14.6	20.0	449753	14.6	21.2
134346	14.3	18.8	6495	14.4	16.3	478956	14.4	19.8	112327	14.5	18.2	360013	14.6	19.8	205011	14.6	19.4
487627	14.3	20.2	458957	14.4	20.8	193500	14.4	18.7	103050	14.5	18.2	400970	14.6	21.1	80500	14.6	19.3
111331	14.3	19.3	342129	14.4	20.5	455922	14.4	20.0	345429	14.5	20.5	520571	14.6	20.4	370384	14.6	21.2
204655	14.3	20.6	533370	14.4	20.8	494492	14.4	20.6	458772	14.5	20.2	326236	14.6	19.2	372916	14.6	20.5
237846	14.3	20.1	437040	14.4	20.5	471704	14.4	21.3	17107	14.5	17.3	509499	14.6	21.4	104570	14.6	20.0
257093	14.3	19.2	540905	14.4	21.1	246615	14.4	19.3	505399	14.5	21.4	430157	14.6	19.9	230849	14.6	20.2
284951	14.3	19.1	539197	14.4	20.3	90065	14.4	19.3	22640	14.5	17.9	41244	14.6	18.5	68959	14.6	18.7
252666	14.3	18.9	162699	14.4	19.0	177219	14.4	19.0	516356	14.5	20.5	448512	14.6	21.3	4144	14.6	16.2
169634	14.3	17.8	261976	14.4	18.8	186802	14.4	19.3	167246	14.5	19.1	240991	14.6	19.7	473992	14.6	20.4
117184	14.3	19.4	140310	14.4	19.6	437537	14.4	20.0	325413	14.5	21.0	324291	14.6	20.4	64509	14.6	17.4
489105	14.3	20.1	360519	14.4	20.3	397439	14.4	20.9	26208	14.5	18.1	429592	14.6	20.9	160468	14.6	19.2
3089	14.3	16.1	466308	14.4	21.1	157068	14.4	20.4	515911	14.5	20.4	240652	14.6	19.5	461882	14.6	21.6
490842	14.3	19.2	359337	14.4	21.1	157764	14.4	20.5	166459	14.5	19.7	393679	14.6	19.4	362292	14.6	20.1
317961	14.3	19.7	181963	14.4	19.9	387761	14.4	20.1	478003	14.5	20.1	99126	14.6	18.2	195088	14.6	19.2
106257	14.3	19.2	104766	14.4	19.2	96486	14.4	18.8	479495	14.5	21.1	123314	14.6	19.0	38169	14.6	19.2
507116	14.3	21.3	530216	14.4	21.6	344900	14.4	20.8	117133	14.5	19.6	471891	14.6	20.1	476557	14.6	20.7
471526	14.3	21.1	509688	14.4	19.8	88816	14.4	19.7	226457	14.5	20.3	366576	14.6	19.4	212588	14.6	19.6
475121	14.3	20.9	248652	14.4	20.6	188573	14.4	19.3	246727	14.5	20.9	513999	14.6	20.7	321934	14.6	20.2
158268	14.3	20.0	313348	14.4	20.0	507872	14.4	20.9	401738	14.5	20.0	352275	14.6	19.9	203950	14.6	18.3
288022	14.3	19.8	174587	14.4	18.6	324762	14.4	21.1	440475	14.5	20.8	364546	14.6	20.4	448686	14.6	20.5
539254	14.3	21.5	303636	14.4	19.8	203395	14.4	19.6	480703	14.5	21.1	411879	14.6	21.2	159080	14.6	19.3
162649	14.3	18.9	506814	14.4	20.7	18959	14.4	18.3	371575	14.5	20.5	516008	14.6	21.2	288386	14.6	20.4
269540	14.3	19.3	444	14.4	11.6	328495	14.4	20.1	480628	14.5	20.3	439644	14.6	21.0	137622	14.6	19.5
216942	14.3	19.4	237144	14.4	19.1	43176	14.5	18.5	295139	14.5	21.0	501828	14.6	19.5	370211	14.6	19.8
89472	14.3	18.6	308635	14.4	20.5	517111	14.5	21.7	281927	14.5	20.2	320089	14.6	20.8	476313	14.6	20.7
420347	14.3	19.6	295717	14.4	18.2	385819	14.5	20.9	241648	14.5	19.5	68916	14.6	19.7	224695	14.6	20.1
380078	14.3	20.1	474150	14.4	20.8	128928	14.5	19.4	471261	14.5	20.5	286800	14.6	19.9	439842	14.6	21.4
476684	14.3	22.4	37971	14.4	18.6	318275	14.5	18.8	314529	14.5	20.3	514230	14.6	20.9	260354	14.6	19.7
521931	14.3	20.6	537081	14.4	21.1	314466	14.5	19.8	211507	14.5	20.4	542652	14.6	20.8	135610	14.6	19.5
390307	14.3	20.0	237953	14.4	20.5	92293	14.5	19.6	40318	14.5	18.7	201099	14.6	21.1	169469	14.6	19.8
536974	14.3	20.5	45057	14.4	18.0	357050	14.5	19.8	217524	14.5	20.5	151776	14.6	20.4	530570	14.6	22.1
395355	14.3	20.3	422483	14.4	19.4	225010	14.5	20.5	446665	14.5	20.7	45965	14.6	18.6	407726	14.6	20.2
158760	14.3	19.5	327063	14.4	18.9	438304	14.5	22.4	493314	14.5	20.5	293321	14.6	21.1	504146	14.6	22.1
107292	14.3	17.8	121680	14.4	19.1	131994	14.5	19.1	333468	14.5	20.7	349765	14.6	20.4	475414	14.6	21.6
169110	14.3	17.5	262622	14.4	20.3	404460	14.5	21.5	373391	14.5	20.7	10366	14.6	16.1	266585	14.6	20.2
193785	14.3	19.7	316966	14.4	20.0	317775	14.5	20.6	161359	14.5	19.3	375217	14.6	20.5	527468	14.6	20.7
487070	14.3	21.4	501033	14.4	20.3	393789	14.5	20.4	65028	14.5	19.3	521877	14.6	19.4	72002	14.6	18.5
396198	14.3	22.6	81171	14.4	18.9	507273	14.5	20.9	60588	14.5	18.3	371896	14.6	20.5	239695	14.6	20.2
20495	14.3	19.4	323628	14.4	20.3	236950	14.5	19.7	506149	14.5	20.7	333660	14.6	21.3	515049	14.6	23.3
284543	14.3	20.6	513475	14.4	21.3	265530	14.5	20.4	231271	14.5	20.0	516766	14.6	21.4	484280	14.6	20.8
278358	14.3	20.3	174068	14.4	19.4	479769	14.5	20.4	46137	14.5	18.4	339307	14.6	19.2	314564	14.6	20.3
383862	14.3	20.1	293840	14.4	21.1	273524	14.5	19.8	163977	14.5	19.9	516614	14.6	19.5	247778	14.6	19.1
172901	14.3	19.6	371527	14.4	21.4	363474	14.5	21.1	62676	14.5	19.0	409807	14.6	20.1	449695	14.6	20.7
207208	14.3	20.1	74968	14.4	18.1	137782	14.5	18.0	287416	14.5	19.9	414093	14.6	20.9	423412	14.6	21.2
500095	14.3	19.6	358764	14.4	21.2	335704	14.5	19.9	13169	14.5	16.1	438926	14.6	20.2	319151	14.6	20.4
342442	14.3	20.5	202493	14.4	20.3	255535	14.5	21.1	250040	14.5	19.6	310280	14.6	20.4	220833	14.6	19.0
351180	14.3	20.7	507814	14.4	19.5	478919	14.5	20.5	381929	14.5	18.2	251320	14.6	20.1	344454	14.6	21.1
81802	14.3	19.5	241473	14.4	20.1	191653	14.5	19.9	74540	14.5	19.9	127923	14.6	19.5	535168	14.6	22.4
92786	14.3	18.4	153196	14.4	19.3	406285	14.5	20.5	204767	14.5	19.5	63731	14.6	18.2	159288	14.6	20.0
59034	14.3	18.9	534556	14.4	20.5	489	14.5	13.1	113566	14.5	18.9	507696	14.6	21.7	159522	14.6	20.2
445190	14.3	21.0	35578	14.4	18.9	516122	14.5	21.2	406993	14.5	19.8	253734	14.6	20.0	157399	14.6	19.7
174399	14.3	19.1	539539	14.4	21.0	457753	14.5	21.0	234752	14.5	20.1	82726	14.6	19.4	393616	14.6	20.9
246295	14.3	20.5	324817	14.4	20.3	518348	14.5	20.7	81681	14.5	18.9	434781	14.6	22.0	97101	14.6	17.7
126570	14.3	18.4	74586	14.4	18.8	17541	14.5	19.6	82070	14.5	18.1	55992	14.6	18.9	58141	14.6	18.3
349799	14.3	19.7	432819	14.4	21.5	462604											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
251367	14.7	20.2	102980	14.8	18.5	390907	14.8	19.7	63427	14.9	18.0	17584	14.9	17.1	217249	15.0	19.2
478660	14.7	19.9	314018	14.8	19.7	296206	14.8	19.2	439421	14.9	20.4	137496	14.9	20.0	533227	15.0	20.3
372852	14.7	20.6	505413	14.8	20.3	215653	14.8	20.6	63556	14.9	18.0	262507	14.9	20.2	189574	15.0	20.3
219950	14.7	19.9	24852	14.8	19.1	134281	14.8	19.6	445189	14.9	21.6	349888	14.9	20.3	119475	15.0	19.6
309794	14.7	19.3	25775	14.8	18.2	101336	14.8	19.3	478876	14.9	20.3	260293	14.9	20.1	333471	15.0	20.6
521897	14.7	20.7	362323	14.8	21.1	336096	14.8	20.2	200446	14.9	18.0	144233	14.9	18.5	500076	15.0	20.0
449768	14.7	19.7	503558	14.8	21.3	317342	14.8	20.4	46560	14.9	19.3	250028	14.9	20.9	536031	15.0	21.5
216730	14.7	20.8	508827	14.8	21.1	357904	14.8	20.4	416006	14.9	20.7	481792	14.9	19.5	294958	15.0	20.9
150055	14.7	20.2	453726	14.8	20.5	14040	14.8	17.3	246236	14.9	19.7	221473	14.9	19.2	469608	15.0	21.8
103300	14.7	18.3	62293	14.8	19.2	133506	14.8	19.2	512788	14.9	20.7	40118	14.9	17.9	466624	15.0	20.1
24728	14.7	17.3	364973	14.8	21.0	313360	14.8	20.5	213558	14.9	20.0	404110	14.9	20.7	15020	15.0	17.0
244820	14.7	19.7	495029	14.8	20.2	515858	14.8	20.9	412813	14.9	21.3	407867	14.9	20.8	453233	15.0	20.8
516326	14.7	20.7	68620	14.8	19.8	165187	14.8	18.0	139820	14.9	19.6	183335	14.9	19.1	465619	15.0	21.6
340309	14.7	20.5	448542	14.8	22.0	362890	14.8	20.9	479867	14.9	20.1	347805	14.9	19.8	151736	15.0	19.8
291414	14.7	19.8	422166	14.8	20.7	378212	14.8	19.7	378614	14.9	21.0	91993	14.9	19.7	390171	15.0	20.2
198512	14.7	19.2	256613	14.8	19.5	451202	14.8	20.6	470327	14.9	19.5	229672	14.9	20.4	496780	15.0	20.8
169414	14.7	17.7	34261	14.8	18.1	106920	14.8	17.4	387917	14.9	18.9	515924	14.9	20.1	43669	15.0	19.4
12432	14.7	17.6	515958	14.8	20.6	477911	14.8	21.2	139242	14.9	20.1	510575	14.9	20.4	196434	15.0	20.1
497942	14.7	20.2	271769	14.8	20.1	218523	14.8	20.2	44159	14.9	19.6	318493	14.9	19.9	347901	15.0	20.1
252821	14.7	20.6	26769	14.8	18.5	530283	14.8	21.5	59932	14.9	20.0	46021	14.9	18.8	240420	15.0	19.7
18672	14.7	17.2	82337	14.8	19.0	15834	14.8	17.8	255265	14.9	20.0	37228	14.9	18.2	219972	15.0	19.6
78381	14.7	17.8	316871	14.8	19.1	431004	14.8	19.8	156691	14.9	20.9	515640	14.9	20.8	304254	15.0	20.1
241109	14.7	20.9	480265	14.8	21.1	446952	14.8	20.6	469921	14.9	20.8	509726	14.9	20.5	342538	15.0	20.0
111818	14.7	18.7	269963	14.8	20.3	220743	14.8	20.1	508400	14.9	21.4	44278	14.9	16.8	51586	15.0	19.5
46888	14.7	16.5	41636	14.8	18.3	517701	14.8	20.8	161249	14.9	20.3	402097	14.9	21.6	362271	15.0	20.8
529930	14.7	20.0	26157	14.8	17.9	395719	14.8	20.2	347465	14.9	20.6	233375	14.9	19.8	90308	15.0	19.2
2057	14.7	15.7	322384	14.8	20.2	183209	14.8	18.5	87250	14.9	18.7	368277	14.9	20.2	111889	15.0	19.5
485974	14.7	19.5	408751	14.8	21.5	469597	14.8	21.3	529458	14.9	20.3	482984	14.9	20.8	274933	15.0	19.6
439206	14.7	20.3	348128	14.8	19.6	135985	14.8	19.8	126705	14.9	19.2	512468	14.9	21.7	356922	15.0	19.9
193397	14.7	18.5	168804	14.8	18.0	410957	14.8	20.6	343847	14.9	21.0	246499	14.9	20.4	91162	15.0	19.0
57758	14.7	18.7	344767	14.8	19.7	76723	14.8	18.4	366527	14.9	20.9	507244	14.9	20.7	185292	15.0	19.7
29435	14.7	18.6	531803	14.8	20.9	423987	14.8	20.8	455059	14.9	19.9	203206	14.9	19.3	282235	15.0	20.0
195303	14.7	19.5	497038	14.8	19.9	533186	14.8	20.5	220682	14.9	19.8	408854	14.9	21.3	74118	15.0	19.2
391216	14.7	19.3	361064	14.8	20.0	157347	14.8	19.0	97591	14.9	18.2	387911	14.9	19.2	389577	15.1	19.5
424173	14.7	21.0	240126	14.8	20.0	154125	14.8	20.7	99317	14.9	18.8	318346	14.9	19.8	481057	15.1	19.7
137565	14.7	19.9	128998	14.8	18.8	214998	14.8	19.5	174698	14.9	19.7	19084	14.9	17.1	160216	15.1	20.4
324952	14.7	20.2	210539	14.8	20.1	77673	14.8	20.1	323457	14.9	19.4	330629	14.9	21.3	321530	15.1	19.7
15874	14.7	21.2	292009	14.8	20.6	306402	14.8	21.0	314673	14.9	20.4	287793	14.9	19.8	13603	15.1	18.5
250276	14.7	20.4	307992	14.8	19.7	12276	14.8	16.7	485136	14.9	20.3	423884	14.9	20.4	71456	15.1	18.8
462793	14.7	21.1	479990	14.8	20.6	436482	14.8	21.2	197278	14.9	18.2	490070	14.9	20.8	207825	15.1	19.6
473584	14.7	20.7	519670	14.8	20.5	19928	14.8	17.3	175068	14.9	19.7	43382	14.9	18.3	537681	15.1	20.4
275990	14.7	19.6	105546	14.8	18.3	386426	14.8	19.1	5880	14.9	17.6	501702	14.9	19.9	451638	15.1	20.8
266956	14.7	20.1	452441	14.8	21.4	142301	14.8	18.5	94069	14.9	17.9	261353	14.9	21.2	299413	15.1	19.3
496446	14.7	21.1	315974	14.8	20.6	359398	14.8	20.4	226465	14.9	19.6	12517	14.9	19.6	486609	15.1	20.4
318205	14.7	20.7	501621	14.8	22.0	296553	14.8	20.7	55088	14.9	18.6	87157	14.9	18.9	317352	15.1	21.5
366055	14.7	20.2	23233	14.8	17.8	175630	14.9	20.0	472724	14.9	21.4	341073	14.9	21.5	316052	15.1	21.0
462593	14.7	20.2	93259	14.8	19.8	99424	14.8	19.9	95262	14.9	17.7	273496	14.9	19.8	70329	15.1	16.9
309038	14.7	21.0	183350	14.8	19.8	483316	14.9	20.6	375673	14.9	21.5	139462	14.9	20.5	339283	15.1	18.8
533556	14.7	20.0	238610	14.8	19.2	151540	14.9	19.6	331478	14.9	20.8	486717	14.9	19.9	74158	15.1	19.4
338710	14.7	18.7	172271	14.8	18.0	517973	14.9	20.2	363664	14.9	19.9	190056	14.9	18.9	452133	15.1	21.2
367124	14.7	21.4	199328	14.8	18.9	122882	14.9	19.4	410704	14.9	20.2	215467	15.0	21.1	405847	15.1	19.5
360673	14.7	20.1	175190	14.8	20.0	255371	14.9	19.7	451193	14.9	21.0	211021	15.0	19.7	398545	15.1	20.3
42679	14.7	19.5	188707	14.8	20.3	216969	14.9	19.0	285376	14.9	20.5	75862	15.0	17.8	515664	15.1	21.1
15344	14.7	16.8	185452	14.8	19.9	469933	14.9	19.9	433993	14.9	19.7	242574	15.0	20.6	476815	15.1	20.9
480568	14.7	20.7	444206	14.8	21.0	271065	14.9	21.5	253467	14.9	19.8	373731	15.0	20.3	69546	15.1	18.7
234217	14.7	18.3	235305	14.8	20.4	79414	14.9	19.3	423102	14.9	19.7	446356	15.0	21.2	385563	15.1	20.7
103840	14.7	19.7	519631	14.8	21.0	537110	14.9	21.1	342701	14.9	19.3	364497	15.0	21.0	375190	15.1	20.5
259697	14.7	19.1	206750	14.8	20.0	6607	14.9	15.6	250724	14.9	20.4	465641	15.0	20.8	67165	15.1	19.8
301650	14.7	20.6	94279	14.8	18.7	76474	14.9	18.0	352217	14.9	21.3	7706	15.0	16.3	169489	15.1	19.2
291787	14.7	20.4	297189	14.8	19.6	91581	14.9	18.5	366186	14.9	20.7	303598	15.0	20.6	90913	15.1	18.5
403462	14.7	20.5	408228	14.8	21.3	235771	14.9	18.0	67155	14.9	18.2	260429	15.0	19.0	172530	15.1	19.6
289536	14.7	21.3	91102	14.8	18.8	401298	14.9	19.4	86969	14.9	17.7	416747	15.0	19.4	59572	15.1	18.8
361931	14.7	20.4	92477	14.8	18.7	416803	14.9	19.6	156837	14.9	18.5	319222	15.0	20.1	263871	15.1	21.6
362308	14.7	20.2	89589	14.8	19.3	451984	14.9	20.8	329948	14.9	19.4	421537	15.0	20.7	274506	15.1	21.0
508150	14.7	19.5	128437	14.8	19.3	22075	14.9	17.9	378602	14.9	21.2	160272	15.0	18.2	13931	15.1	18.5
71229	14.7	19.3	500795	14.8	21.7	42161	14.9	19.4	412497	14.9	20.8	127940	15.0	19.2	99823	15.1	18.1
121706	14.7	18.8	380487	14.8	19.3	237244	14.9	19.9	507992	14.9	20.2	438180	15.0	19.9	341131	15.1	20.2
415572	14.7	18.6	168068	14.8	19.9	171455	14.9	18.9	395661	14.9	20.2	32038	15.0	18.0	324815	15.1	19.9
477049	14.7	20.7	514607	14.8	22.3	243101	14.9										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
141953	15.1	20.2	118925	15.2	17.6	499575	15.3	20.2	409687	15.3	20.9	172903	15.4	20.0	23714	15.5	21.3
62964	15.1	20.0	320196	15.2	20.9	264895	15.3	19.1	134518	15.3	20.0	291150	15.4	21.4	92420	15.5	18.6
449715	15.1	20.9	485894	15.2	21.1	66264	15.3	19.1	130798	15.3	19.6	335514	15.4	20.2	148405	15.5	19.2
38975	15.1	19.8	106954	15.2	18.4	468808	15.3	21.2	10301	15.3	17.4	423461	15.4	21.4	186043	15.5	20.1
468048	15.1	20.4	452768	15.2	21.0	97249	15.3	18.3	288702	15.3	20.3	133343	15.4	19.0	452466	15.5	19.8
226148	15.1	20.2	176175	15.2	20.2	511369	15.3	20.1	141597	15.3	19.9	451209	15.4	20.2	509479	15.5	19.7
264296	15.1	19.6	98019	15.2	18.0	222908	15.3	20.8	399017	15.3	20.6	207330	15.4	20.2	62162	15.5	18.4
175669	15.1	19.8	68675	15.2	19.6	515992	15.3	20.5	483628	15.3	20.2	291028	15.4	19.9	248165	15.5	19.1
515929	15.1	21.0	275670	15.2	21.4	361102	15.3	20.4	86223	15.3	18.9	162477	15.4	18.8	369022	15.5	19.8
260295	15.1	20.2	400717	15.2	21.0	389176	15.3	20.6	436341	15.3	19.9	112640	15.4	20.1	367217	15.5	21.2
293241	15.1	19.3	273945	15.2	20.0	283133	15.3	20.2	318643	15.3	19.8	536582	15.4	20.9	269512	15.5	20.3
374866	15.1	20.2	150480	15.2	19.8	140642	15.3	19.5	57327	15.3	19.5	524473	15.4	21.5	117111	15.5	19.2
128138	15.1	19.2	49667	15.2	16.4	277851	15.3	20.0	146151	15.3	18.9	49009	15.4	18.0	416647	15.5	21.5
306383	15.1	20.5	520510	15.2	21.7	475965	15.3	21.2	383273	15.3	20.4	149780	15.4	19.6	364090	15.5	20.5
276209	15.1	20.6	51416	15.2	18.6	152803	15.3	19.1	402472	15.3	21.4	219176	15.4	19.7	86796	15.5	19.2
186855	15.1	20.2	79757	15.2	19.4	331115	15.3	20.2	427293	15.3	20.7	133141	15.4	20.3	487150	15.5	20.2
46565	15.1	17.9	186811	15.2	20.6	128817	15.3	18.4	257134	15.3	20.1	304896	15.4	21.6	352335	15.5	19.3
479683	15.1	20.6	166696	15.2	18.3	104968	15.3	19.4	47068	15.3	17.3	344681	15.4	19.4	367028	15.5	20.9
289695	15.1	19.7	485366	15.2	21.5	364659	15.3	21.2	472496	15.3	20.5	261421	15.4	19.9	524053	15.5	21.2
518595	15.1	21.3	220373	15.2	20.2	403457	15.3	20.2	403718	15.3	20.0	33114	15.4	18.6	58108	15.5	19.6
255431	15.1	19.0	344631	15.2	20.9	199292	15.3	19.2	464714	15.3	20.6	361958	15.4	21.7	128488	15.5	19.8
73539	15.1	18.3	512027	15.2	20.2	346994	15.3	21.1	125406	15.3	19.1	448426	15.4	20.5	481734	15.5	19.6
82314	15.1	18.6	36567	15.2	17.7	488077	15.3	20.1	212482	15.3	19.7	403724	15.4	20.1	266480	15.5	19.8
255201	15.1	19.6	131413	15.2	18.7	296649	15.3	20.1	59814	15.3	19.9	43733	15.4	20.0	191015	15.5	19.1
3192	15.1	16.0	303546	15.2	21.5	82613	15.3	18.9	474491	15.3	19.2	301592	15.4	20.9	32058	15.5	19.3
39342	15.1	19.2	512372	15.2	20.1	162809	15.3	19.0	181049	15.3	19.9	526415	15.4	21.2	486654	15.5	21.3
512415	15.1	21.0	412639	15.2	21.0	182687	15.3	19.4	404051	15.3	20.5	11583	15.4	19.2	218073	15.5	19.7
224247	15.1	19.7	499515	15.2	21.3	25245	15.3	17.6	362450	15.3	21.0	184261	15.4	20.1	213708	15.5	19.6
249070	15.1	20.2	329021	15.2	20.8	178580	15.3	19.1	324171	15.3	19.1	498136	15.4	21.3	142586	15.5	19.8
488334	15.1	18.5	321540	15.2	19.9	367104	15.3	20.1	474491	15.3	21.2	118565	15.4	20.6	341119	15.5	21.7
495832	15.1	22.2	331418	15.2	20.7	53485	15.3	19.2	211149	15.3	18.9	17296	15.4	17.1	116476	15.5	18.5
276109	15.1	19.4	300752	15.2	21.0	250960	15.3	20.9	154142	15.3	21.0	278349	15.4	20.4	145027	15.5	19.6
467076	15.1	21.4	145129	15.2	20.4	236963	15.3	20.3	351010	15.3	19.5	66832	15.4	18.6	404070	15.5	20.1
433965	15.1	21.4	332012	15.2	20.5	142383	15.3	20.5	451201	15.3	20.6	252770	15.4	19.4	182742	15.5	19.6
147302	15.1	18.5	67748	15.2	19.0	505127	15.3	20.4	289033	15.3	19.9	50482	15.4	18.4	2204	15.5	13.7
200006	15.1	19.9	279082	15.2	19.7	458224	15.3	20.8	480084	15.3	21.4	63140	15.4	18.4	445391	15.5	20.2
158904	15.1	19.7	323728	15.2	20.7	107417	15.3	19.0	487959	15.3	20.4	70880	15.4	19.5	385241	15.5	18.8
191668	15.1	18.7	472249	15.2	20.6	533249	15.3	21.9	246127	15.3	20.1	248329	15.4	20.7	254590	15.5	20.4
277189	15.1	19.9	362919	15.2	19.8	483244	15.3	20.3	539426	15.3	21.7	376432	15.4	21.2	334560	15.5	19.3
196409	15.1	21.0	69544	15.2	18.6	395020	15.3	20.0	367950	15.3	20.0	329185	15.4	20.0	398857	15.5	20.9
114246	15.1	19.2	219922	15.2	20.2	225555	15.3	19.4	176133	15.4	18.8	422879	15.4	21.3	333222	15.5	20.6
141820	15.1	20.2	518320	15.2	20.3	382007	15.3	19.4	326293	15.4	20.7	344113	15.4	20.0	446243	15.5	20.2
432749	15.1	20.5	486614	15.2	20.3	220258	15.3	18.6	392340	15.4	21.2	68925	15.4	19.5	177677	15.5	19.8
465629	15.1	21.4	363014	15.2	19.5	304665	15.3	20.8	185724	15.4	19.6	467345	15.4	20.1	116291	15.5	18.7
115410	15.1	18.8	321649	15.2	20.4	79705	15.3	18.3	246511	15.4	19.7	449037	15.4	20.9	128225	15.5	19.4
479789	15.1	20.0	57634	15.2	17.9	364104	15.3	20.3	205489	15.4	18.9	472677	15.4	21.0	526108	15.5	21.8
269142	15.1	20.9	29538	15.2	16.3	167696	15.3	19.1	343842	15.4	19.9	515684	15.4	21.0	487458	15.5	20.8
326536	15.1	20.4	166037	15.2	19.3	262134	15.3	20.3	142264	15.4	20.1	214012	15.4	19.1	16925	15.5	16.5
59561	15.1	20.4	226429	15.2	19.9	122518	15.3	18.0	307063	15.4	18.4	479084	15.4	21.0	56343	15.5	16.8
213218	15.1	18.1	158154	15.2	18.1	424432	15.3	20.6	446122	15.4	21.1	447131	15.4	19.0	458413	15.5	20.8
208630	15.1	20.1	469603	15.2	20.7	184572	15.3	19.6	223922	15.4	19.7	62792	15.4	19.1	314467	15.5	19.7
26043	15.1	18.0	487403	15.2	20.9	263547	15.3	20.5	471559	15.4	20.4	438309	15.4	21.4	347398	15.5	19.6
156389	15.1	19.3	488059	15.2	20.4	366003	15.3	20.7	468029	15.4	21.6	242337	15.4	19.0	287904	15.5	20.5
240892	15.1	21.6	487062	15.2	20.3	51955	15.3	16.9	475378	15.4	20.5	67147	15.4	18.4	218062	15.5	20.3
105439	15.1	19.2	45301	15.2	18.2	129117	15.3	19.2	347845	15.4	20.8	495341	15.4	20.9	115708	15.5	18.7
128521	15.1	19.8	166445	15.2	21.0	93995	15.3	18.7	74184	15.4	18.0	409622	15.4	19.0	361886	15.5	21.8
505736	15.1	20.3	132613	15.2	19.4	435622	15.3	20.4	299737	15.4	20.0	490313	15.4	21.2	266708	15.5	19.3
14264	15.1	17.6	539141	15.2	20.0	48151	15.3	18.0	449704	15.4	21.1	511242	15.4	20.3	2440	15.5	16.2
133556	15.1	18.8	232193	15.2	20.4	371456	15.3	19.7	424507	15.4	21.1	476966	15.4	19.7	483949	15.5	20.7
395374	15.1	20.8	28442	15.2	18.6	128046	15.3	18.9	37734	15.4	18.7	499588	15.4	19.8	391942	15.5	20.1
24619	15.2	17.9	263308	15.2	20.0	515696	15.3	20.8	202983	15.4	19.6	38362	15.4	19.1	351232	15.5	20.8
512235	15.2	19.9	82704	15.2	19.6	332188	15.3	20.1	478567	15.4	20.0	489619	15.4	20.0	317213	15.5	19.7
224728	15.2	19.2	510259	15.2	21.3	365431	15.3	20.9	328539	15.4	20.2	401729	15.4	20.5	159344	15.5	19.5
443123	15.2	19.7	2473	15.2	15.1	392372	15.3	19.8	218767	15.4	19.2	311980	15.4	20.4	112221	15.5	19.8
22550	15.2	18.4	451644	15.2	19.2	114998	15.3	19.3	157009	15.4	19.5	10916	15.5	17.2	451600	15.5	21.4
516500	15.2	20.3	141625	15.2	20.4	107784	15.3	18.7	361988	15.4	21.1	326385	15.5	21.2	171319	15.5	19.4
230067	15.2	18.8	539379	15.2	22.2	307531	15.3	20.7	158373	15.4	18.8	288148	15.5	20.5	479577	15.5	18.9
516024	15.2	20.6	167155	15.2	18.9	61819	15.3	19.0	253842	15.4	20.0	65709	15.5	19.1	499606	15.5	20.4
239963	15.2	21.1	259868	15.2	19.1	2711											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
145230	15.5	19.9	517988	15.6	20.4	211245	15.7	19.5	33416	15.7	18.3	207845	15.8	20.2	336297	15.9	19.7
43245	15.5	18.1	189155	15.6	19.0	93234	15.7	19.2	483907	15.7	20.4	46848	15.8	16.8	164247	15.9	19.4
356921	15.5	20.0	97042	15.6	20.0	506320	15.7	20.7	224661	15.7	20.0	542028	15.8	21.2	249769	15.9	19.8
354042	15.5	20.4	401764	15.6	20.2	499106	15.7	21.3	217653	15.7	19.6	409336	15.8	20.6	70647	15.9	18.5
206436	15.5	18.0	302205	15.6	20.5	286997	15.7	20.6	314463	15.7	20.4	172322	15.8	18.4	317837	15.9	20.7
94149	15.5	17.3	524699	15.6	20.8	148381	15.7	18.9	522713	15.7	20.9	534535	15.8	20.2	383886	15.9	19.9
11953	15.5	18.3	516089	15.6	21.0	342583	15.7	19.2	185586	15.7	19.9	218567	15.8	20.6	35780	15.9	19.0
504018	15.5	21.3	4800	15.6	16.2	181980	15.7	19.4	272955	15.7	20.5	497528	15.8	20.3	514530	15.9	20.4
260216	15.5	19.3	70054	15.6	19.9	146752	15.7	19.7	336	15.7	12.9	409090	15.8	21.4	511482	15.9	21.3
169858	15.5	19.7	509187	15.6	21.5	430118	15.7	20.6	180180	15.7	20.4	455091	15.8	20.2	515385	15.9	21.9
175753	15.5	19.2	518739	15.6	21.5	307188	15.7	19.1	12942	15.7	17.9	251909	15.8	20.4	271107	15.9	20.1
1752	15.5	15.7	488394	15.6	19.1	132711	15.7	19.5	423489	15.7	20.9	519549	15.8	20.8	199259	15.9	20.1
71389	15.5	18.2	480236	15.6	21.5	507838	15.7	19.8	521469	15.7	21.2	363299	15.8	20.3	256585	15.9	19.8
342542	15.5	19.1	72082	15.6	17.6	202584	15.7	19.1	97708	15.7	19.7	286394	15.8	19.3	128940	15.9	18.9
254115	15.5	20.5	152069	15.6	20.5	335492	15.7	20.2	178037	15.7	20.4	135849	15.8	19.7	23656	15.9	17.9
537306	15.5	22.1	487167	15.6	20.4	207532	15.7	18.1	260398	15.7	19.2	508924	15.8	21.7	262459	15.9	20.3
318419	15.5	20.4	79886	15.6	19.3	205984	15.7	20.2	373714	15.7	21.2	64907	15.8	19.2	127351	15.9	19.6
202194	15.5	19.4	343694	15.6	20.5	12354	15.7	17.4	369040	15.7	19.8	292899	15.8	19.9	318268	15.9	20.5
254598	15.5	19.6	524864	15.6	20.1	262705	15.7	19.1	189966	15.7	19.9	511425	15.8	20.8	420835	15.9	21.3
249520	15.5	19.8	58972	15.6	19.0	79798	15.7	19.1	132660	15.7	20.0	449838	15.8	20.8	24802	15.9	19.0
451183	15.5	20.6	38004	15.6	18.2	483570	15.7	19.5	71236	15.7	18.8	241031	15.8	21.3	296241	15.9	20.0
212262	15.5	20.2	119038	15.6	19.6	213889	15.7	19.7	33774	15.7	18.8	36206	15.8	18.8	521895	15.9	20.6
177387	15.5	20.0	469741	15.6	21.5	417356	15.7	20.3	400683	15.7	21.1	223383	15.8	19.5	190123	15.9	18.6
474341	15.5	21.7	121068	15.6	19.2	6894	15.7	16.5	78967	15.7	18.1	280092	15.8	20.0	393022	15.9	20.1
322411	15.5	20.1	218910	15.6	20.7	133401	15.7	18.8	400920	15.7	19.7	391947	15.8	19.7	164636	15.9	19.3
319150	15.5	20.6	461215	15.6	20.4	393769	15.7	21.0	12244	15.7	17.6	210069	15.8	19.8	483273	15.9	20.1
508082	15.5	21.3	429105	15.6	20.4	128921	15.7	19.7	132369	15.7	20.1	16651	15.8	16.5	195423	15.9	20.3
446543	15.5	21.0	301549	15.6	19.6	236445	15.7	20.7	406969	15.7	20.0	296906	15.8	21.0	349304	15.9	18.8
122435	15.5	19.2	21458	15.6	17.4	254300	15.7	19.0	367114	15.7	20.1	333854	15.8	19.4	389528	15.9	20.5
142165	15.5	19.5	389164	15.6	20.6	539586	15.7	20.3	88251	15.8	17.4	229832	15.8	20.5	488286	15.9	19.6
421997	15.6	21.9	103666	15.6	18.9	189944	15.7	19.2	261652	15.8	19.9	445345	15.8	21.7	82369	15.9	20.1
311926	15.6	19.8	245359	15.6	19.9	13024	15.7	17.7	167153	15.8	20.6	439316	15.8	19.9	36043	15.9	18.0
341979	15.6	19.8	123846	15.6	18.1	118471	15.7	18.4	491052	15.8	20.5	333262	15.8	21.1	527885	15.9	21.6
388218	15.6	20.6	315029	15.6	21.2	219981	15.7	19.8	92045	15.8	18.2	422336	15.8	20.5	373622	15.9	20.9
92858	15.6	19.9	36927	15.6	16.7	430554	15.7	21.2	189526	15.8	20.2	483848	15.8	20.1	521184	15.9	20.4
49339	15.6	16.7	528026	15.6	21.3	209785	15.7	19.2	528247	15.8	20.8	399385	15.8	19.6	445164	15.9	20.9
393763	15.6	21.1	137147	15.6	19.1	4891	15.7	17.1	206692	15.8	19.7	511496	15.8	21.2	434089	15.9	20.3
67080	15.6	18.5	42546	15.6	17.0	476570	15.7	20.6	431811	15.8	21.9	362492	15.8	18.8	78058	15.9	19.0
288955	15.6	19.2	72110	15.6	18.7	230358	15.7	19.6	64851	15.8	18.5	308338	15.8	18.9	34472	15.9	17.8
367041	15.6	20.5	403778	15.6	20.9	90921	15.7	18.0	422570	15.8	20.7	507641	15.8	21.9	474511	15.9	20.6
169796	15.6	20.3	215634	15.6	20.0	362390	15.7	19.9	112189	15.8	18.6	316178	15.8	20.8	43008	15.9	18.7
46719	15.6	19.2	404310	15.6	21.3	341107	15.7	20.3	281515	15.8	20.9	172747	15.8	19.5	124055	15.9	19.3
473988	15.6	20.8	349225	15.6	20.7	30305	15.7	17.9	477495	15.8	19.9	425042	15.8	20.9	462809	15.9	21.0
23581	15.6	17.9	164637	15.6	19.7	250986	15.7	19.9	472664	15.8	20.3	114495	15.8	18.4	401199	15.9	19.0
344754	15.6	20.8	418982	15.6	20.3	342187	15.7	20.0	62702	15.8	18.7	421094	15.8	20.6	18918	15.9	17.9
73397	15.6	18.4	208656	15.6	19.7	487210	15.7	20.4	484564	15.8	21.2	116362	15.8	19.0	488170	15.9	20.9
430346	15.6	21.0	388926	15.6	18.6	514725	15.7	20.4	449423	15.8	21.0	133344	15.8	19.1	389419	15.9	20.7
329304	15.6	19.6	71753	15.6	17.3	408544	15.7	21.3	92606	15.8	18.0	487197	15.8	21.0	291883	15.9	19.8
44960	15.6	17.9	61130	15.6	18.7	1775	15.7	16.6	365943	15.8	20.2	139988	15.8	19.2	154622	15.9	19.9
538939	15.6	20.8	794	15.6	16.8	237070	15.7	19.3	274502	15.8	18.8	505961	15.8	20.7	274680	15.9	20.6
388609	15.6	21.1	135631	15.6	19.7	449075	15.7	21.3	276288	15.8	19.0	165154	15.8	19.7	450353	15.9	20.5
318496	15.6	21.2	533935	15.6	21.9	35662	15.7	19.2	520715	15.8	21.1	260337	15.8	20.7	450791	15.9	20.7
136252	15.6	19.4	375166	15.6	21.1	389014	15.7	19.7	274908	15.8	20.9	344716	15.8	19.7	375700	15.9	19.8
201808	15.6	19.1	471326	15.6	19.9	29675	15.7	19.1	420364	15.8	20.1	115425	15.8	18.7	446950	15.9	21.7
328499	15.6	21.2	280585	15.6	19.7	255632	15.7	20.4	502213	15.8	20.4	84952	15.8	18.1	252961	15.9	20.9
297101	15.6	20.6	291176	15.6	20.0	284528	15.7	21.2	87746	15.8	18.8	400201	15.9	20.4	152259	15.9	19.2
417998	15.6	20.7	100541	15.6	18.9	3386	15.7	16.3	309199	15.8	19.7	157020	15.9	20.8	86232	15.9	17.5
507956	15.6	20.8	218334	15.6	19.7	352708	15.7	19.9	168681	15.8	19.2	2587	15.9	16.6	126936	15.9	20.0
376118	15.6	19.9	239183	15.6	20.3	253455	15.7	19.7	77934	15.8	19.7	404526	15.9	20.7	108366	15.9	19.4
283694	15.6	21.9	408924	15.6	19.0	46191	15.7	18.8	259375	15.8	19.6	246990	15.9	20.3	362289	15.9	20.7
436874	15.6	20.0	431417	15.6	20.5	210493	15.7	20.3	68921	15.8	19.1	50485	15.9	18.7	427546	15.9	21.0
173042	15.6	19.4	110034	15.6	19.8	116905	15.7	19.2	517144	15.8	21.9	336344	15.9	20.3	439229	15.9	20.5
484991	15.6	19.5	393912	15.6	20.8	44334	15.7	19.1	519545	15.8	20.4	514833	15.9	21.9	345435	15.9	21.3
126519	15.6	19.8	504161	15.7	20.6	451361	15.7	20.3	487289	15.8	20.9	239806	15.9	19.5	499671	15.9	20.3
66055	15.6	19.1	243981	15.7	19.3	104048	15.7	19.2	342110	15.8	21.4	99103	15.9	20.4	106921	15.9	18.8
440177	15.6	20.5	982	15.7	15.3	292360	15.7	21.3	432974	15.8	21.5	375698	15.9	20.2	31462	15.9	17.4
363952	15.6	18.7	111416	15.7	19.2	60400	15.7	18.2	365963	15.8	20.5	67481	15.9	17.4	232199	15.9	20.4
130287	15.6	18.5	539445	15.7	20.9	293392	15.7	19.4	90845	15.8	19.6	544500	15.9	20.6	159414	15.9	17.8
336204	15.6	20.9	416411	15.7	19.6	154236	15.7	20.2									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
294410	15.9	20.1	374919	16.0	19.2	122942	16.1	19.4	513072	16.1	19.7	65427	16.2	20.0	407004	16.3	21.1
220704	15.9	19.3	35883	16.0	17.6	178696	16.1	19.1	163342	16.1	17.2	209121	16.2	20.7	304093	16.3	22.0
146036	15.9	20.0	367232	16.0	20.2	508441	16.1	21.6	221036	16.1	21.1	215053	16.2	20.8	190239	16.3	20.3
454872	15.9	20.3	209063	16.0	19.0	44525	16.1	16.9	288665	16.1	20.8	498467	16.2	19.7	66345	16.3	19.3
376705	15.9	20.7	195402	16.0	20.2	109048	16.1	18.4	336883	16.1	20.5	386847	16.2	18.9	90342	16.3	19.9
249226	15.9	20.2	74191	16.0	19.2	207267	16.1	19.9	81487	16.1	18.2	525425	16.2	21.2	514205	16.3	21.0
211619	15.9	19.1	84705	16.0	19.0	476282	16.1	21.3	313973	16.1	19.6	523178	16.2	20.6	537473	16.3	21.6
487610	15.9	20.7	515427	16.0	22.1	45556	16.1	17.8	43990	16.1	18.5	542840	16.2	19.2	374933	16.3	19.5
250985	15.9	21.3	479123	16.0	20.1	342687	16.1	19.8	143951	16.1	19.2	255660	16.2	20.1	508686	16.3	20.8
119018	15.9	18.1	350386	16.0	19.4	284050	16.1	20.3	248002	16.1	20.0	255239	16.2	19.3	118496	16.3	20.4
479548	15.9	20.5	96738	16.0	19.1	127135	16.1	18.6	183677	16.1	19.7	46443	16.2	17.9	445819	16.3	20.9
497938	15.9	20.4	213062	16.0	20.3	97436	16.1	17.4	484959	16.1	20.1	255403	16.2	19.8	525221	16.3	19.6
328179	15.9	20.6	205403	16.0	19.5	320097	16.1	21.1	322745	16.1	19.7	367741	16.2	20.8	86662	16.3	18.8
114794	15.9	20.4	327822	16.0	19.7	353644	16.1	20.8	388622	16.1	20.1	419713	16.2	19.5	348091	16.3	19.3
224872	15.9	19.3	34621	16.0	18.0	536819	16.1	22.2	95439	16.1	18.9	19718	16.2	17.5	259022	16.3	20.1
99010	15.9	19.1	4212	16.0	15.5	358473	16.1	21.3	13539	16.1	17.3	60862	16.2	18.4	514386	16.3	19.9
237878	15.9	21.0	263048	16.0	19.4	147903	16.1	18.5	542452	16.1	20.2	207710	16.2	19.8	420821	16.3	21.0
101047	15.9	19.0	6154	16.0	18.1	235575	16.1	19.9	380811	16.1	20.3	66631	16.2	19.1	195471	16.3	20.1
67235	15.9	19.7	279100	16.0	19.5	312710	16.1	20.7	484819	16.2	20.9	218968	16.2	20.6	328082	16.3	19.1
12255	15.9	16.0	32550	16.0	17.7	76543	16.1	19.0	500808	16.2	20.9	16874	16.2	17.4	445784	16.3	20.6
289281	15.9	19.9	534474	16.0	20.5	1968	16.1	15.8	242513	16.2	18.9	264032	16.2	20.4	427358	16.3	20.3
95901	15.9	19.6	28518	16.0	18.2	365005	16.1	21.1	296106	16.2	20.3	320288	16.2	19.6	43274	16.3	18.5
530538	15.9	22.2	274634	16.0	20.0	20919	16.1	17.5	126704	16.2	20.1	288340	16.2	20.5	131444	16.3	17.8
260132	15.9	20.9	425889	16.0	21.7	93275	16.1	18.8	494561	16.2	19.9	151073	16.2	18.4	320551	16.3	21.3
438422	15.9	20.8	320655	16.0	21.0	511234	16.1	20.1	288385	16.2	19.8	342109	16.2	20.1	476134	16.3	20.1
428690	15.9	22.2	522813	16.0	20.5	452970	16.1	21.0	175404	16.2	19.2	525509	16.2	21.7	172144	16.3	20.0
390905	15.9	20.4	435125	16.0	20.9	385233	16.1	19.6	380037	16.2	19.9	335071	16.2	17.5	216502	16.3	19.7
91602	15.9	17.1	250819	16.0	19.9	71111	16.1	19.0	67246	16.2	17.5	107716	16.2	19.9	460218	16.3	21.5
292212	15.9	19.8	475417	16.0	20.7	408597	16.1	21.5	515686	16.2	21.9	387646	16.2	20.8	312528	16.3	19.6
199597	15.9	19.9	62124	16.0	17.0	223470	16.1	19.7	10826	16.2	16.4	255663	16.2	19.7	428644	16.3	20.9
22156	15.9	16.9	310455	16.0	19.5	87267	16.1	19.0	45306	16.2	17.9	267179	16.2	21.1	408444	16.3	20.5
537505	15.9	21.7	201153	16.0	20.5	280314	16.1	20.4	216356	16.2	20.2	103700	16.2	19.2	470629	16.3	21.3
250307	15.9	20.2	10195	16.0	16.3	338763	16.1	19.0	331392	16.2	20.2	356794	16.2	20.9	40740	16.3	18.3
420848	15.9	21.6	180486	16.0	20.4	69476	16.1	19.2	449451	16.2	20.0	135966	16.2	18.6	102312	16.3	17.3
342038	15.9	19.0	206126	16.0	19.9	513771	16.1	19.9	271130	16.2	20.3	362008	16.2	20.3	94295	16.3	19.0
184019	15.9	18.9	70387	16.0	19.7	392583	16.1	20.4	501673	16.2	20.5	123702	16.2	19.1	428673	16.3	20.6
223377	15.9	19.6	392887	16.0	18.9	446689	16.1	21.4	208578	16.2	19.3	182913	16.2	20.0	510724	16.3	21.0
257495	15.9	20.5	269806	16.0	20.5	208620	16.1	20.0	258731	16.2	20.1	9991	16.2	17.9	279511	16.3	20.0
376342	15.9	20.7	454034	16.0	21.6	127909	16.1	20.2	256788	16.2	18.7	485820	16.2	21.2	410960	16.3	20.6
49199	15.9	18.9	118951	16.0	18.9	253066	16.1	19.0	514873	16.2	22.6	482201	16.2	20.8	327101	16.3	19.5
403465	15.9	20.5	323613	16.0	19.3	407771	16.1	19.4	534337	16.2	20.6	228045	16.2	18.9	449461	16.3	20.8
398020	15.9	18.9	129474	16.0	19.8	159387	16.1	19.9	466257	16.2	20.2	512230	16.2	20.4	330644	16.3	20.0
431345	15.9	19.8	70085	16.0	18.5	422026	16.1	20.8	84083	16.2	18.6	337120	16.2	18.5	129118	16.3	18.9
348538	15.9	19.6	521463	16.0	20.1	435621	16.1	21.6	302831	16.2	21.4	455121	16.2	19.9	348489	16.3	18.2
380538	15.9	19.3	427139	16.0	20.6	313040	16.1	19.4	324738	16.2	21.0	60031	16.2	19.1	35002	16.3	17.1
43998	15.9	19.0	227988	16.0	21.0	257243	16.1	19.7	266867	16.2	19.1	523822	16.2	25.3	313170	16.3	20.4
222187	15.9	18.9	140939	16.0	17.8	296613	16.1	20.6	213505	16.2	20.3	165030	16.2	19.0	442984	16.3	19.8
156736	15.9	18.6	344752	16.0	20.1	455009	16.1	21.2	294506	16.2	19.4	389002	16.2	20.1	137951	16.3	17.8
277813	15.9	20.2	27710	16.0	18.4	518065	16.1	20.9	14804	16.2	18.0	504493	16.2	21.3	215958	16.3	20.4
309026	15.9	20.6	295703	16.0	20.5	266977	16.1	19.6	431396	16.2	20.6	246020	16.2	19.7	11597	16.3	17.4
78271	15.9	19.1	454162	16.0	21.1	203355	16.1	19.0	75481	16.2	17.8	347223	16.2	20.8	121426	16.3	19.5
95943	15.9	18.4	57916	16.0	18.9	274845	16.1	20.0	500946	16.2	21.1	324243	16.2	21.2	203184	16.3	19.5
429679	15.9	20.7	285526	16.0	20.7	63364	16.1	18.5	452683	16.2	20.4	524757	16.2	21.8	176844	16.3	19.8
482997	15.9	21.3	142328	16.0	20.5	198097	16.1	20.4	86122	16.2	19.3	387636	16.2	21.1	440831	16.3	20.7
230912	15.9	19.1	454221	16.0	20.8	276821	16.1	19.6	343445	16.2	19.6	101348	16.2	19.1	448672	16.3	21.3
132738	15.9	20.2	476183	16.0	20.0	524475	16.1	23.4	221773	16.2	20.3	52879	16.2	18.5	444990	16.3	20.6
221919	15.9	19.1	306925	16.0	19.1	478900	16.1	20.5	521646	16.2	20.7	80658	16.2	19.4	255564	16.3	20.9
468815	15.9	20.5	458099	16.0	21.1	422999	16.1	20.1	242092	16.2	19.5	420838	16.2	21.4	414458	16.3	19.4
313368	15.9	20.8	118842	16.0	19.6	288932	16.1	18.9	183564	16.2	19.5	213496	16.2	20.5	201090	16.3	19.8
59819	15.9	18.2	535444	16.0	21.1	360899	16.1	20.5	58435	16.2	19.4	241183	16.2	20.0	468787	16.3	19.4
384807	15.9	21.2	521164	16.0	21.1	310660	16.1	20.6	306630	16.2	20.2	454857	16.2	20.3	291460	16.3	20.5
519774	15.9	22.1	421637	16.0	20.7	30163	16.1	18.4	513425	16.2	19.9	39352	16.2	19.2	255788	16.3	19.3
69963	15.9	16.9	158177	16.0	19.6	495879	16.1	20.5	215054	16.2	20.0	122751	16.2	19.2	8066	16.3	17.6
163958	15.9	19.6	455085	16.0	21.2	518048	16.1	20.7	508869	16.2	22.0	369514	16.2	20.2	81104	16.3	18.9
260126	15.9	20.6	478605	16.0	20.6	532672	16.1	20.3	274709	16.2	21.1	396967	16.2	22.3	285813	16.3	19.4
487428	15.9	21.3	527702	16.0	20.9	434275	16.1	19.8	521755	16.2	21.0	219957	16.2	20.6	188179	16.3	20.6
393042	15.9	19.4	342557	16.0	20.2	238448	16.1	19.7	203940	16.2	18.4	53006	16.2	17.6	146210	16.3	19.5
470804	15.9	19.4	170430	16.0	17.5	540149	16.1	20.8	259033	16.2	19.3	44634	16.3	19.5	296004	16.3	19.4
367092	16.0	19.2	108642	16.0	19.7	88924	1										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
488147	16.3	20.0	477484	16.4	20.0	536198	16.4	20.5	44039	16.5	18.6	252917	16.6	20.6	442750	16.7	20.3
72878	16.3	17.8	521750	16.4	20.8	23148	16.4	18.5	191677	16.5	20.3	500099	16.6	19.9	365775	16.7	19.8
253398	16.3	20.2	784	16.4	14.9	385234	16.4	18.0	255792	16.5	20.5	62992	16.6	18.5	16119	16.7	18.5
153119	16.3	20.1	32569	16.4	16.3	485772	16.4	21.3	85137	16.5	18.7	140155	16.6	19.7	537522	16.7	21.9
235282	16.3	19.9	280742	16.4	21.7	530492	16.4	21.9	362303	16.5	21.5	405489	16.6	20.9	136551	16.7	19.3
310129	16.3	20.8	135634	16.4	19.9	346022	16.5	20.0	66673	16.5	19.2	384433	16.6	19.3	138083	16.7	20.2
195148	16.3	20.7	315161	16.4	20.5	223310	16.5	19.4	362283	16.5	20.1	35574	16.6	18.0	174786	16.7	19.6
260412	16.3	19.8	49361	16.4	17.8	46779	16.5	19.5	87762	16.5	18.0	451174	16.6	21.0	323623	16.7	19.3
476303	16.3	20.3	499511	16.4	21.2	46256	16.5	18.9	482437	16.5	20.7	390453	16.6	19.6	404559	16.7	21.6
215778	16.3	20.1	329572	16.4	19.4	82235	16.5	19.5	179248	16.5	20.1	256722	16.6	19.3	153197	16.7	20.3
14775	16.3	19.2	178009	16.4	19.0	515679	16.5	21.6	505387	16.5	20.8	92100	16.6	18.4	174404	16.7	19.4
516640	16.3	21.2	89741	16.4	18.6	452039	16.5	20.7	373246	16.5	21.1	160049	16.6	19.0	39759	16.7	18.0
392598	16.3	20.8	133417	16.4	18.7	76348	16.5	18.5	68071	16.5	18.4	295846	16.6	19.2	206601	16.7	20.3
249780	16.3	19.0	438589	16.4	21.2	19485	16.5	17.5	413405	16.5	20.9	130786	16.6	17.7	135656	16.7	19.4
77239	16.3	19.5	66330	16.4	19.2	40930	16.5	18.5	111985	16.5	20.4	317440	16.6	21.2	130494	16.7	20.1
196465	16.3	20.2	322202	16.4	20.0	477525	16.5	20.0	163106	16.5	19.5	326597	16.6	19.7	195034	16.7	20.0
481973	16.3	20.7	439573	16.4	21.0	439571	16.5	20.5	316876	16.5	17.1	415766	16.6	20.0	108425	16.7	19.5
302619	16.3	21.1	275650	16.4	20.0	328113	16.5	19.5	220547	16.5	20.4	21426	16.6	19.0	305546	16.7	20.5
380166	16.3	19.7	278562	16.4	20.5	514054	16.5	21.8	335073	16.5	20.1	418251	16.6	20.5	453458	16.7	20.9
154896	16.3	19.4	182976	16.4	19.2	40680	16.5	19.1	535649	16.5	20.6	174573	16.6	18.1	37189	16.7	18.2
389664	16.3	21.3	462797	16.4	21.6	34351	16.5	18.4	159329	16.5	20.1	206137	16.6	19.6	511146	16.7	20.6
223421	16.3	19.4	358865	16.4	20.5	128162	16.5	19.4	78438	16.5	18.1	365772	16.6	20.2	103667	16.7	19.0
507240	16.3	20.2	76993	16.4	17.8	186624	16.5	20.4	211133	16.5	21.0	451180	16.6	20.5	393755	16.7	20.9
239171	16.3	20.3	287885	16.4	20.2	122619	16.5	19.0	209350	16.5	19.8	137448	16.6	20.4	511365	16.7	21.1
14813	16.3	18.0	396435	16.4	21.0	348009	16.5	20.1	408275	16.5	21.1	344762	16.6	19.6	387008	16.7	20.0
447746	16.3	20.4	528475	16.4	20.2	55826	16.5	19.5	432693	16.5	21.1	305157	16.6	19.5	88104	16.7	18.4
297540	16.3	19.2	141972	16.4	18.7	401870	16.5	19.7	511305	16.6	21.6	348065	16.6	20.1	68803	16.7	20.2
248592	16.3	20.3	377604	16.4	20.0	471596	16.5	19.5	69596	16.6	17.9	420560	16.6	20.6	515541	16.7	21.5
168169	16.3	20.0	519684	16.4	19.9	380266	16.5	19.6	98442	16.6	17.8	9746	16.6	16.3	199349	16.7	19.5
172134	16.3	18.7	487262	16.4	20.1	506647	16.5	21.6	466511	16.6	20.4	255705	16.6	19.7	477009	16.7	20.7
454943	16.3	19.4	219311	16.4	21.3	89660	16.5	18.0	106546	16.6	18.1	253521	16.6	19.0	472840	16.7	20.4
220729	16.3	19.8	82354	16.4	17.2	473514	16.5	21.0	107874	16.6	19.1	120750	16.6	19.3	479156	16.7	20.5
127891	16.3	19.8	485144	16.4	20.4	499595	16.5	19.5	468879	16.6	19.1	239847	16.6	19.3	449985	16.7	20.7
535481	16.3	20.1	399963	16.4	19.6	417877	16.5	21.2	314440	16.6	20.3	392031	16.6	20.4	52881	16.7	18.4
274309	16.3	20.3	6325	16.4	17.2	220809	16.5	19.3	188445	16.6	19.1	50793	16.6	17.6	418890	16.7	21.1
537790	16.3	20.6	439445	16.4	18.7	204001	16.5	19.5	71473	16.6	17.6	131237	16.6	19.5	97430	16.7	18.1
192450	16.3	19.1	66178	16.4	17.9	159145	16.5	19.8	445469	16.6	19.5	90785	16.6	18.2	422996	16.7	19.9
474566	16.3	20.2	439727	16.4	20.9	451189	16.5	20.6	91910	16.6	19.1	276896	16.6	19.6	129213	16.7	20.0
383225	16.4	19.8	513460	16.4	20.9	134682	16.5	17.5	96060	16.6	18.7	93245	16.6	18.4	202085	16.7	20.7
518351	16.4	20.3	327816	16.4	20.4	385587	16.5	19.7	105943	16.6	19.3	424555	16.6	20.6	20345	16.7	17.9
389502	16.4	19.9	101596	16.4	18.5	74138	16.5	19.8	408563	16.6	21.0	91536	16.6	18.1	96122	16.7	19.2
261551	16.4	20.0	412595	16.4	19.7	65315	16.5	19.2	141222	16.6	19.3	216480	16.6	19.1	98228	16.7	19.6
369688	16.4	20.8	351147	16.4	19.2	181805	16.5	20.3	260251	16.6	18.9	435760	16.6	20.1	7680	16.7	16.2
327179	16.4	20.5	297263	16.4	19.8	530545	16.5	22.2	45114	16.6	18.1	826	16.6	16.2	65326	16.7	20.2
254567	16.4	20.3	239114	16.4	20.0	62721	16.5	18.5	253595	16.6	19.0	65430	16.6	17.1	525145	16.7	20.5
490224	16.4	21.5	387356	16.4	20.2	350930	16.5	20.3	236600	16.6	19.7	364616	16.6	20.1	528729	16.7	21.0
60298	16.4	17.7	66156	16.4	18.1	148297	16.5	20.1	448670	16.6	20.2	504167	16.6	20.4	103861	16.7	19.3
489652	16.4	19.8	461018	16.4	20.9	44163	16.5	19.7	286820	16.6	20.4	45477	16.6	18.5	2434	16.7	16.5
18400	16.4	17.7	59808	16.4	18.7	529874	16.5	19.1	269966	16.6	19.8	272764	16.7	18.7	311190	16.7	18.8
131048	16.4	19.1	50064	16.4	18.4	531071	16.5	22.3	132589	16.6	20.6	245106	16.7	19.7	426501	16.7	19.4
183751	16.4	19.2	16194	16.4	17.6	315010	16.5	20.4	476522	16.6	22.0	121084	16.7	18.9	483648	16.7	19.1
189618	16.4	20.1	242002	16.4	19.2	82187	16.5	19.5	483250	16.6	20.4	102131	16.7	18.8	487145	16.7	20.2
360508	16.4	21.6	85415	16.4	18.3	207195	16.5	19.9	425639	16.6	19.8	104771	16.7	18.8	95457	16.7	18.9
216940	16.4	19.5	520259	16.4	20.7	271704	16.5	20.6	91742	16.6	19.6	475923	16.7	21.2	258721	16.7	19.9
13407	16.4	16.0	312155	16.4	20.2	24666	16.5	19.2	111017	16.6	18.3	539611	16.7	21.6	251899	16.7	20.1
19355	16.4	17.9	231262	16.4	20.0	211776	16.5	20.3	394546	16.6	19.8	150257	16.7	19.3	173261	16.7	19.7
66212	16.4	18.9	24234	16.4	16.2	24004	16.5	17.7	483641	16.6	20.2	149726	16.7	19.4	293896	16.7	21.0
334298	16.4	19.8	365629	16.4	20.1	336279	16.5	19.7	521244	16.6	20.7	329101	16.7	21.0	139086	16.7	18.5
467313	16.4	20.9	238496	16.4	20.9	234328	16.5	19.0	190576	16.6	19.9	163859	16.7	19.2	161296	16.7	19.2
213171	16.4	18.0	506081	16.4	20.9	443049	16.5	20.3	140902	16.6	19.3	255363	16.7	19.2	43900	16.7	17.4
465628	16.4	20.0	240669	16.4	20.4	471299	16.5	20.9	537176	16.6	21.3	97366	16.7	19.6	224263	16.7	19.4
282994	16.4	19.8	326511	16.4	20.1	361523	16.5	21.5	6728	16.6	16.9	540150	16.7	20.9	323375	16.7	19.5
362915	16.4	20.4	225972	16.4	18.3	13342	16.5	17.5	19667	16.6	17.7	338613	16.7	19.2	416527	16.7	19.4
154259	16.4	20.0	47596	16.4	19.6	324854	16.5	21.5	531523	16.6	21.5	315991	16.7	20.3	280604	16.7	20.8
434244	16.4	20.0	325613	16.4	19.7	109164	16.5	19.1	56593	16.6	18.0	515698	16.7	21.5	27870	16.7	19.1
249793	16.4	18.8	508957	16.4	20.1	253610	16.5	18.8	512200	16.6	20.8	157751	16.7	20.6	507911	16.7	20.3
514228	16.4	21.2	98784	16.4	18.7	176467	16.5	19.9	316172	16.6	20.0	363108	16.7	18.2	483889	16.7	19.6
220381	16.4	18.9	332723	16.4	20.7	284966	16.5	20.5	422162	16.6	19.6	450261	16.7	19.7	24116	16.7	17.4
326802	16.4	19.8	87499	16.4	18.8	412839	16.5	21.2	1289								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
160920	16.7	18.7	60407	16.8	19.2	137655	16.9	18.2	387790	16.9	20.5	495344	17.0	20.8	123801	17.1	19.5
344743	16.7	20.7	187688	16.8	20.2	497703	16.9	20.1	2577	16.9	14.9	305456	17.0	20.7	542665	17.1	20.2
366984	16.7	20.7	393768	16.8	20.7	308330	16.9	20.1	221793	16.9	21.0	525899	17.0	21.6	413407	17.1	20.3
440509	16.7	21.2	24409	16.8	19.5	277015	16.9	19.3	4315	16.9	17.8	91717	17.0	19.0	220766	17.1	20.0
444384	16.7	20.4	395060	16.8	20.6	71815	16.9	18.6	185766	16.9	19.0	48526	17.0	17.4	294199	17.1	19.4
245835	16.7	20.2	295117	16.8	20.7	268869	16.9	19.2	483783	16.9	21.1	345463	17.0	20.4	245186	17.1	20.8
432781	16.7	19.9	390219	16.8	20.7	324560	16.9	20.6	85837	16.9	17.4	293424	17.0	20.5	31471	17.1	16.5
313593	16.7	20.3	89861	16.8	17.8	136527	16.9	20.3	338801	16.9	20.2	38188	17.0	19.3	305856	17.1	19.9
520244	16.7	21.0	77127	16.8	18.5	246682	16.9	19.9	302116	16.9	21.1	134623	17.0	19.0	475976	17.1	20.9
48539	16.7	17.8	162288	16.8	20.7	62218	16.9	19.5	224721	16.9	20.5	263857	17.0	21.0	452514	17.1	20.7
410156	16.8	20.6	521411	16.8	21.1	85919	16.9	17.2	136603	16.9	18.9	426	17.0	12.9	22108	17.1	17.0
86711	16.8	20.2	295769	16.8	20.0	366528	16.9	22.0	418100	16.9	20.1	506967	17.0	20.4	511443	17.1	21.0
398721	16.8	19.8	515434	16.8	21.8	499049	16.9	20.6	416463	16.9	20.2	128244	17.0	19.2	516393	17.1	18.9
20136	16.8	17.4	343609	16.8	19.5	166335	16.9	21.2	444370	16.9	19.9	261505	17.0	20.0	7944	17.1	18.1
528106	16.8	21.4	156934	16.8	20.1	398614	16.9	20.3	454224	16.9	21.1	381989	17.0	22.3	516442	17.1	20.0
410958	16.8	21.5	67436	16.8	18.0	291210	16.9	19.8	294340	16.9	19.0	42737	17.0	18.1	521788	17.1	21.0
332136	16.8	20.3	318502	16.8	21.1	451810	16.9	22.0	494572	16.9	20.3	238535	17.0	19.6	324161	17.1	19.9
444296	16.8	20.7	178893	16.8	19.4	83470	16.9	19.1	424620	16.9	19.7	4546	17.0	16.0	340343	17.1	20.4
321311	16.8	21.2	378625	16.8	21.0	91209	16.9	18.1	63261	16.9	18.8	345468	17.0	19.8	195261	17.1	20.4
304387	16.8	20.7	221499	16.8	19.4	344053	16.9	19.3	127907	16.9	19.9	145254	17.1	19.5	393041	17.1	20.1
484626	16.8	20.3	155856	16.8	18.4	88490	16.9	17.9	298747	16.9	20.3	364692	17.1	21.2	483177	17.1	20.0
117763	16.8	19.7	365679	16.8	20.9	159547	16.9	19.9	117238	16.9	17.9	173233	17.1	19.8	284584	17.1	20.0
191511	16.8	19.2	501698	16.8	20.3	95403	16.9	20.0	60581	16.9	18.4	188273	17.1	19.0	57608	17.1	18.9
316963	16.8	20.7	490109	16.8	21.0	107935	16.9	18.9	287184	16.9	20.4	398214	17.1	20.9	78264	17.1	18.1
107524	16.8	18.8	174716	16.8	18.8	102245	16.9	18.9	137512	16.9	19.0	345308	17.1	20.1	295266	17.1	20.4
389181	16.8	20.3	255682	16.8	21.3	405741	16.9	20.1	405421	16.9	20.1	4109	17.1	17.0	337130	17.1	19.4
485161	16.8	20.4	317488	16.8	20.3	433335	16.9	20.2	436627	16.9	20.7	308097	17.1	19.6	518876	17.1	20.5
407566	16.8	19.8	193465	16.8	18.5	313629	16.9	19.8	332865	16.9	19.6	485934	17.1	21.3	523870	17.1	20.7
218520	16.8	19.8	154239	16.8	19.9	23433	16.9	18.1	72310	16.9	19.0	46869	17.1	18.7	169661	17.1	18.7
331397	16.8	19.8	397921	16.8	18.4	516066	16.9	20.7	339374	16.9	20.4	537602	17.1	21.6	46774	17.1	17.2
513407	16.8	20.3	428789	16.8	21.1	129988	16.9	18.5	537652	16.9	22.3	362411	17.1	20.2	531551	17.1	20.0
502464	16.8	19.7	31050	16.8	17.5	256866	16.9	20.0	103758	16.9	19.6	476925	17.1	20.9	71072	17.1	18.0
213230	16.8	18.1	388716	16.8	20.7	435150	16.9	21.3	457514	16.9	20.2	25146	17.1	17.7	118468	17.1	18.6
326679	16.8	19.3	73893	16.8	19.2	414431	16.9	20.0	506433	16.9	19.3	91760	17.1	19.0	275433	17.1	20.2
209869	16.8	21.0	9435	16.8	17.2	126991	16.9	19.4	372541	16.9	20.9	103821	17.1	20.2	107866	17.1	20.2
195340	16.8	19.9	411502	16.8	20.3	340333	16.9	19.1	509888	16.9	21.2	509165	17.1	20.6	352185	17.1	20.9
97393	16.8	18.5	479763	16.9	20.6	54166	16.9	18.8	416598	16.9	21.2	320157	17.1	20.8	160085	17.1	19.0
317847	16.8	20.2	506943	16.9	21.8	188168	16.9	19.5	164181	16.9	19.1	350433	17.1	20.2	295499	17.1	21.5
404101	16.8	20.5	199083	16.9	18.9	407976	16.9	20.2	478521	17.0	20.0	515391	17.1	22.1	486343	17.1	20.9
23828	16.8	18.5	408506	16.9	20.5	112194	16.9	20.3	265297	17.0	21.0	248458	17.1	18.9	329162	17.1	19.6
414020	16.8	21.5	392780	16.9	20.5	168684	16.9	19.5	201433	17.0	19.6	486434	17.1	20.2	456621	17.1	21.2
535187	16.8	20.1	96988	16.9	19.4	317343	16.9	19.8	262980	17.0	20.5	495374	17.1	20.6	489965	17.1	21.5
248835	16.8	22.0	327210	16.9	21.2	471579	16.9	21.7	422659	17.0	20.8	483263	17.1	20.8	146150	17.1	19.0
253801	16.8	20.7	372355	16.9	21.5	152133	16.9	19.2	237096	17.0	19.7	438015	17.1	21.1	61820	17.1	18.7
439483	16.8	19.8	507121	16.9	20.6	334424	16.9	18.9	504695	17.0	21.9	310250	17.1	20.5	22780	17.1	18.5
167245	16.8	19.4	303121	16.9	20.5	351123	16.9	19.6	423472	17.0	21.2	119044	17.1	19.7	67157	17.1	16.8
63307	16.8	18.2	222881	16.9	20.3	418234	16.9	19.4	321271	17.0	19.9	162064	17.1	20.0	368117	17.1	19.5
404888	16.8	21.2	127103	16.9	19.1	134602	16.9	18.6	160224	17.0	19.5	78126	17.1	19.4	531235	17.1	21.3
252135	16.8	20.3	390527	16.9	21.4	154850	16.9	19.2	530998	17.0	20.8	135019	17.1	20.3	135598	17.1	20.3
418339	16.8	20.6	515803	16.9	21.1	250569	16.9	20.2	539223	17.0	21.1	260291	17.1	19.1	126344	17.1	19.4
538369	16.8	20.8	331806	16.9	20.2	340254	16.9	20.1	249765	17.0	19.3	291215	17.1	20.4	510693	17.1	21.1
516050	16.8	21.1	268917	16.9	19.7	289666	16.9	21.6	409703	17.0	21.0	504863	17.1	20.6	283327	17.1	20.3
340282	16.8	20.0	418246	16.9	20.2	346757	16.9	19.7	499614	17.0	21.1	92945	17.1	18.6	202729	17.2	19.9
6450	16.8	17.9	107474	16.9	19.0	448703	16.9	20.4	309781	17.0	20.1	179752	17.1	20.5	287311	17.2	19.6
41395	16.8	18.5	500129	16.9	20.3	290167	16.9	20.2	403827	17.0	20.5	382945	17.1	20.4	300675	17.2	20.1
539350	16.8	20.8	19710	16.9	17.9	90466	16.9	17.5	169573	17.0	19.1	263983	17.1	20.6	323594	17.2	20.4
273886	16.8	19.9	294774	16.9	20.7	97080	16.9	18.6	89480	17.0	16.7	272320	17.1	20.0	320079	17.2	21.3
49344	16.8	18.4	180298	16.9	19.2	218586	16.9	21.0	183257	17.0	19.5	518337	17.1	20.2	280078	17.2	19.8
278267	16.8	21.5	41870	16.9	18.8	195190	16.9	20.4	289769	17.0	20.7	195528	17.1	19.6	247077	17.2	20.5
468791	16.8	21.7	159012	16.9	20.0	55671	16.9	18.4	498311	17.0	20.8	94051	17.1	19.6	270	17.2	11.4
524456	16.8	20.4	135657	16.9	19.4	36910	16.9	18.1	285555	17.0	19.3	400640	17.1	20.4	127421	17.2	19.9
499654	16.8	20.8	262240	16.9	20.0	325174	16.9	20.5	261968	17.0	21.0	21267	17.1	18.8	213755	17.2	18.8
191742	16.8	19.7	483697	16.9	20.3	374918	16.9	19.9	161554	17.0	19.2	23126	17.1	18.6	515675	17.2	21.8
383252	16.8	20.6	158718	16.9	20.2	298751	16.9	20.7	5878	17.0	16.5	364105	17.1	20.3	366559	17.2	20.3
70072	16.8	19.0	340174	16.9	20.5	224090	16.9	21.5	507259	17.0	20.8	388625	17.1	20.6	62130	17.2	18.8
532349	16.8	20.0	355156	16.9	20.5	257802	16.9	19.4	291036	17.0	19.4	312739	17.1	20.5	435767	17.2	21.1
105129	16.8	19.9	265718	16.9	20.5	472926	16.9	20.2	11231	17.0	15.5	506288	17.1	20.2	216302	17.2	20.0
69452	16.8	17.9	236917	16.9	20.1	128581	16.9	19.2	102381	17.0	18.2	302143	17.1	20.9	231882	17.2	19.8
39358	16.8	18.6	499623	16.9	19.6	521559	16.9</										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
153307	17.2	20.0	439784	17.2	20.2	274639	17.3	20.4	72127	17.4	18.2	163329	17.5	20.5	468493	17.5	20.8
294160	17.2	20.3	157738	17.2	19.8	162149	17.3	16.0	79223	17.4	19.3	69994	17.5	19.1	62976	17.5	19.7
348759	17.2	20.6	187242	17.2	21.0	91999	17.3	19.7	300803	17.4	19.8	91998	17.5	20.3	94366	17.5	18.4
142229	17.2	20.6	319320	17.2	20.5	485947	17.3	21.0	274194	17.4	21.3	409332	17.5	19.5	1533	17.5	15.1
258607	17.2	20.8	342458	17.2	20.2	283269	17.3	20.6	375224	17.4	20.8	71375	17.5	18.0	114805	17.5	18.8
181991	17.2	19.1	67536	17.2	16.8	276551	17.3	21.5	215779	17.4	20.7	504857	17.5	20.3	423868	17.5	20.5
102749	17.2	18.4	365111	17.2	19.5	302150	17.3	20.4	23315	17.4	18.1	62023	17.5	18.1	258928	17.5	18.0
425688	17.2	20.1	469491	17.3	19.2	28724	17.3	18.0	181338	17.4	19.5	223416	17.5	20.6	17189	17.5	16.9
495978	17.2	21.1	314448	17.3	20.9	25633	17.3	18.9	26245	17.4	17.3	261847	17.5	20.5	328879	17.5	19.9
177364	17.2	19.4	516150	17.3	20.9	328128	17.3	20.1	212738	17.4	19.6	67901	17.5	18.8	122961	17.5	20.1
395753	17.2	19.5	123910	17.3	18.7	137441	17.3	17.9	224969	17.4	20.0	313321	17.5	20.2	29887	17.5	17.7
405883	17.2	21.2	476575	17.3	20.0	16902	17.3	17.1	311835	17.4	20.4	521759	17.5	20.8	439695	17.5	20.9
236616	17.2	20.0	291606	17.3	20.4	17951	17.3	17.5	437941	17.4	21.4	444951	17.5	20.6	261222	17.5	20.4
73281	17.2	19.0	168613	17.3	19.5	72004	17.3	18.3	532006	17.4	21.9	373668	17.5	21.7	189054	17.5	19.5
338538	17.2	20.3	514279	17.3	20.5	36107	17.3	18.8	383310	17.4	21.2	172185	17.5	18.9	256575	17.5	20.0
9155	17.2	17.3	287119	17.3	19.9	315817	17.3	21.1	326826	17.4	19.7	400948	17.5	19.6	211242	17.5	19.6
105203	17.2	18.5	406976	17.3	21.2	374876	17.3	21.1	125321	17.4	19.1	187379	17.5	20.3	253108	17.5	19.1
294088	17.2	20.1	87834	17.3	17.9	367722	17.3	21.2	485267	17.4	20.8	440383	17.5	21.1	161564	17.5	19.4
393893	17.2	20.9	251852	17.3	18.0	113002	17.3	19.0	188508	17.4	19.8	99250	17.5	17.9	397123	17.5	20.1
180634	17.2	19.8	99971	17.3	20.2	133522	17.3	19.3	88706	17.4	19.2	371594	17.5	21.0	243433	17.5	19.2
159234	17.2	19.4	323760	17.3	21.0	693	17.3	14.0	14645	17.4	17.6	543405	17.5	21.6	152766	17.5	19.8
378130	17.2	20.3	328560	17.3	21.1	325615	17.3	19.3	121918	17.4	19.6	360716	17.5	19.7	13561	17.5	17.3
212385	17.2	20.4	357834	17.3	20.0	453727	17.3	20.6	306820	17.4	20.2	512707	17.5	21.2	67725	17.5	17.5
412399	17.2	20.3	316910	17.3	19.1	134683	17.3	18.5	257219	17.4	20.6	448702	17.5	19.4	342181	17.5	19.4
142236	17.2	18.1	340683	17.3	21.4	127133	17.3	20.4	487127	17.4	20.1	366051	17.5	21.6	20192	17.5	17.9
251261	17.2	20.9	228608	17.3	18.0	19688	17.3	17.3	535595	17.4	20.2	9433	17.5	17.5	4339	17.5	15.9
396661	17.2	22.6	83678	17.3	18.9	174302	17.3	19.6	206002	17.4	20.0	395936	17.5	20.3	439123	17.5	20.9
406758	17.2	20.9	515863	17.3	21.6	389519	17.3	19.7	236551	17.4	20.1	523571	17.5	20.9	388231	17.5	21.1
510582	17.2	20.1	446649	17.3	20.9	137574	17.3	19.1	480519	17.4	21.0	389065	17.5	19.8	424337	17.5	20.4
312548	17.2	20.7	448421	17.3	20.2	517125	17.3	21.6	436613	17.4	21.5	61111	17.5	17.7	16396	17.5	16.9
410398	17.2	19.3	329917	17.3	21.2	25172	17.3	19.2	387970	17.4	21.9	209995	17.5	21.3	154220	17.5	19.6
397073	17.2	21.0	254291	17.3	19.8	246903	17.3	20.1	152767	17.4	20.2	487092	17.5	20.5	352383	17.5	20.2
446554	17.2	20.9	5493	17.3	17.1	517485	17.3	21.4	216752	17.4	20.0	354298	17.5	18.9	72346	17.5	18.4
357337	17.2	21.7	348775	17.3	20.1	481424	17.3	21.1	298054	17.4	20.5	99747	17.5	19.7	308384	17.5	19.5
106420	17.2	17.0	534925	17.3	20.1	480191	17.3	20.0	178015	17.4	19.7	485793	17.5	21.6	102470	17.5	18.9
535312	17.2	20.6	90915	17.3	20.6	406306	17.3	21.0	255415	17.4	19.8	339364	17.5	20.2	485230	17.5	20.5
177309	17.2	19.2	394072	17.3	20.1	530385	17.3	21.7	176218	17.4	20.1	526330	17.5	20.7	122616	17.5	18.4
405072	17.2	20.7	396542	17.3	20.0	515654	17.3	20.5	76489	17.4	18.5	485279	17.5	19.4	465270	17.5	20.1
166516	17.2	18.9	294512	17.3	19.9	233395	17.3	19.4	518346	17.4	20.5	432666	17.5	21.1	121592	17.5	19.2
66040	17.2	19.3	196487	17.3	20.9	80758	17.3	18.8	100268	17.4	18.3	66440	17.5	17.3	479035	17.5	19.8
257190	17.2	20.5	245379	17.3	20.4	251890	17.4	20.0	526662	17.4	20.7	507969	17.5	21.3	396336	17.5	21.1
402214	17.2	19.7	58373	17.3	19.6	26815	17.4	17.9	91855	17.4	19.0	454986	17.5	19.7	535813	17.6	21.4
62827	17.2	18.1	485276	17.3	20.8	108717	17.4	19.4	539606	17.4	21.0	334392	17.5	19.3	291898	17.6	19.8
390428	17.2	20.5	395172	17.3	21.4	107534	17.4	18.2	224120	17.4	20.9	448728	17.5	20.4	4579	17.6	17.6
299214	17.2	20.4	463464	17.3	20.5	219894	17.4	20.5	521505	17.4	21.7	145662	17.5	20.4	46204	17.6	19.7
206626	17.2	19.6	71466	17.3	19.8	286920	17.4	18.8	59747	17.4	18.7	165989	17.5	19.0	98808	17.6	18.0
472154	17.2	20.2	420778	17.3	21.2	379149	17.4	21.4	442170	17.4	19.4	465102	17.5	21.4	566660	17.6	19.4
261628	17.2	19.6	293967	17.3	19.3	166494	17.4	18.8	344687	17.4	19.9	224632	17.5	19.0	262181	17.6	19.5
399720	17.2	20.2	40600	17.3	18.9	433950	17.4	21.9	447073	17.4	20.4	162693	17.5	18.5	416704	17.6	20.6
504898	17.2	20.4	224666	17.3	19.1	284280	17.4	21.0	334715	17.4	21.0	221358	17.5	19.6	479614	17.6	20.9
253615	17.2	20.4	92978	17.3	18.2	391862	17.4	20.6	62797	17.4	18.5	263535	17.5	20.6	526257	17.6	20.9
169404	17.2	19.2	408550	17.3	20.5	513370	17.4	20.4	206167	17.4	19.6	116265	17.5	19.4	328149	17.6	20.5
330216	17.2	19.6	228104	17.3	20.2	67831	17.4	18.2	426138	17.4	21.5	44032	17.5	18.9	129097	17.6	18.7
340395	17.2	20.6	93781	17.3	18.6	144889	17.4	19.2	126349	17.4	19.3	313336	17.5	19.6	191999	17.6	20.4
149558	17.2	19.4	516608	17.3	20.9	493790	17.4	19.7	87595	17.4	17.4	36787	17.5	18.1	319233	17.6	20.3
482916	17.2	20.4	391594	17.3	20.4	127185	17.4	19.1	288055	17.4	20.9	97424	17.5	17.7	511468	17.6	20.2
106607	17.2	18.1	1981	17.3	20.2	288854	17.4	21.3	412076	17.4	21.2	387645	17.5	19.8	451781	17.6	21.7
503420	17.2	21.0	42655	17.3	17.1	515697	17.4	22.1	32986	17.4	17.5	366474	17.5	21.4	85064	17.6	19.4
542962	17.2	21.6	172326	17.3	19.6	22745	17.4	18.0	349792	17.4	19.7	166662	17.5	17.9	57866	17.6	18.5
94228	17.2	17.6	501779	17.3	19.3	107109	17.4	18.0	11716	17.4	18.6	15537	17.5	17.3	399926	17.6	20.1
319491	17.2	20.0	86081	17.3	18.4	23899	17.4	16.8	387884	17.4	19.9	180273	17.5	18.9	324163	17.6	19.9
37621	17.2	18.3	263268	17.3	20.4	144221	17.4	19.6	377581	17.4	21.1	30902	17.5	17.2	395255	17.6	21.2
103927	17.2	18.5	206180	17.3	19.9	454998	17.4	20.5	406855	17.4	18.9	305846	17.5	20.4	107816	17.6	19.5
65122	17.2	16.7	385450	17.3	21.1	540532	17.4	20.9	539573	17.4	20.2	524631	17.5	19.3	283323	17.6	20.0
296643	17.2	20.9	161365	17.3	18.6	264453	17.4	19.6	204119	17.4	19.9	234725	17.5	20.9	358503	17.6	21.6
200695	17.2	19.5	150027	17.3	20.1	414440	17.4	19.9	517954	17.4	21.0	139172	17.5	19.8	33155	17.6	17.9
196489	17.2	19.9	153290	17.3	19.8	311868	17.4	20.8	384109	17.4	18.9	435286	17.5	20.2	3325	17.6	16.2
327219	17.2	20.6	93681	17.3	19.0	244846	17.4	20.2	425760	17.4	19.8	412113	17.5	20.8	266141	17.6	19.5
77923	17.2	19.4	233460	17.3	20.9	358377	17.4	20.4									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
372812	17.6	20.7	448036	17.7	21.0	207820	17.7	20.3	470581	17.8	22.4	300787	17.9	19.6	401752	17.9	21.0
275584	17.6	21.8	130744	17.7	19.1	255820	17.7	20.2	85679	17.8	19.2	189212	17.9	20.2	6520	17.9	17.3
443500	17.6	21.1	98406	17.7	18.0	312010	17.7	19.6	104521	17.8	19.5	54977	17.9	18.6	284302	17.9	20.9
539723	17.6	21.0	350038	17.7	20.3	17552	17.7	18.0	378684	17.8	21.1	516593	17.9	21.9	286779	17.9	21.2
380042	17.6	20.4	187646	17.7	19.2	467734	17.7	21.0	520554	17.8	20.9	294216	17.9	20.7	242247	17.9	19.6
140561	17.6	20.1	419739	17.7	19.2	497040	17.7	21.4	395090	17.8	21.3	446732	17.9	21.5	510041	17.9	19.4
513073	17.6	20.3	154171	17.7	19.6	287347	17.7	19.8	15524	17.8	17.3	287488	17.9	20.0	148638	17.9	20.1
70609	17.6	19.1	388230	17.7	21.1	32295	17.7	17.4	474615	17.8	21.7	132762	17.9	19.1	34347	17.9	18.0
365349	17.6	20.9	77146	17.7	18.9	400513	17.7	20.8	426145	17.8	19.8	5429	17.9	16.6	11881	17.9	18.1
517459	17.6	21.6	123074	17.7	18.6	434689	17.7	20.8	128625	17.8	19.7	419534	17.9	21.3	530448	17.9	20.7
210839	17.6	19.0	258024	17.7	17.8	99900	17.7	18.4	256450	17.8	19.5	328130	17.9	20.3	500892	17.9	21.3
542974	17.6	20.8	307027	17.7	20.0	291774	17.7	21.7	176308	17.8	19.1	317045	17.9	21.2	117307	17.9	19.9
191928	17.6	19.8	20011	17.7	19.0	255562	17.7	18.5	472166	17.8	19.9	266958	17.9	19.4	215430	17.9	20.4
230652	17.6	20.2	42545	17.7	19.3	198420	17.7	18.6	24899	17.8	18.9	536895	17.9	21.6	329787	17.9	21.3
234754	17.6	21.1	465597	17.7	20.5	70764	17.7	19.0	199517	17.8	19.8	328749	17.9	20.2	333778	17.9	18.9
7033	17.6	16.3	164326	17.7	18.9	510934	17.7	20.3	40848	17.8	18.0	511602	17.9	19.7	46260	17.9	18.0
469627	17.6	18.1	124000	17.7	19.1	94439	17.7	18.9	19237	17.8	16.6	283655	17.9	20.9	159892	17.9	18.4
8492	17.6	16.7	405817	17.7	19.4	72290	17.7	18.5	396222	17.8	19.7	185098	17.9	19.6	219303	17.9	18.7
114881	17.6	18.1	310176	17.7	21.4	514071	17.7	21.5	144119	17.8	20.2	405864	17.9	21.0	131725	17.9	19.3
97979	17.6	18.0	249367	17.7	20.2	100977	17.7	19.8	65519	17.8	19.4	210192	17.9	19.2	322635	17.9	20.1
20629	17.6	17.5	390123	17.7	20.3	217833	17.7	21.0	72606	17.8	19.2	200673	17.9	19.6	23762	17.9	19.1
275672	17.6	21.4	147624	17.7	19.0	500785	17.7	22.0	512635	17.8	20.6	389652	17.9	20.6	147228	17.9	19.5
366458	17.6	20.1	435184	17.7	20.9	59261	17.7	17.3	34717	17.8	17.4	21551	17.9	17.9	417897	17.9	20.8
444395	17.6	19.9	97297	17.7	17.1	418116	17.7	19.9	218724	17.8	19.6	12818	17.9	17.7	46109	17.9	18.9
206100	17.6	20.9	163235	17.7	18.4	171859	17.7	20.2	22160	17.8	16.2	139118	17.9	20.2	316055	17.9	20.2
23618	17.6	18.9	508597	17.7	21.4	386327	17.7	19.4	367305	17.8	20.9	60804	17.9	19.5	368372	17.9	21.5
370364	17.6	21.6	225903	17.7	18.3	478973	17.7	21.0	202247	17.8	19.4	333764	17.9	21.0	353751	17.9	21.0
283662	17.6	19.7	63052	17.7	18.4	517498	17.7	21.1	367959	17.8	20.4	282732	17.9	21.0	355770	17.9	19.8
517877	17.6	20.4	273948	17.7	20.4	58907	17.7	19.8	387599	17.8	18.6	139781	17.9	20.4	523644	17.9	21.0
316110	17.6	21.0	248018	17.7	19.6	59741	17.7	18.6	270364	17.8	18.9	428663	17.9	20.9	429582	17.9	21.2
521774	17.6	20.9	368891	17.7	20.4	343791	17.7	21.3	452188	17.8	21.0	112550	17.9	19.5	240691	17.9	20.1
154789	17.6	19.9	313074	17.7	19.5	36103	17.7	18.4	517463	17.8	21.2	28635	17.9	18.2	94797	17.9	19.0
209340	17.6	19.5	64926	17.7	19.1	208225	17.7	20.4	18424	17.8	17.1	176760	17.9	20.2	112499	17.9	20.5
213004	17.6	19.4	225681	17.7	20.9	364004	17.7	20.1	149956	17.8	19.9	350895	17.9	20.1	440229	17.9	20.4
407623	17.6	19.1	408035	17.7	21.4	487242	17.7	20.9	295960	17.8	20.0	263681	17.9	20.5	516251	17.9	20.7
330871	17.6	21.2	104438	17.7	19.3	527969	17.8	21.4	24897	17.8	18.1	481853	17.9	19.0	325978	17.9	20.4
500865	17.6	20.3	177753	17.7	21.1	324983	17.8	20.5	239958	17.8	20.5	364101	17.9	19.7	408530	17.9	22.2
242685	17.6	21.1	283647	17.7	21.9	145804	17.8	19.8	519858	17.8	22.4	391944	17.9	20.1	155904	17.9	19.7
383482	17.6	21.0	38453	17.7	17.3	211498	17.8	20.2	356849	17.8	21.0	232889	17.9	19.0	178879	17.9	21.0
251907	17.6	19.5	428149	17.7	19.8	449348	17.8	20.7	263846	17.8	19.7	442910	17.9	20.5	408721	17.9	21.8
470611	17.6	20.9	214613	17.7	20.6	95154	17.8	19.8	527030	17.8	21.2	288865	17.9	19.7	513495	17.9	21.1
78876	17.6	18.5	25284	17.7	18.1	139077	17.8	19.0	417908	17.8	19.9	451640	17.9	20.1	304581	17.9	20.6
46748	17.6	19.7	385236	17.7	19.6	345960	17.8	20.4	358329	17.8	20.6	167410	17.9	18.5	132891	17.9	18.8
53613	17.6	18.6	190632	17.7	18.9	262714	17.8	19.9	302148	17.8	20.2	399855	17.9	20.6	172178	17.9	19.6
6835	17.6	17.0	497238	17.7	20.7	189325	17.8	20.1	526395	17.8	21.2	399698	17.9	21.0	236710	17.9	17.4
78935	17.6	17.0	12956	17.7	17.8	314158	17.8	21.0	257372	17.8	19.8	19258	17.9	18.2	13014	17.9	17.3
283687	17.6	20.4	390020	17.7	20.8	361925	17.8	20.1	124614	17.8	19.7	87396	17.9	19.1	74635	17.9	18.8
173884	17.6	20.0	59517	17.7	18.2	257557	17.8	19.2	207889	17.8	20.2	282709	17.9	20.9	450548	17.9	20.4
434657	17.6	19.8	359966	17.7	20.8	123609	17.8	19.2	438334	17.8	19.7	484012	17.9	20.8	517439	17.9	21.1
500806	17.6	20.9	11090	17.7	16.4	182223	17.8	24.0	80618	17.8	18.1	392327	17.9	20.0	480841	17.9	19.9
111510	17.6	19.2	348517	17.7	19.9	53248	17.8	18.2	14714	17.8	18.2	515416	17.9	21.1	160348	17.9	19.6
116483	17.6	19.9	374852	17.7	20.0	285308	17.8	19.5	233544	17.8	20.0	401662	17.9	20.5	38420	17.9	18.5
198358	17.6	18.6	60665	17.7	18.6	55978	17.8	17.5	217817	17.8	19.3	23886	17.9	18.5	133350	17.9	19.1
308010	17.6	19.3	174671	17.7	18.1	450747	17.8	20.7	25295	17.8	17.4	347143	17.9	19.1	199982	17.9	20.5
4306	17.6	17.4	111514	17.7	19.1	216961	17.8	18.7	123399	17.8	19.5	128954	17.9	18.9	392211	17.9	21.4
307980	17.6	21.3	172952	17.7	19.6	422987	17.8	21.0	452725	17.8	20.0	244969	17.9	19.5	298261	17.9	19.8
542268	17.6	20.9	520422	17.7	21.5	239718	17.8	20.8	220681	17.8	18.8	205640	17.9	18.6	9296	17.9	17.2
87720	17.6	18.6	69454	17.7	18.0	482614	17.8	21.0	266780	17.8	19.0	342085	17.9	19.7	514460	17.9	20.9
261611	17.6	19.5	50575	17.7	17.8	127930	17.8	19.0	434682	17.8	21.0	192653	17.9	19.3	469944	17.9	20.7
220968	17.6	20.1	94938	17.7	18.4	256385	17.8	20.3	301425	17.8	20.3	439468	17.9	20.6	60369	17.9	18.4
496168	17.6	20.7	31496	17.7	17.5	74883	17.8	19.1	254557	17.8	20.8	295593	17.9	20.2	100065	17.9	20.3
158140	17.6	19.5	38078	17.7	18.3	318153	17.8	20.0	509893	17.8	21.8	376428	17.9	21.5	126956	17.9	19.6
366072	17.6	20.4	66158	17.7	19.0	512013	17.8	20.8	209954	17.8	20.2	97179	17.9	18.7	124030	17.9	19.4
335100	17.6	19.4	235159	17.7	19.4	160586	17.8	20.3	357725	17.8	21.2	14320	17.9	18.1	173635	17.9	19.8
329959	17.6	21.1	492374	17.7	20.9	263877	17.8	21.1	391281	17.8	21.2	3957	17.9	17.5	531149	17.9	21.5
365338	17.6	20.3	407262	17.7	20.9	95451	17.8	20.1	467207	17.8	20.7	522946	17.9	20.9	41337	17.9	18.3
476087	17.7	20.4	487871	17.7	20.5	324092	17.8	20.1	392430	17.8	20.2	543952	17.9	21.3	437034	17.9	20.7
252856	17.7	20.0	510614	17.7	20.5	270297	17.8	19.9	364216	17.8	20.5	29225	17.9	17.8	537446	17.9	21.4
304385	17.7	20.5	147839	17.7	19.9	327552	17.8	20.4									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
188413	17.9	19.0	352249	18.1	19.4	166052	18.1	18.9	171768	18.2	18.6	136602	18.3	18.8	439529	18.3	20.0
502327	17.9	20.4	482408	18.1	20.4	304398	18.1	20.7	391529	18.2	20.6	293429	18.3	20.5	301726	18.3	20.5
428231	17.9	21.1	332066	18.1	22.1	319598	18.1	21.5	100511	18.2	19.3	9478	18.3	19.1	188327	18.3	19.3
405287	17.9	20.9	244664	18.1	20.3	511725	18.1	19.7	371636	18.2	19.0	334042	18.3	20.7	444241	18.3	21.3
54242	17.9	19.0	283648	18.1	20.8	304520	18.1	19.7	73757	18.2	17.9	142769	18.3	18.6	485036	18.3	20.3
256445	17.9	20.3	139240	18.1	20.1	91941	18.1	18.9	477120	18.2	19.6	329208	18.3	21.1	392073	18.3	20.5
30084	17.9	18.8	507957	18.1	20.3	384833	18.1	20.5	323212	18.2	19.8	424520	18.3	21.2	542237	18.3	20.9
480230	17.9	20.2	523393	18.1	21.0	508896	18.1	20.7	483879	18.2	20.6	158966	18.3	20.6	331891	18.3	21.2
28957	17.9	19.0	201896	18.1	19.8	370427	18.1	20.1	448662	18.2	20.3	313341	18.3	18.9	277219	18.3	21.2
190251	17.9	20.7	72117	18.1	18.1	41810	18.1	18.6	470400	18.2	20.0	19715	18.3	17.4	319243	18.3	19.7
338543	17.9	20.1	464890	18.1	21.4	106673	18.1	17.7	112483	18.2	19.6	198238	18.3	18.6	396408	18.3	21.4
347771	17.9	19.4	483382	18.1	21.2	51590	18.1	19.0	143955	18.2	20.0	18808	18.3	17.9	387746	18.4	22.9
485751	17.9	20.7	487389	18.1	21.5	125279	18.1	18.5	278923	18.2	19.9	330268	18.3	20.8	420852	18.4	20.1
380797	17.9	20.5	370539	18.1	21.1	7655	18.1	16.5	209285	18.2	19.5	438508	18.3	20.9	469318	18.4	20.6
492740	17.9	20.8	206300	18.1	19.9	243975	18.1	19.3	408509	18.2	20.5	73086	18.3	19.0	327050	18.4	19.4
522830	17.9	20.6	349068	18.1	20.3	304517	18.1	20.5	323734	18.2	21.8	213541	18.3	20.7	175489	18.4	20.2
349761	17.9	20.0	274817	18.1	18.7	412720	18.1	20.3	525590	18.2	21.6	254938	18.3	20.0	499663	18.4	20.2
488097	17.9	20.8	517864	18.1	21.0	260215	18.1	20.2	305095	18.2	20.4	511831	18.3	21.4	82574	18.4	18.7
306302	17.9	20.8	344651	18.1	20.8	408574	18.1	20.4	254272	18.2	18.8	521491	18.3	21.2	137593	18.4	19.0
221401	17.9	20.6	105560	18.1	19.1	117432	18.1	19.2	437364	18.2	20.5	99810	18.3	20.1	252797	18.4	19.6
394163	17.9	20.6	388256	18.1	21.8	127935	18.1	19.7	439537	18.2	19.6	286837	18.3	20.6	482427	18.4	20.6
378693	17.9	21.5	438231	18.1	20.3	314180	18.1	20.8	527749	18.2	20.9	253771	18.3	19.8	322093	18.4	19.6
515087	18.0	20.4	261042	18.1	19.5	261836	18.1	21.1	373205	18.2	21.4	518288	18.3	19.0	345795	18.4	21.8
447083	18.0	20.7	144715	18.1	20.0	375692	18.1	21.7	511762	18.2	21.4	539278	18.3	21.1	220748	18.4	19.8
163814	18.0	20.1	509475	18.1	21.3	33509	18.1	18.7	281513	18.2	20.4	377939	18.3	19.9	189925	18.4	20.5
357309	18.0	20.8	365366	18.1	21.4	390000	18.1	20.5	306259	18.2	20.6	444402	18.3	18.9	184615	18.4	18.9
311181	18.0	19.5	537970	18.1	20.3	76268	18.1	18.2	461885	18.2	21.7	2637	18.3	15.9	390289	18.4	21.1
371521	18.0	20.3	12154	18.1	18.4	472111	18.1	20.3	180365	18.2	18.8	155906	18.3	20.0	99357	18.4	18.9
396070	18.0	21.3	544386	18.1	20.9	140778	18.1	20.0	201261	18.2	19.3	53290	18.3	18.7	512602	18.4	20.3
306255	18.0	21.2	518334	18.1	20.5	293982	18.1	21.2	513940	18.2	20.4	283093	18.3	20.3	30034	18.4	19.0
396185	18.0	20.7	502579	18.1	18.9	403409	18.1	20.4	243730	18.2	20.7	368828	18.3	21.3	43490	18.4	18.0
407894	18.0	19.9	443579	18.1	20.9	397872	18.1	21.1	466072	18.2	19.7	19434	18.3	18.4	180466	18.4	19.1
316396	18.0	20.5	93352	18.1	19.1	293483	18.1	20.5	104522	18.2	20.0	5452	18.3	16.6	531747	18.4	20.0
202862	18.0	20.5	244678	18.1	20.0	42750	18.1	18.8	504701	18.2	20.9	395452	18.3	20.8	13149	18.4	17.5
375191	18.0	20.8	12825	18.1	18.4	119766	18.1	19.7	186700	18.2	19.9	350870	18.3	20.7	399726	18.4	19.2
16302	18.0	17.7	126821	18.1	19.5	461317	18.1	20.6	17874	18.2	18.4	513117	18.3	20.1	264070	18.4	19.9
349660	18.0	19.3	167499	18.1	18.3	60113	18.1	18.5	444589	18.2	20.8	316284	18.3	20.5	516079	18.4	21.0
144925	18.0	19.5	203996	18.1	19.6	344630	18.1	22.2	328287	18.2	19.7	130586	18.3	19.3	46174	18.4	18.6
475016	18.0	24.4	476776	18.1	20.2	460014	18.1	20.1	296760	18.2	20.2	437513	18.3	20.2	387241	18.4	20.5
202951	18.0	19.5	451350	18.1	20.7	94157	18.1	18.6	173778	18.2	20.0	376418	18.3	21.0	433434	18.4	19.8
315261	18.0	19.6	67337	18.1	19.2	437796	18.1	21.1	80858	18.2	18.6	69722	18.3	18.3	61903	18.4	18.6
139320	18.0	19.6	39086	18.1	18.8	124049	18.1	19.2	328202	18.2	20.3	166356	18.3	20.6	220686	18.4	19.8
151880	18.0	19.5	340965	18.1	21.8	232222	18.1	19.9	28272	18.2	17.5	305572	18.3	20.3	292990	18.4	20.2
223171	18.0	19.0	398107	18.1	20.6	157427	18.1	20.9	461130	18.2	20.4	401675	18.3	21.0	92071	18.4	17.9
447383	18.0	20.3	204284	18.1	20.8	131574	18.2	19.9	348500	18.2	19.2	59925	18.3	18.2	253698	18.4	19.3
488160	18.0	20.7	531155	18.1	21.5	95622	18.2	18.8	84958	18.2	18.8	432386	18.3	20.4	358508	18.4	21.2
130941	18.0	19.3	160031	18.1	20.0	284944	18.2	19.3	257770	18.2	19.9	34459	18.3	16.1	348355	18.4	20.8
102791	18.0	18.3	369985	18.1	20.3	267168	18.2	20.7	239661	18.2	20.4	429733	18.3	21.8	470425	18.4	20.0
296962	18.0	20.3	201105	18.1	20.3	463396	18.2	21.4	78985	18.2	18.2	537382	18.3	20.9	192972	18.4	19.2
396991	18.0	21.9	410870	18.1	20.6	303499	18.2	21.8	40550	18.2	18.6	258031	18.3	20.6	181800	18.4	20.7
539871	18.0	20.6	176722	18.1	19.7	370216	18.2	21.8	444087	18.2	19.1	43385	18.3	17.5	5340	18.4	17.7
165463	18.0	19.0	203325	18.1	19.1	168960	18.2	19.8	178811	18.2	20.4	319188	18.3	19.7	311200	18.4	20.2
20896	18.0	17.7	33186	18.1	18.7	465107	18.2	21.0	202511	18.2	20.4	323225	18.3	19.1	158754	18.4	19.9
470822	18.0	19.2	319273	18.1	20.3	72957	18.2	19.4	533993	18.2	20.4	512214	18.3	20.3	115847	18.4	18.4
91712	18.0	18.9	408416	18.1	21.0	66764	18.2	18.4	204431	18.2	19.0	431061	18.3	20.4	63020	18.4	18.6
128260	18.0	19.4	472255	18.1	20.1	8687	18.2	17.8	401248	18.2	20.4	155778	18.3	19.4	344635	18.4	19.9
183216	18.0	19.2	431092	18.1	21.0	460241	18.2	21.2	81448	18.2	18.5	251886	18.3	18.0	514577	18.4	21.0
117228	18.0	20.2	535800	18.1	20.2	272543	18.2	20.7	530476	18.2	21.6	185034	18.3	19.8	46923	18.4	17.3
487346	18.0	20.9	16434	18.1	17.2	255408	18.2	20.0	59921	18.2	19.5	395478	18.3	20.7	412037	18.4	21.1
141707	18.0	19.9	157683	18.1	20.6	186641	18.2	20.4	49258	18.2	18.4	407978	18.3	20.8	133671	18.4	19.7
149735	18.0	19.8	369097	18.1	19.6	424625	18.2	21.2	640	18.2	14.1	317709	18.3	20.2	9428	18.4	16.7
94774	18.0	18.4	448410	18.1	20.3	505422	18.2	20.1	487021	18.2	20.8	390423	18.3	19.9	21471	18.4	18.5
154802	18.0	19.3	302199	18.1	19.4	466366	18.2	22.0	151494	18.2	19.4	454441	18.3	21.2	156596	18.4	20.4
35570	18.0	19.0	57875	18.1	18.3	369988	18.2	18.7	146676	18.2	19.5	93767	18.3	18.1	414083	18.4	20.9
499062	18.0	21.2	193425	18.1	18.6	523053	18.2	20.2	155413	18.2	20.6	73494	18.3	19.2	455126	18.4	20.4
112154	18.0	19.2	25955	18.1	17.9	521751	18.2	21.4	418035	18.2	19.4	254260	18.3	20.1	72828	18.4	19.0
127296	18.0	20.0	514977	18.1	21.9	46005	18.2	19.1	5524	18.3	16.0	52052	18.3	18.8	66531	18.4	18.4
35501	18.0	17.8	6374	18.1	16.6	154101	18.2	19.9	333959	18.3	22.2	86106	18.3	17.9	524676	18.4	20.9
276063	18.0	19.5	213818	18.1	19.3	357726	18.2	2									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
204092	18.4	20.0	435871	18.5	21.2	353873	18.5	19.4	43550	18.6	18.5	183683	18.7	19.3	398633	18.7	20.4
527784	18.4	20.6	46277	18.5	18.7	424525	18.5	21.2	183612	18.6	19.2	487271	18.7	21.1	450943	18.7	21.5
161501	18.4	20.2	387377	18.5	20.4	186712	18.5	19.0	315053	18.6	20.7	266815	18.7	19.7	544132	18.7	21.1
112958	18.4	19.9	244898	18.5	19.7	236501	18.5	20.6	287350	18.6	20.3	307069	18.7	19.0	324293	18.7	20.3
59494	18.4	19.3	62174	18.5	19.0	130240	18.5	18.9	76153	18.6	18.7	450757	18.7	20.7	177685	18.7	19.3
25701	18.4	17.2	88130	18.5	18.1	131216	18.5	19.8	432868	18.6	21.1	75599	18.7	18.3	47319	18.7	17.9
40218	18.4	18.2	114623	18.5	19.2	508461	18.5	20.8	487362	18.6	21.4	399336	18.7	19.4	330282	18.7	18.6
142207	18.4	19.7	158592	18.5	20.9	288948	18.5	19.3	383989	18.6	20.7	476059	18.7	19.8	337111	18.7	21.0
135549	18.4	21.0	127112	18.5	20.1	110148	18.5	18.8	136362	18.6	19.8	537489	18.7	22.0	417885	18.7	20.8
74805	18.4	18.8	260407	18.5	19.3	134986	18.5	19.4	392409	18.6	20.6	47978	18.7	18.6	225067	18.7	19.3
449954	18.4	19.9	141932	18.5	20.9	73450	18.5	18.3	285510	18.6	19.2	441940	18.7	20.9	332036	18.7	20.9
407462	18.4	20.1	123153	18.5	19.8	491732	18.5	20.8	466060	18.6	19.4	146276	18.7	20.2	235237	18.7	20.6
83096	18.4	19.1	192515	18.5	20.0	152913	18.5	18.0	89837	18.6	18.5	261829	18.7	19.0	169730	18.8	19.7
304559	18.4	20.3	361546	18.5	20.8	349683	18.5	18.7	65881	18.6	17.9	261780	18.7	20.0	461511	18.8	21.4
187893	18.4	19.7	537586	18.5	21.5	34517	18.5	17.8	395028	18.6	20.1	245147	18.7	19.8	224998	18.8	21.1
293689	18.4	20.1	249371	18.5	20.1	515021	18.5	21.0	507665	18.6	21.2	127818	18.7	19.3	104277	18.8	18.4
18168	18.4	16.9	446248	18.5	21.5	476690	18.5	20.5	482793	18.6	20.2	527361	18.7	21.2	64064	18.8	18.6
260681	18.4	19.9	192736	18.5	20.9	61680	18.5	19.4	288263	18.6	19.3	55311	18.7	18.8	148264	18.8	19.0
206768	18.4	19.1	24605	18.5	16.5	19550	18.5	18.2	366130	18.6	20.7	90912	18.7	20.2	134927	18.8	19.0
364701	18.4	21.4	475933	18.5	21.5	78430	18.5	19.2	35495	18.6	19.1	19736	18.7	17.1	97884	18.8	18.0
18548	18.4	17.6	211115	18.5	20.6	152728	18.6	18.5	175276	18.6	19.6	43171	18.7	17.5	181013	18.8	20.3
13915	18.4	17.2	66480	18.5	17.9	333269	18.6	20.3	476101	18.6	20.6	447258	18.7	21.2	513194	18.8	20.3
365379	18.4	20.1	159297	18.5	19.8	232178	18.6	19.5	381984	18.6	19.8	141584	18.7	19.4	483065	18.8	19.0
335055	18.4	20.0	319392	18.5	20.1	251791	18.6	19.5	360112	18.6	20.2	129597	18.7	18.9	536935	18.8	22.0
486633	18.4	19.9	124087	18.5	20.1	123252	18.6	18.9	288458	18.6	19.3	183379	18.7	19.4	76394	18.8	18.7
476987	18.4	19.4	182395	18.5	20.0	509698	18.6	19.9	403733	18.6	20.5	9376	18.7	17.0	30880	18.8	17.6
452671	18.4	20.9	518363	18.5	20.0	55422	18.6	18.1	389882	18.6	20.0	161407	18.7	20.0	28481	18.8	19.2
355504	18.4	21.1	192265	18.5	20.2	337966	18.6	18.8	485932	18.6	21.4	396067	18.7	20.9	338023	18.8	20.2
87325	18.4	18.6	8544	18.5	16.9	478617	18.6	20.0	113446	18.6	20.0	78368	18.7	18.9	363711	18.8	19.8
390917	18.4	20.6	334353	18.5	19.2	1091	18.6	15.3	258836	18.6	19.9	153292	18.7	19.5	313061	18.8	19.4
357684	18.4	20.2	242861	18.5	20.9	186969	18.6	20.9	526868	18.6	21.6	516140	18.7	20.5	115121	18.8	18.3
517722	18.4	20.2	401736	18.5	20.4	197599	18.6	20.8	265111	18.6	18.7	112524	18.7	19.3	187075	18.8	19.4
344145	18.4	20.2	441238	18.5	21.0	278960	18.6	19.5	108812	18.6	18.3	121221	18.7	19.7	536875	18.8	20.9
393953	18.4	20.7	2558	18.5	16.6	163282	18.6	20.7	508998	18.6	21.5	248818	18.7	17.0	246619	18.8	19.8
518045	18.4	20.2	221031	18.5	19.9	187423	18.6	19.8	390397	18.6	19.9	361948	18.7	21.4	161001	18.8	17.9
250979	18.4	20.5	316018	18.5	20.8	142404	18.6	17.9	123450	18.6	18.5	540402	18.7	20.9	416766	18.8	20.4
493082	18.4	20.9	171747	18.5	18.6	160397	18.6	19.8	410094	18.6	21.6	1889	18.7	15.1	2805	18.8	16.0
157706	18.4	19.6	449384	18.5	19.9	482488	18.6	25.6	431394	18.6	22.7	417946	18.7	21.1	515333	18.8	20.7
51425	18.4	19.1	173272	18.5	19.5	384507	18.6	20.1	469350	18.6	20.1	377627	18.7	21.3	351188	18.8	20.6
180346	18.4	19.4	339308	18.5	19.6	472172	18.6	20.6	66233	18.6	19.0	445824	18.7	20.3	539664	18.8	21.3
336129	18.4	20.6	87414	18.5	19.3	188284	18.6	20.0	471089	18.6	19.8	113091	18.7	19.4	195207	18.8	18.0
102984	18.4	19.2	143281	18.5	18.5	451163	18.6	20.3	139861	18.6	19.0	123746	18.7	19.6	304513	18.8	20.8
528132	18.4	21.7	367932	18.5	20.0	243253	18.6	20.2	350338	18.6	20.4	164097	18.7	19.3	78003	18.8	20.1
17683	18.4	17.4	345526	18.5	20.0	410176	18.6	19.8	118839	18.6	19.2	159944	18.7	19.9	461144	18.8	20.9
39008	18.4	18.0	223388	18.5	19.6	43181	18.6	17.2	161706	18.6	19.8	184376	18.7	20.6	69604	18.8	17.9
11855	18.4	17.6	255733	18.5	20.5	470692	18.6	20.7	269930	18.6	19.9	166436	18.7	19.8	261613	18.8	19.6
312373	18.4	20.3	166943	18.5	21.3	17324	18.6	18.7	107851	18.6	19.5	507254	18.7	20.7	203967	18.8	19.7
166934	18.4	20.5	477908	18.5	22.0	401268	18.6	20.9	482217	18.6	19.8	262071	18.7	21.0	38405	18.8	18.9
414043	18.4	19.6	350933	18.5	20.2	16033	18.6	17.1	542647	18.6	20.9	67605	18.7	18.0	170411	18.8	19.0
392519	18.4	20.3	485197	18.5	20.7	19700	18.6	17.8	69435	18.6	19.6	172452	18.7	20.0	18797	18.8	18.1
68043	18.4	18.1	62428	18.5	19.7	23703	18.6	18.1	517471	18.6	21.4	371460	18.7	21.1	171531	18.8	20.5
15549	18.4	17.2	467338	18.5	22.2	395084	18.6	22.6	327187	18.6	21.2	142102	18.7	19.3	188529	18.8	19.8
381145	18.4	20.3	239204	18.5	20.7	70062	18.6	18.7	101934	18.6	19.1	294807	18.7	19.9	378647	18.8	20.4
169875	18.4	19.0	280300	18.5	19.7	415767	18.6	21.5	128178	18.6	19.1	386937	18.7	20.8	485971	18.8	21.3
537180	18.4	20.6	509699	18.5	20.6	473406	18.6	20.5	5933	18.6	17.3	123493	18.7	18.4	219103	18.8	20.7
430025	18.4	20.6	195401	18.5	19.2	7026	18.6	18.0	511743	18.6	19.7	229934	18.7	20.1	476031	18.8	20.4
254651	18.4	19.8	328092	18.5	20.7	12800	18.6	16.2	509929	18.6	20.7	367984	18.7	20.8	155579	18.8	19.6
348521	18.4	20.2	156930	18.5	19.6	318381	18.6	19.8	137334	18.6	20.4	219970	18.7	19.7	324303	18.8	20.4
131543	18.4	19.3	508207	18.5	20.8	398520	18.6	19.8	282963	18.6	20.7	163797	18.7	19.7	447670	18.8	20.6
493576	18.4	21.4	38081	18.5	19.1	4628	18.6	14.5	485880	18.6	20.6	345465	18.7	21.2	388665	18.8	19.7
101852	18.4	19.6	155588	18.5	19.5	295420	18.6	20.1	104207	18.6	20.3	61281	18.7	19.4	263863	18.8	20.7
424519	18.4	21.1	343370	18.5	20.1	367498	18.6	21.0	503459	18.6	21.3	317723	18.7	21.4	322387	18.8	20.0
15324	18.4	18.0	521431	18.5	20.2	437086	18.6	21.6	165274	18.6	19.0	124684	18.7	19.3	219312	18.8	18.9
254210	18.4	19.4	39875	18.5	17.1	472401	18.6	21.2	365495	18.7	20.7	536970	18.7	20.9	178284	18.8	18.3
137401	18.4	18.4	129082	18.5	19.8	160334	18.6	19.8	353529	18.7	20.8	42127	18.7	19.1	41040	18.8	17.9
517976	18.4	21.0	485311	18.5	19.3	214002	18.6	18.8	43862	18.7	17.7	319098	18.7	20.7	259759	18.8	19.6
179219	18.4	20.0	516966	18.5	21.0	293876	18.6	19.9	142901	18.7	19.2	287039	18.7	20.0	87436	18.8	19.5
305549	18.4	20.0	202425	18.5	19.3	455471	18.6	20.9	135611	18.7	19.2	260180	18.7	19.4	407002	18.8	21.4
382314	18.4	20.8	182312	18.5	19.8	160235	18.6										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
273767	18.8	21.1	224885	18.9	19.9	382104	18.9	20.1	402895	19.0	20.0	132387	19.1	19.0	186307	19.2	19.9
520229	18.8	20.6	432758	18.9	21.3	184262	18.9	20.4	330224	19.0	19.8	361911	19.1	21.4	392116	19.2	21.1
111355	18.8	19.0	206700	18.9	19.5	182094	18.9	19.8	219962	19.0	20.0	185077	19.1	19.9	75863	19.2	18.1
204471	18.8	19.4	17517	18.9	17.0	159399	18.9	18.9	232580	19.0	20.0	15762	19.1	17.5	95133	19.2	18.9
201096	18.8	19.9	321373	18.9	19.5	310035	18.9	20.1	76211	19.0	19.1	144340	19.1	19.9	485866	19.2	21.3
59117	18.8	18.3	457424	18.9	19.8	291025	18.9	20.2	521844	19.0	21.4	237029	19.1	20.6	139260	19.2	19.3
434634	18.8	20.3	77378	18.9	19.5	542838	18.9	20.8	308898	19.0	20.4	423182	19.1	20.5	267210	19.2	20.7
150518	18.8	19.9	402014	18.9	20.3	406301	18.9	21.1	160410	19.0	19.9	223953	19.1	19.4	250480	19.2	19.6
144378	18.8	19.4	325764	18.9	20.6	280031	18.9	19.4	499613	19.0	20.5	389286	19.1	20.8	391151	19.2	22.6
406759	18.8	21.7	186836	18.9	20.8	318000	18.9	20.3	133893	19.0	19.2	228639	19.1	20.2	473003	19.2	19.3
531385	18.8	20.6	348306	18.9	20.8	145102	18.9	20.4	112594	19.0	19.4	112418	19.1	18.7	92373	19.2	18.5
335047	18.8	19.6	61176	18.9	18.5	20445	18.9	17.1	296454	19.0	20.7	540284	19.1	21.3	72682	19.2	19.0
207649	18.8	19.0	362280	18.9	21.3	154846	18.9	19.2	286554	19.0	20.0	22429	19.1	18.1	435089	19.2	21.3
515974	18.8	20.2	347200	18.9	20.4	362582	18.9	20.2	468495	19.0	21.8	80811	19.1	19.9	8219	19.2	15.9
95890	18.8	19.9	435220	18.9	21.0	122701	18.9	18.5	340292	19.0	20.5	361904	19.1	20.0	117731	19.2	19.0
260107	18.8	20.6	498329	18.9	21.2	200361	18.9	19.9	72616	19.0	19.4	136012	19.1	19.7	423836	19.2	20.5
483303	18.8	21.2	23387	18.9	18.9	99826	18.9	18.9	175009	19.0	19.3	192400	19.1	18.5	252480	19.2	18.0
529532	18.8	22.2	402000	18.9	21.5	51516	18.9	18.9	485868	19.0	21.5	68902	19.1	18.4	383237	19.2	19.8
449747	18.8	21.1	130316	18.9	19.0	309066	18.9	20.7	480290	19.0	21.4	255608	19.1	20.7	347500	19.2	21.1
35077	18.8	18.5	178800	18.9	19.1	359477	18.9	20.6	410913	19.0	21.2	286865	19.1	21.1	34905	19.2	18.5
424717	18.8	21.5	391866	18.9	19.8	316986	18.9	21.5	413270	19.0	19.1	287289	19.1	20.9	132518	19.2	18.3
407030	18.8	21.2	318308	18.9	19.7	389158	18.9	20.5	117624	19.0	18.8	89223	19.1	19.2	444218	19.2	21.0
275371	18.8	21.3	384907	18.9	20.5	212823	18.9	20.3	186745	19.0	20.1	500967	19.1	20.2	57976	19.2	18.9
171122	18.8	20.3	250319	18.9	20.6	449907	18.9	20.8	259069	19.0	19.0	208955	19.1	20.2	341094	19.2	20.3
465051	18.8	21.9	315797	18.9	20.5	14063	18.9	17.8	55816	19.0	18.7	187831	19.1	20.0	444067	19.2	20.0
211424	18.8	19.4	435225	18.9	20.8	105761	18.9	19.4	211720	19.0	19.2	155899	19.1	19.2	254179	19.2	20.5
488039	18.8	20.8	85108	18.9	19.0	60519	18.9	19.1	174100	19.0	19.7	344770	19.1	19.2	471589	19.2	20.1
83496	18.8	19.6	43673	18.9	19.3	451616	18.9	21.2	129075	19.0	18.8	520700	19.1	22.1	252069	19.2	20.4
351202	18.8	20.3	66772	18.9	19.7	526275	18.9	20.3	109014	19.0	20.5	61144	19.1	19.6	515681	19.2	21.4
300520	18.8	20.0	234604	18.9	20.2	348773	18.9	21.0	278299	19.0	20.9	143232	19.1	18.5	25889	19.2	17.7
48473	18.8	19.2	414383	18.9	19.9	497690	18.9	20.7	355488	19.0	19.6	81245	19.1	19.3	53715	19.2	19.0
138071	18.9	20.5	74954	18.9	18.1	430442	18.9	19.5	410123	19.0	20.9	259885	19.1	19.7	131560	19.2	19.4
81102	18.9	19.0	225656	18.9	19.9	517797	18.9	20.5	496126	19.0	21.4	8873	19.1	17.3	383263	19.2	20.4
134324	18.9	18.5	177759	18.9	19.8	481614	18.9	20.1	212760	19.0	20.4	98275	19.1	18.3	250987	19.2	20.3
42794	18.9	17.6	389994	18.9	21.0	225586	18.9	21.0	182045	19.1	20.7	379891	19.1	21.6	531200	19.2	20.8
537419	18.9	21.2	485972	18.9	21.1	481572	18.9	20.6	294220	19.1	19.2	384841	19.1	20.2	98328	19.2	18.6
317253	18.9	20.2	328492	18.9	20.7	371836	18.9	19.8	112368	19.1	19.7	348947	19.1	21.0	446323	19.2	21.6
47504	18.9	18.5	143624	18.9	20.5	329158	18.9	19.7	404025	19.1	20.5	528084	19.1	21.3	371404	19.2	20.8
460796	18.9	21.1	399272	18.9	21.1	478624	18.9	21.1	408072	19.1	20.5	153048	19.1	20.7	6781	19.2	18.6
366547	18.9	20.4	487953	18.9	20.3	185145	18.9	20.5	172699	19.1	19.7	65035	19.1	18.8	395430	19.2	20.5
407852	18.9	20.6	466680	18.9	20.7	52347	18.9	19.1	9753	19.1	17.6	452114	19.1	21.4	496968	19.2	20.6
153199	18.9	18.9	350145	18.9	20.1	243602	18.9	20.1	258970	19.1	19.8	353501	19.1	20.7	327212	19.2	19.6
497868	18.9	20.6	279122	18.9	19.8	156463	18.9	19.5	166937	19.1	20.3	447721	19.1	20.9	367464	19.2	20.6
49470	18.9	17.8	84888	18.9	19.6	128938	18.9	19.8	220661	19.1	19.2	147689	19.1	19.7	91871	19.2	18.9
366088	18.9	20.2	315767	18.9	21.2	485357	18.9	19.5	397145	19.1	21.4	51189	19.1	17.5	124123	19.2	20.1
329525	18.9	19.6	539665	18.9	21.5	483266	18.9	20.6	155820	19.1	18.7	45012	19.1	17.7	473391	19.2	20.5
16008	18.9	18.4	168835	18.9	21.0	295382	18.9	20.6	321853	19.1	19.9	262928	19.1	20.6	2920257	19.2	19.5
510581	18.9	21.0	484008	18.9	21.2	103977	18.9	19.0	305893	19.1	19.6	427521	19.1	21.3	220684	19.2	19.6
259984	18.9	19.5	320185	18.9	20.1	424424	18.9	20.8	269635	19.1	19.2	333486	19.1	21.0	244863	19.2	19.6
133972	18.9	19.6	513984	18.9	21.3	348094	18.9	20.4	369767	19.1	20.3	122383	19.1	19.2	321486	19.2	19.8
126673	18.9	19.4	243548	18.9	21.2	482367	18.9	20.4	297226	19.1	20.0	349182	19.1	20.4	252848	19.2	20.9
450506	18.9	20.7	428624	18.9	21.5	288054	18.9	19.5	504250	19.1	20.8	470507	19.1	21.7	49238	19.2	19.1
297016	18.9	20.5	156884	18.9	19.3	523936	18.9	21.8	272531	19.1	20.4	321407	19.1	19.8	330306	19.2	19.9
11337	18.9	18.7	212853	18.9	19.8	328072	19.0	19.6	85400	19.1	18.5	267697	19.1	18.5	293506	19.2	20.2
233396	18.9	19.6	140007	18.9	18.9	119341	19.0	19.1	449459	19.1	20.3	132675	19.1	20.5	518741	19.2	21.0
288755	18.9	20.4	188827	18.9	20.3	510599	19.0	21.1	198890	19.1	18.9	333157	19.1	19.1	428569	19.2	20.6
113370	18.9	20.0	96748	18.9	18.9	69310	19.0	19.4	449741	19.1	21.0	321328	19.1	20.2	118028	19.2	19.8
84513	18.9	18.4	99133	18.9	19.4	285594	19.0	19.4	341100	19.1	21.6	256473	19.1	20.4	462576	19.2	21.1
67738	18.9	19.6	523252	18.9	20.9	28066	19.0	17.9	170016	19.1	20.2	504881	19.1	20.7	40127	19.2	18.1
213716	18.9	19.2	396364	18.9	18.8	273850	19.0	19.0	84152	19.1	18.9	283470	19.1	17.2	48142	19.2	19.2
344867	18.9	20.9	501860	18.9	20.6	316593	19.0	20.6	241037	19.1	21.3	268042	19.1	20.5	8027	19.2	17.7
291134	18.9	18.9	293992	18.9	20.5	393847	19.0	20.7	81226	19.1	19.3	261570	19.1	20.2	282369	19.2	21.2
168997	18.9	20.6	204814	18.9	19.6	99929	19.0	19.2	389047	19.1	20.3	497647	19.1	21.0	470752	19.2	20.2
226090	18.9	21.0	142240	18.9	19.7	512044	19.0	21.1	411627	19.1	20.1	54873	19.1	18.5	123140	19.2	19.1
56464	18.9	18.9	353055	18.9	19.9	112614	19.0	19.3	220735	19.1	19.6	506607	19.1	19.5	137099	19.2	18.4
347957	18.9	19.7	365393	18.9	20.3	261467	19.0	20.5	220853	19.1	19.7	291277	19.1	19.3	7147	19.2	18.5
392606	18.9	21.2	471669	18.9	19.9	7130	19.0	17.9	383179	19.1	20.6	227302	19.1	21.2	23539	19.2	18.2
130041	18.9	19.4	425553	18.9	21.0	13369	19.0	18.6	119476	19.1	19.8	319255	19.1	19.6	385075	19.2	21.1
11503	18.9	16.1	484877	18.9	20.5	113728	19										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
332910	19.2	20.0	174944	19.3	19.7	337116	19.4	19.3	395419	19.4	20.5	537229	19.5	21.4	158768	19.6	19.6
149502	19.2	20.0	399906	19.3	19.8	102510	19.4	19.7	106067	19.4	18.1	512670	19.5	20.9	242939	19.6	20.4
211064	19.2	19.2	401287	19.3	19.8	396203	19.4	20.6	73350	19.4	18.7	409690	19.5	19.9	244864	19.6	19.2
145016	19.2	20.2	399138	19.3	20.4	399701	19.4	19.8	42142	19.4	19.1	391960	19.5	19.7	325777	19.6	20.0
165219	19.2	19.3	245356	19.3	20.1	245078	19.4	21.8	263338	19.4	19.6	412622	19.5	21.9	315163	19.6	19.9
166435	19.2	18.8	474477	19.3	21.7	130949	19.4	18.9	366319	19.4	20.4	163971	19.5	19.9	417911	19.6	20.8
312870	19.2	20.1	204282	19.3	20.2	357736	19.4	20.6	302167	19.4	20.2	482397	19.5	20.3	282366	19.6	20.4
373204	19.2	20.9	77056	19.3	19.3	36143	19.4	17.4	195607	19.4	20.2	350988	19.5	21.6	191206	19.6	19.0
513774	19.2	20.6	521847	19.3	21.0	236535	19.4	20.8	425038	19.4	20.5	494348	19.5	21.5	214505	19.6	19.4
503717	19.2	21.2	501618	19.3	21.7	489151	19.4	21.6	43143	19.4	18.3	449622	19.5	21.4	193559	19.6	18.2
93453	19.2	20.0	326612	19.3	20.4	151284	19.4	20.0	325383	19.4	21.3	217905	19.5	17.6	352411	19.6	19.9
36070	19.2	18.1	347485	19.3	20.4	505595	19.4	19.8	172927	19.4	20.0	299685	19.5	20.5	305825	19.6	20.0
34820	19.2	19.6	485287	19.3	19.5	363688	19.4	20.5	97234	19.4	19.6	411642	19.5	20.4	385537	19.6	19.1
317939	19.2	20.2	507110	19.3	21.7	316821	19.4	20.3	483001	19.4	21.3	112058	19.5	18.9	283018	19.6	20.4
136130	19.2	18.7	82452	19.3	19.2	398092	19.4	20.4	364606	19.4	20.9	2256	19.5	17.0	489700	19.6	19.9
461190	19.2	20.8	431350	19.3	19.9	306385	19.4	20.1	216932	19.4	19.2	24466	19.5	18.0	263526	19.6	21.0
16493	19.2	17.9	172722	19.3	19.5	117515	19.4	19.6	403427	19.4	20.5	129642	19.5	19.0	441909	19.6	21.9
283300	19.2	20.6	416486	19.3	19.7	210364	19.4	19.6	186007	19.4	21.1	171331	19.5	19.0	48117	19.6	19.1
25846	19.2	17.0	240638	19.3	19.1	395037	19.4	20.8	407173	19.4	20.8	261906	19.5	21.3	380106	19.6	20.9
253709	19.2	18.7	103903	19.3	19.6	375457	19.4	20.2	171048	19.4	19.6	284263	19.5	20.0	76144	19.6	19.0
204658	19.2	20.5	539705	19.3	21.0	17462	19.4	16.2	319991	19.4	20.4	485835	19.5	20.3	387878	19.6	20.0
254474	19.2	20.5	484912	19.3	20.5	73047	19.4	20.3	24535	19.4	18.3	521934	19.5	21.1	204027	19.6	19.5
139276	19.2	19.0	258657	19.3	20.2	387933	19.4	19.6	321961	19.4	20.4	45669	19.5	18.2	60261	19.6	19.0
373635	19.2	22.5	481532	19.3	20.5	293875	19.4	21.0	44968	19.4	18.7	371850	19.5	21.0	508809	19.6	20.0
526222	19.2	19.9	162097	19.3	19.3	32315	19.4	18.8	375718	19.4	20.8	318498	19.5	21.0	322240	19.6	21.2
129648	19.2	19.5	31182	19.3	16.9	136377	19.4	19.5	42773	19.4	18.4	466201	19.5	20.9	132108	19.6	19.9
111991	19.2	19.5	38728	19.3	18.5	69449	19.4	18.5	286735	19.4	20.8	198326	19.5	20.5	399324	19.6	20.8
128157	19.2	20.2	380248	19.3	21.2	306110	19.4	21.5	91205	19.4	23.8	83873	19.5	18.1	112440	19.6	20.3
234665	19.2	20.2	185200	19.3	20.4	467733	19.4	21.5	471592	19.4	20.4	255670	19.5	21.0	88327	19.6	18.1
443679	19.2	21.3	289652	19.3	19.0	474471	19.4	20.5	461140	19.4	20.6	289337	19.5	19.9	174363	19.6	20.4
260131	19.2	19.2	159276	19.3	19.3	337108	19.4	20.1	509725	19.4	21.2	228173	19.5	19.8	476829	19.6	20.3
459130	19.2	20.3	518283	19.3	20.7	21671	19.4	17.5	432782	19.4	21.5	278186	19.5	21.1	150546	19.6	18.9
435177	19.2	21.1	348076	19.3	20.1	153301	19.4	19.1	243467	19.4	20.8	515706	19.5	21.8	266756	19.6	20.7
182122	19.2	19.9	529002	19.3	19.3	114860	19.4	18.9	70714	19.4	19.1	363427	19.5	20.5	178829	19.6	20.6
50788	19.2	17.9	387545	19.3	19.1	417940	19.4	20.7	163056	19.4	19.0	491706	19.5	21.7	35295	19.6	17.9
188874	19.3	19.6	145743	19.3	19.6	263135	19.4	19.9	213054	19.4	19.7	509553	19.5	20.0	221736	19.6	19.9
358346	19.3	20.6	129127	19.3	19.0	456095	19.4	21.3	168639	19.5	20.6	379950	19.5	20.6	9130	19.6	17.9
323608	19.3	18.7	454210	19.3	20.5	393134	19.4	20.4	51385	19.5	18.0	392591	19.5	21.1	129004	19.6	20.4
325185	19.3	21.1	276863	19.3	21.3	57955	19.4	19.3	489434	19.5	21.4	221404	19.5	20.2	513341	19.6	20.7
259081	19.3	19.6	473857	19.3	20.1	215599	19.4	20.0	350938	19.5	20.3	14403	19.5	18.3	298130	19.6	20.4
13986	19.3	17.2	445907	19.3	19.3	2289	19.4	17.7	452220	19.5	20.6	447458	19.5	20.0	515985	19.6	20.9
471827	19.3	20.2	361459	19.3	20.7	509185	19.4	19.9	9232	19.5	17.6	166360	19.5	20.5	542803	19.6	20.6
88196	19.3	18.9	340451	19.3	19.2	472070	19.4	19.4	377633	19.5	20.2	489244	19.5	20.5	403726	19.6	20.7
490574	19.3	19.9	80988	19.3	18.1	273923	19.4	20.5	226051	19.5	20.5	317819	19.5	20.5	481362	19.6	20.9
277823	19.3	19.6	292377	19.3	20.8	251777	19.4	20.7	528538	19.5	21.0	363374	19.5	19.8	86447	19.6	19.4
189138	19.3	19.7	391637	19.3	21.2	518561	19.4	21.1	283678	19.5	21.0	36098	19.5	17.6	449357	19.6	20.9
53979	19.3	19.4	518013	19.3	20.8	395911	19.4	20.1	406284	19.5	21.2	344678	19.5	20.6	238547	19.6	21.1
239134	19.3	19.4	537935	19.3	20.7	304415	19.4	20.7	1025	19.5	15.3	141733	19.5	20.4	396929	19.6	20.4
45843	19.3	19.3	206078	19.3	19.4	47595	19.4	19.3	365467	19.5	20.0	169805	19.5	20.2	289775	19.6	20.9
275238	19.3	19.2	165591	19.3	20.8	242534	19.4	20.8	306270	19.5	20.2	482787	19.5	20.5	331116	19.6	19.9
474021	19.3	20.6	48988	19.3	19.2	164507	19.4	19.4	50599	19.5	18.3	220405	19.5	19.3	365362	19.6	21.1
409264	19.3	20.2	185284	19.3	20.3	242068	19.4	20.6	226591	19.5	20.0	162489	19.5	18.9	415644	19.6	20.7
391998	19.3	20.4	355183	19.3	21.0	287384	19.4	19.5	342134	19.5	21.1	200666	19.5	20.0	285848	19.6	20.6
23059	19.3	18.6	385555	19.3	20.0	477131	19.4	20.6	358822	19.5	20.4	220536	19.5	20.9	174758	19.6	19.5
91604	19.3	18.6	512161	19.3	20.5	385232	19.4	19.0	512994	19.5	19.6	536760	19.5	21.9	439101	19.6	21.1
331318	19.3	20.1	138222	19.3	17.9	217580	19.4	20.7	392947	19.5	21.1	344667	19.5	21.6	53505	19.6	18.3
104169	19.3	18.5	486155	19.3	19.7	285803	19.4	20.8	89930	19.5	19.4	177182	19.5	18.7	68737	19.6	19.1
191069	19.3	18.9	362923	19.3	19.6	256489	19.4	19.8	48651	19.5	17.9	34932	19.5	19.1	138388	19.6	18.5
145691	19.3	19.5	150248	19.3	20.0	141946	19.4	21.5	487222	19.5	21.2	505911	19.5	20.2	408204	19.6	21.6
363431	19.3	21.0	426165	19.3	21.9	266461	19.4	20.3	21738	19.5	18.6	526416	19.5	21.8	57518	19.6	17.5
524682	19.3	21.1	445811	19.3	20.2	323000	19.4	20.9	163280	19.5	21.0	333293	19.6	21.3	353711	19.6	20.5
331402	19.3	21.0	233025	19.3	20.6	321037	19.4	20.9	512741	19.5	21.1	399032	19.6	21.5	226259	19.6	19.0
84179	19.3	18.2	509623	19.3	22.2	452101	19.4	20.8	344122	19.5	20.3	429920	19.6	20.3	501654	19.6	19.5
124624	19.3	19.2	22084	19.3	18.4	28715	19.4	19.2	121734	19.5	18.4	37031	19.6	18.8	530224	19.6	21.6
387284	19.3	19.8	240756	19.3	21.1	332477	19.4	20.1	115297	19.5	18.1	203997	19.6	19.6	69764	19.6	19.3
353080	19.3	21.0	159245	19.3	20.2	344920	19.4	20.0	154073	19.5	20.4	252192	19.6	17.2	294038	19.6	20.8
342568	19.3	19.4	424198	19.3	21.4	354472	19.4	19.8	234723	19.5	19.8	259041	19.6	19.3	271590	19.6	19.8
149138	19.3	20.4	540212	19.3	20.2	120811	19.4	20.1	513754	19.5	20.7	405478	19.6	19.5	531245	19.6	21.6
144220	19.3	18.9	88561	19.3	18.0	2											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
295113	19.6	20.5	34492	19.7	18.2	521851	19.8	21.2	268862	19.8	20.4	152129	19.9	20.7	304375	19.9	19.7
258752	19.6	21.0	386093	19.7	20.8	65723	19.8	19.5	518407	19.8	18.6	345865	19.9	20.1	516634	19.9	22.2
324238	19.6	20.5	22198	19.7	18.7	330906	19.8	21.2	168723	19.8	20.3	98251	19.9	18.4	319200	19.9	20.1
206031	19.6	19.6	473398	19.7	20.7	288156	19.8	20.4	167388	19.8	18.3	41839	19.9	18.2	403399	19.9	19.5
518030	19.6	20.6	411895	19.7	20.1	164515	19.8	20.0	523817	19.8	22.6	31919	19.9	18.5	287842	19.9	20.7
299218	19.6	20.4	412859	19.7	21.4	216600	19.8	21.0	160405	19.8	20.7	129088	19.9	19.4	537161	19.9	21.4
513979	19.6	22.1	91983	19.7	20.6	404511	19.8	21.3	451842	19.8	21.0	52121	19.9	18.9	247090	19.9	19.3
229317	19.6	19.8	311572	19.7	19.7	383218	19.8	20.9	210063	19.8	20.1	234247	19.9	18.5	287128	19.9	19.6
301530	19.6	19.8	93889	19.7	18.6	42088	19.8	18.8	54375	19.8	18.3	188149	19.9	19.6	101601	19.9	18.8
124107	19.6	19.8	180409	19.7	19.5	366359	19.8	19.4	505130	19.8	20.5	317793	19.9	20.1	408966	19.9	21.4
511138	19.6	20.8	56571	19.7	17.1	141998	19.8	18.0	195077	19.8	19.1	5782	19.9	16.2	403415	19.9	21.0
295418	19.6	21.1	177723	19.7	20.3	246169	19.8	20.0	91899	19.8	18.4	161065	19.9	20.2	127220	19.9	20.3
426050	19.6	20.0	233498	19.7	20.9	69613	19.8	18.1	204043	19.8	18.6	370861	19.9	20.5	350287	19.9	21.2
225844	19.6	19.2	50018	19.7	18.7	22170	19.8	17.3	102180	19.8	19.4	396429	19.9	20.6	590779	19.9	20.0
510368	19.6	21.1	333624	19.7	20.1	182872	19.8	20.4	40363	19.8	19.1	497034	19.9	20.8	258040	19.9	19.7
44161	19.6	19.9	97924	19.7	18.9	420841	19.8	21.7	379649	19.8	19.9	310341	19.9	20.7	362574	19.9	20.0
377578	19.6	21.4	440397	19.7	20.9	7919	19.8	18.1	441822	19.8	20.3	515031	19.9	20.6	25225	19.9	18.2
390664	19.6	20.2	528999	19.7	20.8	258668	19.8	19.6	58511	19.8	17.9	209781	19.9	20.0	21754	19.9	17.6
400926	19.6	20.0	47204	19.7	19.2	508926	19.8	21.0	399396	19.9	20.4	364471	19.9	21.4	523405	19.9	19.8
539102	19.6	21.6	71874	19.7	18.1	451999	19.8	21.0	86740	19.9	20.0	355597	19.9	19.9	449730	19.9	21.4
524913	19.6	21.4	217559	19.7	20.1	185068	19.8	19.3	178812	19.9	20.4	12546	19.9	18.3	467165	19.9	21.1
395550	19.6	21.2	119274	19.7	17.9	172491	19.8	20.0	392362	19.9	21.8	342131	19.9	20.5	86289	19.9	18.6
485314	19.6	20.9	43230	19.7	17.5	324750	19.8	21.4	513784	19.9	20.4	210246	19.9	19.1	331173	19.9	19.8
476027	19.6	20.5	98994	19.7	18.5	183109	19.8	19.6	441668	19.9	19.7	280956	19.9	20.5	324853	19.9	20.2
40211	19.6	18.4	377617	19.7	21.8	85909	19.8	18.1	298048	19.9	20.1	15147	19.9	17.5	372837	19.9	20.5
316007	19.6	20.1	380004	19.7	21.6	88437	19.8	18.9	237081	19.9	18.9	424576	19.9	21.6	495036	19.9	21.1
111483	19.6	19.7	259551	19.7	19.3	478880	19.8	20.4	468966	19.9	21.0	223399	19.9	18.6	420612	19.9	19.5
72654	19.7	18.2	168216	19.7	20.2	22815	19.8	18.2	481753	19.9	21.3	522763	19.9	20.6	150859	19.9	20.4
321622	19.7	21.3	268885	19.7	19.4	387625	19.8	21.5	311176	19.9	20.1	247151	19.9	20.5	370441	19.9	19.9
434124	19.7	20.6	448584	19.7	21.6	537126	19.8	20.8	180493	19.9	20.3	536322	19.9	20.6	257722	19.9	19.5
97317	19.7	18.6	223965	19.7	18.7	481606	19.8	20.9	169992	19.9	20.2	331904	19.9	19.9	28486	19.9	18.3
445478	19.7	20.4	211528	19.7	20.1	430728	19.8	20.9	491769	19.9	21.6	482183	19.9	20.7	147736	19.9	19.3
344119	19.7	19.8	163928	19.7	19.4	41197	19.8	19.1	72417	19.9	18.8	480044	19.9	21.5	44633	19.9	17.3
257277	19.7	20.5	13805	19.7	18.0	47975	19.8	18.9	91055	19.9	17.1	326506	19.9	20.4	451335	19.9	20.8
273768	19.7	21.0	325654	19.7	21.0	328513	19.8	21.5	237774	19.9	19.1	124108	19.9	19.2	209036	19.9	20.4
221488	19.7	19.0	314618	19.7	21.2	307967	19.8	19.4	36461	19.9	18.7	168827	19.9	19.5	345948	19.9	20.3
478770	19.7	20.5	404586	19.7	20.5	295991	19.8	20.0	220392	19.9	19.5	159845	19.9	20.4	382956	19.9	19.4
36072	19.7	19.4	364025	19.7	19.4	228632	19.8	18.9	264039	19.9	19.5	121074	19.9	18.6	253575	19.9	19.7
150808	19.7	18.7	97370	19.7	18.6	116015	19.8	19.4	377125	19.9	20.1	137322	19.9	20.3	128798	19.9	19.9
192364	19.7	18.8	311151	19.7	18.9	512585	19.8	20.4	104563	19.9	19.1	363058	19.9	20.0	136835	19.9	19.9
234534	19.7	20.3	394491	19.7	19.6	347136	19.8	19.0	220877	19.9	19.0	465595	19.9	20.9	361927	19.9	21.3
159053	19.7	18.9	79800	19.7	17.8	60088	19.8	17.5	248569	19.9	19.7	44145	19.9	19.3	291935	19.9	19.7
113678	19.7	19.5	496164	19.7	21.2	331870	19.8	19.3	480419	19.9	21.1	530512	19.9	22.1	516147	19.9	21.1
476080	19.7	19.5	511276	19.7	21.0	343942	19.8	20.6	193716	19.9	20.5	130173	19.9	18.2	526318	19.9	22.3
99554	19.7	19.2	414399	19.7	19.8	390203	19.8	20.4	455228	19.9	21.1	67740	19.9	19.6	254932	19.9	21.1
484951	19.7	20.8	392951	19.7	19.5	284298	19.8	20.8	350148	19.9	20.4	435774	19.9	21.1	445263	19.9	21.3
293750	19.7	19.7	405886	19.7	20.8	342726	19.8	20.7	192409	19.9	18.6	298185	19.9	20.6	429647	19.9	21.2
114903	19.7	19.9	503441	19.7	20.6	296006	19.8	19.6	223464	19.9	20.2	126148	19.9	18.6	287136	19.9	20.1
138950	19.7	19.4	329186	19.7	20.3	538985	19.8	20.2	420826	19.9	21.3	348194	19.9	19.8	396314	19.9	20.6
443820	19.7	20.5	50771	19.7	17.5	10547	19.8	17.6	205085	19.9	18.8	399861	19.9	20.7	345963	19.9	21.2
246207	19.7	20.2	174072	19.7	20.0	456615	19.8	20.7	513966	19.9	20.8	347078	19.9	20.8	91788	19.9	18.9
87785	19.7	18.6	201428	19.7	19.3	250320	19.8	19.7	117062	19.9	20.0	99671	19.9	19.4	479036	19.9	19.7
197581	19.7	19.9	315221	19.8	19.7	402149	19.8	20.9	27034	19.9	17.6	342563	19.9	19.0	413754	19.9	21.3
99947	19.7	19.8	418888	19.8	20.7	4697	19.8	17.6	486997	19.9	20.6	339248	19.9	21.0	68205	19.9	17.6
362874	19.7	20.5	250383	19.8	19.8	130708	19.8	19.9	180078	19.9	19.6	411853	19.9	21.4	235798	19.9	18.5
252067	19.7	19.1	542234	19.8	20.8	339263	19.8	20.7	17332	19.9	18.7	14249	19.9	17.3	13025	20.0	16.0
309455	19.7	19.5	25854	19.8	17.3	192500	19.8	19.6	266220	19.9	19.5	362257	19.9	20.7	391625	20.0	21.3
140157	19.7	19.5	465620	19.8	21.5	263218	19.8	20.0	289245	19.9	19.6	79690	19.9	19.0	386078	20.0	19.8
99642	19.7	19.0	14175	19.8	17.3	377715	19.8	19.0	434156	19.9	20.9	368400	19.9	20.4	6091	20.0	17.0
372882	19.7	19.6	127118	19.8	20.1	487904	19.8	21.1	351844	19.9	20.2	79713	19.9	18.8	311938	20.0	20.5
129862	19.7	20.5	84965	19.8	18.3	517914	19.8	20.7	284587	19.9	20.5	519671	19.9	21.6	157391	20.0	19.5
309502	19.7	19.9	524931	19.8	21.1	317774	19.8	20.4	316013	19.9	20.5	36404	19.9	17.2	78564	20.0	18.7
7711	19.7	15.6	364014	19.8	20.1	133581	19.8	19.6	488050	19.9	20.9	380788	19.9	20.3	428161	20.0	19.5
314692	19.7	20.3	279177	19.8	20.9	38915	19.8	17.5	403389	19.9	20.4	237918	19.9	20.2	202728	20.0	19.7
39349	19.7	18.5	476148	19.8	21.1	302137	19.8	20.0	276616	19.9	19.2	447443	19.9	20.1	527730	20.0	21.3
374035	19.7	20.0	261745	19.8	19.3	66734	19.8	18.3	59377	19.9	19.4	344733	19.9	20.9	512928	20.0	20.1
217554	19.7	19.0	21669	19.8	17.8	201543	19.8	20.0	265979	19.9	20.3	218488	19.9	19.4	455033	20.0	20.7
8740	19.7	17.2	171370	19.8	19.4	319893	19.8	20.6	163271	19.9	20.4	441733	19.9	20.0	487349	20.0	21.3
440426	19.7	21.0	364177	19.8	21.5	410682	19.8										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
424478	20.0	20.6	77205	20.1	19.2	371498	20.2	21.1	292967	20.2	19.3	490888	20.3	19.4	314409	20.4	20.5
147122	20.0	18.8	454049	20.1	21.0	141796	20.2	18.7	493601	20.2	21.9	38794	20.3	16.6	95301	20.4	19.5
101912	20.0	19.3	439391	20.1	19.9	308092	20.2	19.4	296901	20.2	20.5	454226	20.3	21.7	233208	20.4	20.5
464143	20.0	20.0	185850	20.1	19.3	433358	20.2	19.9	456140	20.2	20.7	445403	20.3	20.3	320875	20.4	20.3
480338	20.0	20.2	192078	20.1	19.6	85204	20.2	19.0	16501	20.2	18.6	480063	20.3	22.0	407746	20.4	20.2
454792	20.0	20.8	317687	20.1	19.6	184933	20.2	19.8	469654	20.2	20.4	157948	20.3	19.3	374743	20.4	21.2
43137	20.0	17.8	86096	20.1	18.2	296046	20.2	20.3	25145	20.2	18.2	355041	20.3	21.1	109242	20.4	21.0
142331	20.0	21.2	75838	20.1	18.6	147683	20.2	20.1	96522	20.2	19.7	476066	20.3	19.0	84067	20.4	19.0
260362	20.0	20.2	251677	20.1	21.1	126788	20.2	19.1	526923	20.2	21.3	395254	20.3	20.3	511190	20.4	20.2
223942	20.0	19.2	439549	20.1	20.9	366956	20.2	20.2	516515	20.2	21.1	504150	20.3	21.8	308912	20.4	21.0
158922	20.0	19.7	276484	20.1	21.0	235284	20.2	20.4	322162	20.2	19.9	408067	20.3	20.9	308112	20.4	19.4
174818	20.0	19.0	278351	20.1	20.1	80799	20.2	18.4	353842	20.2	20.3	236295	20.3	19.3	45197	20.4	17.5
97412	20.0	18.0	193220	20.1	19.7	472362	20.2	21.5	172438	20.2	19.9	202477	20.3	19.9	257177	20.4	20.1
175016	20.0	18.9	446424	20.1	20.1	399132	20.2	20.4	535384	20.2	20.2	208687	20.3	19.7	423142	20.4	21.2
27292	20.0	18.7	19521	20.1	21.0	233317	20.2	19.3	451957	20.2	20.0	536781	20.3	21.4	146070	20.4	18.4
510489	20.0	20.6	32507	20.1	19.2	449045	20.2	20.3	302157	20.2	21.0	126794	20.3	18.6	119975	20.4	17.5
321118	20.0	19.9	683	20.1	13.1	434737	20.2	20.2	77559	20.2	19.0	214559	20.3	20.9	41950	20.4	17.4
126286	20.0	18.7	365842	20.1	20.2	129960	20.2	20.4	315092	20.2	20.8	353147	20.3	20.5	130259	20.4	19.5
336868	20.0	20.6	487416	20.1	20.3	324785	20.2	20.5	73135	20.2	18.9	132275	20.3	19.9	343988	20.4	19.9
173048	20.0	20.2	187013	20.1	20.4	538788	20.2	21.6	378810	20.2	22.1	348742	20.3	22.1	443567	20.4	19.8
450735	20.0	20.1	318369	20.1	20.0	449834	20.2	21.1	24229	20.2	18.4	81040	20.3	19.6	449537	20.4	21.2
51471	20.0	19.8	145561	20.1	20.0	80455	20.2	18.5	146803	20.2	19.4	327241	20.3	19.5	499647	20.4	20.3
377619	20.0	20.8	325436	20.1	19.1	488515	20.2	24.3	241624	20.2	17.0	27652	20.3	19.9	132761	20.4	19.0
476049	20.0	20.5	306940	20.1	20.2	343840	20.2	20.3	314548	20.2	20.1	20686	20.3	18.2	471646	20.4	20.7
401765	20.0	20.3	234744	20.1	21.1	217018	20.2	20.5	324509	20.2	20.2	361570	20.3	20.4	284927	20.4	20.6
198019	20.0	18.4	129508	20.1	19.9	200236	20.2	18.6	422101	20.2	21.2	172796	20.3	19.6	243629	20.4	19.7
449465	20.0	21.5	102581	20.1	19.0	126823	20.2	19.8	432830	20.2	21.0	199976	20.3	19.6	374862	20.4	20.8
298097	20.0	20.4	75587	20.1	18.4	192627	20.2	21.3	122743	20.2	19.1	206070	20.3	20.3	363049	20.4	18.8
260341	20.0	20.2	463402	20.1	21.2	367216	20.2	21.6	367076	20.2	20.9	365969	20.3	20.7	77265	20.4	19.2
296849	20.0	20.0	24559	20.1	18.7	513488	20.2	21.0	5877	20.2	16.7	512619	20.3	20.4	524476	20.4	21.3
517468	20.0	21.3	313382	20.1	20.1	184961	20.2	19.7	164051	20.2	20.3	415987	20.3	21.1	119886	20.4	19.4
79786	20.1	18.5	219296	20.1	20.0	475307	20.2	20.4	60468	20.2	18.2	73544	20.3	19.6	24099	20.4	16.6
22826	20.1	17.8	204034	20.1	18.5	162295	20.2	19.6	245405	20.2	20.3	38492	20.3	18.0	448413	20.4	21.3
32033	20.1	18.3	224731	20.1	19.7	382882	20.2	20.0	530600	20.3	22.4	391959	20.3	19.9	62787	20.4	19.4
178952	20.1	20.9	40545	20.1	18.7	476635	20.2	21.3	35599	20.3	18.7	166290	20.3	20.5	27249	20.4	17.7
406783	20.1	21.4	291575	20.1	20.5	288967	20.2	20.2	279496	20.3	20.7	504854	20.3	20.4	317281	20.4	20.2
329334	20.1	19.2	516065	20.1	20.3	67639	20.2	20.0	412697	20.3	20.9	22556	20.3	18.2	226325	20.4	19.6
113020	20.1	19.8	432860	20.1	21.6	296606	20.2	20.0	352356	20.3	19.5	378556	20.3	21.3	381904	20.4	19.5
98379	20.1	18.1	510941	20.1	20.9	491582	20.2	21.8	184575	20.3	20.1	345882	20.3	20.1	380271	20.4	18.9
506439	20.1	22.6	504832	20.1	21.6	448666	20.2	21.0	24492	20.3	18.8	277441	20.3	20.6	45626	20.4	18.8
508007	20.1	21.2	379216	20.1	22.1	474612	20.2	20.2	112306	20.3	19.9	51472	20.3	18.8	511963	20.4	21.9
305016	20.1	20.9	131669	20.1	19.0	274123	20.2	21.1	439535	20.3	21.2	358950	20.3	20.6	184963	20.4	19.2
256726	20.1	20.2	484756	20.1	20.0	134022	20.2	18.9	71207	20.3	18.1	12084	20.3	17.5	336152	20.4	20.2
238245	20.1	20.1	142053	20.1	20.3	528559	20.2	21.7	25683	20.3	18.7	227266	20.3	21.0	346647	20.4	19.9
318781	20.1	20.0	217332	20.1	19.6	304491	20.2	20.9	43388	20.3	18.1	50611	20.3	18.3	12042	20.4	17.7
415050	20.1	20.3	126419	20.1	18.2	333463	20.2	20.2	150201	20.3	19.5	172142	20.3	20.0	516135	20.4	20.5
269295	20.1	21.9	252138	20.1	18.6	234118	20.2	19.9	436650	20.3	20.3	318592	20.3	20.4	210397	20.4	19.6
246480	20.1	20.2	465029	20.1	21.1	318193	20.2	19.6	216594	20.3	20.8	283660	20.3	21.2	302168	20.4	19.7
240629	20.1	20.0	397531	20.1	20.8	79162	20.2	18.1	97683	20.3	20.7	367792	20.3	20.0	82103	20.4	19.9
67922	20.1	18.8	524605	20.1	20.1	178823	20.2	20.0	8331	20.3	17.0	525408	20.3	20.9	40932	20.4	18.2
402194	20.1	19.3	505483	20.1	19.3	18914	20.2	17.9	339395	20.3	19.8	439819	20.3	20.7	240350	20.4	18.4
516756	20.1	21.5	537155	20.1	20.9	133654	20.2	19.8	250370	20.3	18.2	408565	20.3	21.1	414072	20.4	19.6
44191	20.1	19.0	60717	20.1	19.7	259401	20.2	20.3	518021	20.3	20.8	305843	20.3	20.4	324266	20.4	21.2
43184	20.1	18.6	46685	20.1	17.2	30537	20.2	19.0	461253	20.3	20.9	24103	20.3	17.9	404050	20.4	20.3
130324	20.1	19.4	165121	20.1	19.7	385338	20.2	20.5	99751	20.3	20.1	327598	20.3	19.6	195439	20.4	19.5
188332	20.1	21.3	137684	20.1	19.3	478487	20.2	22.6	6560	20.3	16.6	479477	20.3	20.8	59500	20.4	19.9
249659	20.1	19.3	70341	20.1	19.1	485216	20.2	19.4	255193	20.3	20.3	458178	20.3	21.3	452775	20.4	21.1
6327	20.1	18.0	107522	20.1	19.6	155759	20.2	19.4	509800	20.3	20.6	329209	20.3	20.6	514588	20.4	18.5
166874	20.1	18.6	503287	20.1	19.5	23813	20.2	17.9	322051	20.3	19.2	92197	20.4	18.8	9288	20.4	18.4
27256	20.1	17.7	4603	20.1	17.1	136250	20.2	18.6	330461	20.3	20.1	517499	20.4	22.1	347827	20.4	19.3
153257	20.1	18.9	207294	20.1	20.3	24799	20.2	20.3	539642	20.3	21.0	385824	20.4	20.8	291980	20.4	21.7
202941	20.1	18.5	71325	20.1	18.2	422220	20.2	20.7	85368	20.3	18.3	220519	20.4	20.2	92964	20.4	19.2
290088	20.1	20.3	103148	20.1	18.6	301496	20.2	20.3	77290	20.3	18.9	539461	20.4	21.2	407157	20.4	21.4
216592	20.1	21.2	65260	20.1	19.6	340893	20.2	19.6	512627	20.3	20.7	349380	20.4	19.7	405067	20.4	21.4
81438	20.1	18.4	405722	20.2	19.6	48578	20.2	18.4	393572	20.3	21.2	220984	20.4	19.8	538984	20.4	22.0
248368	20.1	20.6	530431	20.2	19.7	328515	20.2	21.4	386332	20.3	20.5	403476	20.4	19.8	168833	20.4	19.7
70653	20.1	18.0	405491	20.2	18.9	184264	20.2	20.7	476714	20.3	20.5	424622	20.4	21.1	522870	20.4	20.4
242273	20.1	20.4	348099	20.2	19.1	346029	20.2	19.5	297999	20.3	20.0	102774	20.4	18.8	11884	20.4	18.2
167961	20.1	20.1	490377	20.2	21.8	435198	20.2	21.3									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
317402	20.5	20.4	390942	20.5	19.7	500914	20.6	19.2	289855	20.6	20.1	280063	20.7	20.2	46901	20.8	18.7
470319	20.5	20.2	270191	20.5	21.2	6328	20.6	17.5	507394	20.6	21.0	320352	20.7	20.5	130424	20.8	18.9
71762	20.5	18.4	67123	20.5	18.2	171742	20.6	19.4	519484	20.6	22.1	422093	20.7	21.0	517965	20.8	20.9
127213	20.5	19.6	153585	20.5	19.5	511357	20.6	22.0	153171	20.6	20.8	12440	20.7	16.9	540358	20.8	20.1
182932	20.5	19.9	483123	20.5	21.0	298727	20.6	20.0	417339	20.6	21.0	174749	20.7	19.2	92856	20.8	17.6
157917	20.5	18.6	97487	20.5	18.4	208016	20.6	19.6	468662	20.6	20.0	325042	20.7	19.7	93083	20.8	18.5
461255	20.5	20.4	521167	20.5	20.7	108387	20.6	19.3	278924	20.6	20.4	459942	20.7	20.0	201950	20.8	19.5
505414	20.5	20.4	410124	20.5	21.8	293099	20.6	20.4	375141	20.6	20.9	221467	20.7	20.2	390147	20.8	20.5
90592	20.5	18.6	532052	20.5	21.8	167333	20.6	17.7	403698	20.6	20.1	479856	20.7	21.1	257691	20.8	20.0
9545	20.5	17.9	239959	20.5	20.4	66157	20.6	18.5	33565	20.6	18.5	363676	20.7	21.1	11323	20.8	17.9
162070	20.5	20.0	381749	20.5	20.3	512813	20.6	21.2	542760	20.6	21.1	137282	20.7	19.9	48707	20.8	17.4
77136	20.5	18.4	200197	20.5	19.0	301387	20.6	20.7	149346	20.6	18.9	454641	20.7	20.8	512029	20.8	21.8
437755	20.5	20.0	192084	20.5	19.9	523746	20.6	21.0	81127	20.6	19.4	70289	20.7	18.5	3474	20.8	17.3
30044	20.5	19.5	261258	20.5	20.0	320114	20.6	20.0	328821	20.6	19.8	392373	20.7	21.2	11016	20.8	16.6
449399	20.5	21.0	386334	20.5	20.1	511256	20.6	20.3	339239	20.6	19.3	401650	20.7	19.6	2906	20.8	14.4
204845	20.5	20.3	449939	20.5	21.0	117897	20.6	19.6	209254	20.6	20.0	528237	20.7	20.8	359527	20.8	20.2
479555	20.5	20.8	62662	20.5	18.5	318525	20.6	19.8	424511	20.6	20.9	382593	20.7	19.9	18437	20.8	17.5
491465	20.5	19.1	274443	20.5	19.8	496219	20.6	20.9	452452	20.6	20.0	41334	20.7	18.5	399879	20.8	21.3
257681	20.5	19.9	480115	20.5	21.8	76773	20.6	18.8	409283	20.6	20.9	289611	20.7	20.9	516042	20.8	20.1
21888	20.5	17.6	498151	20.5	20.9	255386	20.6	19.2	313086	20.6	20.4	453413	20.7	21.7	160692	20.8	20.5
107888	20.5	19.9	36604	20.5	18.5	172941	20.6	19.9	92209	20.6	17.4	199969	20.7	21.5	83074	20.8	19.7
132292	20.5	18.9	469530	20.5	20.2	144385	20.6	19.2	169548	20.6	19.5	420376	20.7	20.7	200798	20.8	18.0
526239	20.5	20.7	496400	20.5	21.8	91061	20.6	18.6	516775	20.7	21.2	15212	20.7	16.2	429074	20.8	20.9
83699	20.5	19.4	470839	20.5	18.9	489059	20.6	19.7	522821	20.7	21.3	203205	20.7	19.2	24297	20.8	18.1
147540	20.5	20.3	403975	20.5	19.5	512207	20.6	21.0	521118	20.7	20.4	256479	20.7	19.4	288337	20.8	19.9
429103	20.5	20.6	421775	20.5	20.3	195087	20.6	19.3	481626	20.7	20.6	370300	20.7	20.8	392107	20.8	21.7
3765	20.5	16.6	342156	20.5	19.7	318365	20.6	20.4	537275	20.7	21.7	132644	20.7	20.3	459901	20.8	20.0
211160	20.5	18.8	507235	20.5	20.5	39131	20.6	18.5	485153	20.7	20.6	170181	20.7	19.7	407829	20.8	20.0
386733	20.5	20.5	266661	20.5	19.6	230337	20.6	19.9	71616	20.7	18.7	388698	20.7	21.6	42181	20.8	17.3
397753	20.5	21.6	65337	20.5	19.3	291820	20.6	21.8	280651	20.7	20.5	108059	20.7	19.4	13977	20.8	16.3
189313	20.5	19.6	46415	20.5	18.8	70840	20.6	19.4	139126	20.7	18.2	478035	20.7	20.0	179105	20.8	20.4
452785	20.5	21.5	521990	20.5	20.8	389009	20.6	20.6	120822	20.7	20.8	133431	20.7	19.6	209855	20.8	20.0
30062	20.5	19.2	324317	20.5	20.4	26832	20.6	18.7	107553	20.7	19.6	116603	20.7	19.2	303221	20.8	20.9
5338	20.5	16.4	260224	20.5	20.9	406277	20.6	22.0	468642	20.7	19.0	126658	20.7	19.7	126079	20.8	19.7
531207	20.5	21.7	159404	20.5	16.7	347168	20.6	21.5	534451	20.7	21.4	112018	20.7	18.1	160624	20.8	19.6
331363	20.5	20.7	525076	20.5	20.9	299212	20.6	20.9	115342	20.7	19.3	439723	20.7	20.7	35406	20.8	15.5
342550	20.5	19.5	264940	20.5	19.3	14168	20.6	16.8	49067	20.7	18.7	407001	20.7	21.4	540543	20.8	20.9
433227	20.5	20.3	444130	20.5	20.4	508608	20.6	21.2	313347	20.7	20.1	49104	20.7	17.4	360247	20.8	21.5
476656	20.5	19.7	454247	20.5	19.9	79583	20.6	19.8	391992	20.7	20.4	116631	20.7	19.6	154203	20.8	21.0
367729	20.5	20.8	234289	20.5	17.8	9715	20.6	17.9	292842	20.7	20.4	369518	20.7	19.7	520145	20.8	20.8
342238	20.5	21.7	417382	20.5	20.5	136344	20.6	20.0	302735	20.7	20.3	222436	20.7	20.7	205180	20.8	20.5
141592	20.5	20.5	25499	20.5	17.9	26939	20.6	18.6	13538	20.7	17.0	166585	20.7	19.6	422668	20.8	21.1
314484	20.5	20.6	95902	20.5	19.5	517959	20.6	21.4	539333	20.7	21.4	31216	20.7	17.4	23440	20.8	18.2
329968	20.5	21.2	117757	20.5	19.9	341806	20.6	19.3	205635	20.7	19.5	39196	20.7	19.2	278344	20.8	21.5
40049	20.5	18.2	510896	20.5	20.5	139085	20.6	19.3	352159	20.7	20.1	106689	20.7	17.9	360945	20.8	20.4
254169	20.5	21.0	438335	20.5	21.1	418193	20.6	20.3	421648	20.7	21.5	342561	20.7	20.8	380256	20.8	18.8
395891	20.5	19.9	311994	20.5	20.0	8677	20.6	17.4	530277	20.7	21.0	507210	20.7	20.9	421611	20.8	20.9
97571	20.5	19.2	536292	20.5	20.4	438535	20.6	20.3	535910	20.7	21.3	65536	20.7	18.6	23390	20.8	18.9
20005	20.5	17.6	188960	20.5	19.8	432788	20.6	21.5	304292	20.7	20.9	260242	20.7	19.3	221932	20.8	21.0
177245	20.5	19.5	318541	20.5	21.0	158132	20.6	19.3	232197	20.7	19.2	280067	20.7	20.7	117900	20.8	19.0
190718	20.5	20.3	384815	20.5	19.0	470756	20.6	20.9	449820	20.7	19.6	249547	20.7	20.8	295824	20.8	19.8
58126	20.5	19.8	292191	20.5	19.7	271224	20.6	20.2	525251	20.7	20.4	18433	20.7	18.4	470604	20.8	20.3
223317	20.5	19.7	133420	20.5	19.2	451641	20.6	21.0	348330	20.7	20.1	166571	20.7	20.2	263096	20.8	20.3
130472	20.5	18.5	518300	20.6	21.1	164108	20.6	19.9	184791	20.7	20.6	260866	20.7	20.2	240645	20.8	20.3
338520	20.5	19.2	327183	20.6	21.1	507109	20.6	20.7	393409	20.7	19.0	404978	20.7	20.0	513408	20.8	19.9
510595	20.5	19.7	379162	20.6	21.8	411056	20.6	20.3	220782	20.7	20.2	4203	20.7	17.3	157413	20.8	19.5
292994	20.5	20.5	281735	20.6	20.5	336934	20.6	20.4	509923	20.7	20.6	285361	20.7	21.1	480617	20.8	21.2
342368	20.5	21.2	40195	20.6	17.8	390886	20.6	19.3	317934	20.7	19.6	454482	20.7	20.5	397983	20.8	20.4
223430	20.5	19.9	513658	20.6	21.4	377577	20.6	21.7	252611	20.7	19.7	24975	20.7	18.4	295219	20.8	21.1
49314	20.5	17.3	452989	20.6	21.3	323045	20.6	20.7	136173	20.7	18.3	49447	20.7	18.5	234757	20.8	21.3
202821	20.5	21.1	100825	20.6	20.0	262101	20.6	21.4	282509	20.7	20.8	91925	20.7	19.0	395251	20.8	20.8
405114	20.5	21.1	343819	20.6	20.5	490883	20.6	19.7	479071	20.7	20.6	437121	20.7	21.5	418108	20.8	19.5
482426	20.5	21.4	33298	20.6	18.0	385798	20.6	20.1	174733	20.7	19.3	189789	20.7	21.2	341196	20.8	20.9
114851	20.5	19.6	250359	20.6	20.1	398441	20.6	20.5	147403	20.7	19.7	355505	20.7	20.8	263136	20.8	19.5
234761	20.5	20.6	74483	20.6	18.8	479118	20.6	20.2	219083	20.7	20.3	451182	20.7	20.4	199878	20.8	20.7
487095	20.5	19.9	297555	20.6	19.1	510828	20.6	20.8	193320	20.7	18.9	269717	20.7	19.8	116276	20.8	19.5
388258	20.5	21.5	122757	20.6	20.0	220540	20.6	20.3	302185	20.7	19.7	91832	20.7	18.9	326409	20.8	21.1
127903	20.5	19.6	222382	20.6	19.6	164590	20.6	20.8	99471	20.7	19.2	283818	20.7	19.2	131176	20.8	19.2
2329	20.5	18.2	250270	20.6	20.0	450754	20.6										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
45807	20.8	18.1	53498	20.9	18.5	479722	20.9	20.6	454846	21.0	20.3	456826	21.1	22.5	438544	21.2	20.4
323800	20.8	20.9	542173	20.9	20.4	361160	20.9	20.6	115912	21.0	20.1	362324	21.1	20.9	360662	21.2	21.2
455005	20.8	20.9	77993	20.9	19.4	504888	20.9	20.4	88970	21.0	19.4	468478	21.1	20.6	489081	21.2	20.3
152819	20.8	20.4	66411	20.9	16.7	511965	20.9	21.1	337160	21.0	19.7	321142	21.1	20.0	473392	21.2	20.2
381833	20.8	21.1	320109	20.9	20.2	49239	20.9	18.2	134013	21.0	19.5	539233	21.1	21.2	174124	21.2	20.3
496785	20.8	20.4	246436	20.9	20.5	128481	20.9	18.5	66953	21.0	18.2	47870	21.1	17.7	104463	21.2	18.9
498464	20.8	18.8	37267	20.9	18.9	358805	20.9	20.2	93593	21.0	17.3	13262	21.1	17.5	59733	21.2	19.4
342170	20.8	20.3	443842	20.9	22.1	182462	20.9	21.1	93284	21.0	20.6	223397	21.1	19.0	513477	21.2	20.9
488532	20.8	20.4	381372	20.9	20.6	238266	20.9	19.9	251912	21.0	19.2	518039	21.1	21.0	54214	21.2	19.1
245450	20.8	20.8	292659	20.9	20.9	139412	20.9	19.5	437182	21.0	21.6	439086	21.1	20.7	220904	21.2	19.0
218562	20.8	21.0	441933	20.9	21.8	454451	20.9	21.1	75951	21.0	18.0	540178	21.1	20.2	5208	21.2	16.2
216102	20.8	20.8	364619	20.9	20.3	68065	20.9	17.3	497280	21.0	21.4	299778	21.1	20.5	105035	21.2	19.6
423819	20.8	21.4	407022	20.9	21.5	245335	20.9	19.9	323576	21.0	20.0	212098	21.1	20.1	295938	21.2	20.8
426715	20.8	21.2	138957	20.9	20.3	487402	20.9	21.0	91709	21.0	19.5	191929	21.1	19.8	358820	21.2	20.7
506153	20.8	21.1	187666	20.9	20.3	244163	20.9	18.4	452962	21.0	21.1	510722	21.1	20.8	421525	21.2	21.4
266811	20.8	19.6	318561	20.9	20.7	398282	20.9	19.7	497781	21.0	20.2	325514	21.1	20.8	81788	21.2	19.6
92246	20.8	17.8	325560	20.9	20.8	450528	20.9	20.8	43784	21.0	17.8	93295	21.1	19.9	73149	21.2	18.8
50681	20.8	18.6	50699	20.9	18.5	466304	20.9	22.8	24903	21.0	16.9	189504	21.1	19.4	511593	21.2	22.2
316823	20.8	21.2	363300	20.9	21.3	468423	20.9	21.0	365604	21.0	20.3	499477	21.1	22.1	510038	21.2	20.5
188511	20.8	20.2	390427	20.9	19.9	42409	20.9	18.1	172181	21.0	19.7	367725	21.1	20.8	326107	21.2	20.8
42343	20.8	19.3	226422	20.9	20.3	69394	20.9	18.4	143886	21.0	18.2	343468	21.1	20.1	34502	21.2	16.7
324176	20.8	20.5	356640	20.9	20.1	267685	20.9	19.6	313087	21.0	19.7	41823	21.1	18.2	252744	21.2	20.9
314491	20.8	20.0	288045	20.9	20.0	430112	20.9	19.3	38777	21.0	18.1	356191	21.1	20.9	240393	21.2	18.9
247318	20.8	19.4	209481	20.9	19.2	528654	20.9	20.4	136922	21.0	19.0	220365	21.1	20.6	538961	21.2	21.5
182499	20.8	20.7	433804	20.9	20.7	8162	20.9	16.8	402193	21.0	19.9	323604	21.1	20.1	173592	21.2	19.9
264175	20.8	20.1	211370	20.9	18.6	519255	20.9	21.3	221000	21.0	19.3	438848	21.1	20.1	150046	21.2	19.8
215437	20.8	20.6	520091	20.9	20.2	15603	20.9	18.6	409763	21.0	20.8	470552	21.1	22.1	240001	21.2	19.0
8968	20.8	17.2	383611	20.9	19.7	108263	20.9	19.3	456012	21.0	21.0	296750	21.1	19.7	66393	21.2	18.8
21948	20.8	19.9	224104	20.9	21.1	17929	20.9	17.5	485744	21.0	21.2	184066	21.1	19.7	440566	21.2	20.9
446631	20.8	20.3	375238	20.9	20.6	408642	20.9	20.6	37813	21.0	18.5	214124	21.1	18.9	249424	21.2	21.0
461265	20.8	21.1	342142	20.9	19.9	92088	20.9	17.8	430602	21.0	20.7	132066	21.1	20.2	42649	21.2	18.1
427952	20.8	20.8	468838	20.9	21.1	6653	20.9	16.5	97715	21.0	18.9	155166	21.1	19.9	98671	21.2	18.7
517871	20.8	21.5	218924	20.9	20.2	186037	20.9	20.3	25379	21.0	16.2	506937	21.1	21.8	192137	21.2	20.4
453511	20.8	21.2	21211	20.9	18.0	398452	20.9	21.1	37081	21.0	17.0	528191	21.1	21.6	6871	21.2	17.2
238162	20.8	20.3	228310	20.9	19.4	17	20.9	11.6	40891	21.0	18.9	367062	21.1	21.9	524764	21.2	20.8
228580	20.8	18.4	528784	20.9	20.4	485362	20.9	20.8	144700	21.0	20.2	205556	21.1	19.2	208161	21.2	20.0
516499	20.8	20.4	435667	20.9	19.1	537477	20.9	22.5	250964	21.0	20.3	69384	21.1	19.5	28954	21.2	17.3
61827	20.8	18.9	400658	20.9	21.9	425020	20.9	20.9	461183	21.0	19.7	106259	21.1	19.2	346484	21.2	20.9
73617	20.9	18.2	292468	20.9	20.8	351150	20.9	20.2	280065	21.0	20.2	160690	21.1	19.7	339392	21.2	20.1
193919	20.9	20.2	188786	20.9	19.2	379600	20.9	19.2	139250	21.0	20.1	52118	21.1	18.2	539422	21.2	21.7
504147	20.9	21.2	12212	20.9	18.5	535686	20.9	22.1	241345	21.1	20.6	145492	21.1	18.4	100746	21.2	19.9
540215	20.9	20.4	355031	20.9	20.9	496432	20.9	20.8	183824	21.1	20.9	201141	21.1	20.0	188947	21.2	20.5
232075	20.9	18.5	96588	20.9	17.7	101125	20.9	20.6	234031	21.1	20.6	299632	21.1	21.9	368879	21.2	21.9
431433	20.9	21.0	435692	20.9	20.6	265544	20.9	20.3	278798	21.1	20.9	464115	21.1	21.0	466380	21.2	21.9
349660	20.9	20.9	525594	20.9	22.0	421790	20.9	20.4	57046	21.1	18.4	505531	21.1	18.9	402493	21.2	19.7
208590	20.9	19.6	88297	20.9	20.2	43258	20.9	17.9	68860	21.1	18.6	37591	21.1	18.3	214622	21.2	20.1
346575	20.9	19.7	479920	20.9	20.7	461214	20.9	20.5	38604	21.1	17.9	2564	21.1	15.3	480456	21.2	21.8
295776	20.9	19.3	163714	20.9	19.8	184551	20.9	20.5	283189	21.1	20.0	100391	21.1	19.8	66465	21.2	19.0
31905	20.9	19.3	493136	20.9	20.6	284873	20.9	19.9	480489	21.1	20.3	82292	21.1	19.8	317656	21.2	20.7
516012	20.9	21.1	191072	20.9	19.8	510681	20.9	20.0	26830	21.1	16.5	285499	21.1	19.6	496021	21.2	21.8
92275	20.9	19.0	538992	20.9	21.6	277756	20.9	19.8	324258	21.1	20.4	408552	21.1	20.8	382296	21.2	19.6
255577	20.9	19.3	398108	20.9	20.2	47996	20.9	19.2	439287	21.1	19.9	478816	21.1	20.3	171855	21.2	20.4
82715	20.9	18.7	210265	20.9	19.4	162527	20.9	18.3	517275	21.1	20.4	398289	21.1	21.3	234420	21.2	19.1
352014	20.9	20.1	34117	20.9	17.9	91949	20.9	18.6	338691	21.1	19.6	222462	21.1	19.8	428683	21.2	20.7
448072	20.9	20.1	206663	20.9	19.6	467	20.9	14.5	509759	21.1	20.4	273955	21.1	20.3	393219	21.2	21.1
4881	20.9	17.2	206576	20.9	19.1	318226	20.9	20.1	249433	21.1	20.5	420243	21.1	20.8	94548	21.2	18.3
261633	20.9	19.5	191648	20.9	20.1	241588	20.9	21.1	323414	21.1	20.0	156646	21.1	19.7	105816	21.2	19.1
97623	20.9	18.4	508295	20.9	21.6	195359	20.9	18.7	213833	21.1	19.0	524772	21.1	20.6	427725	21.2	21.1
451619	20.9	20.8	497042	20.9	20.8	22125	21.0	17.1	66275	21.1	19.8	387771	21.1	20.6	122177	21.2	20.4
328872	20.9	20.2	488090	20.9	20.3	539055	21.0	20.1	481699	21.1	20.7	46578	21.1	20.0	510246	21.2	21.1
716	20.9	14.9	340924	20.9	20.2	88904	21.0	19.3	98841	21.1	19.2	7456	21.1	17.3	68905	21.2	18.8
444306	20.9	20.4	485891	20.9	21.7	473319	21.0	21.1	169984	21.1	18.9	447079	21.1	21.1	490200	21.2	20.6
321431	20.9	19.8	151354	20.9	19.3	470646	21.0	22.0	482455	21.1	20.8	508984	21.1	21.2	157338	21.2	19.5
269459	20.9	20.4	421876	20.9	21.1	44300	21.0	17.4	166387	21.1	19.5	513422	21.1	19.8	329575	21.2	20.5
284768	20.9	20.3	133236	20.9	19.8	161606	21.0	19.4	419615	21.1	21.0	108244	21.2	19.2	210702	21.2	19.0
412815	20.9	21.6	408542	20.9	21.4	86685	21.0	20.2	304498	21.1	21.0	21100	21.2	18.9	19185	21.2	18.2
534703	20.9	20.6	54622	20.9	19.3	402069	21.0	21.0	259514	21.1	19.9	491498	21.2	20.7	365315	21.2	21.1
365351	20.9	21.0	404558	20.9	21.1	44359	21.0	17.6	426701	21.1	20.7	137894	21.2	18.6	191679	21.2	20.5
467984	20.9	20.8	321420	20.9	20.1	428504	21.0	19.4	10749								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
296638	21.2	19.8	75340	21.3	18.9	447123	21.4	20.2	145497	21.4	19.2	520574	21.5	21.5	299708	21.6	20.6
3787	21.2	15.2	144917	21.3	19.9	539845	21.4	20.1	453719	21.4	19.9	50644	21.5	17.9	171192	21.6	19.5
356791	21.2	20.7	316442	21.3	20.8	90300	21.4	19.5	183053	21.4	19.0	148387	21.5	19.3	541016	21.6	19.7
179167	21.2	19.4	333594	21.3	20.4	491922	21.4	20.9	540665	21.4	20.2	128934	21.5	19.3	347902	21.6	19.4
447409	21.2	20.3	241991	21.3	20.8	140833	21.4	19.9	113711	21.4	19.9	75738	21.5	18.6	481493	21.6	21.5
341090	21.2	20.4	93186	21.3	18.1	298676	21.4	19.6	452523	21.5	20.3	166321	21.5	20.8	221719	21.6	20.6
443499	21.3	20.7	18735	21.3	18.7	434085	21.4	19.9	176781	21.5	20.0	511449	21.5	20.4	420496	21.6	21.0
94127	21.3	18.1	323751	21.3	21.1	105890	21.4	19.3	21558	21.5	17.4	448676	21.5	21.3	4740	21.6	16.0
123623	21.3	20.0	21354	21.3	18.4	3856	21.4	15.8	149307	21.5	19.2	456083	21.5	21.2	266644	21.6	20.5
302196	21.3	20.4	260515	21.3	19.2	120351	21.4	19.6	161269	21.5	20.0	24201	21.5	18.5	447105	21.6	19.4
13534	21.3	18.4	318316	21.3	20.6	175946	21.4	20.1	54747	21.5	19.1	378621	21.5	21.1	508808	21.6	20.6
265726	21.3	19.7	514567	21.3	20.2	456626	21.4	21.3	59541	21.5	18.1	99075	21.5	19.2	407756	21.6	20.8
188900	21.3	20.6	360695	21.3	20.3	185122	21.4	19.7	268901	21.5	20.2	56693	21.5	17.4	317735	21.6	20.6
320076	21.3	20.5	231441	21.3	21.0	476773	21.4	20.1	420777	21.5	21.7	299651	21.5	20.6	146223	21.6	19.4
245535	21.3	20.1	126732	21.3	20.4	38112	21.4	19.3	469034	21.5	21.7	70299	21.5	17.7	435640	21.6	21.8
288790	21.3	20.6	30036	21.3	19.6	534671	21.4	20.9	169955	21.5	19.9	470746	21.5	20.4	464995	21.6	21.3
508149	21.3	21.3	280328	21.3	20.8	464118	21.4	20.1	476879	21.5	20.5	311385	21.5	20.3	113886	21.6	18.5
291978	21.3	20.6	487123	21.3	20.7	451612	21.4	21.5	60691	21.5	19.3	380834	21.5	19.2	511391	21.6	21.3
309862	21.3	20.8	327198	21.3	19.8	24798	21.4	19.0	317830	21.5	19.6	480485	21.5	20.9	536386	21.6	21.6
61518	21.3	18.3	151725	21.3	18.7	243182	21.4	19.6	451214	21.5	21.1	102314	21.5	19.5	480428	21.6	20.3
141834	21.3	18.3	394470	21.3	20.5	40344	21.4	18.9	77358	21.5	18.6	523191	21.5	20.4	133216	21.6	19.7
187006	21.3	19.7	116457	21.3	19.2	303620	21.4	20.6	375696	21.5	20.7	90652	21.5	18.0	511471	21.6	20.4
45107	21.3	18.6	262326	21.3	21.0	400686	21.4	19.5	514328	21.5	20.1	36442	21.5	18.8	169041	21.6	20.8
405477	21.3	19.8	117807	21.3	19.2	262151	21.4	20.0	338614	21.5	20.7	295327	21.5	20.3	100835	21.6	19.1
128741	21.3	19.2	1402	21.3	17.2	408404	21.4	21.8	215638	21.5	19.5	448569	21.5	20.8	61135	21.6	19.0
264108	21.3	20.2	327401	21.3	20.9	515535	21.4	20.3	317759	21.5	20.7	347053	21.5	20.1	294608	21.6	20.7
478233	21.3	20.9	414052	21.3	20.0	265519	21.4	19.3	539036	21.5	20.7	240579	21.5	20.6	193308	21.6	19.5
429180	21.3	20.7	41617	21.3	18.0	155039	21.4	19.4	128752	21.5	19.9	136723	21.5	20.7	299211	21.6	20.5
484930	21.3	21.0	59155	21.3	20.5	299605	21.4	20.8	112326	21.5	19.3	112342	21.5	20.1	469188	21.6	21.7
257740	21.3	19.0	183959	21.3	20.2	186859	21.4	19.5	141895	21.5	19.6	157705	21.5	20.3	272495	21.6	20.7
102765	21.3	19.1	441349	21.3	20.2	92715	21.4	20.3	520343	21.5	21.0	183852	21.5	19.4	454854	21.6	20.9
212192	21.3	19.7	276825	21.3	20.9	397537	21.4	20.4	510670	21.5	21.0	27290	21.5	18.0	1344	21.6	15.7
94175	21.3	19.2	145070	21.3	20.2	473612	21.4	21.4	438732	21.5	19.5	39072	21.5	18.9	481748	21.6	20.8
392388	21.3	21.5	32866	21.3	19.2	348137	21.4	20.2	422886	21.5	20.3	67617	21.5	17.2	347288	21.6	19.8
208026	21.3	20.2	160772	21.3	21.0	220971	21.4	20.9	451601	21.5	20.9	379573	21.5	20.3	147530	21.6	20.2
475404	21.3	21.2	428227	21.3	20.8	513782	21.4	20.4	392469	21.5	20.3	71534	21.6	18.6	99797	21.6	19.6
173322	21.3	20.2	416839	21.3	21.3	11680	21.4	17.9	22969	21.5	17.9	30127	21.6	17.8	521826	21.6	20.2
489688	21.3	20.0	508498	21.3	21.4	111670	21.4	19.4	409318	21.5	20.3	305238	21.6	20.5	14169	21.6	17.2
473506	21.3	20.1	327823	21.3	20.8	346700	21.4	20.1	503849	21.5	21.1	220685	21.6	20.2	60994	21.6	18.7
58874	21.3	18.6	492282	21.3	20.8	443438	21.4	20.7	252828	21.5	20.0	496682	21.6	21.1	66607	21.6	19.6
284275	21.3	20.4	512123	21.3	20.8	523311	21.4	20.2	52403	21.5	18.9	486612	21.6	20.3	41403	21.6	18.2
379258	21.3	20.9	447359	21.3	20.3	159024	21.4	19.8	416659	21.5	20.6	518046	21.6	21.5	309004	21.6	21.4
313620	21.3	20.6	73004	21.3	20.1	299124	21.4	21.5	513347	21.5	20.4	540995	21.6	21.2	193476	21.6	18.7
2111767	21.3	19.8	461297	21.3	20.6	168698	21.4	19.9	514828	21.5	21.0	195592	21.6	18.5	40451	21.6	18.1
139903	21.3	19.9	537272	21.3	21.9	47776	21.4	17.2	88570	21.5	18.1	87421	21.6	18.7	16610	21.6	17.7
525474	21.3	20.8	177314	21.3	19.5	514349	21.4	20.5	8995	21.5	17.4	265378	21.6	19.1	487334	21.6	21.5
495417	21.3	23.8	291502	21.3	20.3	225188	21.4	21.1	513102	21.5	19.9	403768	21.6	20.0	50762	21.6	18.5
237597	21.3	21.0	403224	21.4	21.2	488749	21.4	22.3	514746	21.5	22.3	295246	21.6	21.1	414075	21.6	19.9
513962	21.3	19.7	386781	21.4	20.3	445443	21.4	20.5	97699	21.5	20.4	472869	21.6	19.1	410945	21.6	21.5
158506	21.3	20.2	280139	21.4	20.0	221717	21.4	20.0	390494	21.5	19.1	294810	21.6	21.2	461872	21.6	21.9
323735	21.3	21.2	121900	21.4	18.9	258759	21.4	20.8	12854	21.5	18.7	319354	21.6	19.6	540134	21.6	21.1
5665	21.3	17.0	525857	21.4	21.7	449709	21.4	20.7	518024	21.5	21.2	445412	21.6	21.2	330498	21.6	18.7
456106	21.3	21.2	423065	21.4	19.6	266487	21.4	19.2	257777	21.5	19.3	7437	21.6	16.8	76352	21.6	19.1
22907	21.3	18.4	74923	21.4	18.4	209975	21.4	21.1	353123	21.5	20.3	239462	21.6	20.1	342016	21.6	19.3
450958	21.3	21.6	109054	21.4	19.3	177824	21.4	20.4	161999	21.5	22.0	324960	21.6	20.0	59994	21.6	20.4
289663	21.3	21.2	164790	21.4	19.0	470837	21.4	19.6	124124	21.5	19.2	483745	21.6	20.4	215661	21.7	20.0
428746	21.3	20.8	353849	21.4	19.6	289950	21.4	21.6	510056	21.5	20.6	96541	21.6	20.0	111311	21.7	16.6
226301	21.3	19.3	41263	21.4	19.4	255610	21.4	20.2	511231	21.5	19.5	153079	21.6	19.4	38241	21.7	18.1
350901	21.3	19.5	241242	21.4	20.3	347566	21.4	19.9	532627	21.5	20.1	402520	21.6	20.6	325075	21.7	21.0
250036	21.3	19.5	249778	21.4	20.4	467456	21.4	21.9	116141	21.5	19.8	121770	21.6	19.0	521848	21.7	20.7
321465	21.3	20.6	407857	21.4	21.4	6458	21.4	16.7	348528	21.5	21.1	193544	21.6	18.9	239962	21.7	21.4
451204	21.3	21.5	282401	21.4	20.1	287157	21.4	20.7	198231	21.5	20.2	342042	21.6	20.3	389659	21.7	20.5
250701	21.3	20.6	36847	21.4	18.8	84916	21.4	19.3	537613	21.5	19.9	100581	21.6	20.8	509650	21.7	21.8
353857	21.3	20.7	163779	21.4	19.9	449432	21.4	20.9	166299	21.5	21.1	471694	21.6	21.6	334988	21.7	21.3
421828	21.3	21.1	389510	21.4	20.7	279210	21.4	19.8	401668	21.5	21.6	133482	21.6	18.7	187774	21.7	20.0
145660	21.3	20.0	84534	21.4	18.9	42009	21.4	19.2	128725	21.5	18.9	117569	21.6	19.7	380007	21.7	19.9
444255	21.3	21.6	11868	21.4	19.3	354714	21.4	20.3	151374	21.5	19.5	318357	21.6	21.0	470278	21.7	20.5
72710	21.3	19.4	316464	21.4	19.9	524448	21.4	21.8	473410	21.5	20.5	493719	21.6	20.5	106385	21.7	19.0
124048	21.3	19.3	144127	21.4	19.6	299111	21.4										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
220260	21.7	19.1	76226	21.7	17.9	24962	21.8	18.7	489318	21.9	22.0	119300	21.9	20.4	154927	22.0	18.6
363220	21.7	19.2	344784	21.7	19.0	367027	21.8	21.6	134555	21.9	17.7	102506	21.9	20.2	256498	22.0	20.5
404883	21.7	21.1	11473	21.7	17.3	323423	21.8	20.7	444959	21.9	21.0	17108	21.9	18.7	399555	22.0	20.0
244452	21.7	18.6	370414	21.7	19.7	50039	21.8	19.1	472251	21.9	20.3	317781	21.9	20.4	496801	22.0	20.5
93098	21.7	19.4	252280	21.7	21.5	68426	21.8	17.7	95043	21.9	20.5	458426	21.9	20.7	539241	22.0	20.9
347095	21.7	20.4	28617	21.7	18.2	26575	21.8	18.5	501837	21.9	21.0	203046	21.9	19.1	183595	22.0	22.9
39267	21.7	18.3	372368	21.7	21.2	307095	21.8	19.3	153285	21.9	19.9	9360	21.9	17.9	113431	22.0	19.6
221858	21.7	19.8	510642	21.7	20.3	440782	21.8	21.1	542805	21.9	21.0	56333	21.9	17.4	330846	22.0	20.0
198248	21.7	19.3	65302	21.7	19.1	393771	21.8	20.3	112270	21.9	19.8	501668	21.9	20.1	223404	22.0	19.3
204750	21.7	20.1	98822	21.7	19.1	47894	21.8	17.6	508934	21.9	20.1	353115	21.9	21.4	137812	22.0	18.8
483638	21.7	20.6	217824	21.7	19.5	269192	21.8	20.9	448729	21.9	19.7	403203	21.9	20.5	220976	22.0	20.9
527440	21.7	21.8	198591	21.7	19.0	38028	21.8	19.7	441803	21.9	20.9	369693	21.9	20.4	512051	22.0	21.2
231863	21.7	20.2	370457	21.7	19.2	312968	21.8	19.8	388873	21.9	20.3	418027	21.9	19.9	516059	22.0	20.1
324834	21.7	21.7	359600	21.8	20.7	11752	21.8	18.4	514191	21.9	21.2	506348	21.9	20.3	261254	22.0	21.2
19448	21.7	17.6	404464	21.8	21.1	13666	21.8	19.0	410953	21.9	21.6	291146	21.9	19.9	165020	22.0	18.8
130010	21.7	18.1	371432	21.8	21.2	473413	21.8	19.8	521714	21.9	20.9	325355	21.9	20.3	218417	22.0	19.6
221655	21.7	20.1	14018	21.8	19.0	19504	21.8	17.5	467499	21.9	21.1	72741	21.9	18.4	193806	22.0	20.1
405261	21.7	20.4	100010	21.8	19.5	135961	21.8	19.3	166309	21.9	20.2	78127	21.9	18.4	297984	22.0	21.5
242672	21.7	19.7	164093	21.8	17.6	126396	21.8	18.0	480504	21.9	21.5	156642	21.9	20.3	194914	22.0	19.0
480394	21.7	21.0	351861	21.8	20.5	104382	21.8	19.9	96865	21.9	17.5	342577	21.9	19.7	67208	22.0	18.8
498399	21.7	19.5	514958	21.8	20.8	512417	21.8	20.4	166389	21.9	20.2	511201	21.9	19.9	507669	22.0	20.8
255643	21.7	19.6	217128	21.8	20.3	380300	21.8	20.1	206662	21.9	19.6	135895	21.9	18.6	367291	22.0	21.2
94440	21.7	19.3	383618	21.8	20.2	342440	21.8	20.1	292339	21.9	20.3	159291	21.9	19.4	382585	22.0	18.9
343592	21.7	19.7	389148	21.8	20.1	290903	21.8	20.7	473442	21.9	20.1	252184	21.9	19.6	517457	22.0	21.1
25622	21.7	18.6	66287	21.8	18.2	377561	21.8	21.3	172861	21.9	19.0	84585	21.9	18.4	426068	22.0	20.9
535725	21.7	20.3	223313	21.8	19.6	241003	21.8	21.0	445961	21.9	20.6	345513	21.9	20.2	59144	22.0	17.9
251838	21.7	19.6	512028	21.8	21.1	140283	21.8	17.6	358911	21.9	21.1	48580	21.9	19.0	443822	22.0	19.9
137244	21.7	19.2	225839	21.8	18.2	362350	21.8	19.9	241011	21.9	20.6	368884	21.9	18.9	165195	22.0	19.0
206301	21.7	20.2	364488	21.8	22.2	43005	21.8	19.2	195142	21.9	20.4	232291	21.9	20.3	156669	22.0	20.4
185708	21.7	19.9	139218	21.8	19.7	282748	21.8	20.2	375249	21.9	20.1	113083	21.9	18.2	157054	22.0	19.2
68111	21.7	18.9	443630	21.8	21.0	79005	21.8	18.6	297118	21.9	20.4	470635	21.9	20.8	121380	22.0	19.6
423885	21.7	20.6	180204	21.8	18.1	445219	21.8	21.5	184370	21.9	19.7	511210	21.9	20.1	278483	22.0	20.0
96136	21.7	19.3	107451	21.8	19.9	370386	21.8	20.6	269812	21.9	21.5	39564	21.9	19.9	27062	22.0	16.8
340548	21.7	20.5	437042	21.8	19.7	202612	21.8	19.7	239949	21.9	20.1	401824	21.9	20.8	328488	22.0	21.0
399561	21.7	19.6	525492	21.8	22.1	221623	21.8	19.9	100338	21.9	19.1	191903	21.9	19.1	353429	22.0	20.2
353509	21.7	19.9	471233	21.8	19.5	309051	21.8	21.1	402467	21.9	20.8	86128	21.9	18.1	266586	22.0	20.1
133364	21.7	20.5	64457	21.8	18.3	239387	21.8	20.2	137940	21.9	19.7	290390	21.9	20.9	499082	22.0	20.6
354049	21.7	20.9	26662	21.8	19.3	469207	21.8	20.6	373157	21.9	21.1	485301	21.9	21.5	330368	22.0	20.6
401424	21.7	20.2	491454	21.8	20.8	357868	21.8	20.7	351166	21.9	19.9	98427	21.9	19.0	301199	22.0	19.5
16508	21.7	16.3	165976	21.8	19.3	127370	21.8	18.7	400437	21.9	20.6	247082	21.9	19.3	108313	22.0	19.1
31945	21.7	17.3	512631	21.8	21.0	67216	21.8	18.0	249040	21.9	21.3	44339	21.9	18.7	399770	22.0	20.3
293108	21.7	20.5	520126	21.8	20.9	345938	21.8	18.9	96128	21.9	19.6	433928	21.9	21.2	237287	22.1	20.0
287778	21.7	18.7	291445	21.8	21.1	190454	21.8	20.5	231746	21.9	20.6	390791	21.9	20.2	319429	22.1	20.7
220521	21.7	20.6	438519	21.8	20.0	218532	21.8	19.6	357864	21.9	20.2	49449	21.9	18.1	141777	22.1	19.9
365323	21.7	21.0	225059	21.8	20.1	251531	21.8	20.7	144140	21.9	18.6	206900	21.9	19.4	42399	22.1	19.5
385037	21.7	19.5	382476	21.8	20.0	514001	21.8	20.9	206088	21.9	19.3	265099	21.9	19.6	305301	22.1	20.7
314043	21.7	19.1	59658	21.8	18.3	36985	21.8	18.0	403400	21.9	20.1	343707	21.9	18.7	194947	22.1	18.5
261700	21.7	19.9	331354	21.8	20.1	120359	21.8	18.6	192206	21.9	21.4	378228	21.9	20.0	539088	22.1	20.9
45531	21.7	18.4	217736	21.8	17.9	125341	21.8	19.4	46228	21.9	19.9	71097	21.9	17.0	209752	22.1	20.2
203344	21.7	19.7	361637	21.8	21.1	240198	21.8	20.1	266548	21.9	19.3	60303	21.9	18.1	220771	22.1	20.3
520606	21.7	21.0	223438	21.8	20.0	377650	21.8	20.4	273890	21.9	21.3	525494	21.9	21.4	87143	22.1	19.0
231291	21.7	20.0	26741	21.8	17.7	250494	21.8	19.9	496626	21.9	19.9	54682	21.9	19.3	365811	22.1	20.2
327227	21.7	21.1	16764	21.8	18.3	99859	21.8	19.3	523761	21.9	22.0	354313	21.9	19.1	16460	22.1	17.1
418934	21.7	21.2	49240	21.8	18.3	342407	21.8	20.5	143599	21.9	20.0	163941	21.9	19.7	514914	22.1	24.0
521946	21.7	19.7	205835	21.8	20.3	315291	21.9	19.8	299391	21.9	20.8	494352	21.9	20.1	192250	22.1	20.9
108694	21.7	19.8	333858	21.8	19.1	446797	21.9	21.1	532554	21.9	21.0	487380	21.9	20.4	467747	22.1	22.0
511650	21.7	21.4	194353	21.8	18.9	70112	21.9	20.3	181529	21.9	20.2	16484	21.9	18.0	186819	22.1	20.7
319217	21.7	20.2	147188	21.8	18.9	63496	21.9	19.3	516313	21.9	20.6	349309	21.9	19.4	33185	22.1	17.7
310172	21.7	20.8	172279	21.8	19.4	478238	21.9	21.3	380075	21.9	19.9	486557	21.9	21.1	296574	22.1	21.0
281600	21.7	21.0	437945	21.8	20.6	155887	21.9	19.7	256685	21.9	19.8	183738	21.9	19.1	346937	22.1	20.2
49025	21.7	19.1	301973	21.8	20.9	306980	21.9	20.3	383947	21.9	19.6	390406	21.9	20.3	379235	22.1	21.1
503444	21.7	21.5	34373	21.8	17.6	117249	21.9	19.2	464247	21.9	20.1	221046	21.9	19.0	210482	22.1	20.3
8313	21.7	16.9	441735	21.8	21.1	299113	21.9	20.6	446591	21.9	20.0	235112	21.9	20.1	412949	22.1	21.9
254369	21.7	19.4	198497	21.8	18.9	74331	21.9	18.7	232336	21.9	19.7	433333	21.9	20.2	316555	22.1	19.6
188850	21.7	19.7	203148	21.8	19.0	7069	21.9	16.9	504850	21.9	21.5	369949	21.9	20.6	292464	22.1	20.3
528539	21.7	20.7	451145	21.8	21.5	333560	21.9	20.3	103473	21.9	19.7	328125	21.9	20.2	470675	22.1	20.4
23397	21.7	19.1	308983	21.8	20.4	1627	21.9	16.0	239642	21.9	19.6	71558	21.9	18.6	106614	22.1	18.4
173568	21.7	19.9	117099	21.8	18.5	44247	21.9	18.1	411955	21.9	20.9	218540	21.9	19.3	378842	22.1	23.9
306339	21.7	20.4	448055	21.8	21.5	226860											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
91864	22.1	17.5	392416	22.1	20.2	325022	22.2	21.1	452769	22.3	20.9	195138	22.3	20.0	148273	22.4	17.9
251741	22.1	19.1	529952	22.1	20.0	448506	22.2	21.0	472743	22.3	19.3	483639	22.3	20.8	332683	22.4	21.1
243319	22.1	20.9	155318	22.1	19.3	166598	22.2	19.5	325680	22.3	19.6	22657	22.3	17.6	338541	22.4	19.8
48224	22.1	18.6	93607	22.1	18.7	88877	22.2	18.7	409737	22.3	20.9	10686	22.3	16.9	18854	22.4	18.2
519279	22.1	20.7	336815	22.1	20.5	185193	22.2	19.0	90392	22.3	17.8	469554	22.3	20.4	198099	22.4	19.2
258672	22.1	19.6	169091	22.1	19.7	264893	22.2	19.5	357321	22.3	21.1	242529	22.3	18.3	330755	22.4	20.5
144019	22.1	19.5	127887	22.1	19.5	484916	22.2	20.7	131478	22.3	18.8	258539	22.3	19.9	10197	22.4	17.4
56722	22.1	18.7	206595	22.1	19.6	114909	22.2	18.8	488016	22.3	20.4	148277	22.3	19.9	157036	22.4	19.7
418211	22.1	19.8	476051	22.1	20.6	512756	22.2	20.1	184853	22.3	19.9	169774	22.3	19.3	336460	22.4	19.0
53472	22.1	18.9	378201	22.1	20.0	425682	22.2	20.5	356106	22.3	20.7	495552	22.3	20.0	516175	22.4	20.0
53778	22.1	18.6	160007	22.1	20.1	522938	22.2	20.8	346526	22.3	20.1	141830	22.3	19.2	538871	22.4	20.7
446648	22.1	20.3	331790	22.1	19.5	173539	22.2	19.7	46939	22.3	17.7	451384	22.3	20.5	520507	22.4	20.7
464631	22.1	20.7	539194	22.1	21.2	185326	22.2	20.0	229875	22.3	19.8	125586	22.3	17.6	499513	22.4	20.2
425752	22.1	19.7	421642	22.1	21.0	307608	22.2	19.9	12170	22.3	19.4	117153	22.3	18.9	466650	22.4	20.4
364608	22.1	19.7	235191	22.2	19.3	308002	22.2	19.7	42526	22.3	18.5	43037	22.3	17.9	190572	22.4	17.7
399049	22.1	21.5	203021	22.2	18.2	191043	22.2	18.6	18615	22.3	17.2	165039	22.3	18.9	247369	22.4	18.7
86886	22.1	19.0	451972	22.2	20.4	368389	22.2	20.4	128708	22.3	18.9	294873	22.3	20.2	516957	22.4	20.5
443309	22.1	21.0	308345	22.2	19.9	448709	22.2	20.1	245201	22.3	19.0	451791	22.3	20.2	491665	22.4	20.1
90792	22.1	18.9	374037	22.2	20.0	516436	22.2	19.9	391889	22.3	20.3	129672	22.3	19.3	451205	22.4	20.6
189145	22.1	20.1	115818	22.2	18.7	151167	22.2	19.5	384514	22.3	20.2	147883	22.3	20.2	95096	22.4	17.9
509889	22.1	19.3	190615	22.2	17.0	318106	22.2	19.4	421506	22.3	19.9	113043	22.3	19.2	391516	22.4	20.6
65045	22.1	19.7	371532	22.2	19.1	23859	22.2	18.7	323065	22.3	20.7	225660	22.3	19.8	512366	22.4	19.8
423957	22.1	19.4	489525	22.2	22.0	383980	22.2	19.8	46623	22.3	17.7	450960	22.3	20.6	306768	22.4	18.3
166484	22.1	19.3	395279	22.2	20.5	432079	22.2	20.9	188561	22.3	19.2	455963	22.3	19.9	173810	22.4	19.3
536718	22.1	20.1	345461	22.2	20.0	385805	22.2	21.1	289391	22.3	19.9	377662	22.3	20.6	389772	22.4	21.2
531158	22.1	19.5	289470	22.2	19.2	86732	22.2	19.3	400712	22.3	21.1	390295	22.3	19.5	258940	22.4	19.0
303548	22.1	20.6	532457	22.2	20.8	447720	22.2	20.6	6241	22.3	16.4	85730	22.3	18.3	219259	22.4	20.0
32874	22.1	18.7	333472	22.2	20.8	433110	22.2	20.1	307773	22.3	20.3	437371	22.3	20.1	50977	22.4	18.4
396966	22.1	20.8	299703	22.2	20.0	39222	22.2	17.9	291440	22.3	20.3	212348	22.3	20.1	137420	22.4	18.3
517962	22.1	20.3	404767	22.2	20.3	281296	22.2	20.5	485812	22.3	20.2	445275	22.3	19.9	184415	22.4	20.3
389178	22.1	20.3	537198	22.2	21.5	441893	22.2	21.4	34530	22.3	17.9	145989	22.3	19.1	514853	22.4	21.1
42637	22.1	16.8	501667	22.2	19.8	12304	22.2	16.7	264399	22.3	20.8	325922	22.3	20.5	254926	22.4	20.3
423052	22.1	19.5	21129	22.2	17.6	86043	22.2	19.6	385327	22.3	19.9	228143	22.3	20.2	302113	22.4	21.4
453473	22.1	21.0	385108	22.2	20.2	452057	22.2	20.4	204546	22.3	19.8	97191	22.3	19.4	287100	22.4	20.5
478540	22.1	20.9	118943	22.2	18.3	202106	22.2	19.5	365368	22.3	20.4	382201	22.3	20.0	308995	22.4	20.6
9093	22.1	17.2	394997	22.2	20.0	101051	22.2	20.1	342147	22.3	19.4	298224	22.3	19.6	34132	22.4	18.9
511700	22.1	20.4	300554	22.2	20.9	314588	22.2	19.7	315158	22.3	20.0	470644	22.3	20.6	514730	22.4	20.9
224154	22.1	20.5	507216	22.2	20.6	223361	22.2	19.9	324451	22.3	19.5	421723	22.3	20.9	532608	22.4	21.2
266047	22.1	19.5	188337	22.2	19.3	60103	22.2	18.5	449803	22.3	21.3	535950	22.4	20.1	181818	22.4	19.3
311205	22.1	19.1	254601	22.2	19.3	302180	22.2	20.3	81392	22.3	18.7	91907	22.4	17.7	79175	22.4	18.4
301456	22.1	20.6	79684	22.2	19.2	512022	22.2	21.1	275501	22.3	20.5	171501	22.4	19.7	235210	22.4	19.7
242877	22.1	21.5	342311	22.2	21.2	283118	22.2	20.1	240207	22.3	19.8	162298	22.4	19.5	311902	22.4	20.2
476131	22.1	20.2	136263	22.2	19.1	246215	22.2	19.8	451732	22.3	19.7	130320	22.4	19.0	92104	22.4	18.4
450487	22.1	20.3	361509	22.2	20.6	407740	22.2	22.0	477042	22.3	20.6	99161	22.4	19.0	516958	22.4	21.4
21302	22.1	18.2	193536	22.2	18.3	344760	22.2	19.1	25665	22.3	17.8	39561	22.4	17.5	413387	22.4	21.6
236740	22.1	19.7	66443	22.2	19.9	215037	22.2	20.2	240354	22.3	20.2	480035	22.4	21.3	497640	22.4	20.9
334262	22.1	19.4	70076	22.2	19.4	220768	22.2	20.0	107924	22.3	19.8	38150	22.4	18.1	11824	22.4	17.8
531674	22.1	21.4	207352	22.2	20.5	100323	22.2	19.8	402160	22.3	20.3	216583	22.4	19.0	254186	22.4	19.2
120711	22.1	20.0	368002	22.2	19.7	360902	22.2	20.5	4554	22.3	16.8	301694	22.4	20.6	401242	22.4	20.0
87679	22.1	17.2	438331	22.2	21.9	159815	22.2	18.8	314497	22.3	19.7	42672	22.4	18.0	34042	22.4	18.4
223988	22.1	19.5	484875	22.2	20.6	493623	22.2	20.4	265552	22.3	20.2	441793	22.4	21.6	15896	22.4	19.2
293633	22.1	19.0	423991	22.2	20.1	209517	22.2	19.1	184540	22.3	19.6	340257	22.4	20.3	83210	22.4	19.3
335058	22.1	19.3	531550	22.2	21.5	35545	22.2	18.6	443502	22.3	21.1	102077	22.4	19.2	449817	22.4	19.8
168845	22.1	18.8	443356	22.2	20.7	485979	22.2	20.8	405770	22.3	20.0	13499	22.4	17.8	34544	22.4	18.1
443740	22.1	20.4	242942	22.2	20.3	134113	22.2	19.5	11594	22.3	17.8	412685	22.4	21.6	75855	22.4	19.0
421820	22.1	20.6	307990	22.2	20.1	117549	22.2	19.8	319260	22.3	20.0	12782	22.4	16.9	101974	22.4	18.3
46717	22.1	18.2	196501	22.2	19.9	394066	22.2	16.9	242639	22.3	20.4	27630	22.4	20.0	222491	22.4	19.5
278999	22.1	20.8	485298	22.2	19.9	306211	22.2	20.1	397616	22.3	20.2	13399	22.4	17.2	175422	22.4	19.8
449508	22.1	21.6	12794	22.2	18.2	391924	22.2	20.8	351391	22.3	20.1	448652	22.4	21.1	251423	22.4	20.4
368912	22.1	21.1	530720	22.2	20.9	539779	22.2	21.0	433130	22.3	20.8	168686	22.4	19.4	487233	22.4	20.1
163961	22.1	19.5	310367	22.2	20.0	300710	22.2	19.8	294252	22.3	20.1	199821	22.4	20.9	218081	22.4	19.7
329103	22.1	20.7	287952	22.2	19.5	506924	22.2	21.2	363363	22.3	19.4	405031	22.4	21.3	350944	22.4	19.1
293916	22.1	20.5	21836	22.2	18.0	372408	22.2	20.1	23736	22.3	17.8	361006	22.4	20.2	20435	22.4	17.7
260259	22.1	19.8	518001	22.2	21.0	40992	22.2	17.1	412621	22.3	21.1	319496	22.4	20.5	241023	22.4	20.1
389988	22.1	20.0	489681	22.2	20.9	322150	22.3	20.1	1421	22.3	14.9	245821	22.4	19.8	401693	22.4	19.9
243416	22.1	21.0	487835	22.2	21.0	175507	22.3	19.6	348963	22.3	20.6	141029	22.4	20.0	214727	22.4	20.4
86210	22.1	18.9	90727	22.2	18.9	199167	22.3	19.5	470575	22.3	20.1	439992	22.4	19.9	388640	22.4	20.3
327922	22.1	20.3	181268	22.2	20.1	331878	22.3	19.4	390387	22.3	19.9	219471	22.4	18.6	63917	22.4	18.7
214579	22.1	20.8	348763	22.2	20.5	226509											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
341992	22.4	22.1	176654	22.5	20.0	107140	22.6	18.4	116879	22.7	19.6	107858	22.8	20.3	411773	22.8	19.6
110861	22.4	19.2	132664	22.5	19.5	410692	22.6	20.2	444162	22.7	20.2	461272	22.8	21.0	419798	22.8	20.4
116915	22.5	18.9	183284	22.5	19.6	135572	22.6	19.6	510305	22.7	20.5	92973	22.8	17.9	375177	22.8	21.3
112601	22.5	18.3	273854	22.5	20.4	369563	22.6	20.7	135811	22.7	18.8	485018	22.8	21.4	534256	22.8	19.5
163940	22.5	19.1	449801	22.5	20.6	257518	22.6	20.3	382193	22.7	19.0	3795	22.8	16.6	505019	22.8	19.5
280563	22.5	19.3	429489	22.5	20.1	448631	22.6	19.9	431422	22.7	20.7	213232	22.8	19.1	198265	22.8	21.6
235316	22.5	19.9	60771	22.5	18.4	516828	22.6	20.6	383869	22.7	18.8	406997	22.8	21.5	389472	22.8	21.7
226547	22.5	19.9	347999	22.5	21.1	513798	22.6	20.2	383970	22.7	21.0	511284	22.8	20.1	512019	22.8	20.5
17970	22.5	17.9	305458	22.5	20.6	289074	22.6	19.5	482885	22.7	21.2	443556	22.8	20.7	176135	22.8	20.1
359580	22.5	20.6	89843	22.5	19.8	487770	22.6	20.8	22187	22.7	18.3	372823	22.8	20.3	283657	22.8	20.0
467296	22.5	21.2	306796	22.5	19.9	139627	22.6	19.7	353799	22.7	21.4	29082	22.8	17.7	478771	22.8	20.1
322607	22.5	20.2	134544	22.5	19.1	323716	22.6	21.5	374804	22.7	20.1	253753	22.8	19.3	302803	22.8	19.1
115625	22.5	19.2	249679	22.5	18.6	199141	22.6	19.0	339310	22.7	18.9	529922	22.8	21.0	193270	22.8	20.2
93064	22.5	19.5	10835	22.5	16.5	177005	22.6	18.5	128622	22.7	19.6	448420	22.8	19.9	257938	22.8	19.9
286975	22.5	20.8	145816	22.5	19.8	239960	22.6	21.4	240233	22.7	18.6	183822	22.8	20.3	384688	22.8	20.9
22174	22.5	17.9	322680	22.5	20.7	120870	22.6	19.4	16220	22.7	18.2	250066	22.8	19.8	305859	22.8	21.1
480403	22.5	21.5	283046	22.5	19.5	443346	22.6	20.4	539462	22.7	21.0	180505	22.8	19.3	442127	22.8	20.9
407245	22.5	20.2	469660	22.5	19.2	167756	22.6	18.5	251420	22.7	20.2	435215	22.8	20.2	13851	22.8	16.7
508362	22.5	20.9	158971	22.5	19.6	255438	22.6	19.6	367900	22.7	19.6	185735	22.8	19.7	101018	22.8	19.4
414101	22.5	20.7	259830	22.5	20.3	478016	22.6	20.8	141484	22.7	16.3	78808	22.8	18.9	382098	22.8	20.5
291156	22.5	19.7	145596	22.5	20.1	15922	22.6	17.8	395100	22.7	22.5	57573	22.8	18.3	112680	22.8	20.5
4153	22.5	17.4	442436	22.5	20.2	314465	22.6	20.4	93697	22.7	18.6	130795	22.8	19.3	240562	22.8	19.0
470743	22.5	20.7	380562	22.5	19.3	200224	22.6	20.3	29094	22.7	19.2	78900	22.8	19.5	10357	22.8	17.1
537662	22.5	21.0	307981	22.5	20.0	248460	22.6	19.3	186647	22.7	21.2	360140	22.8	20.1	329233	22.8	20.1
305164	22.5	20.0	430225	22.5	20.6	75404	22.6	18.0	99055	22.7	19.2	61580	22.8	18.6	426360	22.8	20.0
164785	22.5	18.5	231247	22.5	19.8	276477	22.6	20.9	235306	22.7	19.8	539072	22.8	21.3	453536	22.8	20.3
370215	22.5	21.7	513947	22.5	21.4	513453	22.6	19.9	162125	22.7	18.7	407176	22.8	20.6	360504	22.8	20.9
241486	22.5	20.4	421202	22.5	17.8	251810	22.6	19.6	166409	22.7	19.8	4052	22.8	16.0	429464	22.8	20.4
73579	22.5	20.1	173619	22.5	20.5	55856	22.6	18.8	485241	22.7	20.8	319223	22.8	19.7	394594	22.8	20.4
30808	22.5	16.1	288661	22.5	21.6	89738	22.6	17.4	452642	22.7	21.0	127279	22.8	20.2	309046	22.8	20.7
5989	22.5	17.5	27695	22.5	18.7	225646	22.6	20.5	447055	22.7	20.8	75427	22.8	18.8	521119	22.8	20.9
450947	22.5	20.4	243887	22.5	19.6	275562	22.6	20.4	316596	22.7	19.4	178459	22.8	20.3	74659	22.8	17.7
478842	22.5	19.2	248658	22.5	20.4	363674	22.6	19.5	190616	22.7	18.6	143210	22.8	18.4	539640	22.8	21.1
217404	22.5	21.0	282733	22.5	19.8	189156	22.6	20.4	454871	22.7	20.7	98176	22.8	18.7	498425	22.8	20.1
472246	22.5	21.0	76383	22.5	18.5	374249	22.6	21.5	531062	22.7	21.1	230054	22.8	19.4	168730	22.8	20.4
366079	22.5	21.2	226117	22.6	20.1	136565	22.6	18.2	269856	22.7	18.6	476984	22.8	21.1	133463	22.8	19.3
16736	22.5	17.8	41134	22.6	19.6	292638	22.6	19.8	42907	22.7	18.4	485879	22.8	20.5	129108	22.9	18.8
444205	22.5	20.2	187983	22.6	19.4	353684	22.6	20.3	355561	22.7	20.9	28541	22.8	18.5	161930	22.9	20.1
266217	22.5	19.0	415882	22.6	20.2	221663	22.6	18.9	450954	22.7	21.4	523233	22.8	20.9	449349	22.9	21.8
193557	22.5	19.0	365395	22.6	20.2	71996	22.6	18.4	242103	22.7	20.4	311896	22.8	20.2	3144	22.9	16.5
284574	22.5	21.4	492346	22.6	20.6	158299	22.6	20.4	143926	22.7	18.8	485721	22.8	20.5	398833	22.9	20.4
451192	22.5	20.1	194855	22.6	18.7	159303	22.6	20.2	376541	22.7	19.4	448344	22.8	21.0	199378	22.9	20.5
187709	22.5	19.6	324852	22.6	20.7	44158	22.6	18.7	440429	22.7	21.2	157317	22.8	20.1	320693	22.9	20.8
242220	22.5	20.6	60154	22.6	19.5	210253	22.6	19.8	257896	22.7	19.9	404055	22.8	20.3	439630	22.9	21.4
527888	22.5	21.3	38426	22.6	17.8	287720	22.6	20.2	306009	22.7	21.0	154940	22.8	19.5	171646	22.9	19.5
9756	22.5	18.0	361489	22.6	21.0	228378	22.6	18.6	380081	22.7	20.2	361953	22.8	21.4	208227	22.9	20.2
348754	22.5	20.8	95208	22.6	18.8	22298	22.6	17.2	62037	22.7	18.1	134309	22.8	19.9	289690	22.9	21.4
159992	22.5	19.4	437912	22.6	20.5	469932	22.6	20.3	338630	22.7	20.0	435813	22.8	20.2	168676	22.9	19.3
469248	22.5	20.7	506540	22.6	19.2	322602	22.6	19.4	79842	22.7	19.5	385841	22.8	20.3	14409	22.9	18.0
466875	22.5	20.3	501664	22.6	21.1	474075	22.6	21.0	52957	22.7	17.3	320106	22.8	21.1	403186	22.9	22.0
514075	22.5	21.5	290993	22.6	19.0	515006	22.6	21.4	342364	22.7	21.0	342776	22.8	20.9	235356	22.9	20.8
90309	22.5	20.6	469080	22.6	21.0	4614	22.6	16.5	389478	22.7	20.5	201511	22.8	20.5	357692	22.9	20.7
130930	22.5	19.4	379200	22.6	21.4	454635	22.6	20.8	100509	22.7	18.6	420780	22.8	21.2	377603	22.9	18.9
84994	22.5	18.6	537236	22.6	19.6	132487	22.6	19.4	488113	22.7	20.4	168061	22.8	19.6	313079	22.9	19.4
361080	22.5	20.0	368084	22.6	19.9	509750	22.6	20.6	224125	22.7	21.1	379176	22.8	20.9	454029	22.9	20.8
496764	22.5	20.4	479702	22.6	20.4	520696	22.6	20.9	210377	22.7	19.9	376137	22.8	19.6	37167	22.9	18.6
537661	22.5	21.8	483172	22.6	21.6	215845	22.6	19.2	278734	22.7	20.3	262089	22.8	19.9	353456	22.9	20.3
266557	22.5	20.5	471619	22.6	20.0	420468	22.6	19.9	221766	22.7	20.3	409270	22.8	20.9	41948	22.9	16.8
321568	22.5	19.9	374925	22.6	20.6	383228	22.6	20.5	469935	22.7	19.9	198789	22.8	19.5	539240	22.9	21.7
121707	22.5	18.2	219055	22.6	19.5	51541	22.6	18.0	31909	22.7	19.5	155598	22.8	20.2	122746	22.9	19.8
504691	22.5	21.2	110206	22.6	19.7	123843	22.6	19.7	91615	22.7	18.9	259417	22.8	19.0	253891	22.9	19.1
75325	22.5	17.9	340249	22.6	20.5	213253	22.7	19.2	126668	22.7	20.2	387379	22.8	20.3	448406	22.9	21.6
362538	22.5	19.8	156686	22.6	18.9	301355	22.7	20.2	409796	22.7	20.1	82203	22.8	19.2	390922	22.9	20.3
89855	22.5	19.3	252734	22.6	19.6	537650	22.7	20.8	385769	22.7	20.0	48025	22.8	18.6	44919	22.9	15.8
414108	22.5	20.5	238583	22.6	17.6	404563	22.7	20.4	72235	22.7	17.3	525271	22.8	19.3	398976	22.9	20.1
496887	22.5	20.2	382598	22.6	20.2	153262	22.7	19.5	467465	22.7	20.8	473404	22.8	20.4	299151	22.9	20.6
131084	22.5	18.4	92202	22.6	18.7	212406	22.7	20.4	78955	22.7	18.6	529307	22.8	20.2	451340	22.9	21.5
541027	22.5	19.6	276950	22.6	20.9	484267	22.7	21.1	319116	22.7	20.7	219822	22.8	18.4	147884	22.9	20.3
226056	22.5	20.2	281273	22.6	21.0	26619											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
71921	22.9	17.3	272603	22.9	19.8	454404	23.0	20.7	434754	23.1	20.8	318192	23.1	20.1	432893	23.2	21.2
343550	22.9	20.5	352735	22.9	20.7	44884	23.0	19.3	353096	23.1	20.4	282408	23.1	20.2	479938	23.2	20.1
116661	22.9	19.6	216659	22.9	19.3	251553	23.0	19.8	40654	23.1	19.1	297538	23.1	18.9	250671	23.2	21.4
488161	22.9	21.2	505839	22.9	20.2	40461	23.0	18.0	282255	23.1	20.8	308993	23.1	20.3	329600	23.2	20.4
123376	22.9	18.8	476630	22.9	21.3	114371	23.0	18.7	92213	23.1	18.3	128963	23.1	19.2	184805	23.2	20.2
224619	22.9	20.7	415462	22.9	20.2	508353	23.0	20.7	224642	23.1	20.2	126291	23.1	19.4	371438	23.2	21.5
72028	22.9	18.0	516761	22.9	20.8	65681	23.0	18.7	188823	23.1	19.6	463393	23.1	20.7	362294	23.2	20.6
205446	22.9	19.9	115657	22.9	18.5	131630	23.0	17.8	81476	23.1	19.9	479105	23.1	20.3	516953	23.2	21.1
221094	22.9	18.7	276489	22.9	20.1	146051	23.0	18.8	311862	23.1	20.4	290574	23.1	20.7	92453	23.2	18.9
177778	22.9	20.6	222911	22.9	20.6	526080	23.0	20.3	512686	23.1	20.5	141661	23.2	20.6	513248	23.2	20.3
311562	22.9	20.4	424489	22.9	20.5	159527	23.0	20.3	401296	23.1	19.7	93685	23.2	18.7	342162	23.2	20.2
206047	22.9	19.3	387345	22.9	20.3	8539	23.0	16.7	411472	23.1	19.5	411615	23.2	21.6	354333	23.2	20.0
317348	22.9	19.9	478875	22.9	21.2	139006	23.0	19.8	324847	23.1	20.7	479650	23.2	20.2	203241	23.2	19.6
98948	22.9	18.1	300778	22.9	20.8	182291	23.0	20.3	539362	23.1	21.3	436609	23.2	21.1	220756	23.2	19.5
395248	22.9	20.5	316139	22.9	19.6	476118	23.0	20.4	448433	23.1	21.2	473366	23.2	19.9	39431	23.2	17.8
505132	22.9	20.9	323046	22.9	20.4	498231	23.0	21.0	48301	23.1	19.0	269847	23.2	19.9	176442	23.2	19.8
194721	22.9	19.5	481406	22.9	20.9	230918	23.0	19.4	241384	23.1	19.6	321460	23.2	19.6	23838	23.2	18.1
437960	22.9	21.3	301718	22.9	21.4	71296	23.0	18.1	99683	23.1	19.8	373167	23.2	20.1	88342	23.2	19.3
422880	22.9	20.8	482991	22.9	21.1	208030	23.0	20.1	370622	23.1	19.8	336787	23.2	20.5	437940	23.2	21.4
17147	22.9	17.6	514463	22.9	20.8	41131	23.0	18.8	389796	23.1	21.2	481649	23.2	19.9	310302	23.2	20.1
507955	22.9	20.2	480720	22.9	19.9	169829	23.0	19.3	72763	23.1	17.8	537435	23.2	21.8	285208	23.2	18.3
146851	22.9	19.8	164755	22.9	19.0	525615	23.0	20.3	38212	23.1	18.7	6319	23.2	16.4	301040	23.2	20.9
340543	22.9	20.1	78828	22.9	19.9	226455	23.0	19.9	18590	23.1	17.0	501715	23.2	20.3	45195	23.2	16.9
121857	22.9	19.5	390934	22.9	21.3	308939	23.0	20.6	296073	23.1	19.5	79308	23.2	19.0	85087	23.2	18.3
461007	22.9	20.4	135026	22.9	19.0	154250	23.0	20.3	324799	23.1	20.9	389488	23.2	20.2	204959	23.2	19.0
247482	22.9	20.8	254268	22.9	19.0	448379	23.0	21.7	50339	23.1	19.2	85414	23.2	19.4	470619	23.2	20.4
49118	22.9	18.1	128074	22.9	19.4	152169	23.0	19.0	208892	23.1	19.0	92722	23.2	18.5	266834	23.2	19.7
447447	22.9	21.1	516232	22.9	20.6	374805	23.0	21.4	469360	23.1	22.3	515376	23.2	21.3	300348	23.2	20.4
524466	22.9	20.2	430080	22.9	20.4	189534	23.0	19.9	298690	23.1	19.8	542270	23.2	20.6	151398	23.2	20.1
137906	22.9	18.6	47854	22.9	17.6	210326	23.0	20.0	353673	23.1	20.4	294945	23.2	21.3	67668	23.2	18.9
358595	22.9	20.6	452687	22.9	20.4	59075	23.0	17.5	363484	23.1	20.3	124003	23.2	18.9	3785	23.3	16.1
163730	22.9	19.7	207300	22.9	19.8	338021	23.0	20.5	521707	23.1	20.8	388566	23.2	20.1	98156	23.3	18.5
343960	22.9	21.1	424612	22.9	20.2	223426	23.0	20.1	306090	23.1	19.9	421995	23.2	20.9	63417	23.3	17.6
260847	22.9	21.0	380817	22.9	20.9	353847	23.1	19.5	137741	23.1	17.8	101107	23.2	19.4	280965	23.3	19.9
452284	22.9	20.2	193682	22.9	19.6	421776	23.1	20.9	202869	23.1	20.5	119725	23.2	17.8	233339	23.3	19.8
479440	22.9	20.5	373223	22.9	21.2	356547	23.1	20.5	69882	23.1	19.6	507678	23.2	21.7	515939	23.3	20.5
444212	22.9	21.7	261967	22.9	19.5	201739	23.1	19.3	364602	23.1	20.1	520470	23.2	20.8	429771	23.3	20.3
415372	22.9	20.7	198366	22.9	20.0	74734	23.1	17.8	258936	23.1	19.7	187835	23.2	19.8	520900	23.3	20.9
363481	22.9	21.4	528383	22.9	21.3	433324	23.1	20.9	222906	23.1	20.6	41841	23.2	17.1	436437	23.3	20.9
247456	22.9	19.3	484046	22.9	20.7	71955	23.1	19.3	36020	23.1	18.9	474068	23.2	20.6	407252	23.3	20.3
495861	22.9	20.8	539619	22.9	21.2	399705	23.1	19.6	26893	23.1	17.3	361560	23.2	21.0	449957	23.3	21.1
183694	22.9	18.8	384939	22.9	20.6	504141	23.1	21.3	242213	23.1	20.3	323749	23.2	20.8	226488	23.3	19.9
296821	22.9	19.9	245617	22.9	18.7	379265	23.1	21.0	363399	23.1	20.9	329240	23.2	19.6	368280	23.3	20.9
487510	22.9	21.3	258824	22.9	17.9	346601	23.1	19.6	416398	23.1	19.3	469510	23.2	19.9	254430	23.3	19.6
472148	22.9	20.0	438998	22.9	20.0	486952	23.1	20.8	139015	23.1	20.4	481611	23.2	20.6	41249	23.3	18.7
444482	22.9	21.2	472456	23.0	20.8	284264	23.1	21.2	268675	23.1	20.0	324155	23.2	20.1	264063	23.3	19.8
205585	22.9	19.9	512070	23.0	21.3	475361	23.1	21.0	331372	23.1	21.3	155879	23.2	19.1	417937	23.3	20.6
141615	22.9	18.9	96292	23.0	18.8	70435	23.1	19.1	413757	23.1	21.0	225363	23.2	20.1	81012	23.3	19.1
280364	22.9	20.3	54246	23.0	19.2	45606	23.1	18.9	76274	23.1	18.5	22948	23.2	19.1	4357	23.3	16.4
215783	22.9	20.6	392368	23.0	20.0	515401	23.1	21.7	297376	23.1	20.4	208202	23.2	19.7	85776	23.3	17.9
372920	22.9	19.9	185620	23.0	19.7	402573	23.1	20.9	14536	23.1	18.4	251663	23.2	19.1	285050	23.3	21.0
137321	22.9	19.0	417941	23.0	20.1	346627	23.1	19.6	324465	23.1	21.4	1135	23.2	14.2	99086	23.3	18.7
352165	22.9	20.4	100850	23.0	19.2	21274	23.1	17.0	468795	23.1	20.3	485635	23.2	21.7	328107	23.3	19.8
308120	22.9	18.7	132567	23.0	18.5	348131	23.1	20.3	166142	23.1	20.4	361116	23.2	20.2	350945	23.3	19.5
385147	22.9	20.1	93783	23.0	18.2	511219	23.1	20.5	244316	23.1	21.4	67974	23.2	17.5	210374	23.3	19.5
400611	22.9	19.8	355611	23.0	20.2	193462	23.1	18.3	470725	23.1	20.7	60762	23.2	18.9	508600	23.3	20.9
136711	22.9	20.4	27957	23.0	17.7	435274	23.1	20.2	231523	23.1	20.1	539002	23.2	20.5	85288	23.3	18.2
528344	22.9	21.2	447096	23.0	19.3	311621	23.1	20.6	480335	23.1	19.1	71448	23.2	18.0	23854	23.3	18.5
35101	22.9	18.1	26082	23.0	18.7	360558	23.1	21.5	486985	23.1	21.0	537144	23.2	21.6	511148	23.3	19.6
401585	22.9	20.8	231283	23.0	20.4	367095	23.1	20.1	515367	23.1	20.5	21097	23.2	17.8	233656	23.3	18.6
345027	22.9	20.1	380272	23.0	18.4	388955	23.1	20.2	363425	23.1	20.4	116499	23.2	18.8	296561	23.3	19.2
360745	22.9	20.4	442370	23.0	20.3	136416	23.1	20.4	234733	23.1	19.4	450936	23.2	21.3	476416	23.3	20.9
573	22.9	13.6	165568	23.0	20.3	175592	23.1	20.0	241661	23.1	21.3	26133	23.2	16.9	466302	23.3	20.9
483146	22.9	21.3	537621	23.0	21.4	513989	23.1	21.2	478626	23.1	21.1	460222	23.2	21.5	347479	23.3	20.3
102002	22.9	18.5	24291	23.0	17.5	156676	23.1	19.5	311475	23.1	19.8	514307	23.2	20.7	325638	23.3	20.1
110478	22.9	18.3	404678	23.0	20.8	454202	23.1	21.9	236382	23.1	20.7	437037	23.2	20.2	265053	23.3	19.9
77357	22.9	18.4	477992	23.0	20.8	423156	23.1	21.3	433725	23.1	20.2	425530	23.2	20.4	393308	23.3	19.3
293514	22.9	19.6	185984	23.0	19.8	95209	23.1	19.3	211423	23.1	19.3	69619	23.2	18.1	442777	23.3	20.5
395783	22.9	19.5	293421	23.0	20.5	101108	23										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
95358	23.3	19.9	342616	23.4	20.0	394240	23.4	21.3	195293	23.5	19.3	400501	23.6	20.9	178292	23.7	20.3
508627	23.3	20.3	447689	23.4	20.7	326823	23.4	19.8	335085	23.5	21.1	154938	23.6	20.2	501767	23.7	21.8
9194	23.3	17.2	106116	23.4	19.3	424502	23.4	20.3	116691	23.5	20.8	220762	23.6	19.7	111134	23.7	18.5
524073	23.3	21.2	212551	23.4	20.1	336685	23.4	19.6	99526	23.5	19.4	291987	23.6	21.1	80792	23.7	18.7
528440	23.3	20.7	391840	23.4	20.1	403756	23.4	20.8	117452	23.5	19.4	122758	23.6	19.2	54284	23.7	18.7
538924	23.3	21.4	516949	23.4	20.3	385820	23.4	20.4	63139	23.5	18.8	18175	23.6	18.3	484937	23.7	20.7
98728	23.3	18.4	261248	23.4	20.1	73183	23.4	19.8	65267	23.5	19.4	485223	23.6	20.7	309645	23.7	20.1
98970	23.3	19.1	304580	23.4	20.7	94208	23.4	18.4	288824	23.5	19.5	262595	23.6	20.0	491547	23.7	21.1
315230	23.3	20.0	386394	23.4	20.1	53365	23.4	16.8	70884	23.5	19.0	477556	23.6	20.4	127382	23.7	19.6
507924	23.3	20.7	36247	23.4	18.2	283736	23.4	20.2	226448	23.5	19.7	65399	23.6	19.6	187716	23.7	21.3
439079	23.3	21.5	487187	23.4	20.8	207063	23.4	19.5	242422	23.5	20.3	78582	23.6	18.7	364740	23.7	21.4
217272	23.3	19.6	289053	23.4	20.5	57138	23.4	18.2	342393	23.5	20.6	299712	23.6	20.2	300853	23.7	19.3
397345	23.3	20.7	363896	23.4	19.7	52248	23.5	19.0	494515	23.5	19.2	64575	23.6	17.7	5272	23.7	16.9
389106	23.3	20.0	485330	23.4	20.6	412854	23.5	20.8	65934	23.5	16.9	505116	23.6	20.7	14419	23.7	17.2
318527	23.3	21.3	62337	23.4	18.6	335036	23.5	18.6	16179	23.5	18.6	385047	23.6	20.6	374890	23.7	20.0
478591	23.3	21.3	487270	23.4	20.7	296885	23.5	21.0	193886	23.5	19.2	116810	23.6	19.6	342691	23.7	19.4
476116	23.3	20.6	47033	23.4	18.2	153463	23.5	19.9	266618	23.5	19.6	256773	23.6	19.6	200001	23.7	20.1
288142	23.3	20.0	450131	23.4	20.4	318575	23.5	20.0	208869	23.5	20.1	127241	23.6	19.7	220819	23.7	19.3
129027	23.3	19.2	463746	23.4	21.1	521871	23.5	20.3	319113	23.5	20.0	501624	23.6	20.6	131547	23.7	18.8
111032	23.3	18.9	29206	23.4	17.9	35203	23.5	19.0	360002	23.5	19.4	321334	23.6	20.8	337331	23.7	19.2
86224	23.3	19.1	487012	23.4	21.2	539761	23.5	21.0	200507	23.5	18.5	214144	23.6	19.9	401769	23.7	20.3
362839	23.3	20.1	276516	23.4	20.0	85954	23.5	17.0	407044	23.5	20.5	129761	23.6	18.9	122607	23.7	17.9
36063	23.3	17.6	325472	23.4	20.5	477043	23.5	20.0	429422	23.5	19.7	344691	23.6	20.5	14274	23.7	17.3
519653	23.3	20.0	12911	23.4	17.9	278367	23.5	21.6	290605	23.5	19.5	487457	23.6	21.4	197539	23.7	20.5
43298	23.3	19.1	136614	23.4	19.1	516358	23.5	20.9	262912	23.5	19.9	365892	23.6	20.3	116509	23.7	18.9
469179	23.3	21.1	90194	23.4	19.6	74798	23.5	19.1	220248	23.5	19.1	249760	23.6	19.5	407106	23.7	20.4
325674	23.3	19.8	250684	23.4	19.6	4693	23.5	15.8	88791	23.5	18.8	176762	23.6	19.5	9924	23.7	17.5
515711	23.3	21.7	59866	23.4	18.7	18155	23.5	17.2	524646	23.5	20.7	519776	23.6	21.4	53107	23.7	18.3
320181	23.3	20.6	539731	23.4	21.1	6956	23.5	16.3	232093	23.5	18.6	13227	23.6	17.9	454812	23.7	20.3
296265	23.3	19.0	244366	23.4	20.5	233432	23.5	19.4	233715	23.5	20.2	97055	23.6	18.3	213094	23.7	20.5
534811	23.3	20.0	298200	23.4	19.9	512996	23.5	19.7	443340	23.5	20.8	326116	23.6	19.7	85352	23.7	19.3
522819	23.3	20.5	293901	23.4	19.8	5567	23.5	16.4	171196	23.5	19.9	370371	23.6	19.3	465311	23.7	20.4
476073	23.3	21.0	516788	23.4	21.0	198552	23.5	19.3	506790	23.5	20.2	235196	23.6	20.0	31487	23.7	17.4
389447	23.3	19.6	283185	23.4	20.5	24839	23.5	17.1	63204	23.5	18.3	353504	23.6	19.9	527394	23.7	21.2
234095	23.3	19.3	258714	23.4	20.5	360123	23.5	20.5	118932	23.5	18.6	397618	23.6	20.4	57078	23.7	18.1
512594	23.3	20.4	485887	23.4	20.6	19555	23.5	16.7	542440	23.5	20.4	481430	23.6	20.7	4448	23.7	14.6
356859	23.3	19.6	251728	23.4	19.7	358465	23.5	21.7	398414	23.5	21.5	106930	23.6	19.1	484246	23.7	20.8
319379	23.3	20.4	437338	23.4	21.8	455031	23.5	21.0	383190	23.5	18.3	488280	23.6	20.3	409313	23.7	21.5
29857	23.3	17.8	87689	23.4	17.8	171133	23.5	19.2	94597	23.5	19.1	330578	23.6	20.4	511423	23.7	20.8
513461	23.3	19.6	473308	23.4	19.4	325829	23.5	19.5	104364	23.5	18.5	333481	23.6	20.9	523200	23.7	20.4
213047	23.3	18.0	512883	23.4	19.8	218828	23.5	20.1	399541	23.5	20.9	18092	23.6	17.3	69665	23.7	19.3
91794	23.3	19.4	280210	23.4	19.0	326930	23.5	19.9	342377	23.5	21.2	179401	23.6	19.5	507839	23.7	20.1
95948	23.3	19.1	540487	23.4	20.2	38014	23.5	19.0	292188	23.5	19.5	104278	23.6	19.2	413780	23.7	19.7
260308	23.3	20.0	40966	23.4	19.1	395021	23.5	20.6	105922	23.5	19.1	115049	23.6	19.9	273313	23.7	19.8
316490	23.3	20.4	367470	23.4	21.2	335713	23.5	20.2	157877	23.5	20.4	362310	23.6	23.2	443313	23.7	20.6
225711	23.3	21.2	401743	23.4	20.8	264877	23.5	20.6	353674	23.5	20.1	60330	23.6	18.1	262334	23.7	20.2
454407	23.3	21.6	405849	23.4	20.0	157846	23.5	18.9	204007	23.5	19.4	291505	23.6	20.3	184050	23.7	20.2
250093	23.3	19.6	59661	23.4	16.7	360730	23.5	19.8	165650	23.5	19.1	539500	23.6	21.2	365322	23.7	21.3
438793	23.3	20.8	132746	23.4	20.3	236354	23.5	19.9	77782	23.6	18.2	307118	23.6	20.0	412779	23.7	22.4
54698	23.3	20.4	470612	23.4	21.6	423001	23.5	21.4	70755	23.6	17.9	539692	23.6	21.3	460500	23.7	20.1
8083	23.3	16.7	280397	23.4	21.1	505437	23.5	20.4	540891	23.6	21.4	21063	23.6	18.4	145493	23.7	19.4
248245	23.3	19.5	213547	23.4	20.4	18300	23.5	18.9	52664	23.6	18.9	491591	23.6	20.8	410689	23.7	19.9
203703	23.3	20.3	390788	23.4	19.3	79049	23.5	19.5	32731	23.6	17.7	261435	23.6	20.2	75184	23.7	17.9
146300	23.3	19.8	19732	23.4	16.3	118928	23.5	17.7	401767	23.6	20.1	103800	23.6	20.2	375169	23.7	19.7
261744	23.3	20.1	9297	23.4	16.9	865	23.5	14.0	477541	23.6	21.1	35919	23.6	17.4	343966	23.7	19.5
328710	23.3	19.7	434762	23.4	20.9	419639	23.5	20.6	236478	23.6	19.9	106981	23.6	18.1	406258	23.7	21.6
451631	23.3	20.6	414031	23.4	20.9	31721	23.5	18.4	15047	23.6	16.6	304341	23.6	20.3	168460	23.7	20.1
447363	23.3	20.1	305812	23.4	20.0	170444	23.5	19.1	418021	23.6	20.9	364144	23.6	21.1	307266	23.7	19.9
246825	23.3	19.9	34089	23.4	17.5	485909	23.5	21.0	350094	23.6	21.2	39499	23.6	18.2	7597	23.7	16.4
216054	23.3	20.0	887227	23.4	19.8	400365	23.5	19.4	283786	23.6	19.3	92298	23.6	19.6	431439	23.7	20.6
221870	23.3	20.1	506670	23.4	22.2	193269	23.5	19.8	280094	23.6	19.5	514165	23.6	20.9	154783	23.7	27.2
36135	23.3	19.2	187434	23.4	19.3	117045	23.5	19.4	405471	23.6	20.4	465592	23.6	21.6	377397	23.7	18.7
157946	23.4	18.1	535866	23.4	20.7	446118	23.5	21.1	236851	23.6	20.5	178832	23.6	19.5	317821	23.7	20.8
222013	23.4	20.5	219929	23.4	20.5	317301	23.5	21.1	325067	23.6	19.7	537406	23.6	22.2	253749	23.7	20.6
331147	23.4	20.8	67501	23.4	17.6	328109	23.5	19.0	405648	23.6	18.5	122415	23.6	18.8	440663	23.7	20.3
376956	23.4	20.4	211079	23.4	19.5	281592	23.5	20.3	99170	23.6	19.7	525677	23.6	21.3	323257	23.7	20.1
336683	23.4	19.7	513183	23.4	21.1	208601	23.5	20.4	474359	23.6	20.6	269161	23.6	21.1	510070	23.7	21.0
407984	23.4	20.6	285069	23.4	21.3	179657	23.5	19.3	115707	23.6	19.0	513862	23.6	21.6	260264	23.7	20.1
538998	23.4	20.0	24529	23.4	17.8	109050	23.5	18.8	169								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
341837	23.7	21.3	487867	23.8	19.9	189927	23.9	20.2	107626	23.9	18.8	212478	23.9	19.9	286722	24.0	19.9
235780	23.7	19.9	470586	23.8	21.1	394956	23.9	19.0	518495	23.9	20.7	75939	23.9	19.7	160064	24.0	18.9
356180	23.7	21.0	238224	23.8	20.0	490090	23.9	19.6	489730	23.9	20.8	222402	23.9	18.9	69995	24.0	20.5
468061	23.7	21.4	23016	23.8	18.1	387315	23.9	20.8	317720	23.9	20.2	52022	23.9	20.3	48053	24.0	18.9
130994	23.7	18.4	123498	23.8	18.8	1734	23.9	15.2	384890	23.9	20.4	497058	23.9	21.5	104636	24.0	19.2
255341	23.7	19.1	112366	23.8	19.2	248486	23.9	20.7	50121	23.9	18.1	332093	23.9	21.1	475977	24.0	21.2
540855	23.7	20.4	185054	23.8	20.1	515537	23.9	20.9	41855	23.9	18.1	504143	23.9	21.2	436240	24.0	19.2
421708	23.7	20.5	396866	23.8	20.6	276058	23.9	20.3	472625	23.9	19.7	208626	23.9	20.2	290009	24.0	20.7
53572	23.7	18.3	144089	23.8	19.5	320179	23.9	20.3	355256	23.9	23.8	536685	23.9	21.0	520556	24.0	20.7
482758	23.7	20.4	365298	23.8	21.4	20589	23.9	18.4	52159	23.9	18.7	426052	23.9	19.7	202674	24.0	20.5
510342	23.7	20.9	361087	23.8	20.8	389468	23.9	20.0	255261	23.9	19.5	164001	23.9	18.9	495973	24.0	21.4
220966	23.7	20.3	481937	23.8	20.6	411496	23.9	20.2	382616	23.9	21.0	58152	23.9	19.5	177259	24.1	18.7
396211	23.7	19.7	102556	23.8	18.4	434173	23.9	20.7	367298	23.9	20.6	142394	23.9	18.1	325422	24.1	20.8
320091	23.7	19.9	82515	23.8	19.3	13221	23.9	16.3	36071	23.9	18.2	410897	23.9	20.5	120292	24.1	21.1
91785	23.7	18.9	39658	23.8	19.2	25842	23.9	16.9	485925	23.9	21.1	338585	23.9	20.8	23137	24.1	17.0
344433	23.7	21.1	287004	23.8	20.2	268709	23.9	19.4	211488	23.9	20.6	363332	23.9	20.7	117844	24.1	18.7
271026	23.7	19.0	435135	23.8	20.3	461224	23.9	20.5	389912	23.9	20.1	108826	23.9	20.0	266597	24.1	20.9
9463	23.7	18.4	437628	23.8	20.9	518026	23.9	20.8	407174	23.9	20.4	140381	23.9	17.0	486592	24.1	20.2
483195	23.7	20.8	218974	23.8	20.3	431022	23.9	20.1	510028	23.9	21.4	42583	23.9	18.4	516576	24.1	21.0
69247	23.7	19.0	113645	23.8	18.3	98374	23.9	18.7	112429	23.9	19.2	3096	23.9	16.8	258868	24.1	20.6
62923	23.7	19.0	10630	23.8	17.4	51124	23.9	17.6	348117	23.9	19.4	289675	23.9	20.3	442120	24.1	19.7
497231	23.7	20.6	516990	23.8	21.5	261755	23.9	19.4	218221	23.9	19.2	486698	23.9	20.9	402189	24.1	19.9
106696	23.7	18.6	219959	23.8	19.4	123886	23.9	19.3	356998	23.9	20.4	154743	23.9	19.6	53530	24.1	16.8
227928	23.7	20.9	82085	23.8	17.4	70450	23.9	17.9	94932	23.9	18.4	537327	23.9	21.8	210486	24.1	20.3
100795	23.7	20.2	515074	23.8	20.4	121356	23.9	19.3	326579	23.9	20.5	91006	23.9	18.8	361997	24.1	19.8
365326	23.7	21.0	466292	23.8	20.7	507645	23.9	21.7	200794	23.9	18.5	403438	23.9	20.5	435359	24.1	20.4
248162	23.7	19.2	233350	23.8	20.1	475994	23.9	21.2	449068	23.9	20.3	182273	23.9	19.8	396287	24.1	20.4
202221	23.8	18.4	497072	23.8	19.8	485777	23.9	21.1	73571	23.9	18.9	403743	23.9	20.3	183897	24.1	19.7
152128	23.8	19.7	389518	23.8	20.0	346932	23.9	20.2	172221	23.9	18.8	324349	23.9	19.6	487241	24.1	21.0
436796	23.8	19.7	1418	23.8	15.3	239162	23.9	19.9	521382	23.9	20.6	131065	23.9	18.5	169870	24.1	18.5
235829	23.8	18.9	432406	23.8	20.1	54774	23.9	18.5	40121	23.9	18.9	427056	24.0	20.3	246741	24.1	20.2
69603	23.8	18.6	46120	23.8	19.1	331718	23.9	21.1	38193	23.9	19.0	383112	24.0	20.1	71688	24.1	19.0
539745	23.8	21.6	49132	23.8	17.8	261344	23.9	20.2	403719	23.9	20.0	227723	24.0	20.7	96694	24.1	20.1
422048	23.8	19.9	446380	23.8	21.0	515634	23.9	20.8	539556	23.9	21.7	487	24.0	11.6	78990	24.1	19.0
101853	23.8	19.1	145281	23.8	20.5	180733	23.9	19.9	520235	23.9	21.0	443380	24.0	21.1	254158	24.1	21.0
459489	23.8	21.7	143794	23.8	19.2	436220	23.9	19.8	391205	23.9	20.2	99820	24.0	19.2	373457	24.1	19.7
3315	23.8	16.2	398739	23.8	20.7	436593	23.9	21.2	515007	23.9	21.5	259765	24.0	19.8	9225	24.1	17.6
170687	23.8	19.5	184234	23.8	20.6	25652	23.9	18.0	348777	23.9	20.2	119339	24.0	18.5	326147	24.1	20.4
453219	23.8	20.1	123509	23.8	22.8	69758	23.9	18.4	447116	23.9	21.1	424536	24.0	20.5	355581	24.1	20.1
120988	23.8	19.0	218397	23.8	19.7	518572	23.9	21.0	224875	23.9	19.7	230391	24.0	20.4	42060	24.1	18.0
306078	23.8	21.2	224173	23.8	21.4	411816	23.9	20.3	296736	23.9	19.7	43179	24.0	18.0	155763	24.1	18.7
404506	23.8	21.4	400525	23.8	21.8	536840	23.9	22.0	330902	23.9	20.3	379156	24.0	21.2	106953	24.1	18.2
69312	23.8	18.7	325024	23.8	21.2	482324	23.9	21.0	211806	23.9	18.9	454534	24.0	20.2	203020	24.1	19.2
191228	23.8	20.8	265234	23.8	20.6	451198	23.9	21.7	23857	23.9	17.4	247788	24.0	21.4	285288	24.1	20.6
23860	23.8	17.1	363541	23.8	21.4	257584	23.9	20.6	509713	23.9	20.0	217806	24.0	18.8	181829	24.1	19.0
396281	23.8	20.1	349175	23.8	20.6	446654	23.9	19.9	55506	23.9	19.0	275684	24.0	20.9	258816	24.1	20.6
424491	23.8	20.6	403185	23.8	21.0	116726	23.9	19.6	485029	23.9	20.1	68238	24.0	18.3	423446	24.1	21.5
141603	23.8	20.7	537309	23.8	21.6	383255	23.9	20.9	188834	23.9	19.6	28166	24.0	18.5	505763	24.1	20.8
407729	23.8	20.4	515709	23.8	22.1	449492	23.9	20.8	436820	23.9	20.7	226546	24.0	19.3	82251	24.1	20.4
506905	23.8	21.0	400960	23.8	19.9	314045	23.9	19.1	253360	23.9	20.7	380159	24.0	20.6	75452	24.1	18.4
293669	23.8	20.8	346951	23.8	19.9	357499	23.9	20.6	9778	23.9	17.2	364578	24.0	20.1	404011	24.1	20.1
440505	23.8	20.9	122466	23.8	18.4	488046	23.9	20.7	68031	23.9	17.5	218477	24.0	19.5	69213	24.1	19.1
135651	23.8	20.1	211156	23.8	20.5	530025	23.9	20.0	532757	23.9	20.4	276493	24.0	20.5	14862	24.1	16.8
156687	23.8	18.9	424431	23.8	19.6	144344	23.9	18.9	53996	23.9	19.3	189524	24.0	20.7	358280	24.1	20.3
517486	23.8	21.8	443382	23.8	21.1	72431	23.9	19.1	428647	23.9	20.9	220510	24.0	19.5	35866	24.1	18.0
113092	23.8	18.6	224361	23.8	20.1	482388	23.9	19.9	241644	23.9	19.1	504235	24.0	21.4	112722	24.1	18.8
436999	23.8	21.5	222537	23.8	20.6	117925	23.9	19.2	510621	23.9	20.6	3429	24.0	16.8	460975	24.1	20.3
142032	23.8	19.9	27272	23.8	17.5	266404	23.9	19.8	79078	23.9	18.8	336263	24.0	19.8	1709	24.1	15.4
609	23.8	14.8	191224	23.8	19.6	80888	23.9	18.3	393307	23.9	20.1	30363	24.0	18.2	508012	24.1	21.2
406858	23.8	20.5	431746	23.8	21.2	81185	23.9	19.7	205444	23.9	20.6	216220	24.0	20.0	449843	24.1	20.7
80556	23.8	18.2	485329	23.8	20.0	465042	23.9	21.4	212179	23.9	20.2	389480	24.0	21.2	298762	24.1	21.2
83985	23.8	19.2	10099	23.8	17.4	205415	23.9	19.6	89239	23.9	19.4	22597	24.0	19.0	356587	24.1	20.4
325760	23.8	19.8	83542	23.8	19.2	192190	23.9	19.6	497048	23.9	20.3	123185	24.0	18.8	385564	24.1	20.1
84631	23.8	18.3	314493	23.8	19.8	414042	23.9	20.4	127331	23.9	19.3	425636	24.0	20.6	229852	24.1	19.4
304510	23.8	19.7	461834	23.8	21.0	420872	23.9	20.8	139241	23.9	19.9	365297	24.0	21.2	476704	24.1	20.3
42242	23.8	18.8	228359	23.8	18.7	171304	23.9	20.6	358995	23.9	21.2	524075	24.0	21.1	69469	24.1	18.9
420905	23.8	21.2	425627	23.8	20.0	364572	23.9	20.6	408677	23.9	21.1	12136	24.0	17.6	173242	24.1	19.7
315864	23.8	20.7	65740	23.8	19.5	202696	23.9	20.6	461312	23.9	20.6	33016	24.0	19.3	323631	24.1	19.2
407101	23.8	21.1	296731	23.8	20.1	9534	23.9	17.0	4454								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
112848	24.1	20.6	2423	24.2	15.6	506684	24.2	21.4	10811	24.3	15.5	474328	24.4	21.0	17206	24.4	17.2
230311	24.1	18.4	155747	24.2	19.1	195516	24.2	20.2	434751	24.3	24.3	361507	24.4	20.7	191480	24.4	19.4
436968	24.1	20.8	27255	24.2	17.8	30288	24.2	18.9	76512	24.3	18.4	499692	24.4	19.9	218507	24.4	19.2
219254	24.1	19.7	91718	24.2	18.4	115125	24.2	19.5	167338	24.3	21.0	457588	24.4	20.7	512038	24.4	20.9
375689	24.1	21.6	535474	24.2	20.9	396431	24.2	19.9	54671	24.3	16.6	392348	24.4	19.9	14805	24.4	17.3
399076	24.1	20.0	525385	24.2	21.0	273982	24.2	20.3	428205	24.3	20.0	399074	24.4	19.8	405728	24.4	20.3
279125	24.1	19.6	413122	24.2	19.9	254129	24.2	19.5	518262	24.3	20.0	376131	24.4	20.0	137378	24.4	19.0
253720	24.1	19.9	170018	24.2	19.2	265187	24.2	19.8	115732	24.3	19.1	478052	24.4	20.7	390422	24.4	20.4
180778	24.1	20.7	501743	24.2	21.5	488314	24.2	20.0	296804	24.3	19.7	523357	24.4	20.6	276464	24.4	22.1
441441	24.1	20.6	531695	24.2	21.1	219514	24.2	20.0	324976	24.3	20.6	493782	24.4	20.3	485810	24.4	20.9
335762	24.1	19.5	516111	24.2	21.0	468530	24.2	19.7	4119	24.3	15.8	521168	24.4	21.4	343938	24.4	20.1
365744	24.1	20.5	344633	24.2	19.9	537284	24.2	20.4	78547	24.3	18.8	355065	24.4	19.9	386345	24.4	20.5
461259	24.1	20.0	192729	24.2	18.4	185656	24.2	19.8	358314	24.3	20.9	522982	24.4	19.4	449941	24.4	20.2
48011	24.1	18.8	469634	24.2	21.7	448355	24.2	20.9	152088	24.3	19.8	380019	24.4	20.9	140695	24.4	20.3
516243	24.1	20.6	432978	24.2	20.2	412834	24.2	20.9	357492	24.3	21.2	296831	24.4	19.3	17756	24.4	17.5
230033	24.1	20.6	347950	24.2	19.9	97395	24.2	17.3	353538	24.3	20.6	69432	24.4	18.9	433024	24.5	21.1
539789	24.1	19.1	254424	24.2	19.1	22869	24.2	17.8	96812	24.3	19.7	308023	24.4	20.6	162969	24.5	20.4
400128	24.1	20.6	73470	24.2	19.2	45242	24.2	18.5	364559	24.3	21.0	399808	24.4	20.9	414089	24.5	19.7
525150	24.1	21.9	493556	24.2	21.4	327713	24.2	20.8	257685	24.3	19.5	114988	24.4	17.4	301693	24.5	20.7
289818	24.1	20.6	266019	24.2	19.6	189749	24.2	18.7	490831	24.3	20.2	524659	24.4	21.1	452504	24.5	22.2
266157	24.1	20.5	510207	24.2	21.1	480771	24.2	20.4	189804	24.3	20.3	429905	24.4	21.4	405855	24.5	20.6
109307	24.1	19.5	371923	24.2	19.2	477881	24.2	22.0	506544	24.3	21.6	249031	24.4	20.6	443812	24.5	20.1
65767	24.1	18.8	444254	24.2	20.5	139362	24.2	20.2	245480	24.3	19.9	33393	24.4	18.6	390906	24.5	20.1
208235	24.1	20.1	227672	24.2	20.5	452757	24.2	20.3	128212	24.3	19.7	328869	24.4	20.2	367790	24.5	20.3
383892	24.1	20.5	410915	24.2	21.7	280104	24.3	19.9	426301	24.3	21.4	248806	24.4	20.6	17179	24.5	17.4
107319	24.1	18.9	448415	24.2	20.3	233623	24.3	20.7	279698	24.3	20.8	483530	24.4	20.9	448653	24.5	20.4
46099	24.1	18.9	517999	24.2	19.6	51054	24.3	18.5	202443	24.3	19.3	223544	24.4	20.8	371576	24.5	19.5
487429	24.1	21.3	439604	24.2	20.6	291591	24.3	20.1	186927	24.3	20.3	84293	24.4	18.3	66594	24.5	19.8
320167	24.1	19.9	241369	24.2	19.9	130263	24.3	18.9	371874	24.3	20.7	520078	24.4	20.7	9754	24.5	18.6
159307	24.1	20.5	407011	24.2	20.7	192647	24.3	19.8	93370	24.3	18.8	475990	24.4	21.6	320065	24.5	19.8
291236	24.1	19.8	113278	24.2	19.5	60210	24.3	19.0	78200	24.3	19.1	520348	24.4	20.6	77231	24.5	18.7
93344	24.1	18.4	234292	24.2	18.9	361024	24.3	20.7	267175	24.3	19.6	65648	24.4	18.0	164251	24.5	19.1
435151	24.1	21.4	532873	24.2	19.9	299659	24.3	20.5	172521	24.3	19.2	139659	24.4	20.4	335046	24.5	19.9
240203	24.1	21.1	523140	24.2	20.6	338795	24.3	20.1	371444	24.3	21.0	294381	24.4	20.1	318221	24.5	20.2
212727	24.1	19.4	518053	24.2	20.6	244859	24.3	18.8	513643	24.3	21.3	73128	24.4	19.0	78531	24.5	18.6
521999	24.1	20.9	386457	24.2	20.0	514973	24.3	20.8	398178	24.3	19.8	368842	24.4	20.1	120630	24.5	18.8
20512	24.1	17.5	92173	24.2	18.5	480138	24.3	20.7	436671	24.3	23.7	21627	24.4	18.6	25393	24.5	17.0
218513	24.1	20.7	421527	24.2	21.1	236622	24.3	20.4	509826	24.3	20.5	539262	24.4	20.5	352555	24.5	19.0
148300	24.1	18.5	98730	24.2	18.6	270257	24.3	19.6	514840	24.3	21.2	10268	24.4	17.6	301417	24.5	19.8
292282	24.1	21.2	254931	24.2	20.5	523173	24.3	21.0	28582	24.3	17.7	502386	24.4	20.1	271622	24.5	20.7
398513	24.1	20.7	454019	24.2	21.4	404566	24.3	21.2	131271	24.3	19.4	164830	24.4	19.9	476603	24.5	20.4
376187	24.1	20.4	209326	24.2	19.0	107589	24.3	18.0	411547	24.3	19.9	119979	24.4	20.7	479798	24.5	20.2
14021	24.1	18.0	408557	24.2	21.3	314382	24.3	20.5	324218	24.3	20.5	488061	24.4	20.6	163277	24.5	20.0
390926	24.1	21.0	27337	24.2	19.0	463902	24.3	19.7	335153	24.3	19.1	243302	24.4	19.9	447178	24.5	19.7
132652	24.2	19.9	379152	24.2	20.6	179805	24.3	19.2	322033	24.3	20.0	200089	24.4	19.9	109457	24.5	18.4
186929	24.2	19.5	342269	24.2	19.6	321484	24.3	20.5	147293	24.3	18.8	126876	24.4	19.4	20559	24.5	19.0
364489	24.2	21.0	433100	24.2	20.4	218470	24.3	21.3	415510	24.3	20.7	515955	24.4	21.1	440594	24.5	20.3
317425	24.2	19.7	21720	24.2	18.5	113903	24.3	19.7	398781	24.3	20.3	129986	24.4	20.3	156945	24.5	21.0
479601	24.2	21.3	248170	24.2	19.7	121698	24.3	19.0	273876	24.3	20.2	411135	24.4	21.2	363723	24.5	19.3
14938	24.2	17.1	418025	24.2	20.2	392349	24.3	20.1	515586	24.3	21.4	121570	24.4	20.3	70266	24.5	18.1
235264	24.2	19.8	151878	24.2	20.6	127319	24.3	19.2	82713	24.3	17.6	373592	24.4	19.8	115701	24.5	18.7
122303	24.2	18.6	97126	24.2	19.5	433628	24.3	19.8	407771	24.3	19.5	517496	24.4	20.8	362489	24.5	20.5
338642	24.2	20.1	485977	24.2	21.6	108223	24.3	19.7	478588	24.3	21.8	364717	24.4	19.9	18966	24.5	19.3
264488	24.2	19.3	308941	24.2	20.7	4985	24.3	17.0	293426	24.3	20.3	85266	24.4	19.6	111829	24.5	19.2
408962	24.2	21.5	199500	24.2	20.0	279729	24.3	20.5	344495	24.3	19.8	264395	24.4	19.6	492386	24.5	20.7
119852	24.2	18.9	117522	24.2	20.0	205744	24.3	23.7	344011	24.4	19.7	474678	24.4	19.3	33293	24.5	18.1
442955	24.2	20.1	328676	24.2	19.9	27532	24.3	17.9	401721	24.4	20.8	291412	24.4	19.6	451200	24.5	20.2
172762	24.2	21.1	192633	24.2	19.1	91736	24.3	18.8	191324	24.4	18.6	512086	24.4	21.0	524152	24.5	21.2
385840	24.2	20.6	85047	24.2	18.6	364702	24.3	19.8	307179	24.4	19.9	74277	24.4	18.9	8924	24.5	17.5
371645	24.2	19.5	43465	24.2	18.6	133356	24.3	19.2	395025	24.4	20.1	56046	24.4	17.1	394999	24.5	20.7
220897	24.2	19.7	331589	24.2	19.8	417321	24.3	20.4	10999	24.4	17.9	261950	24.4	19.9	344441	24.5	20.8
175058	24.2	18.9	347106	24.2	20.2	186945	24.3	19.4	319316	24.4	19.9	367622	24.4	20.5	523988	24.5	21.1
99792	24.2	19.5	216948	24.2	19.5	288348	24.3	19.8	431869	24.4	20.5	129407	24.4	19.5	492296	24.5	21.1
540314	24.2	20.7	91810	24.2	18.9	288753	24.3	19.8	515330	24.4	18.8	467847	24.4	21.0	402418	24.5	20.4
189573	24.2	19.6	185851	24.2	19.9	377609	24.3	20.6	513499	24.4	21.5	216488	24.4	19.3	438281	24.5	20.6
401687	24.2	21.2	418044	24.2	20.0	499565	24.3	20.0	480165	24.4	20.3	423862	24.4	18.8	320074	24.5	19.6
58065	24.2	19.2	101909	24.2	18.5	130295	24.3	21.1	478720	24.4	20.1	142673	24.4	18.9	202884	24.5	18.4
517467	24.2	20.9	323197	24.2	20.2	342478	24.3	20.3	61739	24.4	19.1	412571	24.4	20.4	134789	24.5	20.1
393014	24.2	20.4	138441	24.2	20.1	779											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
287003	24.5	19.9	255676	24.6	19.6	515195	24.6	20.8	269668	24.7	21.2	52230	24.8	18.9	23686	24.8	18.4
415783	24.5	20.2	195242	24.6	19.5	38511	24.6	18.1	162538	24.7	18.5	319084	24.8	19.8	23684	24.8	18.5
354760	24.5	20.7	382196	24.6	19.6	452706	24.6	20.5	322199	24.7	20.5	43896	24.8	17.1	447062	24.9	21.0
310437	24.5	19.8	125327	24.6	17.7	65138	24.6	18.8	511647	24.7	20.7	534251	24.8	23.0	12352	24.9	15.6
129884	24.5	19.4	328781	24.6	19.6	240697	24.6	20.6	125856	24.7	17.9	172455	24.8	20.1	445400	24.9	20.5
89964	24.5	17.4	170432	24.6	18.9	521619	24.7	20.8	221012	24.7	20.2	468688	24.8	20.7	75327	24.9	19.2
189306	24.5	18.6	170416	24.6	19.1	247471	24.7	18.5	320278	24.7	20.6	236547	24.8	19.3	48177	24.9	19.0
540854	24.5	21.2	369707	24.6	21.1	485844	24.7	21.7	290920	24.7	19.5	500874	24.8	21.6	370895	24.9	20.5
39127	24.5	18.7	524060	24.6	21.1	137289	24.7	19.9	354478	24.7	21.1	450325	24.8	21.4	38878	24.9	18.3
258787	24.5	20.0	401733	24.6	19.7	92228	24.7	17.6	467205	24.7	21.1	80736	24.8	18.2	23570	24.9	17.6
423068	24.5	19.1	86187	24.6	18.4	72283	24.7	18.1	268232	24.7	20.6	283852	24.8	19.9	400748	24.9	21.7
262201	24.5	20.4	421988	24.6	21.3	242859	24.7	19.4	11380	24.7	17.3	369537	24.8	19.8	212151	24.9	20.3
534109	24.5	21.1	315983	24.6	19.0	318284	24.7	20.8	434011	24.7	21.1	182377	24.8	20.5	435182	24.9	20.2
471613	24.5	19.8	122791	24.6	18.7	124126	24.7	18.8	510723	24.7	20.6	364553	24.8	21.1	493564	24.9	20.9
337161	24.5	20.7	539844	24.6	19.7	445442	24.7	19.5	392595	24.7	20.6	484901	24.8	21.5	329337	24.9	21.1
472842	24.5	20.2	465910	24.6	20.1	360523	24.7	22.4	79054	24.7	19.3	271326	24.8	19.0	60625	24.9	18.4
156169	24.5	18.9	93292	24.6	19.2	70832	24.7	19.5	320552	24.7	20.6	152426	24.8	19.5	507668	24.9	21.3
234030	24.5	19.7	120628	24.6	19.4	329949	24.7	21.6	76328	24.7	19.0	59313	24.8	17.5	473615	24.9	20.2
333268	24.5	19.7	207770	24.6	20.8	350050	24.7	20.4	286140	24.7	20.3	519575	24.8	20.2	537293	24.9	21.4
27247	24.5	18.9	283005	24.6	19.9	36936	24.7	17.3	173191	24.7	20.6	427676	24.8	20.5	16528	24.9	17.0
373144	24.5	20.7	276997	24.6	19.8	506293	24.7	20.4	308327	24.8	20.7	453210	24.8	20.6	485190	24.9	20.5
469309	24.5	20.4	205146	24.6	18.6	389076	24.7	20.6	326884	24.8	20.2	487344	24.8	21.1	9693	24.9	17.1
154340	24.5	19.8	475356	24.6	20.0	177216	24.7	18.7	513646	24.8	21.0	39171	24.8	19.0	126867	24.9	19.0
37172	24.5	18.1	143991	24.6	21.8	516339	24.7	20.5	256612	24.8	21.1	501636	24.8	20.9	389143	24.9	20.2
169599	24.5	18.6	211433	24.6	19.5	11744	24.7	18.3	136363	24.8	18.9	329942	24.8	20.5	250324	24.9	21.0
349158	24.5	19.7	316181	24.6	19.7	114098	24.7	17.8	81731	24.8	19.3	9231	24.8	17.3	18648	24.9	19.8
422847	24.5	20.9	441889	24.6	21.7	318459	24.7	20.4	252756	24.8	20.7	129278	24.8	19.6	521331	24.9	21.6
214389	24.5	20.8	482459	24.6	20.0	77389	24.7	19.6	403175	24.8	20.9	387754	24.8	19.7	328468	24.9	18.5
439151	24.5	21.0	139224	24.6	18.8	352546	24.7	20.2	328619	24.8	21.0	235968	24.8	20.3	126051	24.9	19.3
355542	24.5	19.2	294843	24.6	20.8	106585	24.7	19.4	199977	24.8	21.5	253826	24.8	18.8	407135	24.9	21.2
263028	24.5	20.0	111379	24.6	19.6	448422	24.7	19.9	141758	24.8	20.7	186479	24.8	18.9	71660	24.9	18.8
415569	24.5	22.0	289576	24.6	20.5	7532	24.7	17.3	137347	24.8	18.8	292467	24.8	20.2	97931	24.9	18.0
137557	24.5	18.8	323267	24.6	20.4	90318	24.7	19.5	201151	24.8	19.5	395063	24.8	20.6	319265	24.9	19.8
317722	24.5	19.8	44930	24.6	18.8	78855	24.7	19.4	62089	24.8	19.2	448717	24.8	21.1	339109	24.9	19.9
340526	24.5	20.2	71506	24.6	18.8	79450	24.7	18.9	223195	24.8	19.6	364522	24.8	20.9	527443	24.9	23.0
257510	24.5	20.8	362517	24.6	20.7	441943	24.7	21.6	508965	24.8	20.7	363461	24.8	21.0	251848	24.9	20.3
79312	24.5	20.0	71497	24.6	18.8	514996	24.7	20.9	512679	24.8	20.0	218454	24.8	19.6	152110	24.9	19.3
240886	24.5	21.0	476929	24.6	20.9	257690	24.7	20.2	367735	24.8	19.6	218945	24.8	20.3	163313	24.9	20.3
71685	24.5	18.4	307060	24.6	19.1	259794	24.7	19.9	363668	24.8	20.1	133635	24.8	18.2	26958	24.9	18.5
292917	24.5	20.2	521610	24.6	20.1	95407	24.7	19.5	32	24.8	11.1	344783	24.8	18.3	195701	24.9	18.9
29243	24.5	17.2	391978	24.6	19.9	398093	24.7	20.0	103723	24.8	20.2	446671	24.8	20.3	300526	24.9	20.3
236497	24.5	19.6	72190	24.6	18.2	133639	24.7	19.5	79704	24.8	18.8	20391	24.8	17.0	523860	24.9	21.5
253737	24.5	19.8	448104	24.6	21.1	377616	24.7	20.1	176369	24.8	20.6	508098	24.8	20.2	344730	24.9	20.1
324239	24.5	20.8	244363	24.6	20.6	341844	24.7	19.6	145128	24.8	19.4	340197	24.8	20.6	363479	24.9	21.2
41112	24.5	17.7	328520	24.6	20.9	319040	24.7	20.4	225185	24.8	19.6	218476	24.8	19.1	537414	24.9	21.3
13792	24.6	16.9	123985	24.6	18.7	488067	24.7	19.5	368864	24.8	21.2	12890	24.8	17.4	451140	24.9	21.4
193512	24.6	18.8	152468	24.6	20.5	126743	24.7	18.9	444301	24.8	20.7	350439	24.8	20.0	396569	24.9	19.4
401833	24.6	20.9	448618	24.6	20.5	207579	24.7	20.1	353589	24.8	19.8	232160	24.8	19.5	317820	24.9	20.4
255179	24.6	19.8	277286	24.6	20.1	510050	24.7	21.1	190563	24.8	19.4	419545	24.8	20.0	472350	24.9	19.5
295475	24.6	20.0	169098	24.6	19.9	202852	24.7	19.2	117642	24.8	19.3	102790	24.8	18.4	433407	24.9	19.6
234735	24.6	20.1	387518	24.6	20.3	109737	24.7	18.6	116382	24.8	18.8	292700	24.8	21.2	443769	24.9	20.2
90044	24.6	20.0	302200	24.6	19.3	82706	24.7	17.7	430629	24.8	21.1	508272	24.8	20.4	13258	24.9	17.6
520491	24.6	21.7	517901	24.6	20.5	26065	24.7	18.6	48113	24.8	18.4	24373	24.8	17.7	252894	24.9	19.6
7296	24.6	16.5	375172	24.6	20.5	314645	24.7	20.8	404206	24.8	20.7	39023	24.8	17.5	180519	24.9	19.6
351155	24.6	19.2	135003	24.6	19.2	287800	24.7	20.5	476123	24.8	21.2	345304	24.8	20.6	75967	24.9	18.4
218229	24.6	19.9	72198	24.6	18.8	306016	24.7	21.8	180476	24.8	20.5	429943	24.8	21.3	128462	24.9	20.8
393440	24.6	19.7	224924	24.6	20.2	44616	24.7	19.9	367224	24.8	20.4	469352	24.8	20.9	362546	24.9	20.2
468614	24.6	20.1	335086	24.6	19.4	76975	24.7	19.0	296433	24.8	21.2	165212	24.8	19.8	345834	24.9	21.5
399273	24.6	20.7	260160	24.6	19.3	523276	24.7	20.1	515704	24.8	20.8	391541	24.8	20.0	290443	24.9	20.5
487261	24.6	21.0	211749	24.6	19.1	60651	24.7	18.5	497068	24.8	21.3	536226	24.8	20.9	382160	24.9	21.2
154752	24.6	18.6	15875	24.6	21.8	96619	24.7	18.7	183839	24.8	20.1	397147	24.8	20.6	67524	24.9	19.5
384547	24.6	20.5	362299	24.6	21.7	208857	24.7	20.2	437950	24.8	20.4	319057	24.8	20.2	134371	24.9	18.1
47221	24.6	18.9	177258	24.6	18.9	6662	24.7	15.1	116732	24.8	19.4	163093	24.8	19.0	119277	24.9	19.9
23469	24.6	17.1	299190	24.6	20.4	380530	24.7	21.4	364062	24.8	19.9	264881	24.8	19.9	390873	24.9	20.5
41765	24.6	18.5	350449	24.6	19.5	542846	24.7	21.4	341394	24.8	18.5	506189	24.8	21.1	199961	24.9	21.4
449805	24.6	20.8	164897	24.6	20.3	278306	24.7	21.3	330589	24.8	19.4	135601	24.8	19.9	452535	24.9	20.6
484065	24.6	20.6	18059	24.6	16.4	405417	24.7	20.5	129756	24.8	19.5	117815	24.8	19.5	151559	24.9	18.6
126982	24.6	20.4	49186	24.6	18.0	36600	24.7	18.6	154209	24.8	19.7	483645	24.8	20.3	431038	24.9	19.5
375728	24.6	20.0	296547	24.6	19.3	57476	24.7	1									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
188133	24.9	20.1	166373	25.0	20.7	399898	25.1	19.2	257895	25.1	20.5	403390	25.2	20.4	375167	25.3	21.2
456206	24.9	20.7	221621	25.0	19.4	294568	25.1	19.6	437188	25.1	19.6	112527	25.2	19.3	388655	25.3	20.8
244389	24.9	20.2	141955	25.0	18.7	37163	25.1	19.1	260777	25.1	21.1	342233	25.2	19.6	440606	25.3	19.8
538399	24.9	21.4	457846	25.0	21.4	149159	25.1	20.1	65864	25.1	19.1	298228	25.2	19.1	155857	25.3	19.7
360946	24.9	20.4	384505	25.0	19.6	329963	25.1	20.6	252144	25.1	18.8	151392	25.2	19.9	5211	25.3	17.1
331425	24.9	19.2	495549	25.0	21.2	185398	25.1	20.4	509828	25.1	19.7	352221	25.2	19.5	418088	25.3	19.7
423454	24.9	21.6	91805	25.0	18.9	180494	25.1	20.2	10100	25.1	16.3	476185	25.2	19.6	484207	25.3	19.5
186753	24.9	20.0	91692	25.0	18.1	193597	25.1	18.4	109003	25.1	20.7	189548	25.2	19.3	133069	25.3	19.2
467826	24.9	20.4	375158	25.0	20.7	2336	25.1	15.5	346299	25.1	20.4	367591	25.2	19.5	360437	25.3	19.8
342370	24.9	19.5	363111	25.0	20.0	426130	25.1	21.1	310577	25.1	19.4	165598	25.2	19.1	60408	25.3	18.3
366689	24.9	21.1	481027	25.0	23.8	362493	25.1	19.5	360562	25.1	21.1	172534	25.2	20.2	21202	25.3	19.3
529749	24.9	20.7	49149	25.0	18.4	201505	25.1	20.4	448516	25.1	21.2	80801	25.2	20.2	16292	25.3	19.0
240245	24.9	20.0	235806	25.0	19.0	97226	25.1	18.7	222910	25.1	20.6	288495	25.2	20.6	483994	25.3	21.2
454055	24.9	20.6	204627	25.0	20.0	423402	25.1	22.1	396722	25.1	19.7	325525	25.2	20.4	81367	25.3	19.5
99440	24.9	18.9	98298	25.0	18.4	448488	25.1	21.2	412695	25.1	20.0	361091	25.2	20.7	487385	25.3	21.0
289850	24.9	19.8	387665	25.0	22.0	161927	25.1	20.5	18323	25.1	17.3	421955	25.2	21.6	217722	25.3	21.2
275078	24.9	19.8	315106	25.0	20.0	291039	25.1	20.0	70776	25.1	18.3	346582	25.2	19.1	373759	25.3	21.1
141922	24.9	19.6	241330	25.0	19.6	527379	25.1	20.2	313330	25.1	20.3	417449	25.2	20.7	117651	25.3	20.3
490940	24.9	19.5	204290	25.0	20.0	402217	25.1	19.6	28916	25.2	18.4	222885	25.2	20.5	190519	25.3	20.7
250292	24.9	20.4	195494	25.0	19.3	123428	25.1	19.1	284061	25.2	19.7	437137	25.2	20.9	486149	25.3	21.0
242567	24.9	20.5	374938	25.0	19.2	411836	25.1	20.6	138962	25.2	19.8	253823	25.2	18.4	289537	25.3	20.6
33489	24.9	17.6	114889	25.0	18.7	286815	25.1	21.1	94108	25.2	19.0	31055	25.2	18.0	66188	25.3	17.7
403782	24.9	20.1	304332	25.0	20.3	76387	25.1	17.9	168667	25.2	19.8	318659	25.2	21.2	241370	25.3	18.7
488640	24.9	23.7	263639	25.0	20.5	474672	25.1	19.9	200513	25.2	19.0	51408	25.2	19.8	246244	25.3	19.5
6651	24.9	17.1	107430	25.0	19.7	540849	25.1	20.8	55178	25.2	18.4	485131	25.2	20.2	188431	25.3	20.1
405441	24.9	21.5	234748	25.0	20.3	161323	25.1	20.6	421490	25.2	19.9	391278	25.2	22.0	290730	25.3	20.3
8843	24.9	17.7	451187	25.0	20.2	178642	25.1	19.3	2520	25.2	16.5	445262	25.2	19.9	13128	25.3	18.2
67704	24.9	19.5	356656	25.0	20.6	383206	25.1	19.8	534766	25.2	20.5	146182	25.2	20.0	452093	25.3	20.1
359528	24.9	20.3	210620	25.0	20.5	240234	25.1	20.9	117319	25.2	18.9	505126	25.2	21.3	513471	25.3	20.5
403421	24.9	19.4	517964	25.0	21.2	156257	25.1	17.6	330856	25.2	20.3	338329	25.2	20.9	480695	25.3	20.5
436449	24.9	19.0	121806	25.0	17.9	320195	25.1	21.0	383094	25.2	21.4	483262	25.2	20.2	456473	25.3	20.1
134353	24.9	19.3	38515	25.0	17.6	142171	25.1	20.1	346589	25.2	19.3	347879	25.2	20.7	175179	25.3	19.2
60234	24.9	19.2	386297	25.0	20.0	478629	25.1	21.1	472020	25.2	19.2	138975	25.2	19.6	45836	25.3	18.5
476072	24.9	21.3	347814	25.0	19.2	166579	25.1	17.7	269418	25.2	19.5	192081	25.2	20.4	472442	25.3	19.7
93152	24.9	17.7	342079	25.0	21.5	434366	25.1	20.0	40055	25.2	19.1	199377	25.2	20.4	344106	25.3	20.0
517524	24.9	20.9	97404	25.0	18.8	215752	25.1	20.0	181070	25.2	20.9	23078	25.2	16.7	479567	25.3	19.8
43205	24.9	18.0	469522	25.0	20.7	227021	25.1	19.8	451203	25.2	19.3	298655	25.2	19.7	256992	25.3	20.0
414448	24.9	19.8	394174	25.0	21.1	264007	25.1	19.2	421077	25.2	20.3	517547	25.2	21.5	336414	25.3	18.6
479003	24.9	20.4	168093	25.0	21.2	280334	25.1	19.9	429816	25.2	21.1	503684	25.2	19.6	334391	25.3	20.5
454874	24.9	20.2	519945	25.0	20.6	291073	25.1	20.0	474489	25.2	21.9	2599	25.2	15.4	301450	25.3	20.1
240526	24.9	19.3	246612	25.0	20.0	232162	25.1	19.7	515065	25.2	20.5	223611	25.2	19.7	268861	25.3	19.2
129810	24.9	20.0	182320	25.0	20.7	494271	25.1	21.7	238882	25.2	20.5	436540	25.2	20.6	504286	25.3	20.5
139985	24.9	19.6	512076	25.0	21.4	46390	25.1	17.3	70021	25.2	18.1	84001	25.2	18.7	516141	25.3	20.6
61003	24.9	18.3	193524	25.0	18.8	99372	25.1	18.9	427277	25.2	19.4	128378	25.2	20.4	485849	25.3	21.0
518696	24.9	20.6	308494	25.0	20.2	531258	25.1	21.2	75192	25.2	18.9	473613	25.2	21.2	170407	25.3	19.5
278914	24.9	20.4	358795	25.0	21.6	444305	25.1	20.1	449548	25.2	21.0	184912	25.2	19.8	104621	25.3	18.4
193213	24.9	20.1	245097	25.0	20.8	149051	25.1	18.9	65178	25.2	19.2	470559	25.2	21.9	148288	25.3	20.7
195010	24.9	19.9	249300	25.0	20.0	78061	25.1	18.5	508332	25.2	19.7	378631	25.2	21.7	205179	25.3	19.3
498374	24.9	20.3	273901	25.0	21.4	108363	25.1	19.8	188284	25.2	19.2	99588	25.2	20.0	37468	25.3	19.0
211180	24.9	18.9	450347	25.0	21.2	153735	25.1	19.3	539765	25.2	21.3	85815	25.3	18.5	408475	25.3	21.9
211572	24.9	19.8	88119	25.0	18.7	466716	25.1	21.3	466191	25.2	21.1	390191	25.3	19.9	231693	25.3	18.9
317322	24.9	21.3	38913	25.0	18.3	127603	25.1	18.4	519736	25.2	20.6	86592	25.3	19.7	447049	25.3	20.8
542222	24.9	20.5	154252	25.0	20.5	473984	25.1	21.3	469629	25.2	21.4	287099	25.3	19.7	51137	25.3	17.4
503461	24.9	21.6	453501	25.0	20.4	211157	25.1	20.5	364467	25.2	21.3	108068	25.3	19.4	293430	25.3	20.4
356626	24.9	19.8	465329	25.1	20.3	301674	25.1	20.0	255131	25.2	19.9	271922	25.3	20.4	350175	25.3	20.3
49018	24.9	18.7	154899	25.1	19.8	514903	25.1	21.8	242225	25.2	19.9	428828	25.3	21.4	542826	25.3	20.7
67072	24.9	18.3	470628	25.1	19.5	328411	25.1	21.2	89565	25.2	19.3	30273	25.3	17.6	86798	25.3	18.9
200532	24.9	18.1	69569	25.1	18.2	376124	25.1	20.0	216725	25.2	20.9	370018	25.3	19.2	1697	25.3	15.2
74213	24.9	18.9	104612	25.1	19.1	393021	25.1	19.5	539513	25.2	21.0	308258	25.3	20.3	461136	25.3	19.7
387965	24.9	22.1	454697	25.1	20.8	450344	25.1	20.4	350400	25.2	20.2	430124	25.3	19.7	201754	25.3	20.6
42515	24.9	19.1	80985	25.1	18.5	342349	25.1	20.5	210308	25.2	20.0	12880	25.3	18.2	510594	25.3	20.8
193007	24.9	19.2	21926	25.1	18.7	364082	25.1	20.0	70874	25.2	18.1	509147	25.3	20.9	381369	25.3	21.8
45438	24.9	17.9	512180	25.1	21.5	188249	25.1	19.5	42228	25.2	18.4	512562	25.3	20.7	316633	25.3	20.5
209967	24.9	20.2	493078	25.1	20.7	123993	25.1	19.5	528045	25.2	21.1	451840	25.3	20.5	60352	25.3	18.1
518060	24.9	20.9	208875	25.1	19.6	184241	25.1	19.0	177044	25.2	19.2	250990	25.3	21.0	215125	25.3	20.3
199392	24.9	19.9	501939	25.1	20.2	238184	25.1	19.9	134547	25.2	18.1	424518	25.3	21.1	480907	25.3	20.9
288307	24.9	19.8	48612	25.1	18.4	352740	25.1	20.2	59750	25.2	19.3	354489	25.3	20.0	438298	25.3	20.3
100095	24.9	19.6	178080	25.1	19.9	170459	25.1	19.8	410623	25.2	21.9	189072	25.3	21.0	539637	25.3	20.8
474627	24.9	20.8	476735	25.1	20.8	113381	2										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
537460	25.3	21.1	230884	25.4	19.6	368520	25.5	19.9	446136	25.5	20.3	309767	25.6	19.8	72551	25.7	18.5
509654	25.3	21.2	300673	25.4	19.6	59503	25.5	17.6	509497	25.5	20.9	17072	25.6	17.8	356184	25.7	20.8
492299	25.3	19.2	144449	25.4	19.9	20954	25.5	18.0	68890	25.5	19.7	509794	25.6	20.7	123961	25.7	19.1
199255	25.3	21.1	144197	25.4	19.5	467412	25.5	21.6	130942	25.5	19.2	302153	25.6	20.4	389017	25.7	19.8
417485	25.3	19.9	164177	25.4	19.0	403431	25.5	20.8	298233	25.5	20.0	174939	25.6	19.9	499559	25.7	20.4
32421	25.3	18.3	305376	25.4	19.9	360505	25.5	20.8	324796	25.5	20.6	399038	25.6	21.3	94176	25.7	18.6
77160	25.3	18.5	67341	25.4	18.5	504125	25.5	21.8	418124	25.5	19.7	342083	25.6	20.5	515632	25.7	21.3
493625	25.3	21.2	4213	25.4	16.1	316264	25.5	20.2	402150	25.5	20.4	422730	25.6	21.0	301697	25.7	21.3
234772	25.3	20.0	133389	25.4	19.7	321439	25.5	20.3	241769	25.5	19.1	220516	25.6	21.1	448261	25.7	21.1
513536	25.3	20.3	128884	25.4	18.7	529671	25.5	21.4	418127	25.5	20.7	172956	25.6	20.0	107741	25.7	19.4
61402	25.3	20.1	507663	25.4	21.8	141963	25.5	18.3	14808	25.5	18.2	538954	25.6	21.2	41402	25.7	17.4
169934	25.3	19.2	254193	25.4	19.6	393795	25.5	21.1	211795	25.5	20.3	214033	25.6	19.2	163931	25.7	19.8
314059	25.3	19.1	255628	25.4	20.1	498398	25.5	20.7	403441	25.5	19.3	324844	25.6	20.0	451354	25.7	20.0
365659	25.3	20.8	483952	25.4	21.1	469536	25.5	19.4	20478	25.5	17.8	430327	25.6	19.2	183132	25.7	19.0
45884	25.3	18.0	154714	25.4	20.0	201119	25.5	20.3	210360	25.5	20.4	461298	25.6	20.4	129156	25.7	19.5
516093	25.3	21.1	187667	25.4	20.4	90772	25.5	18.4	524805	25.5	20.6	255640	25.6	21.4	343982	25.7	19.9
159910	25.3	19.7	471109	25.4	19.7	135989	25.5	18.5	451620	25.5	20.5	380274	25.6	18.9	472460	25.7	21.4
158117	25.3	20.0	439102	25.4	20.8	359531	25.5	21.0	188326	25.5	20.4	435230	25.6	21.0	175758	25.7	20.1
494299	25.3	20.5	520714	25.4	21.8	468513	25.5	21.5	180989	25.5	20.3	406445	25.6	19.6	446375	25.7	21.1
497091	25.4	19.2	302774	25.4	20.1	42223	25.5	19.2	504746	25.5	18.7	408026	25.6	20.0	300563	25.7	20.3
286635	25.4	20.7	42479	25.4	17.3	499607	25.5	20.8	513935	25.6	20.8	28409	25.6	19.0	336111	25.7	21.4
490857	25.4	20.2	260237	25.4	19.6	339385	25.5	20.4	105488	25.6	19.1	61547	25.6	19.1	85762	25.7	20.1
221823	25.4	19.8	317336	25.4	21.5	108014	25.5	19.3	385554	25.6	19.3	289115	25.6	20.7	120036	25.7	18.8
434373	25.4	19.9	452048	25.4	21.2	184501	25.5	20.6	282766	25.6	20.6	120237	25.6	19.0	72553	25.7	19.3
313164	25.4	19.2	458496	25.4	20.7	172922	25.5	19.4	34511	25.6	18.5	487432	25.6	21.4	536947	25.7	21.2
517589	25.4	20.5	400678	25.4	20.1	64186	25.5	18.7	293172	25.6	19.9	127389	25.6	19.1	407152	25.7	20.0
38480	25.4	18.1	306236	25.4	20.4	396186	25.5	19.0	319393	25.6	21.1	485830	25.6	20.8	482447	25.7	19.4
179714	25.4	20.4	13222	25.4	17.0	400938	25.5	20.4	410857	25.6	20.0	4252	25.6	16.9	245402	25.7	20.5
542613	25.4	20.8	490870	25.4	20.9	521561	25.5	20.5	27016	25.6	17.6	112855	25.6	19.1	13703	25.7	16.9
5945	25.4	16.3	275699	25.4	18.8	46417	25.5	19.6	488114	25.6	20.0	98777	25.6	18.1	402322	25.7	18.9
202071	25.4	20.4	324425	25.4	20.5	396258	25.5	20.9	105483	25.6	20.1	484948	25.6	21.7	112533	25.7	20.6
32504	25.4	17.2	38222	25.4	18.6	517994	25.5	20.9	452764	25.6	21.2	112389	25.6	19.5	120922	25.7	19.4
225082	25.4	20.7	210401	25.4	19.8	218398	25.5	19.1	327096	25.6	19.8	156672	25.6	20.6	429487	25.7	19.6
361867	25.4	20.6	485274	25.4	20.4	367053	25.5	21.2	49931	25.6	18.0	519841	25.6	21.5	398251	25.7	20.8
438327	25.4	21.4	14316	25.4	17.1	265033	25.5	20.1	507654	25.6	21.7	41132	25.6	19.2	366996	25.7	21.5
175536	25.4	18.9	125824	25.4	18.2	231450	25.5	20.0	464050	25.6	20.0	536433	25.6	19.2	96615	25.7	18.1
168644	25.4	20.3	197904	25.4	20.7	153052	25.5	19.5	313703	25.6	20.5	367096	25.6	20.0	325735	25.7	20.3
68101	25.4	18.4	402796	25.4	21.0	367753	25.5	20.4	347048	25.6	20.6	390142	25.6	20.4	278849	25.7	20.2
431738	25.4	20.5	398116	25.4	21.4	323630	25.5	19.5	66580	25.6	19.1	108598	25.6	19.8	483620	25.7	20.3
282943	25.4	21.6	67642	25.4	18.7	224722	25.5	19.0	388220	25.6	20.4	231817	25.6	19.8	210619	25.7	20.0
480956	25.4	21.8	165155	25.4	20.3	325688	25.5	20.0	136413	25.6	19.1	364078	25.6	20.8	404982	25.7	19.5
363405	25.4	19.8	537715	25.4	20.9	59368	25.5	19.2	148173	25.6	19.8	331233	25.6	19.5	505807	25.7	20.5
43389	25.4	17.4	487423	25.4	21.1	50567	25.5	18.9	411935	25.6	21.0	385790	25.6	20.2	155589	25.7	19.9
462579	25.4	21.5	112431	25.4	20.5	483577	25.5	20.9	475396	25.6	21.3	461211	25.6	19.7	368897	25.7	21.1
314540	25.4	20.0	502112	25.4	18.7	198102	25.5	19.7	398105	25.6	19.6	531255	25.6	21.0	370323	25.7	19.8
474622	25.4	21.7	173257	25.4	19.2	32921	25.5	18.1	157654	25.6	20.2	130385	25.6	20.8	295152	25.7	20.1
37106	25.4	18.3	178325	25.4	19.6	456623	25.5	20.9	134596	25.6	19.8	368297	25.6	21.2	363516	25.7	20.7
429990	25.4	20.5	223394	25.4	20.1	298162	25.5	21.5	298177	25.6	20.1	427300	25.6	20.2	137435	25.7	18.8
515104	25.4	20.9	498276	25.4	20.3	255023	25.5	20.4	219294	25.6	19.0	326820	25.6	20.3	71430	25.7	17.6
315118	25.4	20.7	364138	25.4	20.7	71608	25.5	18.2	530291	25.6	21.0	508218	25.6	20.4	314460	25.7	20.5
76417	25.4	19.0	132818	25.4	20.0	410152	25.5	20.1	327581	25.6	19.9	319027	25.6	20.5	103925	25.7	18.9
7579	25.4	15.9	245555	25.4	19.3	32251	25.5	16.5	53592	25.6	17.7	109002	25.6	19.1	514174	25.7	21.4
80959	25.4	19.7	211110	25.4	20.8	388562	25.5	19.6	122660	25.6	18.5	351164	25.6	19.6	75793	25.7	19.4
71199	25.4	18.3	520225	25.4	21.7	78047	25.5	20.5	343916	25.6	19.7	34115	25.6	17.8	34628	25.7	18.1
512896	25.4	21.1	24339	25.4	17.9	405342	25.5	21.4	185355	25.6	19.2	517934	25.6	20.6	129992	25.7	19.7
486553	25.4	21.4	524885	25.4	21.1	347497	25.5	20.4	374658	25.6	22.8	349991	25.6	20.1	12572	25.7	17.8
504115	25.4	21.5	301761	25.4	20.3	245829	25.5	20.2	48777	25.6	18.1	161475	25.6	18.8	244379	25.7	20.7
514164	25.4	21.2	445501	25.4	20.5	206965	25.5	19.0	7750	25.6	17.7	93076	25.6	18.5	523009	25.7	21.4
282284	25.4	21.1	370220	25.4	21.7	196517	25.5	20.4	71245	25.6	18.6	532350	25.6	21.0	23449	25.7	18.7
321453	25.4	19.4	513092	25.4	20.1	75357	25.5	18.5	231903	25.6	18.7	188655	25.6	20.3	339377	25.7	19.1
224117	25.4	19.5	443661	25.4	21.0	298149	25.5	20.7	20398	25.6	18.1	488763	25.6	23.2	232223	25.7	19.8
205545	25.4	20.0	314472	25.4	19.3	87332	25.5	19.9	255351	25.6	20.3	343461	25.6	19.2	476565	25.7	22.5
511368	25.4	20.6	62222	25.4	19.6	454031	25.5	21.0	338641	25.6	19.7	488103	25.6	19.9	426166	25.7	21.1
385341	25.4	20.1	305617	25.4	18.8	8984	25.5	17.6	273076	25.6	20.7	504896	25.6	19.7	32057	25.7	19.4
220553	25.4	19.6	145349	25.4	20.8	115674	25.5	19.2	522428	25.6	20.3	228984	25.7	19.8	95903	25.7	19.3
531132	25.4	22.2	423150	25.4	21.8	116009	25.5	18.9	399899	25.6	19.7	177802	25.7	20.0	405463	25.7	20.1
374275	25.4	20.3	13064	25.4	17.4	71333	25.5	18.5	188235	25.6	20.5	21708	25.7	18.5	360698	25.7	20.3
465050	25.4	21.8	384290	25.5	20.0	310060	25.5	19.5	253688	25.6	19.4	317850	25.7	20.0	235815	25.7	19.9
316982	25.4	21.3	407501	25.5	19.9	134588	25										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
353822	25.7	19.5	423358	25.8	19.9	498049	25.9	21.4	254493	25.9	20.2	150239	26.0	19.7	224196	26.1	20.0
418134	25.7	19.8	512467	25.8	21.0	532808	25.9	20.3	14248	25.9	17.7	60502	26.0	18.7	478754	26.1	20.0
479173	25.7	19.4	289799	25.8	20.6	407066	25.9	19.4	8064	25.9	18.1	157937	26.0	19.7	40834	26.1	18.8
223428	25.7	19.1	282236	25.8	20.0	40657	25.9	19.4	454967	25.9	19.8	97457	26.0	18.9	509488	26.1	20.5
377104	25.7	19.9	22241	25.8	17.3	145114	25.9	20.6	120307	25.9	19.7	511927	26.0	21.1	87212	26.1	19.1
539543	25.7	21.4	175832	25.8	19.7	312144	25.9	19.8	48128	25.9	19.1	255457	26.0	19.0	161965	26.1	20.2
113544	25.7	18.7	77984	25.8	19.3	394180	25.9	21.2	446186	25.9	21.1	198233	26.0	20.1	265446	26.1	19.5
26151	25.7	18.2	57569	25.8	17.9	78520	25.9	19.5	397275	25.9	21.2	45331	26.0	18.1	320149	26.1	21.3
33229	25.7	17.4	261385	25.8	20.5	13885	25.9	18.6	209856	25.9	20.9	391604	26.0	20.9	422122	26.1	20.6
385852	25.7	21.2	216588	25.8	20.6	192090	25.9	19.6	233564	25.9	20.5	333170	26.0	21.3	47468	26.1	17.4
131489	25.7	18.1	390400	25.8	20.6	399083	25.9	20.1	123512	25.9	18.5	131443	26.0	20.7	218400	26.1	20.4
394208	25.7	20.9	472717	25.8	21.0	286330	25.9	19.6	113042	25.9	19.0	105615	26.0	18.9	124082	26.1	19.4
316001	25.7	20.2	132546	25.8	19.9	525122	25.9	20.3	55100	25.9	18.9	176744	26.0	20.2	365266	26.1	20.1
382189	25.7	21.1	259448	25.8	19.0	12341	25.9	17.0	417938	25.9	21.1	348405	26.0	19.6	279359	26.1	20.3
120269	25.7	20.8	158226	25.8	19.3	470730	25.9	20.9	232689	25.9	19.4	403969	26.0	20.2	380736	26.1	21.8
220403	25.7	19.1	305385	25.8	19.7	433133	25.9	21.8	505124	25.9	19.3	178378	26.0	20.7	307034	26.1	19.2
103487	25.7	18.5	210445	25.8	19.1	259449	25.9	19.9	517437	25.9	21.5	353526	26.0	20.4	20545	26.1	17.9
453544	25.7	20.7	303946	25.8	17.3	411544	25.9	20.5	45978	25.9	18.4	127490	26.0	20.0	445413	26.1	20.8
272139	25.7	21.0	352402	25.8	19.8	175830	25.9	18.9	385750	25.9	20.5	174252	26.0	20.0	34982	26.1	17.2
134966	25.7	17.5	261740	25.8	19.0	487214	25.9	21.3	540726	25.9	20.4	374016	26.0	19.6	137944	26.1	19.5
411561	25.7	20.5	509146	25.8	19.9	314066	25.9	19.3	43487	25.9	17.0	145503	26.0	19.4	25619	26.1	17.8
518912	25.7	19.9	284916	25.8	19.8	210494	25.9	20.3	236518	25.9	19.3	221805	26.0	20.4	255581	26.1	21.6
60391	25.7	19.5	167487	25.8	18.4	46795	25.9	19.7	189748	25.9	18.6	497757	26.0	20.2	442288	26.1	20.6
84110	25.7	19.2	220731	25.8	19.1	30011	25.9	18.9	531669	25.9	19.3	23129	26.0	16.3	121353	26.1	17.7
195356	25.8	18.6	314398	25.8	20.7	366046	25.9	20.7	500913	25.9	20.9	516007	26.0	20.4	421970	26.1	19.8
264345	25.8	19.5	63255	25.8	18.7	153260	25.9	19.2	355245	25.9	20.9	466921	26.0	20.1	206585	26.1	19.2
200295	25.8	19.1	42824	25.8	18.3	115709	25.9	18.7	199114	25.9	20.1	199634	26.0	19.3	218114	26.1	21.1
215978	25.8	19.8	509731	25.8	20.6	501650	25.9	22.0	41327	25.9	18.8	60871	26.0	18.2	451611	26.1	20.8
357090	25.8	20.1	480503	25.8	21.2	251799	25.9	19.9	265747	25.9	19.5	99650	26.0	19.1	533266	26.1	20.7
211601	25.8	18.7	488592	25.8	21.7	264289	25.9	19.4	160567	25.9	18.1	80688	26.0	18.3	476201	26.1	21.9
433180	25.8	20.8	43096	25.8	19.1	342661	25.9	19.9	1809	25.9	15.9	245519	26.0	19.9	294668	26.1	20.1
117858	25.8	19.7	238498	25.8	20.6	337011	25.9	20.5	317314	25.9	20.3	203461	26.0	18.7	399097	26.1	20.7
322552	25.8	19.6	415342	25.8	20.8	518204	25.9	21.2	300489	25.9	21.2	12393	26.0	17.3	283058	26.1	19.7
218506	25.8	19.7	374282	25.8	20.8	19832	25.9	17.0	361973	25.9	21.3	480458	26.0	21.2	254105	26.1	18.6
478600	25.8	19.8	263051	25.8	19.2	213483	25.9	20.0	38676	25.9	18.1	517899	26.0	20.8	487860	26.1	20.8
508805	25.8	17.3	496728	25.8	19.8	2591	25.9	15.7	67477	25.9	18.3	450555	26.0	20.7	89295	26.1	18.6
232292	25.8	19.9	6338	25.8	16.7	301158	25.9	20.6	442774	25.9	20.2	73432	26.0	19.5	528120	26.1	21.2
536873	25.8	21.2	350939	25.8	19.6	368165	25.9	21.1	168441	25.9	19.3	421889	26.0	20.6	157267	26.1	20.2
421494	25.8	20.1	78649	25.8	18.8	26078	25.9	18.0	485235	25.9	20.3	480632	26.0	20.4	178572	26.1	21.1
230647	25.8	21.2	321686	25.8	20.3	69327	25.9	19.8	332223	25.9	21.1	45778	26.0	18.0	465634	26.1	21.5
52229	25.8	18.5	21365	25.8	18.1	16468	25.9	17.0	335507	25.9	20.4	264495	26.0	19.4	95220	26.1	18.6
403986	25.8	20.5	194901	25.8	18.4	66438	25.9	19.1	260104	25.9	18.8	173651	26.0	18.7	250302	26.1	19.7
204012	25.8	19.1	59901	25.8	19.3	433391	25.9	21.1	133445	25.9	19.4	256793	26.0	20.2	1863	26.1	20.4
127848	25.8	19.5	75337	25.8	18.9	442982	25.9	20.5	442327	25.9	19.9	138869	26.1	19.4	472675	26.1	21.0
171313	25.8	19.9	421926	25.8	21.4	96704	25.9	18.7	73987	25.9	19.3	337190	26.1	18.9	344009	26.1	21.3
383939	25.8	21.1	264912	25.8	19.0	140581	25.9	19.9	193236	25.9	19.5	62886	26.1	19.0	434691	26.1	20.4
92103	25.8	18.0	113667	25.8	18.6	488132	25.9	20.5	507256	25.9	20.9	285655	26.1	19.1	64072	26.1	19.1
96310	25.8	19.7	261549	25.8	20.0	339080	25.9	20.1	435165	25.9	21.3	410158	26.1	21.6	449052	26.1	20.6
160619	25.8	19.6	517863	25.8	20.1	222223	25.9	18.7	215402	25.9	21.0	483921	26.1	20.1	104869	26.1	19.4
168138	25.8	19.9	233703	25.8	19.9	478055	25.9	20.4	153201	25.9	19.6	306448	26.1	18.5	59012	26.1	18.6
448633	25.8	19.3	213724	25.8	18.8	2364	25.9	16.1	469369	25.9	22.6	105645	26.1	19.5	358983	26.1	20.6
73133	25.8	19.1	383528	25.8	19.6	11482	25.9	16.8	527631	25.9	20.5	84549	26.1	18.6	511733	26.1	21.0
206567	25.8	19.7	140311	25.8	19.8	467413	25.9	21.5	448548	25.9	21.1	9890	26.1	16.9	442672	26.1	20.6
134611	25.8	18.7	196490	25.8	20.4	335846	25.9	20.1	23650	25.9	18.5	227818	26.1	19.4	515867	26.1	21.2
286559	25.8	18.9	293499	25.8	19.9	524778	25.9	20.4	291193	25.9	20.8	307183	26.1	19.5	501567	26.1	24.9
404033	25.8	20.6	469229	25.8	21.6	401264	25.9	21.2	70578	25.9	19.0	11759	26.1	17.9	159705	26.1	20.7
405293	25.8	20.6	483128	25.8	20.8	129666	25.9	20.0	353754	25.9	21.1	342672	26.1	19.4	376125	26.1	19.3
99714	25.8	18.2	29499	25.8	18.2	97469	25.9	18.8	442813	25.9	20.6	484970	26.1	20.7	176144	26.1	19.1
239788	25.8	19.1	501539	25.8	20.2	471577	25.9	19.4	216911	25.9	20.8	284746	26.1	20.2	159225	26.1	18.6
8753	25.8	18.5	365651	25.8	20.5	219952	25.9	19.9	454057	25.9	20.3	287398	26.1	20.0	416529	26.1	19.8
323202	25.8	18.6	287281	25.8	19.2	234730	25.9	20.9	219012	25.9	19.5	278946	26.1	20.9	408638	26.1	20.5
255291	25.8	19.7	465061	25.8	20.6	67215	25.9	18.9	341087	25.9	19.4	388194	26.1	21.0	369694	26.1	20.6
268928	25.8	19.5	243138	25.8	19.7	311940	25.9	20.0	43811	25.9	17.6	95947	26.1	18.8	204302	26.1	19.2
478561	25.8	20.4	310737	25.8	22.0	504242	25.9	20.7	61434	25.9	19.1	509150	26.1	18.6	12101	26.1	18.3
157024	25.8	19.9	108525	25.8	19.8	6514	25.9	15.9	476162	25.9	20.5	127094	26.1	18.5	174998	26.1	19.6
528166	25.8	21.1	528093	25.9	21.9	100108	25.9	19.4	483600	25.9	20.0	228675	26.1	20.5	60243	26.1	18.9
133026	25.8	18.8	188160	25.9	20.6	123828	25.9	18.9	302198	25.9	19.4	93618	26.1	19.6	325689	26.1	20.3
483898	25.8	19.8	362957	25.9	19.7	511720	25.9	21.1	472132	25.9	19.9	379236	26.1	21.7	402767	26.1	21.0
536053	25.8	21.7	40812	25.9	19.5	316190	25.9	21.7									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
17427	26.2	17.6	3869	26.2	16.1	305021	26.3	20.9	117907	26.4	19.4	458113	26.4	20.4	238555	26.5	19.3
204977	26.2	20.7	236469	26.2	20.4	367953	26.3	20.7	201146	26.4	20.2	127411	26.4	19.0	535962	26.5	20.4
131089	26.2	18.0	309991	26.2	20.8	293628	26.3	19.7	283056	26.4	20.0	437259	26.4	21.5	393618	26.5	21.1
406768	26.2	19.7	157321	26.2	20.5	415624	26.3	20.8	506465	26.4	21.8	67189	26.4	18.5	476696	26.5	19.6
188186	26.2	20.1	70455	26.2	19.5	537381	26.3	21.3	288778	26.4	19.8	100873	26.4	20.2	78799	26.5	22.1
304230	26.2	20.6	327608	26.2	20.5	251662	26.3	20.0	347871	26.4	19.4	80895	26.4	20.1	511785	26.5	21.4
233532	26.2	20.8	279716	26.2	20.0	208024	26.3	20.6	506409	26.4	22.2	173801	26.4	20.2	472159	26.5	19.2
472748	26.2	20.5	8197	26.2	15.9	142089	26.3	20.3	316131	26.4	20.2	118825	26.4	17.9	363407	26.5	22.1
399832	26.2	20.9	404475	26.2	20.6	298225	26.3	20.0	403419	26.4	21.0	161591	26.4	19.7	345878	26.5	19.5
351817	26.2	21.0	328219	26.2	20.1	233400	26.3	20.1	407575	26.4	20.1	65535	26.4	17.7	95362	26.5	19.2
80146	26.2	17.9	513961	26.2	19.2	312865	26.3	19.9	191930	26.4	20.8	29315	26.4	18.1	195035	26.5	19.4
370252	26.2	21.8	493834	26.2	19.3	365862	26.3	20.4	180081	26.4	19.8	94284	26.4	18.6	66804	26.5	19.4
166378	26.2	19.5	32394	26.2	19.0	119343	26.3	19.9	144131	26.4	19.0	276027	26.4	20.7	166124	26.5	19.8
188004	26.2	20.3	120264	26.2	19.6	504458	26.3	19.3	329438	26.4	21.6	69986	26.4	23.8	147081	26.5	18.5
85297	26.2	19.6	519718	26.2	21.4	379880	26.3	21.4	287250	26.4	19.8	61662	26.4	18.1	363638	26.5	20.1
308681	26.2	19.2	176650	26.2	19.8	187078	26.3	19.8	33832	26.4	19.3	195534	26.4	18.4	58277	26.5	18.5
176806	26.2	18.7	241767	26.2	20.3	255199	26.3	20.7	260468	26.4	19.7	513783	26.4	20.9	201709	26.5	19.0
221862	26.2	21.0	539403	26.2	21.0	353465	26.3	20.8	476200	26.4	21.3	257800	26.4	19.6	254857	26.5	20.7
318033	26.2	20.4	259757	26.2	20.1	340028	26.3	20.3	329210	26.4	19.3	281686	26.4	20.2	74858	26.5	17.7
510603	26.2	20.6	268314	26.2	20.3	411088	26.3	19.4	411638	26.4	20.4	43084	26.4	15.4	204729	26.5	19.6
96728	26.2	17.8	496464	26.2	21.5	273660	26.3	20.3	453526	26.4	21.6	72844	26.4	19.2	79252	26.5	18.1
410086	26.2	21.3	58499	26.2	19.5	160633	26.3	19.0	221584	26.4	20.5	167917	26.4	20.1	121939	26.5	18.9
301685	26.2	21.0	246637	26.2	19.4	418902	26.3	20.6	36524	26.4	17.4	157328	26.4	19.2	496455	26.5	20.1
293620	26.2	20.2	391989	26.2	18.9	528504	26.3	20.6	142334	26.4	20.0	79806	26.4	18.6	41580	26.5	17.5
145624	26.2	19.7	99476	26.2	19.1	68147	26.3	18.7	272252	26.4	19.2	396240	26.4	19.8	289879	26.5	20.1
281467	26.2	20.4	443224	26.2	20.7	139664	26.3	19.2	80531	26.4	18.5	160636	26.4	19.4	352299	26.5	20.0
436576	26.2	21.6	163013	26.3	18.8	102287	26.3	19.3	451846	26.4	21.0	335482	26.4	20.0	528449	26.5	21.6
317364	26.2	20.4	25973	26.3	18.9	514825	26.3	20.2	433976	26.4	19.5	266032	26.4	19.2	471539	26.5	21.5
38352	26.2	18.4	223369	26.3	19.3	348396	26.3	20.2	180891	26.4	20.9	364666	26.4	19.5	506915	26.5	21.5
400723	26.2	20.0	207309	26.3	19.1	116635	26.3	19.6	86984	26.4	18.8	214554	26.4	20.9	525500	26.5	21.9
156666	26.2	19.8	80478	26.3	18.6	171741	26.3	18.5	294061	26.4	20.6	473396	26.4	19.6	224962	26.5	19.7
49919	26.2	17.5	301452	26.3	19.5	515564	26.3	20.8	274671	26.4	20.1	107605	26.4	19.3	2896	26.5	16.2
459667	26.2	20.9	247720	26.3	19.1	185721	26.3	18.9	287203	26.4	19.2	61733	26.4	18.3	61598	26.5	19.1
340461	26.2	19.3	350406	26.3	20.0	106390	26.3	19.4	497604	26.4	21.6	478761	26.4	20.2	72624	26.5	18.9
260697	26.2	21.0	505458	26.3	21.1	370260	26.3	20.7	26799	26.4	16.3	218859	26.4	20.4	268872	26.5	19.2
249792	26.2	18.7	65654	26.3	18.0	169096	26.3	20.0	243849	26.4	18.0	54367	26.4	19.3	113315	26.5	19.5
410903	26.2	20.0	401535	26.3	20.8	136013	26.3	19.9	292930	26.4	19.7	204095	26.4	19.7	495328	26.5	21.3
422002	26.2	21.2	96819	26.3	18.7	93248	26.3	18.9	102474	26.4	18.8	483630	26.4	20.4	280588	26.5	19.5
125628	26.2	17.8	395647	26.3	20.6	469549	26.3	19.3	386329	26.4	19.4	158410	26.4	17.5	47652	26.5	18.8
1898	26.2	16.1	325033	26.3	19.9	166437	26.3	19.5	259381	26.4	20.4	171335	26.4	19.9	313598	26.5	20.2
353563	26.2	20.8	333924	26.3	20.4	470486	26.3	20.7	435607	26.4	21.5	104757	26.4	19.4	323379	26.5	20.7
258937	26.2	18.9	375727	26.3	20.7	236477	26.3	21.1	186538	26.4	19.3	412098	26.4	20.9	48645	26.5	17.7
300462	26.2	19.8	62743	26.3	18.2	65943	26.3	19.4	522009	26.4	20.5	221660	26.4	20.3	159239	26.5	20.0
43519	26.2	18.7	255463	26.3	19.5	26483	26.3	17.5	394627	26.4	20.5	348361	26.4	20.7	388232	26.5	20.7
204332	26.2	20.5	528159	26.3	22.0	443291	26.3	21.3	421825	26.4	21.0	30715	26.4	17.2	142237	26.5	20.5
277832	26.2	20.0	455320	26.3	21.7	218233	26.3	19.5	439124	26.4	21.2	123208	26.4	18.8	130214	26.5	20.2
319271	26.2	20.0	39796	26.3	18.9	340121	26.3	20.0	303119	26.4	20.5	114783	26.4	18.8	472185	26.5	20.6
414464	26.2	19.9	405451	26.3	20.2	515927	26.3	21.3	523356	26.4	20.8	152000	26.5	21.3	15776	26.5	16.9
12282	26.2	17.4	472623	26.3	20.7	537013	26.3	21.2	510679	26.4	21.0	321902	26.5	19.7	74775	26.5	19.4
262664	26.2	20.1	300747	26.3	19.5	357547	26.3	20.7	41297	26.4	18.6	499478	26.5	21.4	385823	26.5	20.5
453506	26.2	20.3	403901	26.3	20.3	187747	26.3	20.4	84710	26.4	19.1	285045	26.5	20.1	517460	26.5	21.3
202241	26.2	18.9	62061	26.3	18.8	510544	26.3	22.3	59816	26.4	19.1	344080	26.5	19.7	493751	26.5	20.5
50735	26.2	19.1	411889	26.3	20.8	185078	26.3	20.3	111521	26.4	19.0	453737	26.5	20.4	377697	26.5	19.6
190521	26.2	20.2	525391	26.3	20.6	389057	26.3	19.6	204435	26.4	18.7	485871	26.5	21.2	484000	26.5	20.4
153964	26.2	19.0	438593	26.3	20.6	413763	26.3	20.6	250704	26.4	19.8	108141	26.5	19.7	417951	26.5	20.8
211786	26.2	20.4	360668	26.3	20.7	155421	26.3	20.3	516124	26.4	21.3	461968	26.5	21.2	40209	26.5	19.1
340082	26.2	20.0	318528	26.3	21.2	505840	26.3	20.3	198346	26.4	20.3	480397	26.5	21.1	57938	26.5	17.2
444991	26.2	21.0	435590	26.3	20.1	89914	26.3	20.6	232597	26.4	19.0	112261	26.5	19.7	513466	26.5	20.4
372988	26.2	19.1	292922	26.3	20.1	181288	26.3	19.7	226950	26.4	18.6	423173	26.5	20.8	408525	26.5	20.8
6628	26.2	16.6	213489	26.3	19.6	253584	26.3	21.2	267173	26.4	21.4	213557	26.5	21.1	343823	26.5	20.6
291662	26.2	20.7	276959	26.3	21.3	296122	26.3	19.4	62468	26.4	17.7	359271	26.5	20.3	126778	26.5	20.7
541098	26.2	21.0	383861	26.3	19.4	17460	26.3	17.7	323051	26.4	21.5	491650	26.5	20.7	320186	26.5	20.1
127385	26.2	19.6	454056	26.3	20.3	49881	26.3	18.9	462111	26.4	20.7	26177	26.5	17.9	247864	26.5	20.4
182029	26.2	18.5	195604	26.3	19.4	74147	26.3	17.5	144095	26.4	18.9	497051	26.5	20.3	295445	26.5	21.4
187366	26.2	20.9	123385	26.3	18.1	43469	26.3	17.5	475971	26.4	21.9	468685	26.5	22.2	42882	26.5	18.9
271070	26.2	21.7	111776	26.3	19.4	262897	26.3	21.3	478699	26.4	20.5	354330	26.5	19.3	48328	26.5	19.4
6131	26.2	16.1	172601	26.3	19.5	220770	26.3	21.2	487950	26.4	20.8	56148	26.5	17.7	306662	26.5	20.3
450546	26.2	20.3	476082	26.3	19.4	474148	26.3	21.5	170655	26.4	18.3	184258	26.5	20.8	301112	26.5	20.2
159697	26.2	20.6	463368	26.3	20.9	159100	2										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
329001	26.5	19.8	513677	26.6	20.7	9624	26.7	18.0	186798	26.7	20.0	11630	26.8	18.3	364167	26.9	21.2
369966	26.5	21.5	395035	26.6	20.9	518428	26.7	21.9	407479	26.7	19.9	43904	26.8	18.5	293702	26.9	19.7
86967	26.5	20.7	115728	26.6	19.3	115817	26.7	19.6	48036	26.7	19.0	130555	26.8	19.3	197288	26.9	19.0
168655	26.5	19.4	299641	26.6	19.9	330215	26.7	20.0	73222	26.7	19.3	253277	26.8	19.4	228000	26.9	19.4
174831	26.5	19.1	432858	26.6	21.0	7758	26.7	18.5	452738	26.7	20.0	459572	26.8	21.6	172851	26.9	20.0
514942	26.5	18.9	172281	26.6	19.3	42148	26.7	18.7	129975	26.7	19.5	356765	26.8	20.9	236517	26.9	19.8
221760	26.5	19.7	332517	26.6	21.1	129989	26.7	20.7	475334	26.7	20.5	24657	26.8	18.5	379942	26.9	20.7
508063	26.5	20.7	199365	26.6	20.2	238168	26.7	19.2	323695	26.7	20.4	28301	26.8	17.1	436624	26.9	20.9
372360	26.5	21.6	444392	26.6	20.5	322479	26.7	19.9	192005	26.7	19.7	226569	26.8	19.1	117227	26.9	18.7
33123	26.5	17.6	269404	26.6	19.9	482303	26.7	21.0	519577	26.7	21.0	468082	26.8	21.8	48462	26.9	17.9
451177	26.5	21.5	338286	26.6	19.8	168678	26.7	19.2	115642	26.7	18.5	132966	26.8	18.5	22228	26.9	18.2
59719	26.5	19.3	424039	26.6	19.4	368354	26.7	20.6	342431	26.7	19.4	3718	26.8	16.8	466063	26.9	20.3
429690	26.5	20.5	260280	26.6	20.6	452095	26.7	21.1	178507	26.7	19.1	9153	26.8	16.2	314447	26.9	19.3
208549	26.5	19.2	330370	26.6	21.4	530363	26.7	20.3	329748	26.7	19.5	193209	26.8	19.9	480500	26.9	20.9
44052	26.5	18.9	327525	26.6	20.4	97131	26.7	19.1	424490	26.7	20.8	334368	26.8	19.5	183288	26.9	21.5
332313	26.5	20.0	249077	26.6	19.2	294017	26.7	20.4	236524	26.7	21.2	63904	26.8	19.8	111963	26.9	19.7
115831	26.5	19.3	480691	26.6	20.9	452721	26.7	20.7	169675	26.7	21.8	514254	26.8	21.1	330254	26.9	19.9
37188	26.6	18.8	18479	26.6	17.2	37602	26.7	20.1	22690	26.7	17.7	87080	26.8	18.9	21065	26.9	18.2
210025	26.6	21.0	3129	26.6	16.4	325869	26.7	19.0	480726	26.7	20.1	9736	26.8	18.6	477886	26.9	20.8
67921	26.6	18.3	446949	26.6	21.7	46955	26.7	18.1	68345	26.7	18.3	251931	26.8	19.4	481391	26.9	21.0
384128	26.6	20.3	66628	26.6	19.6	508951	26.7	19.8	144991	26.7	20.0	27446	26.8	18.2	470761	26.9	20.4
67192	26.6	19.0	447365	26.6	20.7	226079	26.7	21.1	408015	26.7	20.8	188982	26.8	20.5	128318	26.9	20.0
91307	26.6	18.2	189762	26.6	18.9	317037	26.7	20.5	227321	26.7	20.9	202528	26.8	19.5	292649	26.9	20.3
65124	26.6	18.9	307564	26.6	20.3	138931	26.7	19.4	283008	26.7	19.9	65956	26.8	19.7	524812	26.9	20.3
402015	26.6	20.2	12822	26.6	17.4	464769	26.7	20.8	145694	26.7	19.6	365375	26.8	19.5	122205	26.9	19.7
389055	26.6	19.4	431676	26.6	20.5	509899	26.7	20.5	218570	26.7	21.7	152486	26.8	19.4	514419	26.9	20.6
515712	26.6	21.7	38845	26.6	17.7	20496	26.7	17.9	485307	26.7	21.0	4926	26.8	17.1	340573	26.9	19.1
301459	26.6	20.6	109874	26.6	19.6	211094	26.7	20.6	149393	26.7	18.5	518944	26.8	20.5	43833	26.9	17.8
69741	26.6	18.2	287512	26.6	19.7	16675	26.7	17.3	432677	26.7	21.1	305953	26.8	20.3	386981	26.9	19.6
372373	26.6	20.4	387656	26.6	20.1	346630	26.7	19.5	97452	26.7	19.4	221715	26.8	19.8	519691	26.9	20.7
34979	26.6	17.3	154143	26.6	20.3	505117	26.7	20.1	476000	26.7	21.9	344694	26.8	20.4	128480	26.9	18.9
201205	26.6	20.4	214206	26.6	21.3	227906	26.7	20.2	166163	26.7	19.2	342251	26.8	19.8	165183	26.9	18.5
59041	26.6	17.3	79101	26.6	19.4	189207	26.7	19.5	223103	26.7	19.7	462041	26.8	23.5	470789	26.9	20.0
525591	26.6	20.7	23835	26.6	18.6	324470	26.7	20.1	224022	26.7	20.6	337153	26.8	20.1	483931	26.9	20.2
323703	26.6	20.7	31776	26.6	15.9	180379	26.7	19.0	489614	26.7	20.2	470417	26.8	20.0	82309	26.9	19.5
108155	26.6	18.4	510214	26.6	21.1	157698	26.7	19.9	511842	26.7	20.9	523579	26.8	19.7	494676	26.9	19.3
37051	26.6	18.3	84679	26.6	18.8	92049	26.7	17.6	346440	26.7	20.1	444460	26.8	19.7	260154	26.9	20.2
344098	26.6	19.7	524689	26.6	20.6	205591	26.7	20.3	476881	26.8	20.9	453213	26.8	21.2	537533	26.9	22.4
182791	26.6	20.0	56305	26.6	19.6	66758	26.7	18.5	459930	26.8	20.9	442403	26.8	20.9	344747	26.9	19.3
132582	26.6	19.5	480631	26.6	20.9	342094	26.7	21.3	366201	26.8	20.3	168182	26.8	19.8	5594	26.9	16.5
391951	26.6	19.3	22242	26.6	18.7	481661	26.7	19.8	319552	26.8	21.2	278471	26.8	21.6	13451	26.9	18.2
402051	26.6	20.7	193470	26.6	18.1	90643	26.7	19.6	31675	26.8	18.2	489956	26.8	19.8	20691	26.9	15.8
472966	26.6	20.3	318924	26.6	21.8	504902	26.7	20.1	472077	26.8	20.5	466301	26.8	21.2	475322	26.9	20.3
298135	26.6	21.0	441708	26.6	21.3	48226	26.7	18.3	60785	26.8	18.3	63030	26.8	18.9	220358	26.9	20.4
315855	26.6	20.8	155585	26.6	19.0	325730	26.7	20.4	324072	26.8	20.5	97229	26.8	18.8	428112	26.9	20.2
335067	26.6	19.5	245636	26.6	19.4	454912	26.7	20.1	292205	26.8	19.7	390909	26.8	20.0	323350	26.9	19.7
118655	26.6	19.2	123241	26.6	18.9	374270	26.7	20.9	304771	26.8	21.4	37236	26.8	18.9	11338	26.9	18.3
389732	26.6	21.1	211082	26.6	19.8	133238	26.7	20.0	31052	26.8	18.3	12022	26.8	17.6	60024	26.9	18.6
361996	26.6	20.2	281255	26.6	20.8	120579	26.7	19.7	477507	26.8	20.1	167753	26.8	18.9	452974	26.9	21.0
333974	26.6	21.1	187144	26.6	20.6	310184	26.7	20.3	399379	26.8	20.6	99072	26.8	18.8	244639	26.9	20.4
123040	26.6	18.2	443277	26.6	21.0	151360	26.7	19.8	396954	26.8	20.9	342157	26.8	19.6	514348	26.9	20.7
542842	26.6	20.9	81432	26.6	19.0	286519	26.7	20.0	487982	26.8	21.3	23915	26.8	18.6	250966	26.9	20.5
257352	26.6	20.6	343269	26.6	20.0	46159	26.7	19.5	82264	26.8	19.4	539249	26.8	20.9	156696	26.9	20.1
337338	26.6	19.1	405054	26.6	19.5	392689	26.7	20.5	521371	26.8	21.1	485903	26.8	20.8	509742	26.9	20.7
116672	26.6	19.9	398013	26.6	20.3	16700	26.7	16.8	266004	26.8	20.3	499584	26.8	21.2	320225	26.9	20.7
221830	26.6	21.0	368149	26.6	20.8	72472	26.7	19.4	45014	26.8	17.3	51682	26.8	17.6	138343	26.9	20.5
166388	26.6	19.8	438729	26.6	20.8	90175	26.7	19.3	156682	26.8	20.4	448384	26.8	19.2	20899	26.9	17.0
37608	26.6	18.2	426520	26.6	21.0	385835	26.7	19.9	70384	26.8	18.6	19953	26.8	17.3	243767	26.9	20.2
16457	26.6	16.8	33749	26.6	17.5	516391	26.7	22.0	213665	26.8	19.0	78761	26.8	17.5	28498	26.9	18.6
309763	26.6	19.1	507236	26.6	21.0	440437	26.7	21.0	286308	26.8	19.9	243764	26.8	19.7	497161	26.9	21.8
426116	26.6	19.8	398167	26.6	21.5	484077	26.7	21.6	294500	26.8	20.2	482214	26.8	20.1	429484	26.9	20.4
494215	26.6	21.6	317736	26.6	20.7	487230	26.7	21.1	287365	26.8	19.6	8656	26.8	16.5	5753	26.9	17.0
539402	26.6	21.2	322764	26.6	21.4	306055	26.7	21.9	421788	26.8	20.5	383874	26.9	20.2	537481	26.9	21.2
509190	26.6	21.8	317421	26.6	21.2	396276	26.7	19.2	146780	26.8	18.9	7101	26.9	16.0	244343	26.9	19.3
515594	26.6	20.6	38478	26.6	18.7	388557	26.7	20.4	114728	26.8	18.9	452716	26.9	20.5	512593	26.9	19.7
199908	26.6	21.3	93988	26.6	17.7	334198	26.7	21.4	18766	26.8	18.7	378659	26.9	20.7	407599	26.9	20.6
228982	26.6	19.6	436614	26.6	21.4	193410	26.7	17.8	446557	26.8	20.6	463400	26.9	21.6	151248	26.9	19.7
85619	26.6	20.2	25835	26.6	18.1	236570	26.7	20.4	176399	26.8	19.7	33023	26.9	18.1	81822	26.9	19.9
224170	26.6	19.4	127391	26.7	19.7	514836	26.7	21.1	331341	2							

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
260989	26.9	19.6	37807	27.0	19.2	148461	27.1	19.1	225141	27.2	19.9	55618	27.2	18.2	12544	27.3	17.9
398559	26.9	21.4	317706	27.0	19.9	238608	27.1	20.9	392010	27.2	20.6	2418	27.2	16.3	320248	27.3	20.7
89197	26.9	19.1	262559	27.0	20.2	93069	27.1	18.3	488480	27.2	20.0	187769	27.2	19.9	376132	27.3	19.4
431347	26.9	20.1	427587	27.0	20.0	210413	27.1	19.5	79579	27.2	18.2	69632	27.2	18.7	521779	27.3	20.2
327596	26.9	19.3	262703	27.0	19.3	467722	27.1	19.8	127433	27.2	19.3	391656	27.2	21.2	493638	27.3	21.2
222027	26.9	20.0	58446	27.0	19.4	168317	27.1	19.0	250507	27.2	19.3	202535	27.2	20.6	138295	27.3	19.5
324432	26.9	20.7	407500	27.0	19.9	70467	27.1	18.6	424386	27.2	20.2	308985	27.2	20.1	17640	27.3	14.8
490139	26.9	20.6	477805	27.0	22.2	43227	27.1	18.1	14812	27.2	18.4	296552	27.2	19.8	409672	27.3	20.5
389484	26.9	21.5	224036	27.0	20.9	363349	27.1	22.8	107206	27.2	18.1	158151	27.2	19.4	202960	27.3	19.6
228313	26.9	19.3	49355	27.0	18.6	6163	27.1	16.7	269194	27.2	20.6	117391	27.2	18.8	70153	27.3	18.3
524467	26.9	22.0	164601	27.0	18.6	10365	27.1	17.3	126255	27.2	18.1	515699	27.2	22.2	493634	27.3	21.0
479497	26.9	19.9	379497	27.0	20.6	13092	27.1	17.7	324766	27.2	20.7	365355	27.2	21.0	311184	27.3	19.3
515997	26.9	20.7	301771	27.0	20.3	506298	27.1	20.9	276045	27.2	18.8	317404	27.2	22.0	444994	27.3	21.1
299686	26.9	21.5	274273	27.0	19.9	384440	27.1	19.7	507234	27.2	20.6	261865	27.2	19.3	104599	27.3	20.3
403966	26.9	20.7	55606	27.0	19.2	521310	27.1	22.3	279148	27.2	20.0	264148	27.2	19.6	420614	27.3	19.9
498183	26.9	20.3	223817	27.0	20.2	38890	27.1	18.2	85890	27.2	17.3	239774	27.2	20.3	76651	27.3	16.9
122307	26.9	20.1	71630	27.0	17.8	5969	27.1	17.1	291577	27.2	21.6	487805	27.2	19.7	158715	27.3	20.8
539361	26.9	21.4	317408	27.0	21.9	198551	27.1	19.8	302159	27.2	20.6	144580	27.2	18.8	188752	27.3	19.9
573325	26.9	21.2	482140	27.0	20.3	210901	27.1	20.4	360351	27.2	20.5	518000	27.2	21.0	395880	27.3	20.7
312967	26.9	21.0	239604	27.0	20.5	245344	27.1	19.5	535954	27.2	21.4	178343	27.2	21.2	190209	27.3	20.0
251511	26.9	20.6	347059	27.0	19.8	189397	27.1	20.3	112078	27.2	20.5	399622	27.2	20.2	258795	27.3	19.5
510399	26.9	21.1	188407	27.0	21.2	3666	27.1	16.5	262493	27.2	19.0	318598	27.2	21.3	66729	27.3	18.5
257007	26.9	20.2	423177	27.0	21.3	178576	27.1	18.6	364080	27.2	20.5	37626	27.2	17.6	514237	27.3	21.2
383193	26.9	20.4	521987	27.0	20.5	331557	27.1	19.1	509177	27.2	21.0	74220	27.2	18.6	378675	27.3	21.6
67305	26.9	18.7	403762	27.0	21.0	214593	27.1	20.5	403193	27.2	20.9	500077	27.2	20.9	176111	27.3	19.0
261675	26.9	19.0	374771	27.0	19.5	19507	27.1	18.1	517123	27.2	21.2	392099	27.2	20.4	44679	27.3	18.6
471790	26.9	22.0	511356	27.0	22.0	202721	27.1	19.6	183724	27.2	18.6	401552	27.2	20.3	426270	27.3	21.2
293914	26.9	20.2	69393	27.0	18.9	512712	27.1	20.4	320692	27.2	20.7	324918	27.2	19.6	107327	27.3	19.6
532167	26.9	20.7	470592	27.0	21.3	512233	27.1	20.3	258032	27.2	19.8	326791	27.2	20.3	342788	27.3	18.3
485878	26.9	21.1	387291	27.0	19.9	442604	27.1	20.0	16546	27.2	18.1	261804	27.2	20.2	540433	27.3	20.2
290556	26.9	21.0	73136	27.0	18.4	51704	27.1	18.9	129985	27.2	18.4	344436	27.2	20.5	525238	27.3	21.5
514517	26.9	20.8	101347	27.0	19.4	2505	27.1	16.8	260277	27.2	18.3	423008	27.3	19.9	288724	27.3	20.0
240417	26.9	19.5	98561	27.0	18.6	191446	27.1	20.2	505733	27.2	20.3	221955	27.3	19.6	436214	27.3	21.3
112820	26.9	19.2	276868	27.0	20.5	156683	27.1	19.2	126718	27.2	19.1	508840	27.3	19.2	67463	27.3	18.6
402184	26.9	20.6	480989	27.0	20.0	208285	27.1	19.2	387010	27.2	20.3	185376	27.3	20.9	144753	27.3	16.9
511229	26.9	20.5	413390	27.0	21.7	89194	27.1	19.5	323058	27.2	21.6	309631	27.3	20.5	513465	27.3	20.8
435618	26.9	20.9	362376	27.0	20.9	509018	27.1	21.3	163724	27.2	19.3	440895	27.3	21.0	198998	27.3	20.5
25178	26.9	19.2	168179	27.0	19.6	498074	27.1	20.7	27558	27.2	18.3	292998	27.3	19.5	414407	27.3	20.9
142809	26.9	19.9	7364	27.0	18.6	336256	27.1	19.5	130250	27.2	19.5	144370	27.3	19.9	6176	27.3	15.6
166132	26.9	18.8	282384	27.0	19.8	283716	27.1	18.8	223475	27.2	19.0	168640	27.3	20.4	327594	27.3	19.7
193666	26.9	19.5	306504	27.0	19.5	484911	27.1	20.9	7918	27.2	18.9	477064	27.3	19.6	285192	27.3	21.2
349460	26.9	21.2	176279	27.0	19.4	408555	27.1	21.7	117340	27.2	18.8	6028	27.3	17.0	389533	27.3	20.8
196969	26.9	19.5	431968	27.0	21.8	395563	27.1	21.0	92372	27.2	19.4	453476	27.3	21.5	18007	27.3	16.6
333295	26.9	20.3	488151	27.0	21.1	139217	27.1	19.5	135624	27.2	19.8	454840	27.3	20.1	86357	27.3	18.5
475380	26.9	21.8	139130	27.0	18.4	86989	27.1	19.7	165141	27.2	20.3	9777	27.3	18.4	266662	27.3	21.2
317367	26.9	21.3	2433	27.0	16.1	129069	27.1	19.2	371402	27.2	20.7	58426	27.3	19.4	147712	27.3	20.4
373210	26.9	20.0	426341	27.0	21.3	100868	27.1	19.7	314543	27.2	20.2	118121	27.3	19.7	273787	27.3	20.8
62911	26.9	18.3	1473	27.0	15.6	47097	27.1	18.5	38142	27.2	18.6	426608	27.3	20.5	34629	27.3	18.0
327613	26.9	20.5	141839	27.0	19.9	436867	27.1	21.0	258758	27.2	20.6	52533	27.3	17.5	130312	27.3	19.0
454241	26.9	20.4	294112	27.0	21.1	479663	27.1	20.3	261824	27.2	20.6	456098	27.3	20.9	12121	27.3	17.6
484266	26.9	21.5	250974	27.1	21.0	300813	27.1	20.2	388264	27.2	22.2	186645	27.3	21.2	135630	27.3	19.8
268272	26.9	19.7	110687	27.1	19.5	481393	27.1	20.7	490073	27.2	20.7	320277	27.3	20.2	469676	27.3	19.8
246689	26.9	20.5	237827	27.1	20.5	319434	27.1	20.6	521466	27.2	21.3	500843	27.3	21.3	71954	27.3	19.4
80890	26.9	19.3	453657	27.1	20.5	511343	27.1	19.6	301	27.2	14.3	316498	27.3	19.9	537314	27.3	21.6
12748	26.9	16.5	76351	27.1	19.1	112377	27.1	19.7	212563	27.2	20.0	151401	27.3	18.7	282306	27.3	20.3
280741	26.9	21.0	342185	27.1	20.8	44954	27.1	18.6	45043	27.2	17.8	462569	27.3	21.7	486660	27.3	21.1
365794	26.9	19.6	476853	27.1	19.2	181354	27.1	18.6	494490	27.2	20.1	513494	27.3	21.9	274812	27.3	19.2
98089	26.9	18.5	325505	27.1	19.5	511985	27.1	20.4	52362	27.2	17.9	97798	27.3	19.1	155871	27.3	19.4
468968	26.9	19.9	437928	27.1	20.7	246321	27.1	20.4	364657	27.2	20.1	276274	27.3	22.6	206074	27.3	19.4
503798	26.9	20.8	330606	27.1	20.7	218607	27.1	20.4	130729	27.2	18.0	297173	27.3	20.2	192341	27.3	18.2
12983	26.9	17.8	171693	27.1	19.3	511916	27.1	21.0	179849	27.2	19.8	18879	27.3	17.7	350948	27.3	19.6
168634	26.9	19.3	62366	27.1	19.0	39004	27.1	18.4	510580	27.2	19.8	210273	27.3	19.6	1044	27.3	14.9
368916	26.9	21.1	477871	27.1	21.1	55433	27.1	19.0	217263	27.2	18.9	124621	27.3	19.3	272361	27.3	19.4
226072	26.9	20.5	104067	27.1	19.1	284890	27.1	19.5	198079	27.2	20.2	414046	27.3	20.1	128194	27.3	19.1
190039	26.9	20.4	502500	27.1	20.0	113900	27.1	18.8	223827	27.2	20.0	357790	27.3	20.7	480155	27.3	20.7
48406	26.9	17.5	463679	27.1	20.2	53710	27.1	19.1	184960	27.2	20.6	415033	27.3	20.1	263105	27.3	19.3
353608	26.9	20.5	437918	27.1	21.3	443417	27.1	20.9	44344	27.2	18.5	506687	27.3	21.0	26718	27.3	16.9
447730	26.9	20.1	183266	27.1	19.4	469965	27.1	20.7	504441	27.2	20.6	423852	27.3	21.0	349301	27.3	19.6
297212	26.9	20.2	517940	27.1	20.7	392051	27.1	20.4									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
392047	27.3	20.9	128055	27.4	19.9	103504	27.5	19.1	254107	27.5	19.5	528467	27.6	20.2	260433	27.7	19.3
324988	27.3	21.1	26077	27.4	18.6	130352	27.5	19.7	536843	27.5	20.7	539836	27.6	20.3	25989	27.7	18.6
461261	27.3	20.5	98505	27.4	18.0	308664	27.5	19.3	320305	27.5	20.2	66149	27.6	17.7	352179	27.7	20.2
173692	27.3	19.7	434777	27.4	20.4	387268	27.5	20.7	115573	27.6	19.0	423477	27.6	21.5	447254	27.7	20.9
145829	27.3	18.5	50488	27.4	18.4	189782	27.5	19.5	407111	27.6	21.0	324114	27.6	19.4	335149	27.7	19.0
539239	27.3	21.1	129063	27.4	18.6	344721	27.5	20.1	404013	27.6	21.3	477139	27.6	19.6	386353	27.7	20.9
260470	27.3	19.6	169087	27.4	19.6	142239	27.5	19.4	439114	27.6	22.0	484891	27.6	21.3	451152	27.7	21.8
518325	27.3	21.5	142125	27.4	18.8	473414	27.5	20.4	21588	27.6	19.2	77561	27.6	18.5	509711	27.7	19.9
540955	27.3	21.3	303138	27.4	20.1	37473	27.5	19.3	206655	27.6	19.3	255267	27.6	20.4	151019	27.7	19.3
476268	27.3	20.9	203063	27.4	20.4	87910	27.5	16.9	378667	27.6	20.9	335082	27.6	21.1	43240	27.7	18.9
7585	27.3	17.2	291724	27.4	21.3	347841	27.5	20.6	86342	27.6	18.3	98672	27.6	19.1	210222	27.7	19.6
11595	27.3	16.8	236536	27.4	18.8	66668	27.5	18.6	27141	27.6	17.9	222925	27.6	19.8	444606	27.7	21.2
427446	27.4	20.4	363661	27.4	20.7	122673	27.5	18.3	321473	27.6	19.3	209676	27.6	19.5	246234	27.7	20.4
209854	27.4	20.2	322754	27.4	19.1	259027	27.5	18.7	67804	27.6	19.3	100937	27.6	19.1	485989	27.7	21.8
282285	27.4	18.7	147147	27.4	20.4	209045	27.5	19.9	494820	27.6	20.8	252913	27.6	20.8	112512	27.7	19.3
200222	27.4	19.5	45163	27.4	17.6	107796	27.5	19.6	223714	27.6	20.6	159864	27.6	20.6	367099	27.7	20.8
415793	27.4	18.9	178229	27.4	20.4	208158	27.5	20.4	239085	27.6	19.7	427361	27.6	19.8	482987	27.7	20.8
130185	27.4	18.5	9456	27.4	17.8	144068	27.5	17.9	528031	27.6	21.1	310606	27.6	19.3	417892	27.7	21.6
250582	27.4	19.6	453518	27.4	21.2	211384	27.5	18.4	18422	27.6	18.1	321501	27.6	21.4	323315	27.7	20.6
257657	27.4	18.9	510363	27.4	21.1	80931	27.5	19.0	154972	27.6	19.6	230362	27.6	20.0	328860	27.7	20.7
515337	27.4	20.8	442044	27.4	20.7	63329	27.5	18.4	287839	27.6	19.9	321388	27.6	19.8	165117	27.7	20.7
398832	27.4	21.0	20734	27.4	17.9	224038	27.5	21.4	80508	27.6	17.9	386997	27.6	20.0	457800	27.7	20.3
42372	27.4	19.0	111004	27.4	18.6	322418	27.5	20.2	260523	27.6	19.8	193549	27.6	19.1	14970	27.7	18.5
394630	27.4	20.3	222202	27.4	20.0	41632	27.5	19.0	169563	27.6	18.6	406313	27.6	20.9	482080	27.7	20.8
331373	27.4	21.1	523136	27.4	20.8	387672	27.5	20.5	125975	27.6	19.7	274253	27.6	21.3	439662	27.7	20.5
159857	27.4	15.7	485285	27.4	19.1	136653	27.5	18.7	414391	27.6	19.7	215814	27.6	19.1	137965	27.7	18.7
112334	27.4	18.7	385069	27.4	20.8	398786	27.5	20.4	308038	27.6	19.1	389350	27.6	20.7	331167	27.7	20.0
156685	27.4	20.3	44852	27.4	18.4	470546	27.5	21.0	388213	27.6	21.7	45589	27.6	17.6	281701	27.7	20.1
38399	27.4	18.0	126308	27.4	18.1	325565	27.5	20.1	428648	27.6	21.0	342699	27.6	20.2	450244	27.7	20.6
332488	27.4	20.1	485097	27.4	20.1	106050	27.5	18.6	121441	27.6	17.5	246314	27.6	20.1	110424	27.7	20.2
330308	27.4	20.3	17714	27.4	18.2	234073	27.5	19.6	272572	27.6	21.6	108437	27.6	20.6	515558	27.7	21.1
464001	27.4	21.6	263145	27.4	19.4	416645	27.5	20.6	82804	27.6	18.8	7175	27.6	17.1	242289	27.7	20.8
224121	27.4	21.7	507208	27.4	21.1	137949	27.5	18.7	311537	27.6	19.5	189975	27.6	19.1	377314	27.7	21.2
26558	27.4	18.0	455451	27.4	20.3	127140	27.5	19.9	116766	27.6	19.6	454583	27.6	20.9	159327	27.7	20.7
9819	27.4	18.1	317767	27.4	19.9	531246	27.5	21.4	115523	27.6	19.6	464757	27.6	21.0	518362	27.7	19.9
226523	27.4	19.4	511165	27.4	20.0	117781	27.5	19.6	371600	27.6	21.1	152761	27.6	20.0	482302	27.7	20.5
11242	27.4	18.7	435740	27.4	20.9	365903	27.5	20.8	42780	27.6	18.4	94924	27.6	18.0	107575	27.7	18.2
139080	27.4	19.3	368646	27.4	20.5	25431	27.5	18.5	214640	27.6	20.4	150471	27.6	20.0	216484	27.7	20.9
39347	27.4	18.9	82569	27.4	19.3	309070	27.5	20.7	380162	27.6	19.9	454678	27.6	21.1	225045	27.7	20.4
448638	27.4	20.6	45998	27.4	19.0	407621	27.5	20.2	190049	27.6	21.0	213922	27.6	19.9	507684	27.7	21.4
120393	27.4	19.5	195257	27.4	20.5	485243	27.5	20.7	98249	27.6	18.0	299697	27.6	19.7	388229	27.7	20.9
142051	27.4	19.7	138857	27.4	19.6	448597	27.5	21.1	408076	27.6	20.6	473328	27.6	20.4	353023	27.7	20.1
364621	27.4	20.2	294814	27.4	19.2	514290	27.5	21.4	111575	27.6	19.4	292641	27.6	21.0	442860	27.7	20.6
355107	27.4	20.6	227401	27.4	20.2	170149	27.5	20.0	250965	27.6	20.7	386779	27.6	21.4	18050	27.7	17.4
155853	27.4	19.0	245299	27.4	19.8	150273	27.5	19.9	405459	27.6	20.8	259495	27.6	20.8	540880	27.7	20.8
368490	27.4	19.7	280080	27.5	19.2	228340	27.5	20.3	399197	27.6	20.9	281115	27.6	20.9	354485	27.7	20.6
455018	27.4	19.9	513943	27.5	20.0	280049	27.5	19.7	120194	27.6	19.9	39281	27.6	18.4	22622	27.7	18.3
45793	27.4	18.7	487336	27.5	21.7	262142	27.5	20.6	213063	27.6	19.3	487249	27.6	21.1	45361	27.7	17.4
211646	27.4	19.3	101275	27.5	18.7	71000	27.5	16.8	28186	27.6	17.8	133819	27.6	19.4	285203	27.7	20.2
230357	27.4	19.7	421904	27.5	19.9	53497	27.5	18.1	101176	27.6	20.1	46806	27.6	19.5	423925	27.7	20.3
424531	27.4	20.5	204358	27.5	20.3	321480	27.5	20.4	218965	27.6	21.0	276662	27.7	20.2	82678	27.7	18.2
513383	27.4	20.9	515999	27.5	21.4	112008	27.5	18.9	21769	27.6	19.1	517924	27.7	20.7	142191	27.7	18.8
401506	27.4	20.7	443646	27.5	20.7	60935	27.5	18.3	101111	27.6	18.7	289953	27.7	19.9	46960	27.7	17.9
508803	27.4	19.0	8150	27.5	17.6	1984	27.5	15.8	354307	27.6	19.8	369783	27.7	20.3	194268	27.7	21.6
134658	27.4	18.3	73835	27.5	19.6	439626	27.5	19.8	395004	27.6	21.1	485789	27.7	21.0	478612	27.7	21.1
505778	27.4	20.1	141942	27.5	20.7	139387	27.5	19.6	496210	27.6	21.4	94166	27.7	18.5	388574	27.7	21.1
88542	27.4	18.7	93945	27.5	18.5	330734	27.5	20.5	380785	27.6	21.6	227790	27.7	20.5	205438	27.7	20.2
367743	27.4	20.5	361967	27.5	20.9	539652	27.5	20.7	231744	27.6	19.5	519257	27.7	19.7	260172	27.7	20.0
376547	27.4	20.6	161653	27.5	20.8	444214	27.5	20.9	254466	27.6	19.5	514049	27.7	21.5	193304	27.7	19.7
340460	27.4	20.3	42846	27.5	19.1	118572	27.5	20.4	405273	27.6	21.2	355991	27.7	18.9	385352	27.7	21.9
479171	27.4	19.4	46208	27.5	19.9	441829	27.5	20.5	45103	27.6	18.8	213035	27.7	19.9	411137	27.7	20.5
447666	27.4	21.2	443299	27.5	20.5	108582	27.5	19.8	405332	27.6	19.7	343457	27.7	19.3	247079	27.7	21.0
409656	27.4	20.8	206107	27.5	20.9	371537	27.5	19.9	323206	27.6	20.1	116664	27.7	19.3	421983	27.7	22.0
171227	27.4	19.6	160875	27.5	18.6	476830	27.5	21.9	256654	27.6	19.5	178428	27.7	19.2	204641	27.7	18.8
300541	27.4	20.2	161040	27.5	19.9	213030	27.5	19.7	316952	27.6	19.4	402505	27.7	20.1	99652	27.7	19.0
515569	27.4	21.3	185702	27.5	21.4	298061	27.5	20.1	269406	27.6	19.3	386090	27.7	20.4	146046	27.7	19.6
320127	27.4	20.7	455063	27.5	21.0	50188	27.5	18.6	516039	27.6	21.9	386102	27.7	20.7	260282	27.7	19.2
55364	27.4	18.6	362906	27.5	19.6	320804	27.5	20.2	513552	27.6	21.5	52282	27.7	18.6	18480	27.7	17.5
47507	27.4	17.3	323450	27.5	19.1	540592											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
177185	27.7	19.4	358776	27.8	20.6	472067	27.9	20.6	330697	27.9	19.4	461138	28.0	20.4	449804	28.1	20.9
186355	27.7	19.4	523137	27.8	21.0	477582	27.9	21.3	112551	27.9	19.6	213097	28.0	19.8	273905	28.1	21.2
270288	27.7	19.8	190692	27.8	20.0	404036	27.9	20.3	342851	27.9	20.1	239991	28.0	20.6	157448	28.1	20.1
480170	27.7	20.7	27429	27.8	17.2	42584	27.9	19.4	240373	27.9	20.5	135573	28.0	20.6	41201	28.1	18.7
88906	27.7	19.1	38408	27.8	18.6	539819	27.9	21.0	144211	27.9	18.8	231568	28.0	19.2	531475	28.1	20.5
218811	27.7	19.8	247116	27.8	19.2	485936	27.9	20.9	112145	27.9	20.2	1397	28.0	16.2	514710	28.1	21.1
222897	27.7	20.8	172721	27.8	19.5	230938	27.9	18.9	512464	27.9	21.0	33547	28.0	18.0	213219	28.1	19.0
260455	27.7	19.2	450324	27.8	20.6	236845	27.9	20.4	449814	27.9	20.7	416520	28.0	19.6	511464	28.1	20.5
128160	27.7	20.2	357076	27.8	21.1	24714	27.9	18.1	523143	27.9	20.1	511198	28.0	20.6	435853	28.1	19.5
65665	27.7	17.6	38229	27.8	18.4	446377	27.9	20.7	168781	27.9	20.1	290692	28.0	20.6	401507	28.1	20.9
137692	27.7	19.5	539358	27.8	21.2	343809	27.9	20.5	518289	27.9	20.1	73206	28.0	20.0	713	28.1	13.9
70056	27.7	19.6	139082	27.8	20.2	208790	27.9	19.6	453491	27.9	21.2	364731	28.0	20.5	226529	28.1	19.0
329750	27.7	19.4	261651	27.8	20.2	10208	27.9	17.4	257760	27.9	20.1	427163	28.0	20.4	206936	28.1	19.2
56822	27.7	19.0	127425	27.8	20.3	401265	27.9	20.1	175608	27.9	19.7	173570	28.0	19.4	414974	28.1	20.8
406317	27.7	20.8	471228	27.8	19.5	243466	27.9	19.8	246428	27.9	19.7	152489	28.0	19.1	166461	28.1	20.4
211256	27.7	19.6	367088	27.8	20.4	57942	27.9	18.3	461474	27.9	22.3	539717	28.0	21.8	188535	28.1	19.5
514184	27.7	21.0	485505	27.8	20.7	111655	27.9	18.8	531067	27.9	21.6	222161	28.0	18.5	79289	28.1	19.1
324227	27.7	20.6	199302	27.8	20.6	386388	27.9	20.7	12622	27.9	18.6	291477	28.0	21.2	102164	28.1	19.3
353617	27.7	20.1	44187	27.8	16.4	181188	27.9	20.2	195106	27.9	19.8	422053	28.0	21.6	157067	28.1	19.9
457899	27.7	20.8	510410	27.8	21.5	167495	27.9	18.6	86572	27.9	19.7	87464	28.0	17.6	469537	28.1	21.1
71629	27.7	18.4	71868	27.8	18.5	281757	27.9	20.5	511267	27.9	20.4	306406	28.0	20.3	299148	28.1	20.3
510076	27.7	20.8	9897	27.8	16.9	484798	27.9	21.0	13689	27.9	18.5	416318	28.0	19.7	48558	28.1	17.3
204052	27.7	19.6	436130	27.8	20.1	189393	27.9	20.3	230059	27.9	18.8	513434	28.0	20.2	323336	28.1	20.5
320391	27.7	19.9	469254	27.8	21.3	244357	27.9	19.6	501586	27.9	22.3	465581	28.0	20.7	403380	28.1	20.9
102396	27.7	19.6	159331	27.8	20.1	328146	27.9	20.9	56882	27.9	19.1	333584	28.0	20.4	518186	28.1	19.4
120241	27.7	20.3	164246	27.8	19.9	147767	27.9	19.5	395113	27.9	21.0	250351	28.0	19.6	318200	28.1	20.5
451206	27.7	21.0	119501	27.8	19.0	387953	27.9	20.9	430768	27.9	21.2	476284	28.0	20.4	476170	28.1	19.8
75354	27.7	18.4	329909	27.8	19.3	372867	27.9	20.0	200228	27.9	19.1	421534	28.0	20.9	314061	28.1	19.4
187448	27.8	19.0	75647	27.8	18.6	534192	27.9	21.2	176366	27.9	18.8	300684	28.0	20.3	47249	28.1	17.9
351124	27.8	20.1	373709	27.8	21.8	13179	27.9	18.4	1122	27.9	14.2	70781	28.0	18.2	217626	28.1	20.9
510026	27.8	21.5	319619	27.8	20.6	499605	27.9	21.1	4971	27.9	15.0	130779	28.0	18.6	245979	28.1	20.1
361517	27.8	20.6	131377	27.8	19.1	104213	27.9	19.2	141731	27.9	20.1	112677	28.0	19.9	130444	28.1	19.5
212360	27.8	19.7	13861	27.8	17.9	227720	27.9	20.4	516642	27.9	21.4	34577	28.0	18.4	355434	28.1	20.3
153284	27.8	19.3	7106	27.8	16.6	415483	27.9	20.7	126252	27.9	19.2	35102	28.0	18.9	10988	28.1	18.3
460099	27.8	21.6	257683	27.8	19.6	431207	27.9	20.5	364634	27.9	20.5	363994	28.0	20.4	38109	28.1	18.6
436569	27.8	19.7	25612	27.8	18.2	538641	27.9	21.1	483134	27.9	21.3	514884	28.0	21.9	230823	28.1	19.8
25300	27.8	19.0	486603	27.8	21.0	235374	27.9	19.9	77180	27.9	19.2	88107	28.0	18.9	199312	28.1	20.9
447246	27.8	19.3	80481	27.8	18.5	472965	27.9	19.8	97231	27.9	18.5	353460	28.0	20.5	503743	28.1	19.9
23720	27.8	17.7	127404	27.8	20.3	403690	27.9	20.1	407873	27.9	20.6	253611	28.0	20.7	133623	28.1	19.1
417912	27.8	21.5	19255	27.8	23.3	120953	27.9	19.1	59605	27.9	18.3	75207	28.0	18.5	211399	28.1	19.7
5445	27.8	16.4	320092	27.8	22.0	331410	27.9	20.9	511015	27.9	22.1	539751	28.0	21.9	559613	28.1	18.0
209929	27.8	19.5	375771	27.8	20.6	487776	27.9	20.1	319061	27.9	20.9	427858	28.0	21.7	186379	28.1	20.8
284536	27.8	19.6	498335	27.8	20.0	244882	27.9	20.2	45032	27.9	18.7	50137	28.0	18.2	114644	28.1	19.4
159318	27.8	20.4	389046	27.8	20.4	149070	27.9	19.9	376782	27.9	20.8	16150	28.0	18.7	367475	28.1	21.2
95886	27.8	19.0	531657	27.8	20.6	97719	27.9	17.7	382416	27.9	20.0	452511	28.0	20.6	71195	28.1	18.2
102297	27.8	19.5	476849	27.8	20.1	302118	27.9	20.4	434224	27.9	20.2	123738	28.0	19.0	79329	28.1	20.1
300488	27.8	20.6	307567	27.8	20.5	406275	27.9	21.7	487825	27.9	21.1	331764	28.0	19.6	295994	28.1	20.2
442773	27.8	19.8	479937	27.8	21.0	357061	27.9	20.5	101430	27.9	18.0	460219	28.0	21.0	360507	28.1	22.0
57930	27.8	19.0	387176	27.8	20.0	321884	27.9	20.4	344700	27.9	21.6	81396	28.0	19.0	499578	28.1	19.8
316330	27.8	21.2	15851	27.8	17.5	282270	27.9	19.6	145511	27.9	19.9	41677	28.0	17.0	15852	28.1	17.2
196940	27.8	19.2	264295	27.8	20.9	26864	27.9	16.6	204943	27.9	18.6	316261	28.0	20.3	402811	28.1	20.3
325745	27.8	20.3	474357	27.8	20.3	394249	27.9	20.8	445364	27.9	20.3	514185	28.0	21.2	66328	28.1	18.7
354325	27.8	19.7	286883	27.8	20.4	152711	27.9	19.6	361564	27.9	21.1	472265	28.0	22.0	343349	28.1	19.6
24045	27.8	18.0	172457	27.8	20.1	101364	27.9	19.7	478505	27.9	20.8	170586	28.0	19.5	511261	28.1	20.9
372376	27.8	20.8	207715	27.8	19.6	99313	27.9	18.6	261794	27.9	19.7	142783	28.1	19.7	37506	28.1	18.1
414410	27.8	19.5	39526	27.8	19.2	319292	27.9	20.3	454643	27.9	20.0	261650	28.1	19.5	292396	28.1	19.8
198332	27.8	20.2	277357	27.8	21.8	398432	27.9	20.3	301099	27.9	20.0	524797	28.1	19.9	333196	28.1	20.3
401756	27.8	20.6	244732	27.8	20.8	484887	27.9	20.2	357721	27.9	20.4	228584	28.1	18.8	20900	28.1	18.2
121172	27.8	19.7	323705	27.8	21.6	382159	27.9	19.2	256892	27.9	19.5	99034	28.1	18.7	209262	28.1	18.9
178215	27.8	20.9	209276	27.8	19.5	344774	27.9	18.9	291620	27.9	19.5	299597	28.1	18.9	521933	28.1	20.3
111411	27.8	19.4	501825	27.8	20.6	436849	27.9	20.9	64346	27.9	18.6	121933	28.1	19.7	253607	28.1	20.4
353075	27.8	19.8	328677	27.8	20.3	485913	27.9	20.7	91986	27.9	19.0	77195	28.1	19.5	222423	28.1	19.7
46843	27.8	18.2	309031	27.8	19.9	479946	27.9	20.1	7648	27.9	16.2	375797	28.1	19.9	216518	28.1	19.1
434280	27.8	21.2	42769	27.8	19.7	141696	27.9	20.3	160066	27.9	18.9	467339	28.1	22.4	476019	28.1	21.2
32073	27.8	18.7	427881	27.8	21.1	310245	27.9	20.0	117512	27.9	19.7	408514	28.1	20.4	287059	28.1	20.8
183831	27.8	19.5	299029	27.8	20.2	80027	27.9	17.7	509692	27.9	20.7	252069	28.1	19.8	518929	28.1	21.8
308216	27.8	19.9	516811	27.8	20.5	371436	27.9	21.1	120823	27.9	19.3	476202	28.1	20.4	305082	28.1	20.5
447216	27.8	22.3	189537	27.8	20.2	104664	27.9	19.4	182780	27.9	18.8	53822	28.1	19.3	306647	28.1	19.5
117902	27.8	20.0	83967	27.8	17.9	426717	27.9	20									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
292022	28.1	20.4	220999	28.2	20.8	454844	28.3	20.6	445675	28.3	20.8	138502	28.4	20.4	468074	28.5	20.7
209852	28.1	19.6	70157	28.2	18.4	115714	28.3	19.7	60478	28.3	19.4	108462	28.4	20.3	506154	28.5	20.8
365485	28.1	20.7	323034	28.2	20.8	362002	28.3	20.0	501829	28.3	21.2	263132	28.4	20.2	513763	28.5	19.7
344728	28.1	19.4	298065	28.2	20.5	218578	28.3	20.8	235133	28.3	19.9	317923	28.4	21.2	523278	28.5	20.5
482653	28.1	21.1	370283	28.2	22.0	469311	28.3	20.9	487870	28.3	20.5	293742	28.4	20.4	50651	28.5	18.1
500026	28.1	22.8	523389	28.2	20.7	80468	28.3	18.3	319332	28.3	20.2	99953	28.4	19.1	524834	28.5	23.2
540421	28.1	20.8	507942	28.2	20.6	405267	28.3	21.6	185071	28.3	19.5	278248	28.4	21.5	253556	28.5	19.5
96555	28.1	18.4	39259	28.2	18.9	491652	28.3	21.7	385792	28.3	20.9	327505	28.4	20.5	147482	28.5	19.0
456238	28.1	20.7	371604	28.2	19.4	468482	28.3	21.8	22735	28.3	18.4	471792	28.4	20.5	187213	28.5	20.7
485435	28.1	20.4	361897	28.2	21.6	438787	28.3	20.9	73380	28.3	18.7	269952	28.4	20.2	40242	28.5	18.9
204475	28.1	19.1	35871	28.2	18.2	131388	28.3	19.2	360524	28.3	21.4	430735	28.4	19.8	66778	28.5	18.7
250752	28.1	19.8	115407	28.2	18.4	27321	28.3	17.4	384776	28.3	19.7	151941	28.4	20.1	523289	28.5	21.0
486634	28.1	21.0	203670	28.2	19.8	370310	28.3	20.7	515088	28.3	20.7	170540	28.4	20.0	388193	28.5	21.4
176137	28.1	19.6	60655	28.2	19.0	490892	28.3	19.9	323693	28.3	20.8	295223	28.4	20.9	141442	28.5	19.5
411676	28.1	19.8	285428	28.2	18.7	121256	28.3	20.2	136430	28.3	19.9	382390	28.4	20.9	339286	28.5	19.0
169801	28.1	19.6	151387	28.2	19.9	317410	28.3	20.6	367297	28.3	20.8	408361	28.4	21.3	189152	28.5	21.0
207986	28.1	20.3	332475	28.2	21.1	119892	28.3	19.4	34834	28.3	19.2	368931	28.4	21.1	155471	28.5	19.0
483281	28.1	20.7	13449	28.2	18.2	134137	28.3	19.6	128975	28.3	19.3	295057	28.4	19.1	59062	28.5	18.4
236760	28.1	19.8	355017	28.2	20.2	342498	28.3	20.6	139535	28.3	18.6	87999	28.4	19.4	514444	28.5	20.5
410146	28.1	20.3	303590	28.2	20.8	470517	28.3	21.5	132326	28.3	19.9	81114	28.4	18.4	501810	28.5	21.3
163359	28.1	20.0	517981	28.2	19.5	72008	28.3	17.0	30691	28.3	19.0	442421	28.4	21.2	6049	28.5	17.2
99521	28.1	19.5	509738	28.2	20.4	517015	28.3	21.4	475352	28.3	21.4	20591	28.4	18.6	159294	28.5	19.3
429096	28.1	20.0	133675	28.2	19.8	525052	28.3	20.4	23871	28.3	18.9	18508	28.4	17.4	167476	28.5	18.9
298094	28.1	21.4	414063	28.2	20.0	231471	28.3	20.0	397605	28.4	20.9	41564	28.4	17.1	81360	28.5	19.2
258920	28.1	18.9	186947	28.2	20.0	366124	28.3	20.1	150072	28.4	18.8	50563	28.4	17.5	7036	28.5	16.9
487707	28.1	20.2	523154	28.2	20.5	258925	28.3	20.2	500851	28.4	21.4	244974	28.4	18.8	520169	28.5	20.2
76197	28.1	17.1	142335	28.2	18.9	155922	28.3	20.0	68128	28.4	17.6	113590	28.4	19.3	353615	28.5	20.2
530209	28.1	20.5	130193	28.2	18.4	394613	28.3	20.2	148616	28.4	18.8	101369	28.4	19.6	274973	28.5	20.0
232883	28.1	18.9	338517	28.2	20.4	180884	28.3	20.5	31777	28.4	18.3	23485	28.4	18.5	76494	28.5	18.6
428193	28.1	19.8	258000	28.2	19.2	326274	28.3	21.3	301236	28.4	20.9	315094	28.4	20.6	447091	28.5	20.5
134579	28.1	19.0	78603	28.2	18.1	359452	28.3	20.9	438852	28.4	21.2	293492	28.4	20.1	426215	28.5	21.4
262320	28.1	20.6	410138	28.2	20.8	315803	28.3	21.5	115462	28.4	18.4	48228	28.4	18.8	34035	28.5	17.5
395397	28.1	20.9	499661	28.2	20.6	485347	28.3	20.2	510646	28.4	21.5	283141	28.4	19.3	491761	28.5	20.8
106997	28.1	18.7	452662	28.2	20.4	227936	28.3	20.4	159523	28.4	20.5	338599	28.4	19.4	461830	28.5	21.2
513427	28.2	20.6	459254	28.2	21.1	384604	28.3	20.4	67083	28.4	18.1	510275	28.4	21.1	258946	28.5	18.8
43285	28.2	18.3	136367	28.2	19.9	52072	28.3	19.4	444143	28.4	20.3	392679	28.4	21.0	156977	28.5	20.2
23311	28.2	17.5	185533	28.2	19.9	503691	28.3	21.0	446364	28.4	21.0	237924	28.4	20.3	288064	28.5	20.4
291645	28.2	20.0	300425	28.2	19.8	366101	28.3	20.2	59552	28.4	18.7	339336	28.4	19.3	191748	28.5	19.4
104712	28.2	19.5	249085	28.2	19.9	96288	28.3	19.5	41292	28.4	18.4	95657	28.4	19.0	339398	28.5	18.3
294007	28.2	19.9	135592	28.2	20.6	335836	28.3	19.7	176142	28.4	20.2	302187	28.4	20.8	91823	28.5	19.8
36851	28.2	19.4	255586	28.2	20.5	516136	28.3	21.1	244240	28.4	19.0	262964	28.4	20.1	423398	28.5	21.6
278324	28.2	20.6	474384	28.2	19.4	132371	28.3	20.1	282776	28.4	19.1	327108	28.4	18.7	387486	28.5	20.4
301518	28.2	19.7	451170	28.2	21.4	526983	28.3	22.3	265578	28.4	21.2	396094	28.4	20.4	415570	28.5	21.3
448411	28.2	21.6	481350	28.2	21.5	74203	28.3	16.9	233024	28.4	20.5	363419	28.4	19.8	476597	28.5	21.6
126144	28.2	18.5	12000	28.2	17.2	344451	28.3	20.7	175020	28.4	20.4	170632	28.4	17.9	488639	28.5	19.7
461331	28.2	20.9	266823	28.2	20.3	485939	28.3	20.8	478537	28.4	20.3	415777	28.4	18.9	527735	28.5	20.1
532618	28.2	20.6	156689	28.2	20.6	10200	28.3	18.8	112073	28.4	19.3	9242	28.4	16.8	63830	28.5	18.4
154705	28.2	20.8	404818	28.2	20.7	267334	28.3	20.5	14055	28.4	17.5	518580	28.4	21.0	296257	28.5	20.0
494247	28.2	20.7	72448	28.2	18.6	245189	28.3	18.8	308991	28.4	20.9	369736	28.4	20.5	432670	28.5	20.6
366529	28.2	20.1	319122	28.2	19.4	145057	28.3	20.1	367045	28.4	20.2	199978	28.4	19.7	57045	28.5	19.3
358313	28.2	20.8	130512	28.2	17.6	122353	28.3	18.8	382032	28.4	20.8	262887	28.4	20.9	35754	28.5	19.1
315973	28.2	20.5	130121	28.2	18.0	82728	28.3	20.9	8938	28.4	17.3	282314	28.4	17.7	346791	28.5	19.6
79905	28.2	18.6	344933	28.2	20.3	207732	28.3	20.4	287071	28.4	20.4	432697	28.4	20.0	451124	28.5	23.0
132756	28.2	20.1	497027	28.2	22.1	326886	28.3	20.5	293584	28.4	19.7	320227	28.4	20.2	321467	28.5	20.5
514817	28.2	20.5	179713	28.2	20.4	163381	28.3	18.6	288478	28.4	21.5	433652	28.4	19.7	452029	28.5	21.3
431368	28.2	20.6	321425	28.2	21.6	86561	28.3	20.9	144295	28.4	20.3	108186	28.4	18.8	497882	28.5	20.7
133106	28.2	20.4	204526	28.2	19.4	201079	28.3	19.7	310624	28.4	19.7	131227	28.4	19.2	180397	28.5	19.0
264000	28.2	20.3	255547	28.2	20.8	222416	28.3	20.4	499685	28.4	19.9	398326	28.4	20.5	136051	28.5	18.9
342196	28.2	20.8	424400	28.2	20.5	192961	28.3	18.8	408092	28.4	19.9	441452	28.4	20.9	286745	28.5	20.3
491415	28.2	21.8	213518	28.2	19.2	480319	28.3	20.5	75867	28.4	17.9	420326	28.4	20.2	231674	28.5	20.9
175250	28.2	19.8	65946	28.2	19.4	382045	28.3	20.4	303492	28.4	20.8	303156	28.4	19.8	232264	28.5	20.0
132246	28.2	20.3	540744	28.2	19.7	220905	28.3	18.2	483519	28.4	20.1	115877	28.4	19.3	453452	28.5	20.7
66221	28.2	17.5	274957	28.2	20.5	482291	28.3	20.0	530061	28.4	20.8	438770	28.4	20.5	161542	28.5	20.3
485888	28.2	20.7	365211	28.2	20.4	483637	28.3	19.9	265079	28.4	20.8	290490	28.4	20.1	111783	28.5	19.8
537626	28.2	20.4	82606	28.2	19.6	212891	28.3	19.0	459583	28.4	21.5	9256	28.5	17.4	94409	28.5	18.8
407027	28.2	20.7	18199	28.2	18.7	478798	28.3	21.2	17233	28.4	19.0	285410	28.5	20.0	518349	28.5	21.0
205566	28.2	19.9	96479	28.2	17.9	200278	28.3	18.9	232824	28.4	19.0	423898	28.5	19.6	134190	28.5	19.5
482461	28.2	20.5	393792	28.3	21.3	512553	28.3	21.0	379191	28.4	20.7	326537	28.5	20.4	487972	28.5	20.3
72172	28.2	18.2	295757	28.3	20.3	187872											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
73162	28.5	19.7	97488	28.6	19.5	112813	28.7	19.2	540554	28.7	21.1	346542	28.8	20.3	494635	28.9	20.6
69434	28.5	19.1	195354	28.6	19.4	236522	28.7	20.9	499528	28.7	22.1	394602	28.8	20.2	284984	28.9	20.3
79739	28.5	18.0	310266	28.6	20.2	338695	28.7	19.3	108430	28.7	19.7	272689	28.8	19.5	214103	28.9	20.4
124069	28.5	18.5	407634	28.6	20.9	287361	28.7	19.4	47079	28.7	18.0	239115	28.8	19.6	332047	28.9	20.0
512613	28.6	20.9	115151	28.6	18.4	357516	28.7	21.2	195627	28.7	18.9	195388	28.8	19.7	230875	28.9	19.2
245901	28.6	20.4	139312	28.6	19.8	295345	28.7	20.7	446394	28.7	21.3	33638	28.8	17.6	218475	28.9	19.9
484853	28.6	21.0	272001	28.6	20.0	67941	28.7	17.8	123582	28.7	18.5	395948	28.8	20.0	46111	28.9	19.3
246821	28.6	20.7	284488	28.6	20.8	399307	28.7	22.4	265312	28.7	20.5	216705	28.8	19.7	226470	28.9	19.9
495824	28.6	20.4	412206	28.6	20.7	401692	28.7	20.5	21489	28.7	17.8	487052	28.8	21.4	246579	28.9	20.3
108295	28.6	20.1	525806	28.6	21.3	214936	28.7	20.0	478015	28.7	19.8	312768	28.8	20.1	263057	28.9	20.0
313957	28.6	20.4	540888	28.6	21.0	436835	28.7	20.7	264095	28.8	20.1	272491	28.8	21.8	430943	28.9	20.7
318582	28.6	20.5	142766	28.6	19.0	401754	28.7	20.8	70152	28.8	18.5	176732	28.8	19.8	162543	28.9	20.2
41747	28.6	18.9	278297	28.6	21.1	3047	28.7	16.4	46091	28.8	18.6	334447	28.8	19.8	255152	28.9	19.9
220781	28.6	20.9	280325	28.6	21.0	22916	28.7	19.2	402819	28.8	20.9	443389	28.8	21.5	523092	28.9	20.4
344785	28.6	19.7	70158	28.6	18.0	204126	28.7	19.1	12613	28.8	18.3	164284	28.8	19.2	90021	28.9	18.2
438314	28.6	21.7	127559	28.6	18.6	67573	28.7	19.6	346395	28.8	21.5	386378	28.8	20.7	453410	28.9	20.3
291249	28.6	20.5	39016	28.6	17.9	253511	28.7	20.1	74622	28.8	19.9	218620	28.8	19.3	138881	28.9	19.1
348608	28.6	19.0	48699	28.6	17.5	374602	28.7	22.1	115762	28.8	18.6	307611	28.8	20.5	21736	28.9	17.9
308321	28.6	21.6	247325	28.6	20.5	516218	28.7	21.0	114817	28.8	17.9	526931	28.8	20.8	250427	28.9	19.2
65201	28.6	19.4	394928	28.6	20.0	47598	28.7	19.1	367771	28.8	20.1	20160	28.8	17.9	60877	28.9	18.8
447099	28.6	20.3	211918	28.6	19.6	482263	28.7	20.4	518685	28.8	20.1	453197	28.8	20.5	95379	28.9	19.9
506668	28.6	22.5	102198	28.6	18.1	361671	28.7	20.5	374761	28.8	21.2	102342	28.8	19.1	342128	28.9	21.1
243470	28.6	18.8	488086	28.6	20.1	402358	28.7	20.7	5767	28.8	18.0	447473	28.8	21.5	445250	28.9	20.5
351134	28.6	19.7	155735	28.6	19.3	179690	28.7	19.0	279478	28.8	20.6	7112	28.8	17.7	337121	28.9	19.9
204500	28.6	20.1	172288	28.6	19.9	65841	28.7	19.1	360683	28.8	21.8	47143	28.8	16.6	92308	28.9	19.3
86614	28.6	18.7	273788	28.6	19.6	454065	28.7	20.7	504137	28.8	21.7	214010	28.8	20.6	137367	28.9	19.8
68864	28.6	19.1	301212	28.6	20.8	402791	28.7	21.4	429676	28.8	20.1	511351	28.8	21.1	45866	28.9	18.6
394265	28.6	20.2	463426	28.6	21.7	433245	28.7	21.1	303128	28.8	19.1	242234	28.8	20.2	47601	28.9	19.8
221901	28.6	19.3	342118	28.6	20.2	481929	28.7	20.5	420430	28.8	20.7	236378	28.8	21.2	356324	28.9	21.1
130911	28.6	19.2	501902	28.6	20.3	407931	28.7	20.6	192575	28.8	19.2	293174	28.8	20.8	233666	28.9	18.8
521982	28.6	20.8	131561	28.6	18.7	476055	28.7	20.0	137658	28.8	18.7	457988	28.8	20.4	473450	28.9	20.2
389126	28.6	20.5	98922	28.6	18.3	73874	28.7	18.5	46110	28.8	17.8	76205	28.8	18.6	161043	28.9	20.2
358319	28.6	20.3	516142	28.6	21.0	121327	28.7	19.5	343736	28.8	21.3	491576	28.8	21.6	342105	28.9	21.0
9927	28.6	17.5	421202	28.6	20.9	517152	28.7	21.0	431504	28.8	20.5	538652	28.8	22.4	392360	28.9	20.3
138895	28.6	18.7	156256	28.6	19.3	372344	28.7	21.6	160485	28.8	19.4	364045	28.8	20.4	318247	28.9	21.0
323406	28.6	19.7	234689	28.6	19.9	237282	28.7	20.3	136911	28.8	19.7	302130	28.8	20.2	470002	28.9	20.0
514394	28.6	20.6	506426	28.6	20.0	366987	28.7	19.9	54779	28.8	18.3	27600	28.8	18.3	178945	28.9	20.9
78954	28.6	20.5	268705	28.6	19.7	35613	28.7	18.2	376665	28.8	21.5	196493	28.8	20.0	370405	28.9	19.7
211561	28.6	19.8	105684	28.6	18.8	27936	28.7	19.4	242804	28.8	20.2	176149	28.8	20.7	19035	28.9	18.2
476678	28.6	20.3	431743	28.6	20.7	66835	28.7	18.8	395777	28.8	19.9	332678	28.8	20.4	65263	28.9	19.4
84924	28.6	18.8	331352	28.6	20.2	174962	28.7	19.6	420410	28.8	19.6	539641	28.8	21.7	374878	28.9	21.3
391619	28.6	20.2	47245	28.6	19.1	429443	28.7	19.6	537254	28.8	21.4	94395	28.8	20.1	153582	28.9	20.6
477069	28.6	20.7	374887	28.6	20.9	215115	28.7	19.9	93244	28.8	18.8	189556	28.8	19.0	123869	28.9	19.1
132522	28.6	19.0	270757	28.6	19.7	134403	28.7	19.6	482396	28.8	20.5	212873	28.8	19.7	528038	28.9	21.2
536131	28.6	21.1	189967	28.6	20.5	442596	28.7	19.0	157012	28.8	20.0	374725	28.8	20.2	355771	28.9	22.1
464991	28.6	20.9	434404	28.6	19.9	171229	28.7	20.1	73536	28.8	18.9	489924	28.8	20.4	83912	28.9	17.9
378139	28.6	20.5	293973	28.6	20.8	375701	28.7	21.4	20024	28.8	15.9	14289	28.8	19.1	309506	28.9	19.8
93297	28.6	20.9	52861	28.6	18.6	66171	28.7	18.5	205650	28.8	18.8	40593	28.8	18.8	131663	28.9	19.0
92355	28.6	19.4	319163	28.6	20.2	122552	28.7	20.2	275128	28.8	20.8	163333	28.8	19.6	203671	28.9	19.3
364567	28.6	20.3	120558	28.6	19.0	67623	28.7	19.3	340429	28.8	20.2	111722	28.8	19.1	289782	28.9	21.9
390650	28.6	21.0	448076	28.6	21.8	99023	28.7	19.3	35163	28.8	19.4	346842	28.9	19.5	218514	28.9	19.7
517980	28.6	20.0	476139	28.6	20.6	272578	28.7	20.2	435656	28.8	20.6	522646	28.9	20.5	183886	28.9	19.5
434218	28.6	21.2	319481	28.7	21.2	203314	28.7	19.5	193446	28.8	19.6	120958	28.9	19.4	415975	28.9	19.0
369777	28.6	20.7	126852	28.7	18.9	403446	28.7	21.4	79673	28.8	19.1	242857	28.9	20.4	337333	28.9	19.0
246411	28.6	20.1	239082	28.7	20.7	35236	28.7	18.2	195625	28.8	19.9	145203	28.9	20.2	756	28.9	15.0
133102	28.6	19.2	360442	28.7	20.9	476855	28.7	20.8	149072	28.8	19.7	333144	28.9	19.6	513485	28.9	21.1
53713	28.6	19.3	128758	28.7	19.0	245553	28.7	19.6	172286	28.8	19.2	45681	28.9	18.5	17916	28.9	17.8
297027	28.6	20.1	414761	28.7	21.5	236842	28.7	20.2	134283	28.8	20.1	460382	28.9	20.6	62249	28.9	19.7
365578	28.6	22.1	171119	28.7	19.5	318452	28.7	20.6	225901	28.8	18.2	6601	28.9	16.9	66114	28.9	18.8
431295	28.6	20.3	192042	28.7	20.4	80746	28.7	18.5	150619	28.8	18.9	152068	28.9	19.0	297964	28.9	21.7
251377	28.6	19.5	389583	28.7	19.7	88014	28.7	18.9	353384	28.8	20.2	82802	28.9	19.0	223597	28.9	19.7
82236	28.6	20.2	63457	28.7	19.1	184908	28.7	19.4	364636	28.8	20.6	172740	28.9	20.1	133158	28.9	19.5
377599	28.6	21.7	82711	28.7	18.5	305943	28.7	20.5	185044	28.8	19.0	335049	28.9	22.1	233406	28.9	19.6
298670	28.6	20.4	424470	28.7	20.9	398464	28.7	19.9	525055	28.8	21.7	183895	28.9	20.3	517945	28.9	20.3
323047	28.6	20.1	410164	28.7	21.8	192560	28.7	19.1	19352	28.8	16.4	151345	28.9	19.3	515723	28.9	21.2
176249	28.6	19.0	260401	28.7	19.2	127432	28.7	20.2	111325	28.8	18.7	209996	28.9	21.0	161805	28.9	20.2
460990	28.6	19.7	518298	28.7	21.3	208133	28.7	19.6	84983	28.8	18.6	410758	28.9	20.4	287114	28.9	20.8
383232	28.6	19.5	509712	28.7	20.9	525303	28.7	20.1	276815	28.8	20.8	47192	28.9	18.7	131304	28.9	19.8
307090	28.6	19.8	180393	28.7	20.1	278711	28.7	20									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
16624	28.9	17.4	443550	29.0	20.5	327184	29.1	22.1	210537	29.1	20.5	512742	29.2	20.8	459949	29.3	19.8
151302	28.9	19.6	386089	29.0	21.1	98126	29.1	18.1	166411	29.1	20.0	452055	29.2	20.3	397542	29.3	19.7
261399	28.9	20.2	132995	29.0	18.7	262988	29.1	20.1	411542	29.1	21.7	31714	29.2	16.4	319189	29.3	20.8
94359	28.9	18.4	301710	29.0	21.5	68926	29.1	18.9	402428	29.1	20.5	516149	29.2	20.8	158977	29.3	21.1
57923	28.9	19.1	135542	29.0	20.0	250291	29.1	20.9	333303	29.1	19.3	435066	29.2	20.2	413812	29.3	20.1
368437	28.9	20.0	335549	29.0	20.4	439575	29.1	20.7	139411	29.1	19.7	220775	29.2	19.9	521238	29.3	21.1
203231	28.9	19.9	285368	29.0	21.4	98023	29.1	19.0	40291	29.1	19.9	152628	29.2	19.6	42108	29.3	18.7
41294	28.9	18.2	93550	29.0	17.8	507935	29.1	20.7	483610	29.1	19.8	326229	29.2	18.9	12894	29.3	17.6
73038	28.9	20.5	521551	29.0	20.7	19830	29.1	17.5	41127	29.1	19.0	386326	29.2	20.9	33593	29.3	17.9
417881	28.9	21.8	44152	29.0	18.9	112374	29.1	19.9	449736	29.1	19.9	532621	29.2	20.1	356118	29.3	20.7
108361	28.9	19.4	409182	29.0	21.6	73384	29.1	19.1	349718	29.1	19.9	111389	29.2	20.0	224157	29.3	21.0
73040	28.9	19.0	1368	29.0	14.8	477017	29.1	20.4	115469	29.1	19.3	171438	29.2	20.0	192955	29.3	20.4
380240	28.9	20.8	332854	29.0	19.6	301304	29.1	21.2	95241	29.1	19.4	267164	29.2	19.6	261469	29.3	20.7
25995	28.9	18.3	187459	29.0	19.2	403182	29.1	21.0	242509	29.1	19.3	68750	29.2	19.0	6536	29.3	17.5
99723	28.9	19.7	484578	29.0	21.7	68809	29.1	19.7	165033	29.1	19.3	188554	29.2	21.2	14319	29.3	19.3
426491	28.9	21.8	26557	29.0	18.8	204514	29.1	19.9	365294	29.1	20.6	165209	29.2	20.3	145036	29.3	19.8
183413	28.9	18.7	206115	29.0	20.4	487922	29.1	20.5	371580	29.1	20.0	127499	29.2	19.2	266038	29.3	20.0
64619	28.9	18.0	1354	29.0	16.5	264365	29.1	21.7	84384	29.1	17.6	424434	29.2	20.5	200218	29.3	18.2
176693	28.9	20.5	165970	29.0	19.3	47220	29.1	18.1	203938	29.1	19.4	298057	29.2	21.6	454570	29.3	21.8
507384	28.9	21.8	261729	29.0	20.3	162188	29.1	18.9	179705	29.1	19.2	425629	29.2	20.6	24422	29.3	17.9
58486	28.9	19.4	43447	29.0	17.7	366140	29.1	19.8	230329	29.2	20.0	265584	29.2	20.4	134536	29.3	19.3
34619	28.9	17.6	158810	29.0	18.6	265628	29.1	21.4	458389	29.2	21.1	215742	29.2	19.7	158563	29.3	19.6
269656	28.9	19.7	485354	29.0	21.0	65123	29.1	18.8	510051	29.2	21.1	536650	29.2	21.7	42504	29.3	18.8
166376	28.9	20.6	387945	29.0	21.3	65387	29.1	19.8	129518	29.2	20.1	60558	29.2	19.9	228998	29.3	19.2
243858	28.9	18.9	432745	29.0	21.6	265437	29.1	18.9	311195	29.2	20.5	484873	29.2	20.8	43224	29.3	17.7
144093	28.9	18.9	215803	29.0	19.4	32500	29.1	18.9	1075	29.2	14.6	126275	29.2	19.6	200475	29.3	19.0
413420	28.9	20.3	525592	29.0	21.5	257320	29.1	20.2	24997	29.2	19.0	439427	29.2	20.2	257747	29.3	19.7
188141	28.9	20.4	285370	29.0	20.8	510298	29.1	20.2	205423	29.2	20.3	6000	29.2	15.4	10573	29.3	18.9
275393	28.9	19.3	98120	29.0	18.8	407205	29.1	21.0	342353	29.2	18.6	287056	29.2	20.6	43544	29.3	18.6
270221	28.9	19.4	424412	29.0	20.7	263733	29.1	20.8	71772	29.2	18.2	444145	29.2	19.8	176156	29.3	20.6
71074	28.9	18.1	263905	29.0	21.3	416516	29.1	19.6	446131	29.2	20.6	11422	29.2	18.1	156639	29.3	21.1
468475	28.9	19.7	198234	29.0	19.0	451328	29.1	19.4	494249	29.2	21.5	477157	29.2	21.3	393431	29.3	20.6
117035	28.9	20.4	40477	29.0	18.6	395023	29.1	21.0	126873	29.2	19.7	356135	29.2	21.1	437044	29.3	20.4
74535	28.9	20.0	529114	29.0	22.7	387952	29.1	20.2	154960	29.2	19.4	398248	29.2	21.0	343334	29.3	19.7
26681	28.9	18.7	449844	29.0	21.4	20511	29.1	17.7	505886	29.2	20.0	451975	29.2	20.3	364053	29.3	20.6
504070	28.9	19.5	201130	29.0	20.0	244457	29.1	20.5	183884	29.2	19.9	309933	29.2	20.9	259413	29.3	20.1
36443	28.9	19.2	120120	29.0	19.9	514618	29.1	21.6	431323	29.2	19.7	4328	29.2	17.5	471566	29.3	19.8
261955	28.9	19.9	44709	29.0	18.4	530563	29.1	22.3	305473	29.2	19.2	210653	29.2	19.8	353129	29.3	19.8
50508	28.9	19.5	539968	29.0	20.6	164977	29.1	18.7	342680	29.2	19.8	304205	29.2	20.7	261809	29.3	19.9
103291	28.9	19.9	532622	29.0	21.7	32059	29.1	18.4	453634	29.2	20.0	385153	29.2	20.8	125499	29.3	18.7
446763	28.9	21.4	482264	29.0	21.8	113295	29.1	19.4	363526	29.2	21.1	510035	29.2	20.3	320206	29.3	20.7
404379	28.9	22.0	285022	29.0	20.8	200469	29.1	19.1	138175	29.2	18.9	358638	29.2	20.1	217494	29.3	20.6
392838	28.9	20.4	479659	29.0	20.3	48082	29.1	18.1	476212	29.2	21.7	524925	29.2	21.2	505554	29.3	20.6
200267	28.9	18.6	214557	29.0	19.9	268348	29.1	19.9	417870	29.2	21.6	233518	29.2	19.5	38346	29.3	18.6
320039	28.9	21.5	518022	29.0	20.1	415019	29.1	20.6	220128	29.2	18.6	89258	29.2	19.9	260214	29.3	19.1
520421	28.9	20.7	372973	29.0	19.8	118816	29.1	18.0	363316	29.2	21.6	371872	29.2	20.6	271251	29.3	20.8
433313	28.9	20.6	236552	29.0	20.4	39539	29.1	17.4	66988	29.2	18.2	255293	29.2	20.4	395294	29.3	20.9
50958	28.9	18.7	408512	29.0	21.0	308921	29.1	21.0	37072	29.2	18.2	27335	29.2	18.5	82542	29.3	19.4
439275	28.9	21.0	232814	29.0	20.0	418932	29.1	20.4	131519	29.2	19.1	249287	29.3	20.8	129036	29.3	18.4
27380	28.9	17.5	267306	29.0	19.6	449084	29.1	21.2	136789	29.2	19.0	394617	29.3	19.8	520641	29.3	21.6
499524	28.9	21.5	23544	29.0	17.0	79084	29.1	18.6	485242	29.2	20.1	405338	29.3	21.4	122845	29.3	19.4
261599	28.9	20.3	155211	29.0	19.3	484890	29.1	20.3	99017	29.2	19.3	152800	29.3	19.8	23241	29.3	18.9
393361	28.9	20.4	369378	29.0	21.0	182909	29.1	20.6	517	29.2	13.1	479715	29.3	21.2	121750	29.3	19.0
296698	28.9	20.5	121572	29.1	18.9	481396	29.1	21.3	513656	29.2	21.2	323396	29.3	19.2	478978	29.3	19.5
107253	28.9	18.8	40900	29.1	19.3	104532	29.1	19.3	65743	29.2	19.6	171715	29.3	19.1	54048	29.3	18.9
403401	28.9	20.3	365786	29.1	19.5	469443	29.1	21.5	351142	29.2	20.1	127061	29.3	19.3	271573	29.3	19.9
249007	28.9	21.0	254529	29.1	19.3	536528	29.1	21.4	389145	29.2	19.5	515702	29.3	21.5	358467	29.3	20.7
31365	28.9	18.7	97280	29.1	17.0	447354	29.1	20.0	473673	29.2	19.7	316927	29.3	19.3	226977	29.3	18.9
211620	28.9	20.3	470524	29.1	21.6	482865	29.1	21.3	495369	29.2	21.3	253576	29.3	19.8	65695	29.3	18.7
119346	28.9	20.7	352399	29.1	20.3	146002	29.1	19.4	254880	29.2	19.8	118889	29.3	18.6	111939	29.3	19.9
291181	28.9	19.4	266458	29.1	20.8	403487	29.1	21.0	291939	29.2	20.7	190638	29.3	19.1	312546	29.3	19.9
390935	28.9	20.1	33643	29.1	17.0	173689	29.1	20.4	523764	29.2	22.0	278316	29.3	21.4	474483	29.3	20.9
304166	28.9	20.3	97282	29.1	17.8	199501	29.1	19.7	373155	29.2	20.9	211047	29.3	20.6	95425	29.3	19.5
280601	28.9	19.6	300845	29.1	20.3	9865	29.1	17.6	465614	29.2	21.3	461279	29.3	21.0	459552	29.3	21.6
48394	28.9	17.8	443571	29.1	19.7	297323	29.1	19.3	135533	29.2	19.5	6347	29.3	16.5	474161	29.3	20.9
27230	28.9	17.5	275632	29.1	20.1	207560	29.1	20.0	22886	29.2	17.1	104266	29.3	18.1	580	29.3	14.3
387261	28.9	20.7	253655	29.1	19.2	508807	29.1	19.6	344977	29.2	19.7	429552	29.3	20.3	432426	29.3	20.6
167355	28.9	19.7	472342	29.1	21.1	211365	29.1	20.0	329228	29.2	20.7	97743	29.3	17.6	505755	29.3	20.2
443458	28.9	20.6	263093	29.1	19.6	515666	29.1	21.2	51485</								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
351198	29.3	19.8	5224	29.4	17.3	412904	29.5	21.0	1692	29.5	15.7	287401	29.6	19.9	349431	29.7	20.1
389160	29.3	19.7	498328	29.4	21.6	130734	29.5	16.9	35323	29.5	19.1	450532	29.6	21.0	218198	29.7	20.6
431411	29.3	21.5	457980	29.4	20.4	157041	29.5	19.5	153111	29.5	21.0	423923	29.6	22.2	362273	29.7	20.7
49090	29.3	19.1	286202	29.4	20.5	86660	29.5	19.6	446686	29.5	21.1	484934	29.6	20.5	323699	29.7	21.1
61350	29.3	18.1	114119	29.4	19.2	521966	29.5	21.1	153606	29.5	18.9	400945	29.6	20.2	508997	29.7	21.6
1039	29.3	15.2	377607	29.4	19.9	23352	29.5	19.5	324246	29.5	20.0	505903	29.6	20.0	181849	29.7	19.4
250992	29.3	20.7	116505	29.4	19.4	75322	29.5	18.0	182404	29.5	20.1	231883	29.6	19.3	296427	29.7	20.2
198362	29.3	18.8	71606	29.4	18.8	496382	29.5	21.1	13644	29.5	17.4	73630	29.6	18.5	296098	29.7	20.2
392809	29.3	20.2	421298	29.4	21.2	99524	29.5	19.3	98816	29.5	19.2	479243	29.6	19.1	315085	29.7	21.0
208043	29.3	19.1	323694	29.4	20.2	161059	29.5	19.6	71212	29.5	17.4	407061	29.6	20.9	166910	29.7	19.1
244058	29.3	20.1	436625	29.4	21.9	269981	29.5	19.1	14270	29.5	18.0	349904	29.6	20.5	86583	29.7	19.0
3484	29.3	17.5	204744	29.4	20.0	51434	29.5	19.0	445202	29.5	20.9	492731	29.6	21.0	426148	29.7	21.0
121351	29.3	18.3	119872	29.4	19.0	444277	29.5	21.1	519256	29.5	21.3	328638	29.6	20.2	324170	29.7	21.1
315981	29.4	20.3	413755	29.4	20.7	142592	29.5	18.5	92031	29.5	20.0	304210	29.6	21.9	342208	29.7	20.2
24953	29.4	18.5	463434	29.4	22.0	26004	29.5	19.4	10561	29.5	17.6	38164	29.6	18.9	474339	29.7	21.6
76668	29.4	19.4	195119	29.4	19.7	473573	29.5	21.0	519662	29.5	21.5	327165	29.6	21.1	358321	29.7	21.1
226564	29.4	20.8	264403	29.4	19.6	59684	29.5	18.7	106632	29.5	19.7	141629	29.6	20.2	298608	29.7	19.4
78238	29.4	19.5	32702	29.4	19.2	423100	29.5	23.6	139640	29.5	19.8	20623	29.6	17.0	405274	29.7	21.2
170883	29.4	19.3	311116	29.4	21.0	22080	29.5	17.5	52600	29.5	17.5	42204	29.6	18.8	477885	29.7	22.4
231483	29.4	20.0	383220	29.4	19.1	320320	29.5	19.9	400720	29.5	20.4	238438	29.6	21.0	527974	29.7	21.5
70925	29.4	18.0	230123	29.4	20.6	6993	29.5	16.3	445850	29.6	19.8	365283	29.6	20.3	49169	29.7	19.6
389120	29.4	21.1	424278	29.4	21.1	349802	29.5	20.2	370440	29.6	20.4	524128	29.6	20.6	32997	29.7	18.7
227249	29.4	21.6	271209	29.4	20.4	366273	29.5	19.9	438098	29.6	20.1	449430	29.6	21.3	287743	29.7	20.6
410101	29.4	20.5	344735	29.4	20.0	24358	29.5	18.2	183865	29.6	18.9	156424	29.6	19.8	72511	29.7	19.3
57328	29.4	19.4	105985	29.4	18.3	70986	29.5	18.4	350230	29.6	20.1	136769	29.6	19.7	374286	29.7	19.5
403972	29.4	20.0	210932	29.4	20.2	392867	29.5	19.3	192142	29.6	19.7	485280	29.6	19.9	212503	29.7	20.8
385240	29.4	20.2	103279	29.4	19.3	66982	29.5	18.0	14154	29.6	17.8	449414	29.6	20.3	378238	29.7	20.2
91606	29.4	19.0	523984	29.4	20.5	66618	29.5	19.5	96099	29.6	20.6	351285	29.6	20.4	510155	29.7	20.9
537432	29.4	21.5	116980	29.4	20.2	148499	29.5	19.5	38339	29.6	18.7	73599	29.6	19.3	403128	29.7	21.1
331359	29.4	19.8	273580	29.4	19.8	539977	29.5	19.7	316512	29.6	20.4	487637	29.6	20.5	269598	29.7	19.5
328155	29.4	20.6	521692	29.4	21.5	411474	29.5	20.1	448103	29.6	21.2	215729	29.6	20.3	515000	29.7	21.8
455122	29.4	21.2	293540	29.4	21.1	298661	29.5	20.4	468154	29.6	20.3	148910	29.6	19.0	303969	29.7	19.5
266496	29.4	20.4	209872	29.4	21.1	291735	29.5	20.3	134092	29.6	18.4	158403	29.6	18.2	355562	29.7	20.3
388185	29.4	21.9	270002	29.4	18.5	192357	29.5	18.9	324851	29.6	19.1	327514	29.6	19.8	202693	29.7	20.6
434005	29.4	19.2	376845	29.4	21.1	452766	29.5	20.2	470665	29.6	21.6	386293	29.6	20.1	363718	29.7	21.2
467480	29.4	22.2	91809	29.4	18.6	109165	29.5	19.8	493925	29.6	21.0	124626	29.6	19.7	63312	29.7	19.3
118220	29.4	19.0	324760	29.4	20.8	367887	29.5	20.2	249748	29.6	19.4	454432	29.6	21.1	91593	29.7	18.8
479057	29.4	20.1	490023	29.4	21.1	525604	29.5	20.1	368030	29.6	20.7	199182	29.6	20.3	382613	29.7	19.2
46701	29.4	18.0	496311	29.4	20.9	47487	29.5	17.9	487014	29.6	20.6	288379	29.6	19.6	195978	29.7	20.7
69949	29.4	18.2	529890	29.4	21.0	189825	29.5	19.6	240805	29.6	20.5	463410	29.6	20.7	40758	29.7	18.6
383143	29.4	21.1	388200	29.4	20.6	218536	29.5	19.3	181037	29.6	20.3	2942	29.6	16.5	417739	29.7	19.9
86380	29.4	18.6	185631	29.4	19.8	317340	29.5	20.7	438328	29.6	21.5	230904	29.6	20.4	418039	29.7	20.6
476251	29.4	21.0	73009	29.4	19.5	215325	29.5	19.6	447104	29.6	20.7	146998	29.6	20.0	34284	29.7	18.3
169080	29.4	20.8	327064	29.4	19.6	134984	29.5	17.9	59673	29.6	18.9	142867	29.6	19.3	206028	29.7	20.5
367085	29.4	20.5	199311	29.4	21.1	459352	29.5	20.4	423393	29.6	21.0	510032	29.6	21.5	123059	29.7	18.9
406970	29.4	21.8	507700	29.4	21.4	535906	29.5	21.3	44377	29.6	18.6	2853	29.6	15.3	402081	29.7	20.6
413406	29.4	19.9	485924	29.4	20.9	222156	29.5	19.6	240931	29.6	19.4	16464	29.6	17.1	177620	29.7	20.4
500149	29.4	21.0	292483	29.5	21.8	16980	29.5	17.6	336475	29.6	20.8	36091	29.6	18.3	441750	29.7	20.7
54499	29.4	18.9	60431	29.5	18.1	212966	29.5	19.5	266622	29.6	20.7	404561	29.6	20.8	80434	29.7	18.6
402394	29.4	20.3	35452	29.5	17.4	3738	29.5	16.4	142474	29.6	20.1	508389	29.6	21.1	351192	29.7	20.5
225151	29.4	20.5	219889	29.5	19.9	299200	29.5	20.5	298042	29.6	21.1	116792	29.6	19.5	393145	29.7	20.7
126	29.4	12.4	41098	29.5	19.0	91766	29.5	18.7	241575	29.6	19.6	344187	29.6	20.1	23058	29.7	18.3
39837	29.4	18.5	162493	29.5	18.4	225080	29.5	19.9	477304	29.6	21.1	48509	29.6	18.7	294149	29.7	21.2
22933	29.4	18.0	106122	29.5	17.9	333167	29.5	20.0	488312	29.6	20.9	190535	29.6	19.9	176176	29.7	20.2
152411	29.4	19.9	330989	29.5	19.9	219119	29.5	19.8	22709	29.6	18.2	383229	29.6	19.9	137319	29.7	19.7
37537	29.4	18.1	210671	29.5	19.5	80714	29.5	19.9	454859	29.6	21.4	323586	29.6	20.6	483642	29.7	20.0
342794	29.4	19.4	100347	29.5	19.6	514711	29.5	22.1	524957	29.6	21.1	161371	29.6	19.4	532428	29.7	21.9
288246	29.4	19.5	250059	29.5	20.0	179816	29.5	19.9	481598	29.6	20.1	306291	29.6	20.5	485863	29.7	20.8
287076	29.4	20.9	217674	29.5	19.6	10210	29.5	17.4	305898	29.6	20.6	208945	29.6	19.6	185456	29.7	20.2
450746	29.4	21.4	513740	29.5	20.3	190166	29.5	21.6	349801	29.6	20.3	452098	29.6	21.1	441758	29.7	21.2
514461	29.4	20.5	413397	29.5	21.4	465880	29.5	22.6	364561	29.6	21.4	70625	29.6	18.8	470577	29.7	21.4
161233	29.4	17.8	3150	29.5	16.7	160143	29.5	18.0	412361	29.6	21.5	249177	29.6	19.8	55638	29.7	20.2
540777	29.4	20.3	280207	29.5	20.4	91686	29.5	19.8	429447	29.6	20.2	477527	29.7	20.4	518299	29.7	20.4
145588	29.4	20.4	392934	29.5	20.7	518016	29.5	20.2	327122	29.6	20.6	171564	29.7	19.8	542347	29.7	20.1
508472	29.4	19.2	12412	29.5	17.0	333008	29.5	21.2	60120	29.6	19.9	72359	29.7	19.2	431421	29.7	21.7
517523	29.4	21.5	319465	29.5	20.6	194996	29.5	19.2	205978	29.6	20.9	484941	29.7	21.1	50268	29.7	18.6
13267	29.4	18.4	128269	29.5	18.9	382568	29.5	19.9	393104	29.6	21.8	130068	29.7	18.6	145792	29.7	20.3
413388	29.4	20.8	328518	29.5	20.9	294267	29.5	20.6	451952	29.6	20.5	291604	29.7	21.2	342836	29.7	19.8
44641	29.4	17.9	395893	29.5	20.4	339267	29.5	20.4	1218								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
128293	29.7	19.5	176102	29.8	17.9	134653	29.9	20.3	73152	29.9	19.8	457939	29.9	20.4	481680	30.0	20.2
448693	29.7	20.8	356559	29.8	20.7	105470	29.9	18.5	223321	29.9	19.3	137880	29.9	18.4	295070	30.0	20.5
51449	29.7	19.0	485141	29.8	20.1	787	29.9	13.9	24939	29.9	17.3	507165	29.9	19.5	39532	30.0	17.2
263602	29.7	21.0	429983	29.8	20.5	212372	29.9	20.5	487169	29.9	20.3	427071	29.9	21.0	72845	30.0	17.9
278337	29.7	20.8	525544	29.8	21.1	378633	29.9	20.7	53673	29.9	19.0	7430	29.9	14.7	260509	30.0	21.1
430560	29.7	18.3	518665	29.8	20.9	221066	29.9	20.9	81289	29.9	18.5	38940	29.9	18.1	520627	30.0	21.1
399582	29.7	20.0	329029	29.8	19.6	99864	29.9	19.4	436878	29.9	21.3	468208	29.9	21.3	276451	30.0	18.5
91647	29.7	17.9	528736	29.8	20.4	98381	29.9	18.2	476069	29.9	19.6	44501	29.9	17.1	368374	30.0	20.4
58894	29.7	19.7	42789	29.8	17.6	75406	29.9	18.5	273872	29.9	20.5	461512	29.9	20.3	500954	30.0	20.5
114254	29.7	19.2	471627	29.8	21.1	361048	29.9	20.6	67899	29.9	17.5	177756	29.9	20.7	327214	30.0	21.0
296983	29.7	20.0	247821	29.8	20.4	57952	29.9	19.0	394633	29.9	20.7	521484	29.9	21.7	478548	30.0	20.6
461516	29.7	20.8	76390	29.8	19.0	451959	29.9	21.0	311179	29.9	20.0	449828	29.9	20.2	425649	30.0	21.2
133573	29.7	19.3	471138	29.8	18.4	148398	29.9	19.3	245516	29.9	19.8	447065	29.9	21.3	505445	30.0	20.9
199567	29.7	20.6	361086	29.8	19.6	322155	29.9	20.1	189755	29.9	18.9	517481	29.9	22.5	188838	30.0	19.7
287086	29.7	20.6	264400	29.8	21.3	107777	29.9	19.5	437486	29.9	19.7	174882	29.9	20.1	124316	30.0	17.7
474463	29.7	22.1	116786	29.8	20.7	235728	29.9	19.6	287434	29.9	19.8	507658	29.9	19.8	302164	30.1	20.0
468992	29.7	21.1	393761	29.8	20.6	133249	29.9	20.5	312983	29.9	19.9	51610	29.9	19.8	167288	30.1	19.0
293558	29.7	21.3	50726	29.8	18.6	372400	29.9	21.2	479039	29.9	20.1	388245	29.9	20.2	405748	30.1	20.2
335066	29.7	19.9	410271	29.8	20.7	374240	29.9	22.1	69194	29.9	18.7	334729	29.9	19.6	470557	30.1	21.2
394525	29.7	21.0	274200	29.8	21.1	26101	29.9	19.1	346639	29.9	18.8	17456	29.9	17.3	478922	30.1	20.6
53725	29.7	18.9	476016	29.8	21.1	177736	29.9	20.5	424559	29.9	20.2	79593	29.9	19.1	397313	30.1	21.0
395203	29.7	21.1	518196	29.8	20.5	290830	29.9	20.3	180777	29.9	19.9	487041	29.9	20.8	514458	30.1	21.2
109804	29.7	19.6	100148	29.8	19.0	521953	29.9	20.5	180434	29.9	19.9	212615	29.9	20.8	512586	30.1	21.2
85556	29.7	18.2	31376	29.8	17.6	537515	29.9	21.1	298131	29.9	20.6	176709	30.0	20.7	423894	30.1	19.7
312655	29.7	19.6	24905	29.8	17.6	45290	29.9	17.5	239101	29.9	20.6	51931	30.0	18.9	85775	30.1	18.1
47636	29.8	18.6	474517	29.8	20.6	419767	29.9	21.2	155520	29.9	18.1	50700	30.0	18.3	395906	30.1	20.0
223165	29.8	18.6	128189	29.8	18.9	289359	29.9	20.1	427732	29.9	21.1	103034	30.0	18.8	200517	30.1	18.7
347495	29.8	20.6	486944	29.8	21.3	252752	29.9	20.0	73478	29.9	20.0	31345	30.0	18.0	250580	30.1	18.7
60495	29.8	18.7	190558	29.8	20.9	134019	29.9	19.1	488089	29.9	20.3	68231	30.0	17.8	479843	30.1	19.4
475362	29.8	20.4	155708	29.8	19.6	169025	29.9	18.9	480561	29.9	20.9	224749	30.0	19.6	159431	30.1	21.4
281774	29.8	19.6	312417	29.8	20.3	186052	29.9	19.6	379841	29.9	19.8	523215	30.0	20.8	405020	30.1	22.0
415554	29.8	20.6	449840	29.8	21.3	23681	29.9	18.5	418940	29.9	20.4	443723	30.0	20.4	170718	30.1	19.9
156999	29.8	19.0	519223	29.8	21.1	77021	29.9	19.5	131741	29.9	19.2	373824	30.0	18.8	319449	30.1	20.2
67903	29.8	18.3	133256	29.8	19.4	195385	29.9	19.8	475982	29.9	21.2	435852	30.0	20.2	276582	30.1	20.5
177882	29.8	21.1	30712	29.8	17.2	81132	29.9	20.0	347208	29.9	21.0	219413	30.0	19.8	185173	30.1	19.7
49152	29.8	18.1	524058	29.8	20.3	328665	29.9	22.0	428091	29.9	19.4	294190	30.0	20.7	265262	30.1	19.6
353145	29.8	20.1	180945	29.8	19.2	285422	29.9	20.1	416799	29.9	20.8	328142	30.0	19.6	132488	30.1	19.8
280518	29.8	21.4	366597	29.8	19.9	461158	29.9	20.2	434479	29.9	20.1	243914	30.0	19.2	479951	30.1	20.3
72189	29.8	18.2	37976	29.8	17.7	38616	29.9	17.8	461548	29.9	21.5	407537	30.0	20.2	136216	30.1	19.9
461798	29.8	20.8	260090	29.8	20.1	484722	29.9	18.9	282378	29.9	19.5	206938	30.0	19.9	234109	30.1	20.1
479640	29.8	20.4	229148	29.8	20.4	309191	29.9	20.5	135990	29.9	19.4	11067	30.0	17.2	331242	30.1	20.5
86922	29.8	18.2	107559	29.8	20.1	270333	29.9	18.9	505115	29.9	20.5	144979	30.0	19.6	191203	30.1	19.2
445449	29.8	20.0	185410	29.8	20.3	192208	29.9	19.7	102929	29.9	18.1	71470	30.0	17.8	498055	30.1	19.9
229866	29.8	20.0	396484	29.8	20.0	203010	29.9	18.0	199619	29.9	20.1	250709	30.0	19.7	493796	30.1	20.2
189606	29.8	19.1	199448	29.8	20.3	232801	29.9	20.0	289961	29.9	21.2	243865	30.0	18.0	503443	30.1	20.9
216953	29.8	19.4	224958	29.8	20.3	448392	29.9	21.2	236678	29.9	19.7	357753	30.0	21.1	390683	30.1	20.2
480387	29.8	20.0	364510	29.8	21.7	150391	29.9	19.1	387134	29.9	20.3	72005	30.0	18.1	182362	30.1	19.8
28413	29.8	18.3	76154	29.8	17.7	517470	29.9	21.7	506338	29.9	20.5	160916	30.0	19.6	480408	30.1	20.5
44742	29.8	18.1	261856	29.8	20.1	227003	29.9	19.9	480609	29.9	21.0	6577	30.0	17.7	445237	30.1	19.6
70576	29.8	20.3	480147	29.8	21.0	321048	29.9	21.4	25994	29.9	18.4	367963	30.0	21.1	519851	30.1	21.9
17606	29.8	18.9	133808	29.8	18.5	487180	29.9	20.8	211764	29.9	19.7	480729	30.0	20.2	472488	30.1	20.0
282311	29.8	20.5	35736	29.8	18.2	424604	29.9	21.7	472764	29.9	20.7	400537	30.0	21.7	324690	30.1	21.4
479158	29.8	19.4	452001	29.8	20.7	87857	29.9	19.1	85817	29.9	18.4	122498	30.0	19.9	255515	30.1	19.6
501578	29.8	20.8	39912	29.8	17.6	360982	29.9	20.6	415585	29.9	20.8	74226	30.0	18.8	469338	30.1	21.1
82564	29.8	18.9	344106	29.8	19.4	344973	29.9	19.4	504240	29.9	20.6	452116	30.0	20.4	24226	30.1	19.0
494558	29.8	20.1	401831	29.8	20.2	213084	29.9	21.3	158572	29.9	19.8	62849	30.0	19.1	294547	30.1	20.5
160519	29.8	19.5	153258	29.8	18.5	95609	29.9	18.2	515390	29.9	21.4	360206	30.0	19.8	322123	30.1	20.4
347097	29.8	19.5	507972	29.9	20.8	35794	29.9	17.6	155036	29.9	19.3	73241	30.0	18.8	43463	30.1	18.5
516145	29.8	21.7	404568	29.9	21.1	321539	29.9	21.9	260163	29.9	20.4	261670	30.0	19.0	291970	30.1	20.0
398230	29.8	20.0	433978	29.9	20.5	304608	29.9	20.7	445214	29.9	21.3	515408	30.0	21.5	485251	30.1	20.9
43194	29.8	19.4	469718	29.9	22.9	4298	29.9	15.4	325486	29.9	21.2	458856	30.0	20.2	319390	30.1	19.8
225497	29.8	19.7	270412	29.9	20.2	460641	29.9	21.2	255272	29.9	19.9	195008	30.0	19.8	528158	30.1	22.0
236920	29.8	21.2	84811	29.9	18.8	398603	29.9	20.8	88132	29.9	18.5	505798	30.0	20.8	255722	30.1	19.4
366030	29.8	20.7	366621	29.9	21.2	197871	29.9	20.8	256166	29.9	18.8	245527	30.0	20.0	459687	30.1	20.8
91605	29.8	18.4	139414	29.9	20.2	463449	29.9	22.0	317987	29.9	20.2	470621	30.0	21.0	248728	30.1	21.4
109037	29.8	19.9	324457	29.9	21.1	112648	29.9	19.2	189405	29.9	19.8	229751	30.0	19.8	509685	30.1	20.2
198135	29.8	19.9	323589	29.9	20.7	432798	29.9	20.7	350527	29.9	19.6	441380	30.0	20.1	471611	30.1	22.2
397248	29.8	21.0	142793	29.9	18.0	343526	29.9	20.7	453545	29.9	20.1	326628	30.0	20.8	170582	30.1	17.5
360539	29.8	20.3	301835	29.9	20.0	351412	29										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
439329	30.1	20.8	450512	30.2	20.4	519620	30.2	20.8	402199	30.3	19.7	74096	30.4	19.6	277669	30.5	21.4
216017	30.1	19.8	204992	30.2	20.2	357349	30.2	21.1	364003	30.3	20.1	68913	30.4	19.5	110218	30.5	18.7
352309	30.1	19.8	450427	30.2	20.5	46659	30.2	19.5	91980	30.3	18.9	77148	30.4	19.4	349786	30.5	19.2
415551	30.1	20.6	104580	30.2	19.3	38376	30.3	19.0	278648	30.3	20.6	217660	30.4	20.2	474388	30.5	20.6
264117	30.1	21.0	195328	30.2	19.5	44933	30.3	18.4	146413	30.3	19.3	22256	30.4	18.8	200466	30.5	19.4
220470	30.1	19.5	194980	30.2	20.1	164723	30.3	20.4	480646	30.3	20.7	43979	30.4	18.2	325763	30.5	20.2
35927	30.1	18.0	6634	30.2	16.7	525453	30.3	20.6	139162	30.3	20.4	438611	30.4	20.5	450513	30.5	20.9
166281	30.1	19.0	413115	30.2	20.6	131811	30.3	19.2	227504	30.3	20.9	314314	30.4	20.4	127275	30.5	18.8
37462	30.1	19.1	431361	30.2	20.5	207907	30.3	20.7	306886	30.3	20.6	374272	30.4	20.0	195095	30.5	19.9
12384	30.1	17.6	256708	30.2	18.8	483129	30.3	21.1	407046	30.3	20.7	390208	30.4	20.3	421823	30.5	19.9
365107	30.1	20.0	524691	30.2	20.6	509763	30.3	20.1	43842	30.3	20.0	521329	30.4	21.4	158075	30.5	19.1
96527	30.1	18.6	30888	30.2	16.5	318265	30.3	19.9	516178	30.3	19.9	357564	30.4	22.0	298281	30.5	19.8
74078	30.1	19.5	477917	30.2	21.4	316047	30.3	20.1	307954	30.3	20.9	339257	30.4	19.7	491799	30.5	21.3
198243	30.1	19.8	301829	30.2	21.5	293320	30.3	20.0	232245	30.3	20.4	22383	30.4	19.1	145579	30.5	18.6
388620	30.1	20.1	366490	30.2	21.5	395797	30.3	19.6	412992	30.3	20.8	409267	30.4	19.8	129380	30.5	19.9
327763	30.1	20.5	217349	30.2	19.7	423453	30.3	21.3	1629	30.3	15.8	444430	30.4	19.1	252110	30.5	20.2
429915	30.1	21.2	492355	30.2	21.4	388248	30.3	20.7	184454	30.3	20.2	346652	30.4	19.4	428244	30.5	20.3
265569	30.1	21.1	222907	30.2	20.7	284878	30.3	19.8	393247	30.3	21.5	407181	30.4	20.4	255344	30.5	20.4
19621	30.1	17.7	159791	30.2	20.6	408093	30.3	20.4	1693	30.3	16.2	41412	30.4	18.4	172456	30.5	19.8
169962	30.1	18.4	479950	30.2	20.7	247524	30.3	20.9	491858	30.3	20.3	46945	30.4	18.3	211295	30.5	19.6
395108	30.1	20.0	163963	30.2	19.8	342516	30.3	20.1	216727	30.3	19.7	317390	30.4	21.3	302796	30.5	19.5
208931	30.1	19.9	318216	30.2	21.0	251690	30.3	20.1	365285	30.3	19.9	77452	30.4	19.6	271082	30.5	20.7
405277	30.1	20.5	259932	30.2	19.7	127456	30.3	20.9	342323	30.3	20.7	56368	30.4	18.2	97174	30.5	17.3
229872	30.1	19.9	106417	30.2	18.6	160425	30.3	20.5	31406	30.3	18.5	428674	30.4	21.6	320205	30.5	20.3
338010	30.1	20.3	128080	30.2	19.6	108739	30.3	19.3	392905	30.3	20.1	465840	30.4	21.7	280379	30.5	21.5
225674	30.1	20.5	59506	30.2	17.9	464737	30.3	20.7	387674	30.3	20.8	316810	30.4	20.4	537020	30.5	21.0
188344	30.1	20.2	266758	30.2	20.3	276538	30.3	19.6	408745	30.3	20.3	1688	30.4	17.4	112496	30.5	20.2
463428	30.1	21.5	417655	30.2	19.2	529115	30.3	21.2	19746	30.3	17.9	126422	30.4	18.5	243654	30.5	19.4
126481	30.1	19.0	511736	30.2	19.8	467720	30.3	20.0	224301	30.3	20.5	81901	30.4	19.7	247048	30.5	19.9
89817	30.1	18.4	209409	30.2	20.1	399535	30.3	22.6	100583	30.3	19.1	400728	30.4	20.8	540613	30.5	21.6
448664	30.1	19.4	246620	30.2	19.9	60589	30.3	18.6	22999	30.3	17.5	379882	30.4	21.6	483139	30.5	21.1
439610	30.1	20.4	389045	30.2	19.8	491480	30.3	22.0	71463	30.3	18.7	327162	30.4	19.9	253526	30.5	19.6
159410	30.1	19.1	534293	30.2	20.8	405268	30.3	21.3	10596	30.3	17.9	130106	30.4	18.7	283817	30.5	20.4
318751	30.1	20.5	160004	30.2	20.3	293122	30.3	20.5	10211	30.3	18.4	255883	30.4	19.3	326068	30.5	20.2
478469	30.1	22.3	265426	30.2	19.3	398636	30.3	20.6	221664	30.3	20.3	487795	30.4	20.5	528932	30.5	20.7
5006	30.1	15.9	137628	30.2	21.2	88977	30.3	20.0	218972	30.3	21.4	295565	30.4	19.9	396392	30.5	20.3
166397	30.1	20.5	142367	30.2	20.3	87253	30.3	18.4	205641	30.3	18.5	311321	30.4	20.6	52250	30.5	18.9
54766	30.1	19.4	44112	30.2	18.5	218509	30.3	20.5	273676	30.3	20.4	426668	30.4	19.8	221577	30.5	20.4
177146	30.1	20.2	288490	30.2	18.9	476113	30.3	19.7	204116	30.3	18.6	488093	30.4	21.0	38806	30.5	18.6
344763	30.1	20.0	394883	30.2	20.0	188335	30.3	19.1	365335	30.4	20.8	183171	30.4	19.6	38100	30.5	19.3
180330	30.1	19.2	179102	30.2	20.3	164789	30.3	18.9	487725	30.4	20.4	39027	30.4	17.9	173286	30.5	20.0
470314	30.1	21.2	501882	30.2	20.5	526100	30.3	19.4	288751	30.4	20.9	96482	30.4	18.1	513060	30.5	19.8
392674	30.1	20.7	14744	30.2	18.0	354316	30.3	20.3	108659	30.4	19.9	284841	30.4	19.4	134559	30.5	18.8
73067	30.1	20.7	218808	30.2	19.1	540814	30.3	20.1	120554	30.4	18.8	158423	30.4	18.7	13428	30.5	18.6
11822	30.1	16.5	97228	30.2	18.5	316020	30.3	21.6	44080	30.4	19.8	467736	30.4	21.4	26320	30.5	18.0
3638	30.1	16.2	123071	30.2	18.0	232237	30.3	20.6	177836	30.4	20.3	312941	30.4	20.9	220959	30.5	20.2
45930	30.1	18.6	209845	30.2	20.0	506775	30.3	20.4	353541	30.4	20.2	398229	30.4	19.7	236703	30.5	20.6
289739	30.1	22.0	250837	30.2	20.8	439495	30.3	20.1	452265	30.4	20.9	54742	30.4	19.4	220937	30.5	21.2
388236	30.1	20.5	365931	30.2	20.5	176727	30.3	19.0	52051	30.4	18.2	36394	30.4	17.5	203240	30.5	19.2
364125	30.1	20.2	523309	30.2	21.3	501691	30.3	21.3	452750	30.4	21.3	132786	30.4	18.9	148292	30.5	20.2
115172	30.1	20.3	536782	30.2	21.6	494610	30.3	20.1	76341	30.4	18.4	429508	30.4	20.5	144066	30.5	18.3
362855	30.1	21.2	476239	30.2	21.0	251819	30.3	20.5	33010	30.4	16.8	443506	30.4	20.8	313842	30.5	20.6
28098	30.1	18.9	497903	30.2	20.4	314589	30.3	20.2	248012	30.4	19.6	129948	30.4	20.0	70001	30.5	19.4
450504	30.1	21.2	136532	30.2	19.5	402035	30.3	20.5	263622	30.4	19.1	474101	30.4	21.1	22	30.5	10.1
340086	30.1	19.0	327209	30.2	20.7	221767	30.3	20.3	21108	30.4	18.5	484563	30.4	21.0	505128	30.5	20.9
409740	30.1	21.5	96020	30.2	19.7	154616	30.3	19.6	85630	30.4	18.8	70441	30.4	17.2	231300	30.5	20.6
132708	30.1	20.0	286828	30.2	20.3	139298	30.3	19.3	487130	30.4	21.2	465839	30.4	21.6	140324	30.5	19.3
280292	30.2	20.5	206853	30.2	18.9	185358	30.3	20.9	201150	30.4	19.4	114842	30.4	19.1	274818	30.5	20.6
448568	30.2	20.4	483956	30.2	21.8	489961	30.3	21.3	452004	30.4	20.8	150683	30.4	18.8	100923	30.5	20.5
129111	30.2	19.3	515705	30.2	21.6	442886	30.3	20.9	471808	30.4	21.2	477514	30.4	20.5	487404	30.5	20.4
369473	30.2	21.1	205588	30.2	19.9	55845	30.3	19.6	317590	30.4	19.8	390455	30.4	19.2	7814	30.5	16.3
509959	30.2	21.2	117029	30.2	20.3	517528	30.3	21.6	234388	30.4	20.1	430027	30.4	20.3	304172	30.5	21.2
76525	30.2	19.0	370354	30.2	21.3	399580	30.3	20.0	117840	30.4	20.3	255489	30.4	19.0	460600	30.5	20.5
142298	30.2	18.6	122617	30.2	18.7	403205	30.3	20.3	194874	30.4	20.1	184225	30.4	18.8	21518	30.5	16.6
337254	30.2	20.6	509613	30.2	21.4	423911	30.3	20.3	491599	30.4	20.6	122984	30.4	19.0	317852	30.5	19.9
314240	30.2	19.9	449003	30.2	20.4	33873	30.3	18.7	136907	30.4	20.7	180088	30.4	19.5	93619	30.5	19.9
365743	30.2	20.5	504254	30.2	20.1	460248	30.3	20.6	332104	30.4	20.6	392935	30.4	20.0	430637	30.5	20.4
347241	30.2	20.8	11859	30.2	18.2	239390	30.3	20.5	1999	30.4	15.0	36002	30.4	17.6	507390	30.5	21.5
369877	30.2	21.8	523291	30.2	20.8	485351	30.3										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
457862	30.5	19.7	497471	30.6	21.2	115436	30.6	18.2	420799	30.7	21.0	429569	30.8	21.5	97663	30.8	20.1
327519	30.5	20.6	168783	30.6	19.2	137447	30.6	18.7	487720	30.7	19.9	7358	30.8	16.0	332459	30.9	21.1
143333	30.5	19.5	173660	30.6	19.4	255257	30.6	19.3	78336	30.7	19.0	511749	30.8	20.3	452119	30.9	21.2
373332	30.5	21.4	433611	30.6	20.4	507111	30.6	21.1	74506	30.7	17.4	246777	30.8	19.4	279195	30.9	19.9
442298	30.5	20.0	192496	30.6	19.3	471718	30.6	19.8	236544	30.7	20.0	503890	30.8	21.0	149067	30.9	19.7
322160	30.5	20.3	225187	30.6	20.3	217253	30.6	19.9	3841	30.7	15.2	176692	30.8	20.3	507813	30.9	19.5
305004	30.5	19.9	60339	30.6	18.8	184447	30.6	19.6	328626	30.7	20.4	113586	30.8	19.5	220840	30.9	19.2
416413	30.5	20.7	379885	30.6	21.8	302793	30.6	20.6	454997	30.7	20.3	60376	30.8	18.6	48064	30.9	19.0
5729	30.5	17.0	399577	30.6	20.7	355115	30.6	20.4	178858	30.7	20.5	113163	30.8	19.8	414414	30.9	20.2
4473	30.5	16.9	436455	30.6	21.0	453008	30.6	21.6	72364	30.7	18.9	346594	30.8	20.5	509824	30.9	20.6
219006	30.5	19.3	451213	30.6	19.0	469619	30.6	21.0	352401	30.7	20.1	471009	30.8	20.6	442733	30.9	20.9
515204	30.5	21.2	314074	30.6	20.2	308873	30.6	19.0	154319	30.7	19.1	3101	30.8	17.0	454048	30.9	20.7
282772	30.5	21.1	59488	30.6	19.3	264842	30.6	20.0	331369	30.7	20.3	185330	30.8	20.5	510729	30.9	20.3
308026	30.5	19.6	43400	30.6	18.0	480433	30.6	21.8	7013	30.7	17.4	358963	30.8	19.8	463122	30.9	20.4
257600	30.5	21.4	30560	30.6	18.1	390923	30.6	20.0	97819	30.7	18.2	91976	30.8	20.2	537301	30.9	22.1
252912	30.5	20.6	207553	30.6	20.3	282339	30.6	20.2	476163	30.7	20.9	479052	30.8	20.4	10127	30.9	17.4
164437	30.5	20.4	470570	30.6	20.9	319148	30.6	19.6	417917	30.7	21.6	8993	30.8	16.9	236780	30.9	20.2
129404	30.5	19.1	226095	30.6	20.0	92414	30.6	19.9	537330	30.7	22.8	354305	30.8	20.0	245706	30.9	20.2
17599	30.5	18.5	212353	30.6	18.9	291376	30.7	21.1	31166	30.7	18.4	220396	30.8	19.0	485935	30.9	20.8
52944	30.5	19.1	485028	30.6	21.2	95593	30.7	19.6	178111	30.7	20.4	479409	30.8	19.9	241843	30.9	19.9
41469	30.5	17.5	438586	30.6	20.8	261463	30.7	19.1	53914	30.7	18.5	44384	30.8	18.9	214408	30.9	21.1
193295	30.5	19.0	344030	30.6	20.2	225086	30.7	19.1	386086	30.7	21.1	340102	30.8	19.6	434306	30.9	21.5
17893	30.5	18.2	507931	30.6	20.7	539434	30.7	21.0	193671	30.7	21.7	147727	30.8	18.5	482992	30.9	20.6
487363	30.5	20.5	193680	30.6	18.5	321035	30.7	21.1	24828	30.7	17.6	452994	30.8	20.1	9432	30.9	17.7
325558	30.5	20.1	403445	30.6	20.4	473566	30.7	20.2	453482	30.7	20.5	141978	30.8	18.7	483318	30.9	20.7
227968	30.5	20.3	461126	30.6	20.4	194043	30.7	21.1	183571	30.7	19.6	396842	30.8	20.6	381124	30.9	20.5
377520	30.5	21.1	367102	30.6	20.1	315036	30.7	20.1	205834	30.7	20.5	480501	30.8	21.7	37105	30.9	17.8
364351	30.5	21.1	21724	30.6	17.9	353834	30.7	19.1	323597	30.7	20.3	330845	30.8	20.4	422102	30.9	21.4
125072	30.5	16.2	508899	30.6	19.7	454039	30.7	21.7	368457	30.7	20.4	34771	30.8	17.5	16123	30.9	18.2
214630	30.5	20.5	49290	30.6	18.0	514028	30.7	21.7	276323	30.7	20.2	155374	30.8	19.8	273298	30.9	20.0
318557	30.5	21.7	422662	30.6	21.1	81494	30.7	17.9	363267	30.7	22.0	26087	30.8	18.0	21797	30.9	17.0
405333	30.5	20.1	266263	30.6	19.6	159161	30.7	19.7	373991	30.7	19.7	163298	30.8	19.6	316722	30.9	19.8
103347	30.5	18.6	214146	30.6	19.9	336415	30.7	20.5	21849	30.7	19.2	328838	30.8	20.5	85496	30.9	19.3
288642	30.5	18.5	512943	30.6	20.6	326876	30.7	19.6	331522	30.7	21.3	299094	30.8	20.1	389836	30.9	19.7
105674	30.5	17.2	26277	30.6	17.5	103523	30.7	18.7	411111	30.7	20.5	48665	30.8	19.5	73223	30.9	19.7
387935	30.5	20.3	477006	30.6	21.2	65237	30.7	19.9	184952	30.7	19.2	133346	30.8	19.2	286960	30.9	20.0
43521	30.5	18.3	479257	30.6	18.8	451168	30.7	21.0	2147	30.7	16.4	100165	30.8	19.2	484889	30.9	20.6
191629	30.5	20.4	198222	30.6	20.3	344658	30.7	19.8	333979	30.7	19.0	86529	30.8	18.0	449670	30.9	21.7
55609	30.5	18.4	512208	30.6	21.0	14176	30.7	18.1	272380	30.7	20.2	490203	30.8	21.1	147115	30.9	19.0
109159	30.5	19.7	37338	30.6	18.4	923	30.7	14.7	110966	30.7	19.7	286765	30.8	20.5	90907	30.9	19.3
17128	30.5	17.8	116047	30.6	19.2	98858	30.7	18.2	354285	30.7	20.1	379211	30.8	20.7	161546	30.9	19.5
265930	30.5	20.8	286409	30.6	19.2	298235	30.7	20.0	103816	30.7	19.4	335442	30.8	20.2	29238	30.9	18.2
324808	30.5	19.4	171629	30.6	19.6	473952	30.7	21.7	132427	30.7	19.8	476836	30.8	22.3	481957	30.9	20.7
194288	30.5	18.9	359850	30.6	20.6	195044	30.7	19.3	461129	30.7	20.3	487855	30.8	21.0	103470	30.9	19.5
438322	30.5	21.3	402528	30.6	20.4	523350	30.7	21.4	108063	30.7	19.7	277250	30.8	21.3	63387	30.9	17.1
397942	30.5	19.2	161662	30.6	19.5	350012	30.7	20.1	69746	30.7	19.7	219470	30.8	19.5	363463	30.9	20.5
51581	30.5	19.3	302128	30.6	19.3	169797	30.7	22.6	276969	30.7	19.9	151312	30.8	19.5	317862	30.9	20.3
357817	30.5	20.5	396001	30.6	20.4	222233	30.7	20.0	243709	30.7	20.3	151453	30.8	19.2	80709	30.9	19.3
21889	30.5	18.2	537355	30.6	19.9	111954	30.7	20.1	420766	30.7	21.4	303643	30.8	20.4	139067	30.9	19.6
361558	30.5	20.7	173762	30.6	19.6	439538	30.7	20.7	490858	30.7	21.1	400731	30.8	20.4	461242	30.9	19.7
145828	30.5	18.6	479780	30.6	19.9	234188	30.7	18.0	281604	30.7	20.9	407070	30.8	21.2	467324	30.9	21.7
451797	30.5	20.5	25269	30.6	18.8	511152	30.7	19.7	484900	30.7	20.9	365688	30.8	19.4	38498	30.9	19.4
445271	30.5	19.8	149047	30.6	19.9	144894	30.7	18.8	349244	30.7	19.4	296589	30.8	20.1	76945	30.9	19.1
408281	30.5	21.2	329969	30.6	21.3	445332	30.7	21.1	151442	30.8	17.7	35615	30.8	19.0	218446	30.9	19.2
519801	30.5	21.3	133388	30.6	18.5	90433	30.7	19.6	35894	30.8	18.1	175561	30.8	19.5	286610	30.9	21.2
231273	30.5	20.2	280317	30.6	20.4	426397	30.7	21.4	271734	30.8	20.1	538476	30.8	20.6	400875	30.9	21.0
313365	30.5	19.7	95196	30.6	19.6	398055	30.7	20.8	305078	30.8	21.1	374799	30.8	19.8	353669	30.9	20.6
9733	30.5	17.5	357759	30.6	20.5	253531	30.7	19.9	424600	30.8	21.4	100761	30.8	20.2	92032	30.9	18.7
114448	30.6	19.1	465272	30.6	20.9	288921	30.7	19.9	348356	30.8	20.0	86828	30.8	20.1	482286	30.9	21.4
169086	30.6	20.6	220755	30.6	20.0	321159	30.7	19.2	478609	30.8	21.9	293615	30.8	21.3	41807	30.9	19.1
491500	30.6	20.3	233875	30.6	19.9	327556	30.7	20.8	518319	30.8	21.4	281739	30.8	20.3	113506	30.9	19.8
424595	30.6	21.5	507660	30.6	21.1	174259	30.7	20.0	426174	30.8	21.0	455118	30.8	19.4	366476	30.9	20.8
106501	30.6	18.5	91259	30.6	18.2	404093	30.7	20.7	351791	30.8	20.5	373197	30.8	20.6	286201	30.9	21.2
192162	30.6	19.9	318595	30.6	21.1	179626	30.7	20.4	185004	30.8	20.7	71413	30.8	17.2	535395	30.9	21.2
386860	30.6	20.5	32104	30.6	19.4	203150	30.7	20.2	92037	30.8	19.8	304402	30.8	21.0	342219	30.9	20.4
536926	30.6	21.1	353548	30.6	20.2	453534	30.7	20.3	484993	30.8	20.7	454905	30.8	19.6	374332	30.9	20.2
530615	30.6	22.0	380810	30.6	18.9	155938	30.7	20.4	112800	30.8	20.3	298267	30.8	19.4	406762	30.9	22.3
283098	30.6	20.6	332020	30.6	20.8	532415	30.7	20.6	74827	30.8	18.8	174721	30.8	19.0	248207	30.9	20.6
350918	30.6	19.7	325642	30.6	20.1	296616	30.7										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
334383	30.9	18.6	510030	30.9	20.9	77490	31.0	18.3	428656	31.1	21.8	112427	31.2	19.4	83923	31.2	18.2
313278	30.9	19.6	533654	30.9	21.8	334226	31.0	19.8	238002	31.1	20.2	316011	31.2	21.0	249763	31.2	19.6
257550	30.9	19.5	480005	30.9	20.2	99649	31.0	18.4	192191	31.1	20.7	352291	31.2	20.1	452704	31.2	20.5
23820	30.9	19.1	445340	30.9	20.5	365678	31.0	20.5	412672	31.1	20.6	273677	31.2	19.8	305881	31.2	20.8
217183	30.9	20.5	355091	30.9	20.8	450002	31.0	20.2	55022	31.1	17.9	175392	31.2	19.3	103790	31.3	19.9
316125	30.9	21.3	70696	30.9	19.0	46696	31.0	18.3	92051	31.1	19.4	409753	31.2	21.5	192267	31.3	20.1
136328	30.9	19.0	478522	30.9	20.3	124583	31.0	20.0	339361	31.1	19.3	131623	31.2	18.3	199249	31.3	20.4
4381	30.9	15.8	75784	30.9	18.8	261833	31.0	20.3	4276	31.1	15.5	227043	31.2	18.9	426359	31.3	20.8
203011	30.9	18.8	35561	30.9	18.3	500081	31.0	20.3	13630	31.1	17.4	327627	31.2	19.8	133624	31.3	19.4
218796	30.9	19.3	86469	30.9	18.7	379252	31.0	20.3	537259	31.1	20.5	515886	31.2	21.2	290843	31.3	20.0
420797	30.9	21.5	146044	30.9	19.4	120677	31.0	19.7	260304	31.1	19.7	30624	31.2	20.1	45118	31.3	18.2
96552	30.9	19.4	130933	30.9	18.8	65183	31.0	19.2	464752	31.1	20.7	74590	31.2	17.8	140704	31.3	19.6
220834	30.9	19.8	24522	30.9	17.3	318280	31.1	20.6	19684	31.1	16.8	179875	31.2	19.9	356514	31.3	20.4
66548	30.9	16.9	240651	30.9	19.6	261612	31.1	19.7	374915	31.1	19.4	157650	31.2	20.3	487832	31.3	21.3
146088	30.9	19.1	132521	30.9	20.1	325720	31.1	21.1	449745	31.1	20.2	344729	31.2	19.8	347073	31.3	20.7
127435	30.9	19.4	92744	30.9	18.6	436616	31.1	22.6	418242	31.1	20.6	475382	31.2	20.4	367588	31.3	20.3
286808	30.9	21.0	145807	30.9	18.4	286156	31.1	20.4	454589	31.1	21.8	483900	31.2	20.2	353290	31.3	20.8
112612	30.9	19.1	485845	30.9	21.9	67346	31.1	17.2	58951	31.1	18.9	175220	31.2	19.2	189546	31.3	18.8
349724	30.9	20.7	212282	30.9	19.9	517491	31.1	21.0	517966	31.1	20.4	249680	31.2	19.4	131112	31.3	19.0
37252	30.9	18.1	267094	30.9	19.1	441910	31.1	20.4	460525	31.1	21.2	300757	31.2	20.5	368822	31.3	21.8
262555	30.9	20.7	501765	30.9	21.3	100681	31.1	17.6	324222	31.1	20.9	381676	31.2	19.5	163274	31.3	20.0
69361	30.9	19.7	193581	30.9	19.1	222421	31.1	20.6	398401	31.1	21.1	240936	31.2	20.6	127503	31.3	17.5
397278	30.9	21.0	303049	30.9	19.9	393297	31.1	19.6	81508	31.1	19.3	74284	31.2	17.5	452169	31.3	20.4
257729	30.9	20.1	385198	30.9	20.6	351429	31.1	19.7	106383	31.1	18.2	225963	31.2	20.2	506929	31.3	21.2
148229	30.9	19.3	112365	30.9	19.7	479759	31.1	20.9	402406	31.1	20.4	162868	31.2	19.2	186492	31.3	19.8
501585	30.9	19.9	206652	30.9	19.3	87289	31.1	18.8	279826	31.1	21.0	230344	31.2	20.2	287859	31.3	20.0
402455	30.9	20.4	329238	30.9	21.5	408919	31.1	19.7	204991	31.1	19.6	274553	31.2	21.2	174334	31.3	18.6
498066	30.9	22.6	326745	30.9	21.0	108107	31.1	19.8	479681	31.1	20.1	274126	31.2	20.5	69180	31.3	19.5
116791	30.9	19.7	169874	30.9	17.7	301356	31.1	20.9	321692	31.1	19.6	268262	31.2	19.9	512412	31.3	20.6
95543	30.9	19.4	524132	30.9	19.7	92905	31.1	18.9	218583	31.1	21.1	494393	31.2	20.2	376460	31.3	21.2
439596	30.9	20.7	431466	30.9	20.2	539216	31.1	21.8	525478	31.1	21.7	317493	31.2	20.9	10536	31.3	17.3
283730	30.9	20.0	474509	30.9	20.8	509793	31.1	20.3	488137	31.1	20.4	323274	31.2	20.3	145611	31.3	20.1
8929	30.9	16.7	481407	30.9	21.0	522890	31.1	20.9	209296	31.1	20.2	485250	31.2	19.2	234705	31.3	21.1
26812	30.9	17.5	443677	30.9	21.4	313362	31.1	19.6	112287	31.1	19.2	239211	31.2	21.0	12004	31.3	17.5
511950	30.9	21.7	181481	31.0	20.0	181499	31.1	20.6	18291	31.1	18.0	380003	31.2	20.8	27263	31.3	18.1
498537	30.9	21.0	484935	31.0	22.0	284512	31.1	20.2	421445	31.1	19.9	497958	31.2	19.6	514954	31.3	20.9
505963	30.9	20.1	155248	31.0	18.9	177372	31.1	20.2	405733	31.1	20.3	364985	31.2	21.9	442550	31.3	20.8
183843	30.9	20.8	422506	31.0	21.1	241996	31.1	20.5	362549	31.1	20.7	95623	31.2	18.2	511428	31.3	21.4
550	30.9	13.5	78811	31.0	20.4	528054	31.1	21.3	51551	31.1	20.0	25688	31.2	18.2	388742	31.3	21.1
183960	30.9	19.9	331357	31.0	20.4	438	31.1	13.8	319467	31.1	21.6	24317	31.2	18.9	21226	31.3	19.2
103366	30.9	18.7	217021	31.0	19.4	513053	31.1	20.2	523989	31.1	22.7	448725	31.2	19.7	366821	31.3	19.6
285491	30.9	20.1	318374	31.0	19.7	22689	31.1	17.5	171156	31.1	19.3	191516	31.2	20.3	395463	31.3	20.4
409082	30.9	22.5	300863	31.0	20.5	69167	31.1	18.0	36747	31.1	18.6	306957	31.2	19.3	510080	31.3	22.3
307049	30.9	20.4	432002	31.0	20.8	403976	31.1	20.9	121890	31.1	20.0	47639	31.2	18.6	136537	31.3	19.9
34543	30.9	19.1	413384	31.0	21.7	511901	31.1	20.7	159646	31.1	20.1	217319	31.2	20.5	432714	31.3	20.2
536762	30.9	21.3	66291	31.0	18.7	220954	31.1	20.8	439082	31.1	20.3	389030	31.2	20.0	494496	31.3	20.7
104799	30.9	19.7	489531	31.0	21.7	305811	31.1	20.5	93955	31.1	18.7	394562	31.2	21.0	20503	31.3	18.5
220158	30.9	20.7	439345	31.0	19.7	523809	31.1	24.7	319170	31.1	20.1	197276	31.2	19.3	299679	31.3	20.2
175114	30.9	19.9	461231	31.0	20.6	235230	31.1	20.4	349198	31.1	18.1	140005	31.2	20.1	235860	31.3	18.9
91771	30.9	19.5	45099	31.0	19.1	108786	31.1	19.9	348761	31.1	20.4	303628	31.2	20.9	532723	31.3	20.2
135018	30.9	19.8	385575	31.0	20.2	165254	31.1	19.6	247135	31.1	19.2	263178	31.2	19.9	47621	31.3	17.2
189800	30.9	19.8	9569	31.0	17.0	407076	31.1	21.6	368371	31.1	20.8	101000	31.2	19.6	505425	31.3	20.0
185852	30.9	19.1	431015	31.0	20.3	157070	31.1	19.2	99354	31.1	19.6	525125	31.2	19.4	264939	31.3	19.4
82279	30.9	19.6	147113	31.0	19.7	145283	31.1	19.9	97809	31.2	19.8	530457	31.2	22.0	20653	31.3	16.9
89615	30.9	19.9	282561	31.0	18.2	120448	31.1	19.6	310078	31.2	21.2	320698	31.2	20.7	416551	31.3	19.5
258732	30.9	19.8	241711	31.0	20.9	236508	31.1	20.4	304148	31.2	21.6	112231	31.2	18.3	422989	31.3	21.3
143245	30.9	18.3	531105	31.0	22.2	478590	31.1	21.9	284593	31.2	20.6	121199	31.2	19.9	506542	31.3	19.0
487918	30.9	20.9	71577	31.0	18.9	256604	31.1	21.0	226069	31.2	21.1	342609	31.2	19.7	430437	31.3	20.6
128999	30.9	19.4	324339	31.0	20.3	49415	31.1	18.6	395295	31.2	21.9	387516	31.2	18.6	160198	31.3	19.4
396079	30.9	20.7	258975	31.0	19.4	348033	31.1	20.4	154596	31.2	21.0	156112	31.2	18.1	100580	31.3	20.3
403174	30.9	20.9	393350	31.0	20.4	255214	31.1	19.4	517949	31.2	20.5	257553	31.2	19.8	77475	31.3	19.5
91296	30.9	16.9	38151	31.0	19.1	74214	31.1	19.4	386865	31.2	19.2	515952	31.2	21.0	247986	31.3	20.3
179804	30.9	19.7	515008	31.0	20.9	143283	31.1	19.0	235262	31.2	20.2	363653	31.2	18.7	387673	31.3	20.4
294389	30.9	20.7	512012	31.0	20.2	24416	31.1	18.9	88114	31.2	19.0	167690	31.2	19.5	70603	31.3	19.0
246208	30.9	19.7	186785	31.0	19.9	324247	31.1	21.1	235357	31.2	20.9	283713	31.2	20.5	216516	31.3	18.8
224099	30.9	20.7	416420	31.0	20.3	136397	31.1	18.9	347984	31.2	19.6	66535	31.2	18.9	121190	31.3	18.0
469565	30.9	18.5	86831	31.0	19.9	289468	31.1	19.8	116195	31.2	18.7	134507	31.2	19.1	260389	31.3	19.9
316523	30.9	19.9	226568	31.0	19.6	456609	31.1	21.2	424003	31.2	19.1	186832	31.2	21.0	305902	31.3	20.3
485320	30.9	19.9	208238	31.0	21.0	480306	31.1										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
449810	31.3	21.2	204777	31.4	21.0	31133	31.4	18.8	29459	31.5	19.1	373433	31.6	21.6	252798	31.7	19.3
59617	31.3	19.7	284490	31.4	22.0	340537	31.5	19.4	531097	31.5	20.9	327191	31.6	21.6	198126	31.7	20.0
409072	31.3	20.9	450200	31.4	20.9	382535	31.5	20.4	322664	31.5	20.4	301110	31.6	20.4	148546	31.7	20.7
271035	31.3	19.9	519461	31.4	20.9	283842	31.5	21.3	319108	31.5	19.9	298058	31.6	20.7	35005	31.7	18.6
214956	31.3	19.7	226314	31.4	19.7	418067	31.5	20.9	71336	31.5	17.6	468228	31.6	20.6	390759	31.7	20.7
469558	31.3	18.9	403485	31.4	21.5	30930	31.5	18.2	146812	31.5	20.0	10136	31.6	17.0	999	31.7	14.9
87515	31.3	20.1	114206	31.4	18.4	480222	31.5	21.3	384742	31.5	21.4	77480	31.6	18.9	106400	31.7	19.0
473342	31.3	20.3	444263	31.4	21.7	103804	31.5	20.3	103658	31.5	18.9	512228	31.6	20.8	389808	31.7	21.2
342574	31.3	19.8	77650	31.4	19.0	262016	31.5	21.6	323066	31.5	20.8	114052	31.6	20.1	152268	31.7	19.1
333190	31.3	20.3	367066	31.4	21.5	356614	31.5	19.8	363691	31.5	20.3	427041	31.6	20.4	313349	31.7	19.9
147527	31.3	19.7	32074	31.4	18.6	53574	31.5	18.1	503580	31.5	21.4	407115	31.6	20.5	247241	31.7	20.5
369703	31.3	19.6	448690	31.4	20.5	395971	31.5	20.7	518003	31.5	20.6	403315	31.6	19.5	189511	31.7	19.1
515542	31.3	21.4	212128	31.4	20.5	342189	31.5	20.2	374281	31.5	21.0	227037	31.6	19.5	281768	31.7	20.8
17115	31.3	18.5	363667	31.4	20.4	128680	31.5	20.0	470637	31.5	21.0	291552	31.6	21.0	435601	31.7	21.8
347430	31.3	21.0	289043	31.4	21.0	406745	31.5	21.8	229786	31.5	21.2	473389	31.6	20.4	396744	31.7	20.8
162088	31.3	20.7	284100	31.4	21.0	539429	31.5	21.8	224244	31.5	19.9	99897	31.6	19.1	518755	31.7	20.9
263066	31.3	19.7	520285	31.4	20.9	518812	31.5	20.6	71695	31.5	18.8	363987	31.6	20.0	332290	31.7	19.5
149714	31.3	20.3	247822	31.4	19.5	287690	31.5	19.4	51690	31.5	18.6	306099	31.6	21.4	451154	31.7	21.1
518509	31.3	23.5	221387	31.4	19.5	432702	31.5	20.5	470645	31.5	20.9	361722	31.6	21.3	18642	31.7	17.1
258330	31.3	19.3	160237	31.4	19.5	239118	31.5	20.6	391500	31.5	19.3	92968	31.6	18.8	250272	31.7	19.5
477952	31.3	20.8	403477	31.4	20.2	147120	31.5	21.5	368360	31.5	21.6	112469	31.6	19.4	188383	31.7	20.9
405787	31.3	20.8	157015	31.4	19.5	11712	31.5	17.1	269373	31.5	20.8	391501	31.6	20.7	298055	31.7	20.5
153178	31.3	19.8	10118	31.4	17.5	394920	31.5	20.1	127216	31.5	19.2	138988	31.6	19.6	472614	31.7	20.9
240667	31.3	20.5	219918	31.4	21.1	108093	31.5	19.2	478638	31.5	21.6	401232	31.6	19.9	80701	31.7	18.5
358900	31.3	21.4	222884	31.4	21.1	153902	31.5	19.7	253832	31.5	19.0	212390	31.6	20.1	26811	31.7	17.6
139351	31.3	19.9	27576	31.4	19.0	365953	31.5	21.4	504856	31.5	20.8	145034	31.6	19.8	133337	31.7	19.2
396124	31.3	20.5	180951	31.4	20.9	358609	31.5	20.3	175224	31.5	19.8	35104	31.6	19.1	137317	31.7	18.8
249418	31.3	20.9	48782	31.4	19.3	12753	31.5	16.5	239875	31.5	20.6	79408	31.6	19.8	323600	31.7	20.1
446811	31.3	22.1	318429	31.4	20.5	288259	31.5	19.9	347269	31.5	19.9	149724	31.6	20.9	128180	31.7	19.2
275369	31.3	20.4	7494	31.4	16.6	334757	31.5	18.6	306972	31.5	19.3	509466	31.6	21.3	317461	31.7	19.8
222431	31.3	20.7	382583	31.4	20.1	511403	31.5	21.3	416059	31.5	20.7	449847	31.6	21.3	203155	31.7	19.6
293948	31.3	20.3	240177	31.4	19.9	535218	31.5	21.3	245490	31.5	19.2	61368	31.6	18.5	19245	31.7	18.0
386811	31.3	21.2	488672	31.4	19.9	376400	31.5	21.3	208287	31.5	19.3	245398	31.6	21.3	371842	31.7	20.5
391514	31.3	20.5	346679	31.4	19.7	207885	31.5	20.9	184044	31.6	20.1	234100	31.6	20.1	169787	31.7	19.2
540628	31.3	20.6	336273	31.4	19.5	320424	31.5	19.2	131150	31.6	19.6	152322	31.6	19.7	361014	31.7	21.0
202003	31.4	20.1	305065	31.4	19.5	371440	31.5	21.4	522007	31.6	21.4	530984	31.6	21.3	47644	31.7	18.2
102689	31.4	19.5	158087	31.4	18.7	323293	31.5	20.7	535139	31.6	21.3	339209	31.6	21.1	53533	31.7	19.0
10147	31.4	17.3	106597	31.4	18.8	316959	31.5	20.4	140473	31.6	18.5	491571	31.6	21.4	365276	31.7	20.4
495181	31.4	19.8	207	31.4	13.0	167492	31.5	18.5	177960	31.6	20.8	433022	31.6	21.2	485791	31.7	20.8
11917	31.4	17.1	143075	31.4	20.1	488204	31.5	20.3	450151	31.6	21.3	16168	31.6	18.1	158196	31.7	20.4
329244	31.4	20.6	205036	31.4	19.7	435118	31.5	20.2	338793	31.6	20.2	399652	31.6	21.1	21967	31.7	16.4
170521	31.4	19.0	18470	31.4	17.8	169818	31.5	19.0	27178	31.6	17.9	383468	31.6	19.9	476629	31.7	21.8
127197	31.4	19.7	432767	31.4	21.1	437643	31.5	19.8	94053	31.6	18.5	350419	31.6	20.1	82648	31.7	19.6
447711	31.4	19.9	532178	31.4	21.4	428803	31.5	21.2	234804	31.6	20.6	309558	31.6	20.9	476713	31.7	20.0
142151	31.4	19.9	159823	31.4	19.4	497646	31.5	20.6	205071	31.6	19.2	25504	31.6	17.5	476604	31.7	20.8
504430	31.4	21.2	189370	31.4	20.6	426454	31.5	21.7	300819	31.6	21.3	389505	31.6	20.8	64975	31.7	20.2
326167	31.4	19.9	36198	31.4	17.2	13711	31.5	18.4	211520	31.6	20.2	206625	31.6	19.5	261944	31.7	21.1
351175	31.4	20.6	427651	31.4	18.9	114753	31.5	18.6	167201	31.6	20.4	233775	31.6	19.6	446725	31.7	20.8
388563	31.4	20.4	287840	31.4	20.0	11793	31.5	17.0	33830	31.6	17.5	385532	31.6	19.6	425097	31.7	20.7
321938	31.4	20.3	249344	31.4	20.1	86678	31.5	19.3	221465	31.6	19.3	80854	31.6	19.7	34565	31.7	18.3
517410	31.4	21.4	320148	31.4	20.2	106145	31.5	18.2	473355	31.6	20.9	315045	31.6	20.5	266537	31.7	20.8
134083	31.4	19.5	77258	31.4	19.0	171202	31.5	20.3	484897	31.6	20.8	282941	31.6	18.6	210789	31.7	19.6
283649	31.4	21.0	191470	31.4	20.7	72276	31.5	18.1	376863	31.6	19.8	368654	31.6	20.7	49120	31.7	19.0
396391	31.4	20.6	480409	31.4	21.5	137130	31.5	19.4	230364	31.6	19.0	187140	31.6	20.0	297179	31.7	19.9
323324	31.4	19.7	218799	31.4	19.4	172803	31.5	19.0	99966	31.6	20.9	371513	31.6	20.8	225891	31.7	18.1
165574	31.4	18.9	10514	31.4	17.0	478930	31.5	21.2	6664	31.6	16.9	100070	31.6	18.1	181605	31.7	19.6
200240	31.4	19.3	169814	31.4	19.2	251816	31.5	19.2	345498	31.6	21.0	155570	31.6	19.6	131020	31.7	17.9
79657	31.4	19.7	265834	31.4	20.1	358773	31.5	20.9	46024	31.6	19.4	107479	31.6	19.3	480874	31.7	19.8
412833	31.4	21.5	428232	31.4	20.7	215433	31.5	20.2	378567	31.6	21.1	348051	31.6	20.9	274336	31.7	20.7
482224	31.4	21.0	7856	31.4	17.5	237328	31.5	18.6	428603	31.6	20.5	470800	31.7	19.0	237911	31.7	19.8
66155	31.4	18.6	151289	31.4	20.2	250382	31.5	19.5	503913	31.6	21.5	92799	31.7	19.1	121854	31.7	19.4
144118	31.4	19.5	516885	31.4	22.1	150052	31.5	20.1	287093	31.6	20.3	154618	31.7	20.3	285079	31.7	20.0
381632	31.4	19.2	320567	31.4	20.4	362609	31.5	20.0	202748	31.6	19.2	264899	31.7	19.3	107630	31.7	19.8
381717	31.4	22.0	112500	31.4	19.5	70223	31.5	18.6	239681	31.6	20.0	70478	31.7	17.7	260201	31.7	20.3
24592	31.4	18.2	106683	31.4	19.4	396901	31.5	19.4	223344	31.6	19.4	511658	31.7	20.4	79085	31.7	19.1
319626	31.4	21.5	221540	31.4	19.9	446298	31.5	21.0	282701	31.6	19.3	84198	31.7	18.9	390945	31.7	21.0
403192	31.4	21.7	70888	31.4	19.2	501940	31.5	20.3	114965	31.6	19.1	454063	31.7	21.0	168119	31.7	20.0
246222	31.4	20.7	356555	31.4	20.3	186806	31.5	20.4	476581	31.6	20.7	365311	31.7	22.1	507639	31.7	22.5
343338	31.4	20.2	296408	31.4	19.8	34688											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2021

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
255114	31.7	20.0	522032	31.8	21.2	132424	31.8	20.3	136228	31.9	17.9	504692	31.9	21.4	453523	31.9	21.6
54712	31.7	19.4	40965	31.8	19.0	223213	31.8	19.4	34287	31.9	17.6	468903	31.9	19.5	440925	31.9	20.9
515183	31.7	20.2	86192	31.8	16.4	297217	31.8	21.1	127834	31.9	19.9	192643	31.9	18.3	28229	31.9	17.5
243310	31.7	21.2	419847	31.8	19.6	157455	31.8	19.5	5855	31.9	16.0	237530	31.9	19.9	346644	31.9	19.4
45222	31.7	16.5	42139	31.8	18.8	126373	31.8	18.7	478743	31.9	20.6	108159	31.9	19.9	179240	31.9	20.9
98490	31.7	19.0	130201	31.8	18.9	23827	31.8	17.8	47048	31.9	17.9	532747	31.9	20.7	139259	31.9	19.7
45111	31.7	18.1	494696	31.8	23.4	286936	31.8	19.7	97472	31.9	19.4	115869	31.9	19.5	410672	31.9	20.9
107933	31.7	18.9	528160	31.8	21.9	325607	31.8	20.1	131922	31.9	19.0	81784	31.9	18.5	85148	31.9	20.4
104529	31.7	19.7	535291	31.8	20.9	13995	31.8	18.8	27298	31.9	17.8	406962	31.9	20.1			
132375	31.7	20.0	312904	31.8	20.2	536262	31.8	21.2	61319	31.9	18.6	267187	31.9	20.7			
22726	31.7	18.7	53762	31.8	18.8	54206	31.8	18.4	31892	31.9	19.0	1424	31.9	14.7			
88206	31.7	18.6	480466	31.8	21.4	407128	31.8	21.2	509524	31.9	19.5	151429	31.9	19.8			
37417	31.7	19.5	342488	31.8	19.9	398871	31.8	19.9	73383	31.9	18.7	541049	31.9	19.8			
114452	31.7	18.2	323283	31.8	20.4	315257	31.8	20.6	447286	31.9	20.5	45687	31.9	17.9			
247733	31.7	20.6	162907	31.8	19.4	298579	31.8	19.8	297357	31.9	21.0	233402	31.9	20.2			
449958	31.7	21.6	377294	31.8	20.3	280969	31.8	20.8	181386	31.9	20.2	65789	31.9	20.2			
6910	31.7	17.0	373655	31.8	21.8	274173	31.8	20.9	108474	31.9	19.8	96381	31.9	19.8			
455231	31.7	20.6	251936	31.8	19.2	324177	31.8	20.3	411167	31.9	20.6	394483	31.9	19.8			
507283	31.8	19.8	407586	31.8	20.2	485296	31.8	20.3	409106	31.9	21.6	98254	31.9	19.1			
128949	31.8	18.9	331742	31.8	19.4	241416	31.8	19.0	349297	31.9	19.7	280184	31.9	20.6			
45643	31.8	17.3	414041	31.8	20.9	32612	31.8	18.2	262602	31.9	19.8	157704	31.9	19.2			
477150	31.8	19.9	424535	31.8	20.8	490460	31.8	20.0	528173	31.9	21.2	461371	31.9	20.8			
324228	31.8	20.0	360693	31.8	20.6	284500	31.9	21.7	412310	31.9	20.8	158130	31.9	20.1			
307593	31.8	20.7	455046	31.8	21.3	117369	31.9	19.4	487884	31.9	21.0	349193	31.9	20.9			
106183	31.8	18.4	227206	31.8	19.0	330847	31.9	20.1	98520	31.9	18.7	338803	31.9	19.3			
145796	31.8	19.9	405810	31.8	20.5	6594	31.9	17.3	348428	31.9	20.3	455087	31.9	19.8			
262070	31.8	20.0	320329	31.8	19.8	21721	31.9	18.6	208504	31.9	19.1	476138	31.9	20.4			
360526	31.8	21.2	99234	31.8	19.6	177409	31.9	20.3	29209	31.9	18.0	187750	31.9	20.7			
357331	31.8	21.6	100593	31.8	18.7	21586	31.9	17.7	203336	31.9	19.9	448402	31.9	20.7			
515425	31.8	21.9	382517	31.8	21.4	205665	31.9	19.4	17272	31.9	17.5	291769	31.9	21.4			
483640	31.8	20.3	100102	31.8	19.4	528133	31.9	21.6	206039	31.9	20.0	230317	31.9	19.1			
446620	31.8	20.6	37909	31.8	19.1	237976	31.9	20.2	232595	31.9	20.3	68873	31.9	18.7			
27698	31.8	19.4	78765	31.8	18.8	281818	31.9	20.3	533979	31.9	21.0	493637	31.9	21.5			
7017	31.8	16.8	509830	31.8	18.0	385770	31.9	19.6	131781	31.9	18.6	116514	31.9	20.7			
182335	31.8	20.6	50350	31.8	18.5	530513	31.9	21.7	159969	31.9	19.1	134142	31.9	20.1			
380243	31.8	19.8	439572	31.8	21.2	517963	31.9	20.8	203287	31.9	19.7	199085	31.9	19.9			
89390	31.8	19.7	342922	31.8	19.0	19180	31.9	17.8	393080	31.9	20.9	346433	31.9	21.7			
103769	31.8	18.7	33408	31.8	17.8	213316	31.9	19.7	203962	31.9	18.4	115405	31.9	18.7			
476680	31.8	20.8	297112	31.8	21.1	5587	31.9	19.4	235135	31.9	19.5	482092	31.9	20.8			
75442	31.8	18.3	323658	31.8	20.8	373830	31.9	17.8	252902	31.9	20.8	193420	31.9	17.8			
400746	31.8	20.2	449712	31.8	19.9	365378	31.9	20.9	144891	31.9	19.1	520670	31.9	21.6			
399890	31.8	19.9	438932	31.8	21.3	138019	31.9	18.8	313658	31.9	20.8	511708	31.9	20.8			
336784	31.8	20.4	487292	31.8	20.0	322638	31.9	20.3	237370	31.9	20.2	330852	31.9	20.8			
11960	31.8	18.1	351189	31.8	20.6	293455	31.9	19.7	162833	31.9	19.3	56543	31.9	19.0			
145687	31.8	19.5	27361	31.8	18.1	469348	31.9	20.0	512172	31.9	21.4	276888	31.9	22.1			
169474	31.8	19.2	237959	31.8	20.9	13619	31.9	18.2	451195	31.9	20.2	432669	31.9	20.9			
144942	31.8	19.9	521808	31.8	20.5	449738	31.9	20.4	26324	31.9	19.1	250355	31.9	18.8			
115294	31.8	19.8	357365	31.8	21.0	262136	31.9	21.1	5491	31.9	15.9	313687	31.9	21.5			
398995	31.8	20.5	292099	31.8	21.2	227795	31.9	20.2	386381	31.9	20.5	121784	31.9	19.1			
292553	31.8	19.7	75136	31.8	19.4	382587	31.9	19.4	120570	31.9	21.0	48116	31.9	19.0			
25149	31.8	18.9	2682	31.8	16.8	324297	31.9	20.7	262681	31.9	19.9	259397	31.9	20.1			
247393	31.8	19.9	322753	31.8	19.5	523254	31.9	20.8	401645	31.9	20.2	214604	31.9	21.0			
380826	31.8	19.5	428872	31.8	21.2	421903	31.9	20.8	153691	31.9	18.8	439838	31.9	21.3			
478570	31.8	22.3	24355	31.8	17.6	223417	31.9	20.3	526386	31.9	22.3	441664	31.9	18.9			
448083	31.8	21.5	453440	31.8	20.8	121920	31.9	18.8	100973	31.9	19.0	467334	31.9	19.9			
409256	31.8	22.8	518411	31.8	20.9	57897	31.9	18.4	170749	31.9	20.1	404111	31.9	19.3			
137570	31.8	19.3	286934	31.8	20.9	474698	31.9	20.4	119149	31.9	19.4	516144	31.9	20.4			
477091	31.8	20.5	112454	31.8	19.4	479818	31.9	20.7	157212	31.9	20.4	483863	31.9	20.0			
106609	31.8	18.7	475974	31.8	21.5	282932	31.9	20.3	447481	31.9	21.8	279043	31.9	20.4			
218606	31.8	19.7	392698	31.8	21.0	447263	31.9	21.0	78129	31.9	20.6	113100	31.9	19.5			
45587	31.8	17.9	434365	31.8	20.8	21944	31.9	18.6	479075	31.9	19.7	511181	31.9	20.2			
480389	31.8	20.8	441078	31.8	20.1	105577	31.9	19.1	126333	31.9	20.0	73771	31.9	20.1			
63185	31.8	18.9	240430	31.8	19.6	197078	31.9	20.6	133568	31.9	19.7	313045	31.9	19.0			
166427	31.8	20.5	99538	31.8	19.3	473498	31.9	20.9	93540	31.9	18.2	511080	31.9	20.6			
425106	31.8	21.8	287658	31.8	20.9	370455	31.9	19.9	2994	31.9	17.8	531222	31.9	21.7			