

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
313992	1.0	20.4	460133	1.1	20.5	350370	1.1	19.9	99066	1.2	19.7	286575	1.3	20.2	162392	1.4	18.3
501781	1.0	20.1	34639	1.1	16.8	151495	1.1	18.7	392969	1.2	20.3	121813	1.3	19.9	418074	1.4	20.0
406310	1.0	21.9	410695	1.1	19.7	158022	1.1	18.1	310614	1.2	19.5	292217	1.3	20.4	542672	1.4	21.0
346733	1.0	20.2	539424	1.1	21.1	122675	1.1	18.7	521345	1.2	19.5	57786	1.3	17.3	251265	1.4	19.9
539152	1.0	20.9	536822	1.1	21.7	514302	1.1	20.3	511298	1.2	21.4	489276	1.3	21.2	96065	1.4	19.4
328955	1.0	21.0	297050	1.1	20.4	493559	1.1	21.2	533247	1.2	20.8	166147	1.3	19.6	399940	1.4	19.6
277567	1.0	19.5	443367	1.1	20.7	124744	1.1	19.4	161376	1.2	18.6	512082	1.3	20.7	502612	1.4	20.1
460413	1.0	21.0	310641	1.1	20.1	536073	1.1	21.5	280149	1.2	20.0	20961	1.3	18.7	535162	1.4	20.9
527629	1.0	20.5	257122	1.1	20.8	276870	1.2	19.0	511135	1.2	21.2	510635	1.3	20.6	482343	1.4	20.5
408343	1.0	20.3	96404	1.1	18.7	202234	1.2	19.8	326203	1.2	20.3	349782	1.3	20.7	233359	1.4	20.6
208647	1.0	20.7	447207	1.1	19.9	180946	1.2	19.6	168778	1.2	18.2	405427	1.3	21.8	219954	1.4	19.6
530378	1.0	20.8	39798	1.1	18.9	316176	1.2	20.1	358351	1.2	21.0	176159	1.3	19.8	529505	1.4	20.3
195460	1.0	20.5	208573	1.1	20.0	408684	1.2	20.7	250058	1.2	21.2	393178	1.3	20.3	539006	1.4	21.1
499581	1.0	20.5	9132	1.1	17.5	194678	1.2	19.0	73304	1.2	19.4	324984	1.3	20.2	476228	1.4	20.4
39369	1.0	18.4	69970	1.1	18.2	33377	1.2	19.0	414411	1.2	20.9	299438	1.3	19.9	478760	1.4	21.2
213566	1.0	20.0	130654	1.1	18.6	335117	1.2	19.4	359613	1.2	20.3	132397	1.3	19.9	482364	1.4	20.3
468616	1.0	21.4	182061	1.1	20.1	98386	1.2	18.4	107702	1.2	19.9	516445	1.3	19.4	272155	1.4	20.1
322020	1.0	19.2	39275	1.1	19.1	325908	1.2	20.1	165964	1.2	20.3	315229	1.3	19.7	54438	1.4	18.8
348365	1.0	19.8	224030	1.1	18.7	515987	1.2	20.9	15642	1.2	17.7	418084	1.3	20.2	502440	1.4	20.0
47347	1.0	18.9	475551	1.1	19.7	105661	1.2	19.1	187356	1.2	19.6	157243	1.3	19.9	315956	1.4	20.4
508566	1.0	20.5	255322	1.1	20.2	441978	1.2	20.1	389327	1.2	20.8	43632	1.3	19.2	347088	1.4	21.1
121888	1.0	19.8	77092	1.1	19.3	425911	1.2	21.1	510865	1.2	20.7	92304	1.3	19.4	37542	1.4	19.2
278136	1.0	19.9	252200	1.1	21.2	244638	1.2	20.8	377632	1.2	20.5	345050	1.3	21.0	445526	1.4	19.4
337118	1.0	21.2	315056	1.1	20.9	248518	1.2	19.3	205704	1.2	18.6	436216	1.3	20.3	172832	1.4	20.3
335515	1.0	19.7	358604	1.1	18.0	271919	1.2	19.0	254315	1.2	19.8	55250	1.3	18.7	287668	1.4	18.6
344189	1.0	21.0	445266	1.1	20.0	358728	1.2	21.0	213862	1.2	18.0	472545	1.3	21.6	213508	1.4	19.7
26601	1.0	18.0	116775	1.1	19.4	269621	1.2	19.6	429643	1.2	21.4	188961	1.3	20.1	279437	1.4	19.8
189567	1.0	18.9	112987	1.1	19.5	389867	1.2	19.7	537231	1.2	20.6	209299	1.3	19.4	369765	1.4	20.3
17900	1.0	18.8	24924	1.1	17.8	492419	1.2	21.2	504500	1.2	20.7	299908	1.3	20.7	365257	1.4	19.8
253380	1.0	19.8	351172	1.1	19.8	111754	1.2	19.5	36008	1.2	18.8	202773	1.3	19.1	97368	1.4	17.5
273785	1.0	21.6	446417	1.1	21.6	294575	1.2	21.4	298695	1.3	20.1	112175	1.3	20.3	517064	1.4	19.4
33218	1.0	18.1	123934	1.1	19.6	436082	1.2	20.6	460609	1.3	20.3	432026	1.3	20.0	315438	1.4	20.7
310666	1.0	19.6	536836	1.1	21.5	278897	1.2	20.7	207752	1.3	19.3	69464	1.3	17.1	249422	1.4	21.0
73265	1.0	18.0	359350	1.1	20.5	313149	1.2	20.8	132197	1.3	19.2	189136	1.3	17.8	139196	1.4	19.9
304015	1.0	20.1	21105	1.1	18.9	399232	1.2	21.3	217280	1.3	20.7	472700	1.3	20.6	276515	1.4	18.3
295787	1.0	20.1	19404	1.1	18.0	507300	1.2	21.4	114506	1.3	18.2	250820	1.3	19.5	158028	1.4	18.6
225624	1.0	20.1	162647	1.1	18.2	292622	1.2	19.6	401730	1.3	20.7	476011	1.3	20.7	465317	1.4	19.9
435712	1.0	20.9	234026	1.1	18.8	238177	1.2	18.9	96723	1.3	19.0	208412	1.3	19.2	36168	1.4	17.6
83978	1.0	19.3	450956	1.1	19.4	278558	1.2	20.3	75010	1.3	18.3	473128	1.3	20.2	459660	1.4	20.8
374435	1.0	20.3	263962	1.1	20.0	9719	1.2	17.2	293454	1.3	19.5	431403	1.3	22.0	96043	1.4	18.9
306401	1.0	20.8	251960	1.1	20.0	356216	1.2	20.6	144935	1.3	19.8	321322	1.3	20.2	94277	1.4	20.1
264121	1.0	19.4	480815	1.1	20.5	186481	1.2	19.5	361592	1.3	20.5	65206	1.3	19.3	282404	1.4	20.1
131545	1.0	19.3	28549	1.1	18.2	185296	1.2	20.6	420463	1.3	20.3	173083	1.3	20.9	360185	1.4	20.3
302211	1.0	19.5	515951	1.1	21.1	442539	1.2	20.4	476931	1.3	20.0	207677	1.3	20.2	62100	1.4	18.9
151518	1.0	20.5	339233	1.1	19.1	182828	1.2	19.6	96388	1.3	19.7	290659	1.3	20.6	307907	1.4	19.9
38472	1.1	18.6	418956	1.1	20.9	338637	1.2	20.1	442083	1.3	20.6	336381	1.3	19.9	383165	1.4	20.6
442142	1.1	20.3	11924	1.1	17.1	385740	1.2	20.1	59942	1.3	18.2	257204	1.3	20.1	147962	1.4	21.0
480639	1.1	20.7	477515	1.1	21.3	276046	1.2	20.4	247803	1.3	19.7	16643	1.3	17.8	311380	1.4	20.0
42898	1.1	19.3	224103	1.1	20.4	438255	1.2	20.0	357004	1.3	20.2	106783	1.3	18.3	174427	1.4	20.2
23790	1.1	17.1	121638	1.1	19.0	477815	1.2	21.8	528519	1.3	20.0	34684	1.3	18.5	278433	1.4	18.5
352948	1.1	20.7	261972	1.1	19.7	263802	1.2	20.2	485699	1.3	20.7	86132	1.3	19.3	95498	1.4	19.2
363176	1.1	20.3	103685	1.1	19.5	325081	1.2	21.8	459630	1.3	21.3	184324	1.3	19.9	317806	1.4	19.0
247530	1.1	20.7	89815	1.1	19.4	389183	1.2	20.4	448990	1.3	20.7	4267	1.3	16.3	156159	1.4	19.2
516868	1.1	22.9	217822	1.1	20.6	460235	1.2	20.2	348125	1.3	18.7	506443	1.3	22.5	519495	1.4	21.2
235838	1.1	19.8	448714	1.1	19.8	3656	1.2	16.6	270342	1.3	19.3	356448	1.3	20.5	254613	1.4	18.9
534274	1.1	19.9	119935	1.1	20.0	295490	1.2	20.2	127155	1.3	19.2	484542	1.3	20.9	180421	1.4	19.5
506982	1.1	19.7	326631	1.1	19.5	356914	1.2	20.6	219085	1.3	18.8	153167	1.3	20.0	359959	1.4	20.6
226367	1.1	19.5	376537	1.1	20.8	514045	1.2	21.1	480181	1.3	21.1	540137	1.4	21.1	31666	1.4	17.1
141441	1.1	17.8	20461	1.1	29.0	165240	1.2	18.6	212690	1.3	21.1	94227	1.4	18.6	274870	1.4	19.8
122472	1.1	18.0	31767	1.1	18.4	462012	1.2	21.2	282866	1.3	19.3	491601	1.4	20.3	430974	1.4	20.5
25338	1.1	16.0	191300	1.1	20.9	144915	1.2	20.2	182075	1.3	19.8	26132	1.4	18.7	278842	1.4	19.9
287833	1.1	19.8	519336	1.1	20.4	103774	1.2	19.1	242053	1.3	20.1	537279	1.4	20.0	436814	1.4	20.6
431868	1.1	20.9	247148	1.1	17.3	69365	1.2	17.8	516280	1.3	20.1	165291	1.4	19.5	362035	1.4	21.1
455870	1.1	19.8	515691	1.1	20.3	35795	1.2	19.0	94311	1.3	19.0	239374	1.4	20.2	177051	1.4	19.7
93473	1.1	19.1	475651	1.1	20.7	254289	1.2	19.7	445377	1.3	19.3	290597	1.4	19.9	529933	1.4	18.7
359602	1.1	20.7	216027	1.1	19.4	279638	1.2	20.4	257472	1.3	21.1	96410	1.4	19.4	143667	1.4	19.0
391559	1.1	20.9	526353	1.1	21.7	542693	1.2	21.6	205706	1.3	19.4	355600	1.4	21.7	361093	1.4	20.4
294934	1.1	19.9	60068	1.1	18.6	325924	1.2	18.6	2116	1.3	15.7	514758	1.4	20.2	380184	1.4	18.6
510911	1.1	20.4	143648	1.1	19.7	437089	1.2	20.5	278808	1.3	20.1	542691	1.4	20.7	494311	1.4	21.2
271754	1.1	19.8	245319	1.1	19.8	349815	1.2	19.3	187004	1.3	19.6	22231	1.4	18.8	521495	1.4	20.4
152900	1.1	19.9	136523	1.1	19.1	448973	1.2	20.7	91795	1.3	19.1	140401	1.4</				

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
46699	1.4	18.5	23663	1.5	18.3	15329	1.6	17.9	92875	1.7	17.9	292456	1.7	19.9	195305	1.8	20.3
380820	1.4	19.6	263516	1.5	19.7	300654	1.6	20.4	174804	1.7	19.1	277642	1.7	20.9	36745	1.8	17.7
147997	1.4	18.4	283092	1.5	20.0	392357	1.6	19.9	208579	1.7	19.9	309616	1.7	20.4	513578	1.8	20.6
389623	1.4	19.9	241386	1.5	19.6	328120	1.6	20.5	148542	1.7	18.8	83607	1.7	18.7	310646	1.8	20.3
430784	1.4	17.9	293100	1.5	19.8	491959	1.6	21.0	168877	1.7	18.8	283823	1.7	20.1	65675	1.8	18.9
335455	1.4	20.9	303945	1.5	20.5	435677	1.6	20.3	399005	1.7	20.4	537625	1.7	20.6	371633	1.8	20.0
25370	1.4	18.9	49396	1.5	17.1	395081	1.6	20.3	37727	1.7	18.7	494641	1.7	21.1	68938	1.8	18.3
71892	1.4	18.6	166583	1.5	19.3	126528	1.6	19.3	181881	1.7	18.7	169910	1.7	20.3	258686	1.8	20.3
397048	1.4	20.1	309213	1.5	20.0	501027	1.6	20.2	40889	1.7	19.2	285219	1.7	21.3	296707	1.8	20.5
73171	1.4	19.5	243342	1.5	19.6	244215	1.6	20.5	276053	1.7	20.4	462552	1.7	20.2	144002	1.8	19.3
434002	1.5	19.5	15521	1.5	18.5	209926	1.6	18.6	415327	1.7	20.8	441748	1.7	21.7	200769	1.8	17.8
316957	1.5	20.4	295696	1.5	19.8	130561	1.6	18.3	311502	1.7	20.5	83975	1.7	19.7	387427	1.8	20.5
432294	1.5	20.5	513386	1.5	21.7	90769	1.6	18.9	358877	1.7	21.1	319606	1.7	20.8	63120	1.8	17.2
380831	1.5	20.9	108849	1.5	19.0	340456	1.6	20.5	108604	1.7	18.9	316276	1.7	20.2	464802	1.8	21.0
80518	1.5	17.6	534035	1.5	19.8	500060	1.6	21.0	441983	1.7	20.6	526115	1.7	20.7	251715	1.8	20.9
80302	1.5	19.1	289588	1.5	20.7	405117	1.6	20.5	163974	1.7	19.6	219968	1.7	19.8	115845	1.8	18.7
305486	1.5	20.6	367660	1.5	19.0	69993	1.6	18.5	209344	1.7	19.6	209104	1.7	18.9	471160	1.8	20.4
473117	1.5	21.6	69625	1.5	17.7	530417	1.6	22.3	456096	1.7	21.6	306883	1.7	17.8	529338	1.8	21.0
441970	1.5	20.4	205865	1.5	20.0	264236	1.6	20.4	9961	1.7	17.4	387471	1.7	19.1	353739	1.8	20.3
531532	1.5	21.3	314109	1.5	20.3	27284	1.6	18.4	95955	1.7	19.2	394834	1.7	20.0	375179	1.8	20.8
439369	1.5	20.4	59567	1.5	19.7	349787	1.6	21.1	154241	1.7	19.6	93615	1.7	18.9	514257	1.8	21.2
71064	1.5	18.0	539737	1.5	20.6	313929	1.6	19.3	162161	1.7	21.6	282005	1.7	20.3	131955	1.8	20.0
474082	1.5	19.7	308021	1.5	18.9	26105	1.6	17.4	246307	1.7	19.5	341983	1.7	20.7	476246	1.8	21.2
382757	1.5	21.1	331382	1.5	20.8	199787	1.6	19.2	235954	1.7	20.2	128677	1.7	19.5	338511	1.8	20.5
6164	1.5	16.1	441996	1.5	19.7	377639	1.6	20.5	216272	1.7	19.2	211191	1.7	20.1	44795	1.8	18.2
322157	1.5	20.5	25958	1.5	17.7	239824	1.6	20.1	445357	1.7	20.9	315922	1.7	20.6	71437	1.8	19.5
103635	1.5	19.6	8868	1.5	17.5	516118	1.6	21.2	95984	1.7	19.0	256540	1.7	20.2	246661	1.8	20.5
433989	1.5	20.6	20149	1.5	17.4	171751	1.6	19.4	537694	1.7	21.5	137577	1.7	20.2	268484	1.8	20.2
468856	1.5	20.6	222384	1.5	19.1	43152	1.6	18.5	447093	1.7	20.6	42301	1.7	21.4	60381	1.8	18.3
85037	1.5	18.7	292895	1.5	20.9	180957	1.6	19.1	418958	1.7	21.5	316132	1.7	20.2	27559	1.8	18.5
358989	1.5	20.6	358952	1.5	20.7	501801	1.6	20.7	49674	1.7	16.5	340487	1.8	19.7	538777	1.8	20.1
303306	1.5	20.6	362929	1.5	19.9	58245	1.6	17.6	517824	1.7	20.4	393811	1.8	19.5	430134	1.8	19.5
441437	1.5	19.6	274149	1.5	20.6	142668	1.6	19.4	359559	1.7	20.0	63193	1.8	19.5	43095	1.8	18.2
519541	1.5	20.9	312198	1.5	19.7	184857	1.6	19.5	150524	1.7	19.2	2538	1.8	15.3	250326	1.8	18.2
338548	1.5	18.3	420049	1.5	20.5	139178	1.6	19.7	433674	1.7	21.0	145841	1.8	19.6	28851	1.8	17.5
294992	1.5	21.1	230834	1.5	18.5	314513	1.6	19.7	471294	1.7	20.9	339430	1.8	19.7	535941	1.8	21.1
123532	1.5	19.9	99643	1.5	19.0	255097	1.6	18.5	258544	1.7	19.2	39050	1.8	18.5	50093	1.8	17.7
169582	1.5	19.3	243098	1.5	19.9	218489	1.6	19.4	361937	1.7	20.3	235797	1.8	19.7	345941	1.8	20.3
150659	1.5	20.5	5284	1.5	17.0	97293	1.6	19.1	100861	1.7	19.3	312948	1.8	20.1	420773	1.8	21.0
207292	1.5	20.0	330270	1.5	19.7	265413	1.6	20.0	337335	1.7	19.6	7742	1.8	17.0	510712	1.8	21.6
490446	1.5	21.1	10638	1.5	18.1	278328	1.6	21.0	411098	1.7	20.7	55245	1.8	18.9	439250	1.8	21.0
27682	1.5	19.3	533833	1.5	19.6	338527	1.6	20.2	393234	1.7	20.6	78824	1.8	18.0	95891	1.8	19.5
275968	1.5	17.8	153215	1.5	19.5	250348	1.6	19.1	262403	1.7	20.2	189853	1.8	19.5	359598	1.8	21.2
176460	1.5	18.9	431696	1.5	21.4	432377	1.6	19.9	312961	1.7	20.3	398941	1.8	21.4	292309	1.8	19.1
382764	1.5	19.9	449018	1.5	20.8	540098	1.6	20.4	435706	1.7	20.7	34303	1.8	19.6	388889	1.8	20.9
31305	1.5	18.4	525826	1.5	20.2	404343	1.6	21.6	395236	1.7	21.0	128626	1.8	19.5	420402	1.8	21.0
314569	1.5	21.6	247828	1.6	19.5	6414	1.6	16.7	181613	1.7	20.5	247155	1.8	20.6	443025	1.8	20.5
446167	1.5	20.4	74005	1.6	19.2	259165	1.6	19.9	506570	1.7	20.6	399007	1.8	19.8	295504	1.8	20.0
177270	1.5	19.2	173718	1.6	19.9	44366	1.6	18.0	356279	1.7	19.8	34372	1.8	17.6	316088	1.8	19.9
439766	1.5	21.2	117585	1.6	20.7	369697	1.6	21.8	362797	1.7	20.4	508985	1.8	21.1	355252	1.8	21.7
289838	1.5	20.6	133375	1.6	19.4	73877	1.6	18.9	322017	1.7	19.9	242726	1.8	18.6	69763	1.8	18.3
168018	1.5	19.8	463774	1.6	20.3	92248	1.6	18.7	398290	1.7	19.0	249611	1.8	19.7	353196	1.8	20.8
309186	1.5	20.5	137620	1.6	19.3	346550	1.6	20.5	34028	1.7	18.6	239861	1.8	20.4	256525	1.8	20.1
473052	1.5	20.0	215470	1.6	19.6	164282	1.6	18.5	221329	1.7	19.4	435347	1.8	20.0	219141	1.8	19.5
102283	1.5	18.0	467252	1.6	20.6	454838	1.6	20.9	531262	1.7	20.8	15133	1.8	17.5	17246	1.8	18.0
231921	1.5	19.8	145211	1.6	20.5	404713	1.6	20.6	94247	1.7	19.5	314527	1.8	20.8	446144	1.8	21.1
32079	1.5	18.4	145527	1.6	20.2	6059	1.6	16.5	191010	1.7	19.8	531539	1.8	20.9	7360	1.8	16.2
304377	1.5	21.0	409360	1.6	19.6	539049	1.6	21.4	344778	1.7	19.3	70588	1.8	18.7	343105	1.8	19.3
482170	1.5	20.8	68736	1.6	19.2	163302	1.6	19.5	65746	1.7	19.4	512261	1.8	21.3	367910	1.8	20.6
78056	1.5	18.6	397108	1.6	20.4	306174	1.6	19.5	318940	1.7	18.7	360430	1.8	20.6	43169	1.8	16.7
341261	1.5	20.1	294642	1.6	20.4	283701	1.6	20.0	106044	1.7	19.0	376385	1.8	19.5	59355	1.8	20.2
155867	1.5	19.6	274282	1.6	19.2	237122	1.6	19.6	403049	1.7	18.5	48497	1.8	18.9	264132	1.8	19.4
483251	1.5	19.6	509708	1.6	19.3	454901	1.6	20.3	318917	1.7	20.6	380846	1.8	21.1	101895	1.8	18.3
340430	1.5	20.7	219512	1.6	18.8	278336	1.6	20.8	153053	1.7	18.6	161020	1.8	19.9	416330	1.8	19.5
315368	1.5	19.7	355810	1.6	20.5	472022	1.6	20.2	261785	1.7	20.2	393907	1.8	20.1	436207	1.8	19.2
253145	1.5	19.4	87615	1.6	18.3	157315	1.6	19.0	341207	1.7	20.3	524781	1.8	20.4	525151	1.8	19.0
333597	1.5	20.8	34541	1.6	19.3	90426	1.6	18.3	26802	1.7	18.9	97653	1.8	18.9	343531	1.8	20.8
71358	1.5	18.5	522722	1.6	20.1	192348	1.6	19.9	373540	1.7	20.4	9214	1.8	16.4	390097	1.8	20.4
214478	1.5	19.9	211544	1.6	18.1	518836	1.6	21.2	187385	1.7	19.7	479784	1.8	20.4	363933	1.8	18.9
233596	1.5	19.7	182217	1.6	20.3	447304	1.6	19.8	105519	1.7	18.6	178257	1.8	19.9	178568	1.8	19.6
185267	1.5	20.5	389863	1.6	19.2	126870	1.6	19.6	242178	1.7	19.7	462598	1.8	21.3	204783		

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
49183	1.9	18.6	479971	1.9	21.3	511485	2.0	21.4	380808	2.1	19.1	95478	2.1	19.5	479410	2.2	20.1
476096	1.9	20.3	470766	1.9	20.6	538462	2.0	20.9	255878	2.1	19.2	530169	2.1	20.8	96767	2.2	18.7
156910	1.9	20.1	446387	1.9	21.0	332578	2.0	18.8	403835	2.1	20.6	175735	2.1	19.4	62339	2.2	18.6
86211	1.9	18.6	143950	1.9	18.5	225876	2.0	18.9	63793	2.1	18.6	29755	2.1	16.6	184624	2.2	19.8
534634	1.9	20.5	537622	1.9	21.5	389827	2.0	20.2	380293	2.1	18.1	8797	2.1	17.9	479677	2.2	20.6
537671	1.9	21.0	14927	1.9	16.2	292730	2.0	20.5	322053	2.1	19.8	220675	2.1	19.8	319073	2.2	18.5
99221	1.9	19.7	68861	1.9	19.1	316215	2.0	20.0	491621	2.1	20.9	507492	2.1	20.3	150558	2.2	20.0
145310	1.9	19.8	392671	1.9	19.9	254539	2.0	19.8	515994	2.1	20.7	256652	2.1	20.4	139791	2.2	19.0
157665	1.9	19.8	206481	1.9	19.7	48144	2.0	19.2	257108	2.1	20.0	250033	2.1	19.6	436767	2.2	19.4
77285	1.9	19.5	13504	1.9	17.5	390944	2.0	20.5	397744	2.1	21.2	525890	2.1	20.0	205209	2.2	19.9
511966	1.9	20.8	167980	1.9	19.8	196286	2.0	19.7	234762	2.1	19.2	393832	2.1	19.4	522861	2.2	20.3
330111	1.9	20.2	51448	1.9	18.9	39289	2.0	19.0	135540	2.1	18.9	337135	2.1	19.4	496300	2.2	20.9
315879	1.9	20.0	437380	1.9	20.4	157324	2.0	18.9	62618	2.1	18.3	131049	2.1	17.6	513118	2.2	19.1
342399	1.9	20.6	213472	1.9	19.5	22054	2.0	18.5	401479	2.1	20.4	24212	2.1	18.7	144017	2.2	18.8
256533	1.9	20.4	129515	1.9	20.2	75349	2.0	18.5	513859	2.1	21.4	248099	2.1	19.5	93017	2.2	18.2
281820	1.9	20.5	92018	1.9	18.8	188081	2.0	17.1	315477	2.1	21.1	437536	2.1	20.4	542276	2.2	20.1
107525	1.9	19.4	23013	1.9	18.8	335792	2.0	20.7	313717	2.1	19.5	66172	2.1	17.9	423958	2.2	20.3
97270	1.9	19.4	431116	1.9	20.6	98703	2.0	19.6	386851	2.1	21.4	265521	2.1	19.7	401569	2.2	21.0
181111	1.9	18.1	448432	1.9	19.3	394863	2.0	19.8	24854	2.1	16.7	493007	2.2	20.7	5185	2.2	15.5
217663	1.9	19.7	493554	1.9	21.0	349783	2.0	20.1	387453	2.1	19.9	443378	2.2	20.1	97318	2.2	17.6
135965	1.9	19.4	255485	1.9	20.1	395263	2.0	21.1	442081	2.1	19.9	469183	2.2	21.3	191071	2.2	19.7
314561	1.9	20.6	164464	1.9	18.8	527880	2.0	21.7	219088	2.1	19.1	76068	2.2	17.8	303713	2.2	20.1
307922	1.9	21.1	3507	1.9	16.4	53285	2.0	19.3	49975	2.1	17.8	425155	2.2	20.5	67353	2.2	19.0
117832	1.9	19.3	414123	1.9	20.9	379390	2.0	19.7	144749	2.1	19.4	263806	2.2	19.8	82841	2.2	18.6
112541	1.9	20.2	530864	1.9	20.4	280394	2.0	19.9	483948	2.1	21.0	500162	2.2	20.4	395616	2.2	20.2
331762	1.9	19.7	260471	1.9	19.7	468016	2.0	20.5	196187	2.1	18.4	132119	2.2	18.1	366027	2.2	20.7
246297	1.9	19.8	533204	1.9	20.4	355246	2.0	21.1	443581	2.1	19.5	115153	2.2	18.0	350457	2.2	20.4
313121	1.9	20.6	472975	1.9	20.4	106573	2.0	18.5	142418	2.1	18.4	31592	2.2	17.2	109323	2.2	17.1
415063	1.9	20.7	174077	1.9	19.4	178314	2.0	19.9	89844	2.1	20.0	75396	2.2	17.9	233925	2.2	18.7
415540	1.9	20.7	157550	1.9	19.8	439821	2.0	21.3	395664	2.1	20.7	120877	2.2	17.3	450048	2.2	20.5
234779	1.9	20.9	13269	1.9	18.2	76547	2.0	19.1	410313	2.1	19.2	105529	2.2	18.4	264074	2.2	19.2
95360	1.9	19.3	173244	1.9	19.2	138695	2.0	18.0	91906	2.1	17.5	69797	2.2	18.0	423982	2.2	19.4
331512	1.9	21.4	238793	1.9	20.1	356439	2.0	20.4	441362	2.1	20.8	128224	2.2	19.2	38503	2.2	18.8
142060	1.9	19.3	444247	1.9	20.5	33397	2.0	18.4	158479	2.1	19.7	1440	2.2	15.5	437069	2.2	20.4
446234	1.9	21.0	97426	1.9	19.0	441353	2.0	21.0	408023	2.1	20.6	46136	2.2	19.1	349298	2.2	19.5
485702	1.9	20.0	46017	1.9	19.8	376424	2.0	21.3	242663	2.1	19.7	288866	2.2	19.7	88170	2.2	18.1
320954	1.9	20.4	213562	1.9	20.7	315177	2.0	21.3	9123	2.1	18.0	525253	2.2	20.3	442763	2.2	21.4
310869	1.9	20.4	183985	1.9	19.9	328136	2.0	21.2	536890	2.1	21.0	101028	2.2	17.6	102931	2.2	17.8
536599	1.9	21.6	251745	1.9	18.7	357515	2.0	20.2	389741	2.1	20.3	245862	2.2	20.0	26231	2.2	17.7
160547	1.9	19.1	420219	1.9	20.7	325875	2.0	19.3	65209	2.1	18.9	296028	2.2	20.1	528891	2.2	20.8
236709	1.9	20.5	191705	1.9	19.2	160227	2.0	21.3	390793	2.1	20.9	207974	2.2	19.5	92931	2.2	18.9
445006	1.9	20.5	23119	1.9	17.8	13960	2.0	17.3	201475	2.1	20.0	200555	2.2	20.1	246053	2.2	19.5
163155	1.9	19.3	354732	1.9	19.0	397188	2.0	19.3	293350	2.1	20.8	56569	2.2	18.2	6355	2.2	16.5
106457	1.9	19.6	214477	1.9	18.5	19410	2.0	17.9	89940	2.1	19.6	303963	2.2	18.5	83115	2.2	18.8
235177	1.9	19.0	377712	1.9	21.1	192359	2.0	20.2	527941	2.1	21.8	254394	2.2	19.0	345849	2.2	20.1
510516	1.9	21.2	156006	1.9	19.0	306460	2.0	20.8	92993	2.1	17.3	183271	2.2	19.6	184374	2.2	19.3
358854	1.9	20.2	161003	1.9	19.6	363665	2.0	19.3	75111	2.1	17.9	493585	2.2	20.8	30118	2.2	17.0
161627	1.9	20.4	158160	1.9	18.9	199932	2.0	20.2	536553	2.1	19.8	3793	2.2	15.5	111734	2.2	19.0
360520	1.9	20.4	20393	1.9	18.8	275713	2.0	18.9	358864	2.1	20.9	376900	2.2	19.6	539031	2.2	21.0
258810	1.9	20.1	106876	1.9	19.5	385463	2.0	19.6	308357	2.1	20.2	278379	2.2	20.1	311884	2.2	20.6
171322	1.9	19.6	483277	1.9	20.4	231607	2.0	19.9	440522	2.1	20.5	479740	2.2	20.1	355780	2.2	21.2
17995	1.9	17.3	69919	1.9	18.8	76969	2.0	19.3	366592	2.1	18.6	401710	2.2	20.7	125607	2.3	19.5
53698	1.9	19.3	420476	1.9	21.5	354516	2.1	20.6	342322	2.1	19.6	433296	2.2	20.7	321698	2.3	20.6
242198	1.9	19.6	284894	1.9	18.4	167870	2.1	19.5	540912	2.1	20.5	137946	2.2	18.8	250343	2.3	19.6
249683	1.9	17.9	509728	1.9	20.5	511898	2.1	20.2	241714	2.1	19.4	74818	2.2	17.6	321659	2.3	20.1
95717	1.9	20.2	316105	1.9	19.5	536944	2.1	22.1	312623	2.1	20.2	40878	2.2	18.9	533566	2.3	22.2
255418	1.9	19.2	52859	1.9	17.5	138835	2.1	19.2	289704	2.1	21.1	350189	2.2	19.5	184181	2.3	19.6
391262	1.9	20.7	389561	1.9	20.7	378218	2.1	19.9	97237	2.1	18.6	323412	2.2	20.2	528185	2.3	21.2
236528	1.9	20.2	432325	1.9	20.5	71440	2.1	19.1	12238	2.1	17.1	223950	2.2	19.6	72694	2.3	18.6
398273	1.9	20.3	112782	1.9	19.6	155206	2.1	19.4	12903	2.1	17.2	356189	2.2	20.6	211144	2.3	18.5
281901	1.9	19.9	443447	1.9	21.2	185027	2.1	19.9	230108	2.1	20.3	410285	2.2	19.3	6409	2.3	16.3
464601	1.9	21.0	151955	1.9	20.3	45210	2.1	18.0	400218	2.1	21.2	341044	2.2	20.9	125026	2.3	18.9
537369	1.9	21.2	336319	1.9	20.1	297053	2.1	20.1	320193	2.1	20.0	232184	2.2	19.6	106269	2.3	18.8
81010	1.9	19.7	32484	1.9	18.0	35654	2.1	17.9	343570	2.1	20.1	311984	2.2	20.8	520535	2.3	20.7
40150	1.9	18.1	312742	1.9	20.8	387921	2.1	18.9	471215	2.1	20.4	144111	2.2	18.7	456967	2.3	20.9
482392	1.9	20.7	335727	1.9	20.5	229826	2.1	19.6	177683	2.1	19.7	367853	2.2	20.6	394798	2.3	20.5
327490	1.9	19.8	316111	1.9	19.3	207718	2.1	18.6	537291	2.1	22.2	8398	2.2	18.6	242177	2.3	19.7
175270	1.9	20.6	389011	1.9	20.2	537024	2.1	20.6	464699	2.1	21.4	509790	2.2	20.9	377133	2.3	21.3
53353	1.9	18.5	53457	1.9	17.5	232414	2.1	20.1	253155	2.1	18.7	525681	2.2	20.2	165321	2.3	18.8
329777	1.9	21.0	78093	1.9	17.4	280070	2.1	20.1	9828	2.1	18.6	92111	2.2	18.2	188502	2.3	20.5
507220	1.9	21.2	503612	1.9	21.4	379183	2.1	20.1	187331	2.1	20.3	188049	2.2	18.2	132856	2.	

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
112199	2.3	20.6	181324	2.4	18.9	230381	2.4	20.0	533518	2.5	21.5	387616	2.6	20.6	312805	2.6	20.5
92102	2.3	18.7	199607	2.4	19.2	115862	2.4	18.5	500161	2.5	18.6	369895	2.6	20.8	382463	2.6	18.3
237484	2.3	19.7	149582	2.4	20.3	244708	2.4	17.7	446497	2.5	21.0	514999	2.6	20.0	207305	2.6	20.4
472984	2.3	20.3	269790	2.4	19.2	200687	2.4	19.9	520332	2.5	20.4	159438	2.6	18.3	113672	2.6	18.0
123821	2.3	19.6	32901	2.4	18.8	483474	2.4	20.7	439754	2.5	21.1	413154	2.6	21.1	309408	2.6	20.3
23855	2.3	18.0	178848	2.4	20.0	482773	2.4	21.0	358550	2.5	19.8	121816	2.6	19.3	511389	2.6	20.5
20777	2.3	16.5	390043	2.4	20.2	403141	2.4	21.7	256670	2.5	20.7	509101	2.6	21.4	316087	2.6	21.1
121956	2.3	18.8	270467	2.4	20.5	84848	2.4	17.9	103622	2.5	19.8	504951	2.6	19.7	120043	2.6	19.1
99559	2.3	19.3	181303	2.4	19.0	31635	2.4	18.2	219896	2.5	19.8	508447	2.6	20.9	67142	2.6	18.0
514281	2.3	20.5	295675	2.4	20.0	361535	2.4	20.5	168219	2.5	19.2	457710	2.6	21.5	260625	2.6	19.7
279727	2.3	20.2	92866	2.4	18.7	312804	2.4	19.8	146125	2.5	19.5	169890	2.6	20.5	119919	2.6	20.3
403780	2.3	19.8	437529	2.4	20.2	163955	2.4	19.1	476300	2.5	19.9	510163	2.6	19.9	349381	2.6	20.5
236700	2.3	19.9	489491	2.4	21.4	321249	2.4	20.3	361936	2.5	20.5	22059	2.6	18.3	446964	2.6	20.4
203717	2.3	19.5	423644	2.4	21.4	197531	2.4	20.7	512803	2.5	20.7	523193	2.6	20.1	397124	2.6	19.4
295197	2.3	20.9	241581	2.4	20.5	506311	2.4	20.8	269666	2.5	20.6	60509	2.6	17.5	476089	2.6	20.7
79245	2.3	19.6	233874	2.4	19.1	316505	2.4	19.8	59360	2.5	16.5	251860	2.6	19.7	389511	2.6	21.2
445410	2.3	20.3	275561	2.4	19.0	240470	2.4	19.7	75112	2.5	17.3	397121	2.6	20.7	282844	2.6	19.5
252169	2.3	20.0	119781	2.4	20.1	358916	2.4	21.1	539450	2.5	21.3	488345	2.6	20.0	316161	2.6	19.8
36212	2.3	18.4	252170	2.4	20.0	286684	2.4	21.1	442163	2.5	20.4	162516	2.6	19.6	321204	2.6	20.0
309995	2.3	20.5	388239	2.4	20.1	165531	2.4	19.7	188346	2.5	20.3	468456	2.6	20.7	165996	2.6	19.7
126558	2.3	18.8	261762	2.4	19.9	483239	2.4	20.3	11877	2.5	16.6	390325	2.6	21.2	146821	2.6	19.5
112607	2.3	19.5	239727	2.4	20.2	321707	2.4	20.7	472567	2.5	21.1	250391	2.6	19.6	342612	2.6	19.0
384470	2.3	19.9	357766	2.4	19.7	271074	2.4	20.0	48039	2.5	19.1	290096	2.6	19.7	511741	2.6	21.2
342712	2.3	20.3	18750	2.4	18.3	494292	2.4	20.7	365947	2.5	19.5	506413	2.6	19.7	23459	2.6	17.6
38024	2.3	18.5	364035	2.4	20.9	444659	2.4	21.3	112869	2.5	19.0	89672	2.6	19.1	448102	2.6	21.5
513560	2.3	20.2	538263	2.4	21.6	357323	2.4	20.7	395069	2.5	18.4	313373	2.6	20.8	532714	2.6	20.3
180511	2.3	19.5	156740	2.4	19.3	353349	2.4	20.7	211970	2.5	18.7	152414	2.6	18.8	333882	2.6	19.8
465613	2.3	22.1	64875	2.4	18.5	201623	2.4	20.0	122951	2.5	19.4	306974	2.6	19.4	83977	2.6	19.0
444056	2.3	20.8	9586	2.4	17.4	448424	2.4	20.1	504915	2.5	21.2	539755	2.6	20.9	289523	2.6	20.2
260147	2.3	18.8	524966	2.4	19.8	16354	2.4	17.6	351210	2.5	19.9	260077	2.6	20.3	85806	2.6	17.1
126009	2.3	18.8	85306	2.4	17.1	409742	2.4	20.8	344781	2.5	18.9	52101	2.6	18.2	334443	2.6	20.5
250862	2.3	20.2	363060	2.4	19.8	221981	2.4	20.9	515967	2.5	20.2	260342	2.6	19.9	23152	2.7	18.2
353788	2.3	19.5	417537	2.4	19.7	258916	2.4	18.7	340545	2.5	19.5	108491	2.6	19.0	393130	2.7	20.7
33837	2.3	17.1	537167	2.4	20.9	121383	2.4	19.1	48527	2.5	17.5	189859	2.6	19.5	384986	2.7	20.3
441967	2.3	19.9	338589	2.4	19.5	161393	2.4	19.1	8661	2.5	16.3	18128	2.6	18.0	206630	2.7	19.5
397967	2.3	20.9	353986	2.4	20.2	98502	2.4	18.0	440228	2.5	20.9	338747	2.6	19.2	118239	2.7	19.6
220513	2.3	20.6	444344	2.4	20.9	525438	2.4	20.0	82278	2.5	18.1	239447	2.6	19.1	153084	2.7	19.0
484156	2.3	20.2	442064	2.4	20.8	510673	2.4	20.5	19910	2.5	16.9	528560	2.6	20.4	514690	2.7	21.1
111401	2.3	19.3	526261	2.4	21.4	362876	2.4	20.8	309733	2.5	20.6	388578	2.6	19.7	260262	2.7	19.2
326198	2.3	20.4	24421	2.4	17.7	416369	2.4	19.6	36694	2.5	17.7	230852	2.6	19.4	289093	2.7	19.5
263434	2.3	20.3	480508	2.4	19.6	506528	2.5	20.2	127096	2.5	18.2	111588	2.6	19.9	69942	2.7	16.7
347086	2.3	20.0	428323	2.4	20.7	440848	2.5	19.9	43951	2.5	18.3	483461	2.6	21.2	521174	2.7	21.0
250737	2.3	19.6	476255	2.4	20.2	142267	2.5	20.2	62993	2.5	17.4	178342	2.6	20.4	405887	2.7	20.7
370023	2.3	20.1	103664	2.4	19.4	113306	2.5	19.4	89187	2.5	18.4	473985	2.6	20.9	159455	2.7	19.4
152368	2.3	19.1	420449	2.4	21.0	347439	2.5	20.6	99530	2.5	19.0	424521	2.6	20.9	280903	2.7	20.3
94528	2.3	19.3	39881	2.4	18.4	190613	2.5	17.5	145688	2.5	19.0	438293	2.6	21.9	133645	2.7	19.2
328093	2.3	21.1	293834	2.4	19.9	375250	2.5	20.9	300874	2.5	20.0	508565	2.6	20.6	253417	2.7	18.9
294899	2.3	20.8	510505	2.4	20.8	71237	2.5	17.8	130683	2.5	17.6	171435	2.6	19.8	59989	2.7	19.1
203081	2.3	19.5	410210	2.4	19.8	335069	2.5	19.5	93045	2.5	17.9	246255	2.6	18.6	413872	2.7	19.4
288647	2.3	20.2	463227	2.4	20.9	289995	2.5	19.7	468032	2.5	21.7	498983	2.6	21.5	242866	2.7	20.0
504747	2.3	20.1	503448	2.4	21.7	387931	2.5	19.9	130117	2.5	18.5	498509	2.6	21.1	213090	2.7	19.7
497237	2.3	21.6	4946	2.4	17.4	380262	2.5	19.6	161389	2.5	19.3	471689	2.6	21.1	449456	2.7	20.4
73336	2.3	20.0	471110	2.4	21.0	365955	2.5	20.5	427748	2.5	19.5	392197	2.6	20.3	216465	2.7	19.8
99382	2.3	19.1	3032	2.4	15.0	350994	2.5	22.1	404342	2.5	21.4	141005	2.6	19.0	167851	2.7	19.8
383328	2.3	20.6	316537	2.4	20.3	389356	2.5	19.3	97199	2.5	19.1	436270	2.6	19.9	528853	2.7	21.3
263663	2.3	19.7	385804	2.4	20.7	404895	2.5	20.9	531614	2.5	20.4	425282	2.6	18.5	444378	2.7	20.5
245619	2.3	20.3	164076	2.4	19.0	153939	2.5	18.5	120898	2.5	19.2	222494	2.6	18.8	323333	2.7	19.5
100875	2.3	19.2	316033	2.4	19.2	96134	2.5	18.5	215689	2.5	18.7	381548	2.6	19.9	539675	2.7	20.7
500809	2.3	20.9	213945	2.4	18.2	43917	2.5	18.4	95598	2.5	17.0	262686	2.6	20.5	321830	2.7	19.6
93323	2.3	18.5	307033	2.4	19.9	131588	2.5	19.3	35886	2.5	16.6	370014	2.6	20.2	503401	2.7	20.9
128002	2.3	19.8	377885	2.4	21.1	261679	2.5	19.9	120565	2.5	19.5	115949	2.6	19.7	224595	2.7	20.4
427306	2.3	20.7	154809	2.4	19.2	442105	2.5	21.3	451267	2.5	20.4	212694	2.6	19.2	382584	2.7	19.6
266600	2.3	19.6	94940	2.4	19.8	537029	2.5	22.0	172495	2.5	18.8	408816	2.6	19.7	274235	2.7	19.1
368657	2.3	21.3	25390	2.4	16.7	443472	2.5	20.9	59548	2.5	18.2	461679	2.6	21.4	321889	2.7	19.5
17978	2.3	17.8	335801	2.4	19.6	167522	2.5	19.8	25585	2.5	19.2	392081	2.6	20.9	434703	2.7	20.9
44138	2.3	19.2	321652	2.4	20.0	26749	2.5	18.2	501649	2.5	20.0	38922	2.6	18.0	505756	2.7	21.1
205408	2.3	19.8	283674	2.4	18.2	338537	2.5	18.9	376693	2.5	19.5	159785	2.6	20.5	352313	2.7	20.6
39674	2.3	17.7	331381	2.4	20.9	266995	2.5	19.6	338729	2.5	20.1	341633	2.6	20.6	189564	2.7	19.2
159628	2.3	19.5	62184	2.4	17.7	143766	2.5	19.7	357566	2.5	20.1	346391	2.6	19.5	257033	2.7	20.1
18992	2.3	17.9	207434	2.4	20.0	116521	2.5	19.7	390026	2.5	20.2	475405	2.6	21.3	312607	2.7	19.9
16184	2.3	17.3	344478	2.4	20.3	367935	2.5	21.3	375691	2.5	19.4	376121	2.6				

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
512017	2.7	20.6	380197	2.8	19.9	48002	2.8	18.9	501375	2.9	20.4	51601	2.9	18.6	320467	3.0	18.6
396057	2.7	20.8	501350	2.8	19.3	532677	2.8	20.0	266596	2.9	19.8	393283	2.9	20.6	164738	3.0	19.4
158312	2.7	18.6	144033	2.8	19.6	198029	2.8	20.4	214903	2.9	19.4	236483	2.9	19.7	62935	3.0	18.8
455300	2.7	21.6	257230	2.8	19.8	176642	2.8	18.0	508702	2.9	19.6	66929	2.9	18.1	38501	3.0	19.3
347132	2.7	21.1	57470	2.8	18.3	45048	2.8	17.9	83307	2.9	19.2	64312	2.9	18.3	520339	3.0	20.9
124781	2.7	19.0	122776	2.8	18.9	60529	2.8	19.0	248945	2.9	20.6	482762	2.9	20.3	416680	3.0	21.5
356452	2.7	20.0	531005	2.8	21.1	523843	2.8	21.0	46739	2.9	18.7	509502	2.9	20.5	166448	3.0	18.4
368423	2.7	19.7	44432	2.8	18.3	478892	2.8	20.5	344706	2.9	20.3	537673	2.9	22.0	169839	3.1	19.3
390777	2.7	18.2	420602	2.8	20.7	315903	2.8	19.9	358432	2.9	21.0	184692	2.9	19.4	13887	3.1	17.8
103860	2.7	18.8	430757	2.8	19.9	389033	2.8	20.3	277943	2.9	20.8	316128	2.9	20.2	199325	3.1	20.1
19824	2.7	18.3	416407	2.8	18.7	296592	2.8	18.9	471767	2.9	20.2	319001	2.9	20.9	231598	3.1	19.6
126953	2.7	19.0	28461	2.8	17.1	7677	2.8	16.4	525043	2.9	21.1	288404	2.9	20.3	207282	3.1	20.1
311981	2.7	19.6	38374	2.8	17.8	314520	2.8	20.7	27573	2.9	17.8	65219	2.9	18.1	39854	3.1	18.5
292313	2.7	20.3	6828	2.8	15.6	398095	2.8	20.2	380298	2.9	21.6	161515	2.9	19.7	384715	3.1	21.3
390303	2.7	20.3	214172	2.8	20.1	179739	2.8	18.9	524001	2.9	20.4	515076	2.9	20.9	157344	3.1	19.2
166589	2.7	17.2	75572	2.8	18.7	424989	2.8	20.9	499525	2.9	19.9	442000	2.9	20.1	355646	3.1	21.6
282996	2.7	19.9	63241	2.8	19.4	83650	2.8	19.2	42286	2.9	18.6	399215	2.9	19.8	266979	3.1	19.9
240044	2.7	19.9	34656	2.8	17.5	92766	2.8	17.2	382982	2.9	20.6	315123	2.9	20.3	35279	3.1	17.6
176820	2.7	19.7	264048	2.8	20.0	504719	2.9	20.7	482970	2.9	20.5	146686	2.9	19.0	353746	3.1	20.7
23169	2.7	17.8	216442	2.8	19.1	20292	2.9	18.3	242855	2.9	19.2	382577	2.9	20.1	70758	3.1	18.4
227082	2.7	20.0	175187	2.8	20.7	343444	2.9	19.7	423968	2.9	19.8	444244	2.9	20.6	312782	3.1	19.9
92353	2.7	17.3	414141	2.8	20.0	491607	2.9	21.1	233360	2.9	20.1	289886	2.9	20.6	120778	3.1	20.6
226347	2.7	19.9	153031	2.8	18.1	45431	2.9	17.7	243726	2.9	19.4	15760	2.9	23.4	74848	3.1	18.2
412409	2.7	21.0	469010	2.8	20.7	322322	2.9	20.2	481995	2.9	20.0	149559	2.9	19.8	438928	3.1	21.2
316526	2.7	19.8	443466	2.8	21.1	468587	2.9	20.0	164194	2.9	18.6	523230	2.9	20.7	102014	3.1	19.1
168797	2.7	18.5	68385	2.8	18.4	346745	2.9	20.6	462263	2.9	21.6	408630	2.9	20.9	94242	3.1	19.0
470795	2.7	20.4	14008	2.8	18.4	96076	2.9	18.5	321004	2.9	19.8	232258	2.9	19.8	258005	3.1	19.7
257734	2.7	20.2	86084	2.8	19.0	365654	2.9	20.1	397028	2.9	18.6	470671	2.9	20.7	480884	3.1	20.9
195501	2.7	19.8	241421	2.8	20.5	410196	2.9	19.0	269068	2.9	20.7	103783	2.9	19.1	536671	3.1	20.6
515421	2.7	21.3	288785	2.8	20.7	537196	2.9	21.1	208168	2.9	18.4	510956	2.9	20.7	195322	3.1	20.1
135719	2.7	18.0	240926	2.8	20.2	40246	2.9	18.2	356402	2.9	20.7	163914	2.9	19.7	167341	3.1	19.8
61074	2.7	16.7	198211	2.8	18.9	276029	2.9	20.3	360077	2.9	21.1	335122	2.9	18.9	86261	3.1	18.7
318163	2.7	19.5	208422	2.8	20.5	222821	2.9	19.9	22041	2.9	18.4	93729	2.9	18.6	282450	3.1	19.2
146263	2.7	19.4	335146	2.8	18.8	19776	2.9	18.5	356425	2.9	20.7	225254	2.9	18.6	178365	3.1	20.2
260990	2.7	20.4	404735	2.8	20.1	114984	2.9	17.9	200106	2.9	19.9	206117	2.9	20.0	304640	3.1	21.1
84529	2.7	18.6	226005	2.8	19.9	464042	2.9	20.4	432271	2.9	20.6	9725	2.9	18.8	68089	3.1	17.3
246373	2.7	20.1	299176	2.8	20.1	237798	2.9	19.8	27982	2.9	17.7	75796	3.0	18.2	355762	3.1	20.8
113374	2.7	19.2	520926	2.8	21.4	420432	2.9	21.1	39254	2.9	17.2	509349	3.0	20.7	357206	3.1	20.4
366552	2.7	20.7	373248	2.8	21.1	529917	2.9	21.1	469288	2.9	19.9	127757	3.0	19.1	528019	3.1	21.3
40530	2.7	18.7	534710	2.8	18.3	442597	2.9	19.6	37116	2.9	16.9	479850	3.0	20.7	270427	3.1	19.8
358953	2.7	20.9	145265	2.8	19.5	233336	2.9	20.1	168161	2.9	19.6	5615	3.0	16.0	149757	3.1	19.0
392226	2.7	19.8	353747	2.8	20.3	479705	2.9	20.4	461807	2.9	20.9	61655	3.0	19.1	370913	3.1	20.5
478291	2.7	20.4	193628	2.8	19.1	168187	2.9	19.8	102628	2.9	18.1	398071	3.0	21.2	122760	3.1	18.2
527975	2.7	21.2	378695	2.8	20.0	345944	2.9	20.1	252852	2.9	20.2	372591	3.0	18.5	476156	3.1	19.9
269023	2.7	20.3	367972	2.8	19.7	65210	2.9	19.0	173643	2.9	20.1	258944	3.0	19.1	268487	3.1	18.2
255477	2.7	19.4	514563	2.8	19.8	173639	2.9	19.8	274351	2.9	20.6	17917	3.0	18.2	476994	3.1	20.3
65030	2.7	18.9	344515	2.8	19.7	242451	2.9	20.8	264087	2.9	20.9	142844	3.0	18.4	320291	3.1	18.7
338521	2.7	19.1	326574	2.8	19.1	530647	2.9	20.0	471008	2.9	20.8	420379	3.0	21.0	519107	3.1	21.0
521746	2.7	20.8	503506	2.8	21.0	359352	2.9	20.5	426651	2.9	20.6	232758	3.0	19.6	218538	3.1	18.1
338767	2.7	19.8	92810	2.8	19.2	521408	2.9	20.6	247481	2.9	20.4	360006	3.0	20.0	271584	3.1	19.5
429485	2.7	20.2	222244	2.8	18.9	302266	2.9	19.6	326118	2.9	19.5	348411	3.0	21.0	247457	3.1	20.8
496851	2.7	20.2	97085	2.8	18.5	99821	2.9	19.6	343961	2.9	20.2	471650	3.0	20.4	296694	3.1	20.1
18903	2.7	16.4	291675	2.8	21.1	175115	2.9	19.8	308035	2.9	19.9	190075	3.0	19.6	519167	3.1	19.9
126872	2.7	19.0	58096	2.8	18.9	519807	2.9	21.4	12266	2.9	18.6	61416	3.0	20.0	71794	3.1	17.9
71613	2.7	18.9	9579	2.8	17.8	393173	2.9	20.1	65384	2.9	19.4	236123	3.0	20.3	186999	3.1	19.8
89358	2.7	17.4	219958	2.8	19.7	289703	2.9	20.8	510696	2.9	19.7	312747	3.0	19.4	186974	3.1	18.4
181503	2.7	19.9	538466	2.8	20.9	183956	2.9	20.1	524554	2.9	20.7	134227	3.0	18.9	434690	3.1	20.9
467967	2.7	20.3	257497	2.8	19.2	211922	2.9	18.6	51420	2.9	20.1	184735	3.0	18.6	183287	3.1	20.1
280143	2.7	20.1	296786	2.8	19.8	18371	2.9	16.4	419590	2.9	19.6	3945	3.0	15.6	104110	3.1	19.6
249391	2.8	21.2	444275	2.8	20.6	355145	2.9	20.5	223631	2.9	19.7	351200	3.0	19.8	170205	3.1	19.0
158381	2.8	18.9	266700	2.8	20.5	106556	2.9	18.3	357144	2.9	20.9	528911	3.0	19.5	271770	3.1	20.1
60242	2.8	18.3	50299	2.8	17.3	142600	2.9	19.4	276603	2.9	19.1	13333	3.0	18.1	385070	3.1	19.9
367219	2.8	20.9	248608	2.8	20.6	91123	2.9	17.8	341106	2.9	20.7	285084	3.0	19.7	403944	3.1	20.4
398967	2.8	20.7	19104	2.8	17.9	518577	2.9	21.7	316148	2.9	20.7	289316	3.0	19.9	398753	3.1	21.0
23095	2.8	18.5	225228	2.8	19.4	467859	2.9	19.6	511553	2.9	23.3	523831	3.0	20.6	403231	3.1	19.8
326611	2.8	18.9	517638	2.8	20.7	506566	2.9	20.1	249008	2.9	19.5	129384	3.0	19.5	106141	3.1	18.6
90287	2.8	19.2	439091	2.8	18.9	315244	2.9	19.2	42364	2.9	18.3	393095	3.0	20.4	517303	3.1	20.9
396171	2.8	20.2	525373	2.8	21.3	266441	2.9	19.7	171452	2.9	19.3	271903	3.0	18.8	479887	3.1	21.5
509267	2.8	20.8	513846	2.8	21.8	312398	2.9	20.4	92189	2.9	18.3	180181	3.0	20.1	87831	3.1	17.7
155478	2.8	18.2	427148	2.8	20.2	262472	2.9	20.8	394303	2.9	19.7	87300	3.0	18.8	96177	3.1	22.2
491792	2.8	20.2	254361	2.8	19.3	66726	2.9	19.0	11120	2.9	17.5	195323	3.0	20.7	114710		

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
162657	3.1	18.4	36437	3.2	17.3	201622	3.3	19.3	540241	3.3	21.1	212618	3.4	20.4	395056	3.5	20.1
361161	3.1	20.1	412661	3.2	20.1	129911	3.3	18.5	470350	3.3	19.6	501704	3.4	20.6	514760	3.5	21.1
308099	3.1	19.4	165077	3.2	20.1	45098	3.3	18.6	69940	3.3	18.6	234602	3.4	19.6	328193	3.5	20.9
80467	3.1	18.6	420286	3.2	23.9	57830	3.3	19.1	60429	3.3	18.3	202568	3.4	19.9	159244	3.5	20.0
294159	3.1	19.9	25937	3.2	18.8	469694	3.3	18.8	320292	3.3	20.2	524713	3.4	19.6	303286	3.5	19.3
227403	3.1	20.5	321625	3.2	20.2	60977	3.3	19.6	205375	3.3	20.2	43090	3.4	18.4	367113	3.5	19.0
132618	3.1	18.7	358979	3.2	19.0	299687	3.3	18.7	169902	3.3	19.7	261591	3.4	19.7	533018	3.5	20.3
90211	3.1	17.9	28833	3.2	18.6	389332	3.3	20.5	240799	3.3	20.5	398211	3.4	20.1	359338	3.5	19.6
536117	3.1	20.4	313355	3.2	20.1	322517	3.3	19.7	50813	3.3	18.4	471308	3.4	21.1	542881	3.5	21.0
388868	3.1	18.8	387096	3.2	20.1	66876	3.3	18.3	170992	3.3	18.5	130799	3.4	18.1	249059	3.5	20.4
184372	3.1	21.4	504573	3.2	20.8	211185	3.3	19.8	497951	3.3	20.4	181249	3.4	19.5	524453	3.5	20.6
41383	3.1	17.2	417452	3.2	20.3	369887	3.3	18.6	91095	3.4	19.0	17720	3.4	17.4	509130	3.5	21.4
508119	3.1	21.2	507740	3.2	19.7	5394	3.3	16.1	258706	3.4	21.0	409695	3.4	21.0	342880	3.5	20.2
501839	3.1	21.0	38880	3.2	18.1	537448	3.3	21.1	339397	3.4	18.6	370915	3.4	21.3	17210	3.5	17.8
234575	3.1	18.8	534078	3.2	20.1	442563	3.3	20.1	179641	3.4	18.7	34267	3.4	18.6	33442	3.5	18.6
263998	3.1	20.0	203663	3.2	20.5	321604	3.3	19.9	157309	3.4	19.7	468379	3.4	21.8	102796	3.5	18.4
24952	3.1	22.4	91406	3.2	16.4	334725	3.3	20.6	508324	3.4	20.4	382144	3.4	21.1	322584	3.5	19.2
326635	3.1	19.2	122288	3.2	18.5	221069	3.3	19.3	379313	3.4	18.7	209962	3.4	20.4	471293	3.5	21.9
471753	3.1	19.5	60072	3.2	19.1	321765	3.3	19.5	251807	3.4	19.4	146279	3.4	20.0	540691	3.5	19.3
368918	3.1	19.5	314009	3.2	19.3	464710	3.3	18.8	125874	3.4	18.7	184394	3.4	18.8	43232	3.5	15.6
175139	3.1	20.4	107277	3.2	18.6	250081	3.3	20.3	427705	3.4	20.0	324479	3.4	20.6	135912	3.5	19.3
338005	3.1	20.2	207911	3.2	18.9	411534	3.3	20.8	513682	3.4	19.9	308591	3.4	19.8	9839	3.5	17.4
173292	3.1	19.5	386824	3.2	20.0	218404	3.3	19.5	22479	3.4	17.7	95719	3.4	19.6	237392	3.5	20.0
316431	3.1	19.9	491603	3.2	20.6	448096	3.3	19.8	36889	3.4	18.5	315052	3.4	20.9	358047	3.5	20.2
255420	3.1	19.9	321987	3.2	20.1	113152	3.3	19.7	398515	3.4	19.8	312524	3.4	21.0	395264	3.5	20.5
463436	3.1	21.0	12554	3.2	17.4	360436	3.3	20.8	3747	3.4	15.5	499554	3.4	20.4	139096	3.5	18.4
25109	3.1	18.7	255880	3.2	20.0	465652	3.3	20.6	111445	3.4	18.1	243387	3.4	20.2	355268	3.5	20.3
92587	3.1	18.7	356443	3.2	20.2	123865	3.3	19.0	12486	3.4	17.3	305234	3.4	19.4	295904	3.5	19.7
72558	3.1	19.4	215243	3.2	19.4	324809	3.3	18.4	91290	3.4	17.5	314425	3.4	20.1	400545	3.5	20.6
200024	3.1	19.3	342381	3.2	20.9	527556	3.3	20.1	271617	3.4	19.4	388959	3.4	19.2	154548	3.5	20.5
280174	3.1	19.1	257548	3.2	20.0	75209	3.3	18.4	473006	3.4	21.0	311423	3.4	20.0	391904	3.5	20.0
175724	3.1	19.4	508287	3.2	20.1	473135	3.3	20.5	30007	3.4	18.6	353618	3.4	19.8	40488	3.5	17.9
223933	3.1	19.2	2920	3.2	15.4	168330	3.3	19.9	215836	3.4	20.8	166649	3.4	19.5	35807	3.5	18.1
358472	3.1	19.3	263116	3.2	18.7	179218	3.3	19.2	29868	3.4	18.2	509877	3.4	21.3	157091	3.5	19.3
99227	3.1	18.2	223284	3.2	17.1	180350	3.3	19.3	79295	3.4	18.2	370907	3.4	21.1	461506	3.5	19.0
529896	3.1	21.0	216605	3.2	19.3	520249	3.3	20.9	516091	3.4	20.3	128850	3.4	18.8	73801	3.5	19.7
461501	3.1	22.6	430460	3.2	20.7	248100	3.3	19.2	3331	3.4	16.2	446157	3.4	20.4	132141	3.5	18.6
326666	3.1	20.2	129288	3.2	19.2	73052	3.3	19.6	213008	3.4	18.1	25206	3.4	18.0	455314	3.5	21.5
520419	3.1	20.2	295974	3.2	20.5	450027	3.3	19.7	124909	3.4	18.7	36858	3.4	18.5	93423	3.5	18.7
159450	3.1	19.7	510119	3.2	20.8	4500	3.3	16.3	534265	3.4	18.7	528168	3.4	22.5	329768	3.5	21.3
345980	3.1	19.7	254472	3.2	20.7	62164	3.3	18.6	421431	3.4	20.5	310594	3.4	19.3	38853	3.5	17.6
262776	3.1	19.6	148391	3.2	18.9	182000	3.3	19.6	430420	3.4	20.3	36749	3.4	17.0	437492	3.5	20.9
385817	3.1	20.7	432561	3.2	19.5	428330	3.3	20.7	519232	3.4	20.3	211356	3.4	19.2	297623	3.5	19.0
55568	3.1	18.1	512295	3.2	19.9	365503	3.3	19.9	321963	3.4	19.6	382214	3.4	19.9	31637	3.5	17.7
459533	3.1	21.6	136315	3.2	18.4	338014	3.3	21.1	386389	3.4	19.9	285788	3.4	18.6	126218	3.5	19.5
338578	3.1	20.5	482160	3.2	20.6	533624	3.3	22.7	153232	3.4	19.3	445432	3.4	20.1	254681	3.5	19.3
155862	3.1	18.4	312636	3.2	20.7	4260	3.3	15.8	501769	3.4	19.7	195028	3.4	19.0	39733	3.5	18.7
308369	3.1	19.6	471549	3.2	20.8	278236	3.3	21.0	11786	3.4	17.5	136843	3.5	18.4	336851	3.5	20.8
153137	3.1	19.0	53796	3.2	19.1	20450	3.3	17.7	45347	3.4	18.8	191320	3.5	19.8	92272	3.5	18.6
481421	3.1	20.5	513106	3.2	20.1	466110	3.3	22.3	313342	3.4	20.9	312466	3.5	20.7	229878	3.5	19.2
422842	3.1	20.3	380541	3.2	20.2	329838	3.3	19.8	165444	3.4	19.5	70488	3.5	19.2	509798	3.5	20.5
125625	3.1	18.8	286721	3.2	20.7	508244	3.3	20.2	247413	3.4	20.1	77956	3.5	18.6	115235	3.5	19.1
251932	3.1	18.8	221060	3.2	19.7	346981	3.3	21.2	513242	3.4	21.9	442484	3.5	20.4	325969	3.5	20.1
208593	3.2	20.4	43763	3.2	18.8	505742	3.3	21.3	531510	3.4	20.3	506150	3.5	20.8	500845	3.5	20.9
509555	3.2	22.2	120408	3.2	19.7	433914	3.3	20.9	386257	3.4	21.2	3664	3.5	15.2	50529	3.5	19.0
139344	3.2	19.2	15398	3.2	17.9	241176	3.3	20.0	358928	3.4	20.4	436388	3.5	20.2	286568	3.5	19.6
199061	3.2	20.1	254252	3.2	19.7	495118	3.3	20.9	512895	3.4	19.9	301200	3.5	19.7	513706	3.5	20.7
294318	3.2	20.4	343517	3.2	20.3	507295	3.3	21.2	514766	3.4	21.6	239288	3.5	19.6	282141	3.5	20.0
87451	3.2	18.0	397560	3.2	20.7	442469	3.3	20.4	253618	3.4	18.8	390800	3.5	21.4	16603	3.5	16.7
321410	3.2	19.5	20417	3.2	18.7	261100	3.3	20.7	172715	3.4	19.7	26530	3.5	17.2	130982	3.5	18.9
292229	3.2	19.0	262889	3.2	20.3	414432	3.3	20.6	363964	3.4	19.9	258762	3.5	20.1	228219	3.5	18.2
530664	3.2	22.4	387303	3.2	20.5	235452	3.3	19.6	438222	3.4	18.9	315219	3.5	19.3	119529	3.5	19.1
302051	3.2	19.3	161381	3.2	19.4	391932	3.3	20.0	220652	3.4	18.6	463812	3.5	19.8	459571	3.5	20.7
240940	3.2	19.5	150307	3.2	20.8	47216	3.3	18.2	521460	3.4	20.1	427572	3.5	20.9	23825	3.5	17.9
205918	3.2	20.3	359893	3.2	20.7	42858	3.3	18.9	36677	3.4	18.9	211041	3.5	20.6	256553	3.5	19.9
324400	3.2	20.7	512649	3.2	20.1	77535	3.3	19.1	345983	3.4	19.8	501604	3.5	19.1	495033	3.5	19.5
108185	3.2	19.7	312471	3.2	19.3	120140	3.3	18.7	118520	3.4	18.8	24267	3.5	19.5	174191	3.5	19.8
311983	3.2	20.2	233670	3.2	20.0	480264	3.3	21.2	533733	3.4	21.8	111426	3.5	18.9	440534	3.5	20.2
283663	3.2	20.1	425566	3.2	19.6	154842	3.3	19.9	251949	3.4	20.4	509789	3.5	20.2	315944	3.5	20.5
100598	3.2	18.2	223265	3.3	19.0	120175	3.3	20.4	56383	3.4	18.1	436061	3.5	20.8	308057	3.5	20.5
46757	3.2	17.1	285527	3.3	21.4	354078	3.3	20.0	119034	3.4	18.9	289999	3.5	20.5	4		

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
503012	3.5	20.5	481764	3.6	20.8	33445	3.7	18.3	392174	3.8	20.2	91665	3.8	18.1	126789	3.9	19.9
481223	3.5	19.8	204833	3.6	18.8	421607	3.7	20.8	295891	3.8	19.4	324292	3.8	19.7	478663	3.9	20.1
287826	3.5	19.9	101910	3.6	18.5	234636	3.7	20.1	72959	3.8	19.0	26486	3.8	19.1	101925	3.9	18.9
195159	3.5	20.5	390330	3.6	20.3	10704	3.7	16.8	312775	3.8	20.2	51482	3.8	17.4	89992	3.9	17.6
230088	3.5	18.5	126242	3.6	19.8	26887	3.7	18.5	462255	3.8	20.8	374416	3.8	19.6	466285	3.9	19.1
168059	3.5	20.8	512058	3.6	20.8	134767	3.7	19.5	538746	3.8	20.6	311986	3.8	20.6	240443	3.9	19.4
450744	3.5	20.6	353128	3.6	19.8	9571	3.7	17.1	255146	3.8	20.7	180398	3.8	19.5	40843	3.9	18.7
121645	3.5	19.0	321353	3.6	19.5	305580	3.7	20.8	400966	3.8	20.5	212751	3.8	19.0	162603	3.9	18.0
203007	3.5	18.5	465872	3.6	20.4	376859	3.7	18.8	416715	3.8	20.3	501701	3.8	20.6	190229	3.9	19.4
365807	3.5	19.9	388891	3.6	20.8	63290	3.7	19.6	102756	3.8	19.3	373198	3.8	20.8	264065	3.9	19.6
31288	3.5	18.1	171231	3.6	19.9	201292	3.7	19.0	360222	3.8	19.6	342770	3.8	19.6	534631	3.9	22.6
60471	3.5	19.0	258628	3.6	20.0	350032	3.7	20.4	291008	3.8	20.6	524173	3.8	21.2	192540	3.9	18.4
97013	3.5	19.3	488431	3.6	19.3	482111	3.7	22.2	320104	3.8	21.1	348687	3.8	20.0	36654	3.9	18.7
417260	3.5	21.6	88291	3.6	19.0	141762	3.7	19.6	56505	3.8	18.7	420499	3.8	21.0	91961	3.9	19.0
409736	3.5	21.3	212983	3.6	21.1	293863	3.7	20.2	57030	3.8	18.7	398955	3.8	20.3	204148	3.9	19.9
295995	3.6	19.7	234367	3.6	20.3	277399	3.7	19.8	367952	3.8	20.8	450331	3.8	20.6	329229	3.9	20.6
316967	3.6	21.6	472972	3.6	20.9	446881	3.7	20.6	299726	3.8	19.2	535401	3.8	21.0	264203	3.9	19.9
62154	3.6	18.5	302178	3.6	17.9	410804	3.7	20.5	207216	3.8	19.9	88225	3.8	19.3	406800	3.9	20.9
306093	3.6	20.5	17945	3.6	18.0	306059	3.7	19.9	536891	3.8	21.7	262696	3.8	19.5	267733	3.9	20.1
131801	3.6	19.5	469981	3.6	19.9	252809	3.7	20.1	1956	3.8	16.5	94620	3.8	18.7	254320	3.9	19.9
355652	3.6	19.9	234889	3.6	19.5	299117	3.7	20.2	330	3.8	14.0	445778	3.8	19.9	456055	3.9	21.3
141562	3.6	19.3	331540	3.6	18.9	541062	3.7	19.8	255909	3.8	19.2	390209	3.8	20.9	37545	3.9	18.9
520326	3.6	20.6	170177	3.6	18.8	437285	3.7	20.0	350310	3.8	20.6	85983	3.8	17.8	392449	3.9	20.4
15309	3.6	18.0	188424	3.6	20.6	476249	3.7	20.8	94448	3.8	18.1	374921	3.8	20.8	431789	3.9	20.4
396208	3.6	20.2	56735	3.6	18.6	445020	3.7	21.3	461455	3.8	19.5	60666	3.8	18.4	133254	3.9	19.0
537162	3.6	20.9	134282	3.6	19.2	1588	3.7	15.6	169833	3.8	19.6	49902	3.8	18.7	91748	3.9	18.5
524560	3.6	20.5	469650	3.6	19.9	207419	3.7	20.6	427585	3.8	20.6	115948	3.8	19.8	231975	3.9	20.1
228879	3.6	20.5	361512	3.6	20.8	80077	3.7	19.6	429480	3.8	20.8	359949	3.8	20.1	316447	3.9	19.8
272779	3.6	20.8	42186	3.6	18.3	104644	3.7	18.5	361605	3.8	20.9	390312	3.8	19.9	94251	3.9	18.8
60911	3.6	18.8	346628	3.6	20.4	15910	3.7	17.2	119754	3.8	19.1	40007	3.8	17.5	289805	3.9	20.4
274566	3.6	19.2	252906	3.6	19.9	118055	3.7	19.0	395381	3.8	20.7	259361	3.8	19.7	80157	3.9	18.7
384478	3.6	20.4	499577	3.6	21.3	188313	3.7	19.6	217019	3.8	20.1	369838	3.8	19.4	446151	3.9	20.5
358362	3.6	20.1	511457	3.6	21.6	291812	3.7	20.8	77034	3.8	18.9	293530	3.9	20.9	368114	3.9	19.9
127360	3.6	19.6	107811	3.6	19.6	468816	3.7	19.5	397774	3.8	20.8	512030	3.9	20.8	121972	3.9	19.2
428764	3.6	21.0	177105	3.6	19.7	142476	3.7	19.2	159056	3.8	19.8	41097	3.9	18.4	4833	3.9	16.0
441993	3.6	20.4	211355	3.6	18.0	479513	3.7	20.9	291317	3.8	20.7	407990	3.9	21.3	283686	3.9	19.9
186328	3.6	20.6	377736	3.6	19.8	255629	3.7	21.2	263307	3.8	21.1	208177	3.9	19.3	517884	3.9	19.2
530140	3.6	21.4	273929	3.7	20.2	146238	3.7	18.3	22058	3.8	18.4	311066	3.9	21.1	233404	3.9	20.5
256589	3.6	20.2	86145	3.7	19.4	320762	3.7	20.5	44604	3.8	17.9	166652	3.9	18.8	515845	3.9	20.2
152862	3.6	19.5	34023	3.7	17.5	345875	3.7	20.0	288676	3.8	20.6	200448	3.9	17.8	205647	3.9	18.9
393020	3.6	21.0	444309	3.7	18.9	74962	3.7	17.9	3063	3.8	15.5	421654	3.9	20.7	525017	3.9	20.6
312023	3.6	20.6	355023	3.7	19.7	324899	3.7	19.2	62766	3.8	17.3	506431	3.9	19.6	350936	3.9	20.3
264134	3.6	19.6	530446	3.7	22.2	226252	3.7	19.8	213252	3.8	19.4	61711	3.9	18.4	393165	3.9	21.0
76230	3.6	19.4	362666	3.7	20.0	91950	3.7	18.8	199177	3.8	18.8	391570	3.9	19.9	315172	3.9	20.3
127355	3.6	18.8	476917	3.7	20.1	73445	3.7	17.0	471225	3.8	20.8	259510	3.9	19.0	530080	3.9	20.3
360991	3.6	20.7	410294	3.7	19.9	418970	3.7	21.3	218385	3.8	18.7	94135	3.9	18.1	323422	3.9	20.4
47526	3.6	16.7	75105	3.7	18.1	458243	3.7	21.4	275164	3.8	19.4	429525	3.9	19.3	463599	3.9	21.2
530491	3.6	21.4	478839	3.7	20.4	256530	3.7	19.5	302088	3.8	19.4	530268	3.9	21.7	388935	3.9	20.7
251671	3.6	19.8	539307	3.7	20.4	521093	3.7	21.1	121449	3.8	19.1	315276	3.9	18.0	39652	3.9	19.6
112031	3.6	19.1	462837	3.7	19.5	178242	3.7	19.8	454866	3.8	21.0	211124	3.9	19.5	134275	3.9	19.8
257066	3.6	20.4	214589	3.7	19.6	525569	3.7	20.6	284152	3.8	20.4	86728	3.9	18.3	230409	3.9	20.3
274100	3.6	19.8	218496	3.7	19.8	322563	3.7	20.4	359948	3.8	19.7	206991	3.9	19.6	50297	3.9	17.5
360121	3.6	21.0	338003	3.7	21.0	149622	3.7	19.2	130560	3.8	18.1	427416	3.9	20.6	470829	3.9	20.6
442173	3.6	20.7	301056	3.7	19.7	463408	3.7	20.6	257988	3.8	18.3	255384	3.9	19.8	89323	3.9	18.5
360682	3.6	20.5	372378	3.7	19.4	356362	3.7	20.6	257910	3.8	18.5	61047	3.9	19.1	6574	3.9	17.4
42179	3.6	18.8	304623	3.7	19.4	243167	3.7	18.7	314315	3.8	19.3	342435	3.9	18.9	256523	3.9	20.3
314110	3.6	19.9	32322	3.7	18.3	99743	3.7	19.1	17504	3.8	17.7	86216	3.9	18.7	89891	3.9	19.2
115383	3.6	19.6	509263	3.7	20.8	341830	3.7	20.7	280931	3.8	20.1	65625	3.9	18.0	171839	3.9	20.2
293260	3.6	20.9	261255	3.7	19.7	234112	3.7	18.9	314133	3.8	19.8	247917	3.9	18.4	81148	3.9	19.0
521047	3.6	21.5	151881	3.7	19.5	349341	3.7	20.3	184236	3.8	19.6	418077	3.9	19.5	499553	3.9	19.4
111962	3.6	18.6	260359	3.7	19.9	228102	3.7	19.0	305345	3.8	20.1	67910	3.9	17.7	293818	3.9	18.7
34330	3.6	18.6	430770	3.7	20.2	512104	3.7	20.3	471705	3.8	20.3	23970	3.9	18.1	202981	3.9	18.7
240684	3.6	20.3	255096	3.7	20.3	481495	3.7	21.0	343794	3.8	20.0	70404	3.9	18.4	364477	3.9	21.3
302234	3.6	19.7	374494	3.7	19.9	250089	3.7	20.5	153731	3.8	19.4	380618	3.9	19.4	431415	3.9	21.3
528391	3.6	20.4	507080	3.7	20.7	388924	3.7	20.0	108855	3.8	18.5	436064	3.9	20.9	44408	3.9	18.1
253382	3.6	19.5	515655	3.7	20.9	212188	3.7	18.1	233808	3.8	20.3	412710	3.9	20.8	254391	3.9	19.7
521772	3.6	20.7	531152	3.7	21.2	354741	3.7	20.7	313676	3.8	20.1	258819	3.9	20.4	168963	3.9	18.6
195174	3.6	19.4	87618	3.7	17.4	332495	3.7	19.8	505143	3.8	20.8	120121	3.9	19.6	482115	3.9	19.7
380295	3.6	20.9	496980	3.7	20.7	237063	3.7	19.1	260226	3.8	19.8	467955	3.9	20.4	439685	3.9	20.0
402978	3.6	19.1	62889	3.7	18.2	408617	3.7	19.9	42089	3.8	19.5	438169	3.9	20.4	210555	3.9	20.0
530442	3.6	20.9	365752	3.7	19.5	266628	3.7	19.7	481294	3.8	20.9	192240	3.9	19.6			

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
314883	3.9	20.3	59533	4.0	18.8	525328	4.1	19.0	94865	4.2	19.2	472637	4.2	20.1	107581	4.3	19.9
510409	3.9	20.5	158137	4.0	20.3	499328	4.1	19.5	474715	4.2	20.6	121475	4.2	18.7	263982	4.3	19.5
520210	3.9	21.1	2636	4.0	16.3	320360	4.1	20.1	13752	4.2	17.7	443585	4.3	20.3	73342	4.3	18.3
359610	3.9	20.0	437514	4.0	20.3	517032	4.1	20.4	235591	4.2	19.6	391082	4.3	19.2	430286	4.3	18.5
286033	3.9	19.6	396841	4.0	19.9	102693	4.1	18.4	523122	4.2	20.9	283712	4.3	19.8	448437	4.3	20.5
512618	3.9	20.4	287012	4.0	21.5	307016	4.1	19.0	126726	4.2	19.4	357808	4.3	20.9	514770	4.3	21.6
246884	3.9	19.8	318331	4.0	19.5	9448	4.1	17.5	140322	4.2	20.4	530958	4.3	20.6	43488	4.3	18.6
397020	3.9	20.8	187429	4.0	20.3	404458	4.1	20.7	481227	4.2	20.4	520071	4.3	20.0	18550	4.3	17.8
478473	3.9	21.2	246613	4.0	19.9	266026	4.1	19.9	161944	4.2	19.7	506195	4.3	20.8	513492	4.3	22.1
86042	3.9	17.9	239091	4.1	20.8	62986	4.1	17.9	210050	4.2	19.9	166669	4.3	18.6	506796	4.3	21.1
482964	3.9	20.8	531231	4.1	19.9	345039	4.1	20.2	168830	4.2	18.9	200029	4.3	18.7	301344	4.3	20.6
122191	3.9	19.7	78930	4.1	19.1	308524	4.1	19.0	112107	4.2	19.3	324268	4.3	20.0	415278	4.3	20.7
392426	3.9	19.6	177926	4.1	20.0	469671	4.1	19.5	466062	4.2	20.1	397536	4.3	20.1	449884	4.3	20.3
363408	3.9	18.8	384506	4.1	20.1	243707	4.1	20.6	320040	4.2	21.0	114678	4.3	18.0	84160	4.3	17.9
207469	3.9	19.9	511915	4.1	20.1	535013	4.1	19.4	35038	4.2	18.9	526112	4.3	20.1	362882	4.4	19.4
446337	3.9	20.7	115155	4.1	19.2	345021	4.1	19.9	306926	4.2	19.1	240945	4.3	20.2	529994	4.4	19.9
519480	3.9	20.7	274546	4.1	20.0	258624	4.1	20.1	192672	4.2	18.7	94352	4.3	18.5	114752	4.4	19.9
511299	3.9	20.6	433671	4.1	21.0	499537	4.1	20.3	449687	4.2	20.0	344519	4.3	19.8	497502	4.4	20.0
501747	3.9	20.8	314098	4.1	19.7	366468	4.1	20.8	121658	4.2	18.5	422604	4.3	20.5	143632	4.4	19.8
505922	3.9	21.4	248420	4.1	19.1	501584	4.1	20.8	181096	4.2	19.8	62478	4.3	18.3	343504	4.4	19.6
31047	3.9	18.2	85426	4.1	19.1	209117	4.1	19.5	73315	4.2	18.4	419568	4.3	19.8	216459	4.4	19.8
135547	3.9	19.2	14496	4.1	17.5	258949	4.1	19.4	449345	4.2	20.1	48009	4.3	18.6	482952	4.4	21.1
27365	3.9	17.8	185500	4.1	19.5	358908	4.1	21.2	197563	4.2	20.0	424008	4.3	19.8	283205	4.4	20.3
434729	3.9	21.2	361900	4.1	21.5	381132	4.1	20.9	35150	4.2	18.7	16678	4.3	16.7	124036	4.4	19.1
442096	3.9	20.7	475707	4.1	20.6	384884	4.1	20.2	95931	4.2	19.8	263815	4.3	20.3	38066	4.4	17.4
263799	3.9	20.1	194067	4.1	19.5	523959	4.1	21.0	442119	4.2	18.9	290856	4.3	20.9	494460	4.4	19.9
488373	3.9	19.0	44826	4.1	18.8	13185	4.1	18.6	148474	4.2	20.2	255472	4.3	19.6	401160	4.4	19.7
209844	3.9	19.9	361986	4.1	20.4	473178	4.1	19.6	351898	4.2	20.9	225846	4.3	19.9	397795	4.4	21.2
491205	3.9	21.0	399825	4.1	20.8	279746	4.1	20.6	467856	4.2	21.0	154180	4.3	19.3	306083	4.4	20.8
481502	3.9	20.7	374865	4.1	19.8	269107	4.1	19.8	457713	4.2	21.4	53594	4.3	17.9	302660	4.4	20.5
157862	3.9	18.3	404792	4.1	20.3	510501	4.1	21.3	132560	4.2	18.8	338749	4.3	19.2	532942	4.4	20.7
273909	3.9	20.5	174193	4.1	20.0	358860	4.1	21.1	178695	4.2	19.5	214712	4.3	20.6	205681	4.4	19.1
245091	3.9	19.9	155957	4.1	19.2	357772	4.1	20.9	12513	4.2	16.1	263811	4.3	20.9	232885	4.4	19.1
356259	3.9	20.4	131564	4.1	18.0	72449	4.1	18.8	116947	4.2	19.9	25142	4.3	17.3	35037	4.4	19.0
1907	3.9	15.6	428310	4.1	21.6	149921	4.1	19.2	125224	4.2	19.1	309858	4.3	19.9	98947	4.4	19.2
27098	3.9	17.7	286395	4.1	18.9	451578	4.1	20.9	314592	4.2	20.2	77518	4.3	18.7	155199	4.4	19.1
540807	3.9	20.1	358988	4.1	21.1	468148	4.1	20.2	308960	4.2	19.9	117357	4.3	18.4	99175	4.4	18.4
353338	4.0	20.5	327715	4.1	19.5	357839	4.1	19.3	19488	4.2	17.8	50229	4.3	16.4	229606	4.4	20.4
535242	4.0	21.1	201610	4.1	19.5	161049	4.1	19.6	356911	4.2	20.6	269754	4.3	18.6	537203	4.4	21.6
175668	4.0	19.9	466106	4.1	21.4	219905	4.1	20.0	159642	4.2	19.9	261761	4.3	19.2	364514	4.4	21.0
362397	4.0	19.1	473248	4.1	20.1	320451	4.1	19.5	488789	4.2	23.4	301047	4.3	20.0	502095	4.4	20.0
36503	4.0	18.5	112930	4.1	20.3	503877	4.1	19.2	125927	4.2	18.3	517874	4.3	20.4	508236	4.4	20.7
509389	4.0	21.1	536177	4.1	21.6	263495	4.1	20.7	400999	4.2	19.5	361038	4.3	20.2	494482	4.4	20.3
272699	4.0	19.1	256423	4.1	19.9	101053	4.1	19.0	355820	4.2	20.9	300518	4.3	19.9	429200	4.4	20.9
426298	4.0	20.0	129789	4.1	19.2	253713	4.1	19.1	91344	4.2	20.2	158828	4.3	18.9	17499	4.4	18.2
252844	4.0	20.0	472187	4.1	20.7	7174	4.1	17.8	475553	4.2	19.5	118878	4.3	18.9	429735	4.4	21.3
441533	4.0	20.6	496424	4.1	20.7	38087	4.1	18.7	310471	4.2	18.7	385837	4.3	19.8	313375	4.4	20.2
107601	4.0	19.8	297174	4.1	20.4	219256	4.1	19.4	467414	4.2	20.8	195467	4.3	18.8	87907	4.4	18.3
282976	4.0	20.0	524468	4.1	20.8	535003	4.1	20.1	146264	4.2	19.6	320671	4.3	20.3	117790	4.4	17.1
289665	4.0	20.1	93708	4.1	18.0	72591	4.1	19.0	181821	4.2	20.2	390366	4.3	20.3	457592	4.4	21.9
28205	4.0	17.1	534975	4.1	20.7	195364	4.1	19.7	91145	4.2	18.7	320027	4.3	20.2	87582	4.4	17.9
11847	4.0	17.6	4823	4.1	15.7	241643	4.1	19.8	160171	4.2	18.1	244774	4.3	18.3	450102	4.4	19.6
32892	4.0	18.9	396810	4.1	18.5	395530	4.1	19.6	394297	4.2	20.0	83726	4.3	18.5	331874	4.4	21.2
120783	4.0	18.8	73198	4.1	18.4	518194	4.2	20.7	62550	4.2	19.4	336346	4.3	19.9	527083	4.4	20.2
377135	4.0	20.7	90314	4.1	19.2	23633	4.2	17.9	466586	4.2	20.2	356204	4.3	20.6	214620	4.4	19.4
463403	4.0	20.7	467084	4.1	19.9	299822	4.2	19.9	263415	4.2	20.7	373255	4.3	20.8	539337	4.4	20.6
19140	4.0	15.6	93294	4.1	18.7	318456	4.2	20.8	110757	4.2	18.2	51031	4.3	17.1	152738	4.4	18.4
514265	4.0	19.9	152615	4.1	20.3	533661	4.2	20.4	43594	4.2	17.6	475355	4.3	21.5	533183	4.4	21.5
92310	4.0	19.1	384898	4.1	20.0	370924	4.2	20.2	181145	4.2	20.1	17479	4.3	17.3	260166	4.4	20.4
366119	4.0	19.7	46129	4.1	17.5	244330	4.2	19.6	378531	4.2	21.3	453483	4.3	20.5	470394	4.4	20.1
126427	4.0	18.7	257513	4.1	20.4	512656	4.2	20.6	355560	4.2	19.4	425957	4.3	19.7	443056	4.4	20.2
297548	4.0	19.9	21575	4.1	17.7	59579	4.2	17.0	252784	4.2	20.3	59065	4.3	17.4	75148	4.4	18.6
335173	4.0	18.3	344702	4.1	20.3	321095	4.2	20.5	241235	4.2	20.1	108399	4.3	18.8	7006	4.4	18.9
96278	4.0	19.8	262299	4.1	20.5	211575	4.2	19.8	344669	4.2	19.0	153831	4.3	20.1	393274	4.4	20.4
42071	4.0	18.3	335522	4.1	20.0	255031	4.2	19.2	315917	4.2	20.7	355718	4.3	20.5	178838	4.4	19.7
34613	4.0	19.9	75510	4.1	17.7	114835	4.2	18.7	478056	4.2	20.5	412256	4.3	19.2	500105	4.4	21.2
318787	4.0	19.8	183917	4.1	20.3	112240	4.2	19.0	309762	4.2	20.3	353193	4.3	20.8	47038	4.4	17.2
391329	4.0	20.4	460464	4.1	20.0	91777	4.2	17.6	357552	4.2	20.0	35476	4.3	17.7	156266	4.4	17.9
323727	4.0	20.9	71381	4.1	17.2	244251	4.2	19.5	430839	4.2	20.7	161902	4.3	19.7	276470	4.4	21.5
233933	4.0	20.4	400567	4.1	20.4	356436	4.2	20.5	499002	4.2	21.5	334722	4.3	20.3	497741	4.4	21.0
383216	4.0	19.8	25776	4.1	18.7	79968	4.2	18.4	540751	4.2	18.7	241124	4.3	20.3			



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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
67438	4.4	18.2	170660	4.5	19.5	386794	4.6	20.0	43981	4.6	19.1	27956	4.7	17.6	250341	4.8	19.1
440591	4.4	20.0	419378	4.5	19.5	63126	4.6	18.8	9447	4.6	16.7	24233	4.7	18.3	266761	4.8	20.1
329204	4.4	20.7	438861	4.5	21.6	405080	4.6	19.4	446188	4.6	20.1	93646	4.7	17.8	133702	4.8	19.7
33523	4.4	18.5	317685	4.5	19.7	304410	4.6	20.4	424648	4.6	19.8	508740	4.7	20.8	329839	4.8	20.0
256742	4.4	19.7	144241	4.5	20.1	436313	4.6	20.3	445831	4.6	20.0	430967	4.7	20.2	2218	4.8	14.9
127950	4.4	19.4	376816	4.5	19.6	352250	4.6	19.5	122537	4.6	18.5	482925	4.7	20.9	102411	4.8	19.2
10487	4.4	16.1	280107	4.5	20.1	444709	4.6	21.1	104324	4.6	18.4	468799	4.7	21.5	223915	4.8	20.1
521313	4.4	21.1	356258	4.5	20.6	193589	4.6	18.0	350992	4.6	21.3	12900	4.7	18.9	1251	4.8	13.8
4079	4.4	17.1	51384	4.5	19.2	218914	4.6	19.5	75333	4.6	19.0	501545	4.7	20.2	287574	4.8	20.4
112746	4.4	19.2	7640	4.5	17.1	367310	4.6	20.3	480139	4.6	20.8	173622	4.7	20.0	470291	4.8	22.8
120781	4.4	20.1	6667	4.5	16.4	95538	4.6	19.6	178055	4.6	18.7	238579	4.7	19.2	199722	4.8	20.0
169554	4.4	19.3	89212	4.5	17.8	523981	4.6	20.5	62180	4.6	18.8	399113	4.7	20.3	380299	4.8	17.8
123847	4.4	18.8	361135	4.5	20.8	316040	4.6	21.1	532033	4.6	20.7	291611	4.7	19.4	253882	4.8	19.7
51631	4.4	19.5	383259	4.5	19.5	453738	4.6	20.6	499635	4.6	20.7	296271	4.7	20.1	303676	4.8	20.2
312595	4.4	20.2	253695	4.5	18.9	531037	4.6	21.5	95149	4.6	19.1	120650	4.7	18.9	405107	4.8	20.3
2324	4.4	16.3	250430	4.5	19.3	522755	4.6	20.4	436295	4.6	21.9	188654	4.7	20.1	36428	4.8	17.3
112488	4.4	19.1	255692	4.5	19.5	354364	4.6	21.2	510684	4.6	20.3	37685	4.7	18.3	2094	4.8	14.9
16297	4.4	18.0	220777	4.5	18.8	314151	4.6	21.0	526911	4.6	22.0	69930	4.7	17.2	121482	4.8	18.3
116724	4.4	18.1	470713	4.5	20.1	411693	4.6	20.6	285567	4.7	22.1	168405	4.7	19.0	238954	4.8	20.4
403786	4.4	19.5	291126	4.5	21.1	47271	4.6	18.1	527434	4.7	19.8	473051	4.7	20.0	430452	4.8	19.1
202248	4.4	17.4	159903	4.5	18.9	504038	4.6	20.1	306001	4.7	19.1	504984	4.7	21.1	334737	4.8	18.8
526336	4.4	21.0	172917	4.5	19.9	439693	4.6	20.3	353779	4.7	19.9	20627	4.7	18.4	109662	4.8	19.0
374384	4.5	19.8	97507	4.5	19.7	173636	4.6	19.6	126008	4.7	19.5	197619	4.7	19.7	321273	4.8	19.3
529467	4.5	21.1	401739	4.5	19.7	357555	4.6	19.7	375842	4.7	20.0	160204	4.7	17.8	459465	4.8	20.1
130922	4.5	18.0	165978	4.5	19.1	68088	4.6	17.5	503267	4.7	20.1	192398	4.7	18.5	359444	4.8	21.0
509408	4.5	21.3	307388	4.5	18.6	410170	4.6	20.2	41171	4.7	18.1	249721	4.7	18.7	379350	4.8	19.8
317268	4.5	21.2	42136	4.5	19.4	101590	4.6	18.6	163894	4.7	19.2	37544	4.7	17.3	21469	4.8	19.4
159010	4.5	18.9	393376	4.5	19.7	242892	4.6	20.7	181073	4.7	20.2	306387	4.7	20.9	364754	4.8	19.0
203019	4.5	19.6	515942	4.5	19.6	99809	4.6	18.8	103537	4.7	19.1	198571	4.7	19.0	107163	4.8	20.1
427419	4.5	20.9	39133	4.5	17.0	42092	4.6	17.6	499950	4.7	19.9	114962	4.7	17.5	365317	4.8	20.6
37535	4.5	18.7	245071	4.5	19.7	216672	4.6	19.4	121624	4.7	18.8	207297	4.7	19.7	258823	4.8	18.7
89595	4.5	18.3	511143	4.5	20.6	479745	4.6	20.6	230302	4.7	19.1	272698	4.7	20.9	121917	4.8	18.8
439520	4.5	20.7	137716	4.5	17.8	440478	4.6	20.8	503389	4.7	20.6	387311	4.7	20.4	522965	4.8	21.6
490292	4.5	21.1	133071	4.5	19.4	416446	4.6	18.3	360041	4.7	20.6	164534	4.7	19.6	304054	4.8	20.0
515441	4.5	20.7	256289	4.5	20.0	416390	4.6	19.9	251682	4.7	18.8	237025	4.7	20.1	250759	4.8	18.7
263211	4.5	19.8	537001	4.5	21.6	214739	4.6	20.1	112547	4.7	18.6	180388	4.7	19.1	189561	4.8	19.1
507131	4.5	20.7	445378	4.5	19.8	240773	4.6	20.2	444689	4.7	20.1	70181	4.7	18.5	537017	4.8	21.6
415065	4.5	19.6	33086	4.5	18.1	212518	4.6	18.5	220382	4.7	19.3	190442	4.7	19.5	478947	4.8	20.2
254352	4.5	19.6	390339	4.5	20.6	335790	4.6	19.5	540401	4.7	20.7	397097	4.7	20.4	65967	4.8	19.3
101209	4.5	19.3	253356	4.5	19.9	474487	4.6	20.9	116493	4.7	19.5	351500	4.7	20.2	347911	4.8	19.6
193592	4.5	19.6	376329	4.5	19.9	152494	4.6	19.5	504043	4.7	20.6	418274	4.7	20.9	225818	4.8	19.5
356203	4.5	20.0	509480	4.5	19.9	472211	4.6	21.2	397737	4.7	20.2	137295	4.7	22.6	436758	4.8	20.2
510790	4.5	21.1	301641	4.5	20.4	117444	4.6	20.2	36871	4.7	17.9	312638	4.7	19.8	246998	4.8	20.6
257200	4.5	20.1	225219	4.5	19.7	470902	4.6	20.4	482409	4.7	20.6	18003	4.7	17.1	216952	4.8	19.4
321731	4.5	20.6	200036	4.5	20.2	323615	4.6	18.4	292243	4.7	20.4	476256	4.7	20.6	316765	4.8	20.0
315413	4.5	19.0	2148	4.5	17.4	427435	4.6	21.3	123408	4.7	19.1	32324	4.7	17.7	510102	4.8	20.9
503355	4.5	21.3	135083	4.5	16.8	5474	4.6	16.0	376568	4.7	20.3	71501	4.7	18.5	488465	4.8	23.6
97205	4.5	19.1	252971	4.5	20.6	514068	4.6	21.6	543035	4.7	20.1	442555	4.7	19.7	40406	4.8	17.1
250072	4.5	19.2	34594	4.5	18.7	504086	4.6	20.0	266795	4.7	19.6	497682	4.7	20.4	523146	4.8	20.7
316097	4.5	19.8	509469	4.5	19.9	533320	4.6	20.6	417570	4.7	20.1	534436	4.7	20.6	399886	4.8	21.1
345892	4.5	20.6	297182	4.5	20.2	392168	4.6	20.6	328178	4.7	21.2	318363	4.7	20.0	482221	4.8	20.1
172247	4.5	18.1	476800	4.5	20.7	1157	4.6	14.9	245316	4.7	19.9	62869	4.7	19.0	237935	4.8	20.4
480624	4.5	20.1	123522	4.6	18.3	261199	4.6	20.4	286548	4.7	20.0	166502	4.7	19.1	425542	4.8	19.3
211967	4.5	19.3	352976	4.6	20.3	316470	4.6	20.3	437820	4.7	20.6	397792	4.7	21.6	124201	4.8	17.7
153871	4.5	18.1	401241	4.6	21.0	168411	4.6	20.1	302256	4.7	18.9	314503	4.7	20.2	154227	4.8	20.1
110549	4.5	18.5	43016	4.6	18.3	399826	4.6	20.1	2797	4.7	15.5	439456	4.7	20.7	347849	4.8	19.9
294925	4.5	20.1	355279	4.6	18.7	496357	4.6	21.7	107308	4.7	19.3	179809	4.7	19.2	384477	4.8	20.3
228610	4.5	20.1	59912	4.6	19.0	244648	4.6	20.4	493651	4.7	20.9	217022	4.7	20.0	392700	4.8	21.1
396828	4.5	20.8	82780	4.6	18.7	278792	4.6	20.5	107007	4.7	19.0	91613	4.7	18.2	2162	4.8	14.3
338007	4.5	19.9	128902	4.6	19.0	46075	4.6	19.1	262164	4.7	20.5	1162	4.7	15.4	362507	4.8	20.0
31444	4.5	18.8	364450	4.6	19.7	53399	4.6	17.2	493617	4.7	20.0	59914	4.7	19.0	626	4.8	12.1
291370	4.5	20.9	538953	4.6	21.6	7565	4.6	17.7	165208	4.7	18.6	435790	4.7	20.0	350975	4.8	20.9
142444	4.5	18.8	311165	4.6	20.0	537729	4.6	19.2	93753	4.7	18.9	533583	4.7	21.2	256958	4.8	20.4
426993	4.5	20.9	154818	4.6	18.9	356902	4.6	20.6	65895	4.7	17.3	257364	4.7	20.8	336642	4.8	20.8
295390	4.5	20.0	258964	4.6	19.5	475863	4.6	20.9	3698	4.7	15.3	37529	4.7	18.6	280855	4.8	20.7
319563	4.5	19.3	13562	4.6	18.2	92906	4.6	18.0	192339	4.7	18.3	191299	4.8	20.7	163208	4.8	20.2
278069	4.5	19.4	401734	4.6	20.6	196430	4.6	19.6	115610	4.7	19.1	56460	4.8	18.1	469453	4.8	19.4
11705	4.5	15.2	320620	4.6	21.7	311469	4.6	19.1	2146	4.7	17.0	389825	4.8	20.9	85766	4.8	19.3
3158	4.5	15.4	3216	4.6	15.5	444969	4.6	20.9	387129	4.7	20.3	259554	4.8	19.1	89319	4.8	18.1
365746	4.5	20.6	505859	4.6	21.2	30510	4.6	18.4	171132	4.7	19.3	74850	4.8	17.7	249336	4.8	18.8
432489	4.5	21.1	108641	4.6	20.0	423961	4.6	19.5	69231	4.7	20.4	136307	4.8	18.3	183791	4.8	

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
497408	4.8	19.8	94261	4.9	18.9	168230	4.9	20.6	373567	5.0	19.1	13035	5.1	17.7	71634	5.2	18.1
528768	4.8	20.9	261864	4.9	20.2	390337	4.9	19.9	229857	5.0	19.1	304407	5.1	20.2	525488	5.2	21.9
93477	4.8	19.0	482370	4.9	21.1	516300	4.9	19.7	361540	5.0	18.4	536341	5.1	21.5	315090	5.2	20.7
422194	4.8	20.7	282242	4.9	20.0	457369	4.9	18.9	405808	5.0	20.6	515529	5.1	20.8	219844	5.2	19.6
185470	4.8	20.0	130963	4.9	18.2	362831	4.9	20.0	4365	5.0	16.5	63883	5.1	17.2	318123	5.2	20.9
127095	4.8	19.4	225226	4.9	20.5	326239	4.9	20.3	47960	5.0	18.3	55588	5.1	16.8	252197	5.2	19.2
151492	4.8	19.8	379245	4.9	19.5	540206	4.9	17.7	523176	5.0	20.9	2012	5.1	16.0	538930	5.2	21.0
39774	4.8	18.3	513511	4.9	20.9	404825	4.9	20.1	421464	5.0	19.3	353535	5.1	20.3	449470	5.2	21.8
511177	4.8	19.9	236413	4.9	20.4	248596	4.9	20.1	72315	5.0	18.3	232229	5.1	20.7	65290	5.2	18.9
208157	4.8	20.4	308075	4.9	18.8	39755	4.9	19.2	22203	5.0	18.6	168854	5.1	18.8	340385	5.2	20.2
128788	4.8	18.9	539164	4.9	21.1	421443	4.9	20.1	4160	5.0	16.4	197546	5.1	20.5	528195	5.2	21.4
149050	4.8	19.4	240782	4.9	18.9	198345	4.9	19.9	474096	5.0	20.4	323230	5.1	18.4	371480	5.2	20.0
528954	4.8	22.3	211171	4.9	21.0	214453	4.9	19.0	252835	5.0	19.5	116678	5.1	20.3	87155	5.2	18.6
520351	4.8	20.5	169102	4.9	20.0	404695	4.9	19.9	358853	5.0	20.6	266710	5.1	20.6	15950	5.2	16.4
145605	4.8	19.9	101797	4.9	18.6	4150	4.9	15.0	53019	5.0	18.4	371561	5.1	19.7	482190	5.2	20.7
119961	4.8	18.0	512160	4.9	20.5	435795	4.9	19.8	257393	5.0	20.3	359659	5.1	20.3	55908	5.2	19.1
23709	4.8	18.0	496719	4.9	19.9	250047	4.9	20.2	221759	5.0	20.2	122131	5.1	19.6	437085	5.2	19.6
86233	4.8	19.4	514240	4.9	20.2	257615	4.9	19.9	208099	5.0	20.0	433512	5.1	19.5	251321	5.2	19.8
112055	4.9	20.0	398529	4.9	20.6	101864	4.9	19.3	356689	5.0	20.7	9990	5.1	17.1	256627	5.2	19.7
542768	4.9	20.1	159083	4.9	19.1	499541	4.9	19.7	315943	5.0	20.5	65492	5.1	18.3	477872	5.2	20.8
104835	4.9	19.8	381882	4.9	19.7	141067	4.9	19.2	157579	5.0	19.1	414420	5.1	19.7	254868	5.2	20.0
396105	4.9	20.5	299772	4.9	19.7	331908	4.9	19.9	474331	5.0	20.6	321150	5.1	20.9	168693	5.2	20.2
229668	4.9	20.6	432522	4.9	20.1	200571	4.9	18.8	461651	5.0	20.8	263480	5.1	19.5	437170	5.2	20.8
497836	4.9	20.2	387774	4.9	18.1	471111	4.9	20.5	92223	5.0	18.6	352666	5.1	20.7	277484	5.2	20.6
198342	4.9	18.7	346704	4.9	20.6	291053	4.9	19.6	285153	5.0	19.1	114718	5.1	19.3	159915	5.2	20.6
101884	4.9	19.3	240192	4.9	19.8	240440	4.9	19.6	169177	5.0	18.4	23812	5.1	18.2	431028	5.2	19.6
88233	4.9	18.0	241954	4.9	20.8	169504	4.9	19.3	131752	5.0	18.8	58680	5.1	17.9	525068	5.2	20.8
495854	4.9	21.8	412243	4.9	20.2	357045	4.9	20.1	140438	5.0	19.2	456827	5.1	20.4	263830	5.2	19.9
34348	4.9	16.9	384830	4.9	19.4	35357	4.9	18.7	185921	5.0	18.7	228106	5.1	19.5	315901	5.2	20.6
11439	4.9	16.6	527525	4.9	20.6	27241	4.9	18.2	343406	5.1	19.3	158128	5.1	20.0	403149	5.2	22.1
391024	4.9	19.9	200530	4.9	20.6	392634	4.9	20.9	351545	5.1	20.2	189371	5.1	18.7	515941	5.2	19.7
408501	4.9	21.6	107583	4.9	20.5	359606	4.9	20.4	510974	5.1	21.4	447182	5.1	20.8	74992	5.2	18.7
394039	4.9	20.5	296692	4.9	20.6	540165	4.9	20.2	420479	5.1	20.9	190301	5.1	19.8	118266	5.2	19.4
380168	4.9	18.7	477057	4.9	20.9	529010	4.9	21.5	516076	5.1	20.9	90901	5.1	19.4	73259	5.2	18.8
326947	4.9	19.4	37283	4.9	18.3	497798	4.9	20.3	445438	5.1	20.0	8820	5.2	16.4	220570	5.2	19.5
441382	4.9	20.4	377594	4.9	21.0	161856	4.9	20.9	320385	5.1	19.0	99834	5.2	19.4	19257	5.2	17.0
519473	4.9	21.3	243297	4.9	19.8	200242	4.9	18.7	389355	5.1	20.8	539338	5.2	20.4	359894	5.2	21.0
118986	4.9	18.8	312604	4.9	19.9	539727	4.9	19.9	216701	5.1	19.3	494663	5.2	19.8	443031	5.2	20.4
381168	4.9	20.8	369719	4.9	20.4	494342	4.9	20.5	346001	5.1	20.3	318567	5.2	20.4	120925	5.2	18.8
56930	4.9	17.8	308004	4.9	17.9	127980	4.9	19.2	131240	5.1	18.1	250086	5.2	21.1	206062	5.2	20.4
253785	4.9	19.9	362866	4.9	19.5	324924	4.9	20.9	438103	5.1	20.7	349359	5.2	19.7	257779	5.2	20.0
506523	4.9	20.8	503298	4.9	20.1	139194	4.9	19.4	511497	5.1	22.1	254216	5.2	19.7	355375	5.2	20.4
405768	4.9	21.3	309097	4.9	20.4	96321	4.9	18.4	404753	5.1	21.2	106380	5.2	18.3	113694	5.2	19.3
508191	4.9	21.4	512473	4.9	20.6	47770	4.9	17.8	405836	5.1	20.4	61337	5.2	18.8	437009	5.2	20.5
23624	4.9	17.8	408128	4.9	21.0	91946	5.0	18.6	159025	5.1	20.4	501923	5.2	19.6	488301	5.2	19.9
271862	4.9	20.0	289062	4.9	19.2	523094	5.0	20.5	185062	5.1	19.6	432611	5.2	20.1	96289	5.2	19.0
414115	4.9	19.4	12974	4.9	17.9	277408	5.0	19.7	94333	5.1	18.1	538861	5.2	21.6	304277	5.2	20.4
40890	4.9	18.7	73480	4.9	22.7	290530	5.0	19.7	498513	5.1	20.8	340967	5.2	21.7	179869	5.2	18.9
357862	4.9	20.7	208659	4.9	19.8	266719	5.0	20.3	513845	5.1	21.1	324985	5.2	20.5	414085	5.2	19.4
314568	4.9	19.9	508158	4.9	21.2	379877	5.0	19.5	325025	5.1	19.6	238247	5.2	19.4	74745	5.2	18.6
296763	4.9	19.1	537637	4.9	21.2	209513	5.0	19.9	285251	5.1	20.6	65057	5.2	18.1	151709	5.2	19.7
36949	4.9	17.8	310460	4.9	19.6	400475	5.0	20.1	330317	5.1	20.1	117006	5.2	19.6	153281	5.2	19.6
332278	4.9	20.5	48971	4.9	18.1	312457	5.0	19.4	15025	5.1	17.8	462239	5.2	21.3	393230	5.2	20.3
79406	4.9	19.1	284058	4.9	20.4	192686	5.0	17.6	537157	5.1	21.1	533149	5.2	21.8	167711	5.2	20.3
92110	4.9	18.5	126483	4.9	20.1	126073	5.0	19.1	141224	5.1	19.5	358894	5.2	20.5	190668	5.3	17.7
349195	4.9	20.7	434748	4.9	19.4	176317	5.0	20.0	90378	5.1	19.2	192659	5.2	17.7	86174	5.3	18.7
519151	4.9	19.8	36993	4.9	18.2	159366	5.0	18.9	471284	5.1	21.7	337159	5.2	19.6	503955	5.3	21.0
469032	4.9	20.6	386783	4.9	20.0	397074	5.0	20.5	292136	5.1	20.5	157384	5.2	19.3	40927	5.3	18.8
263988	4.9	20.7	154514	4.9	19.7	28370	5.0	17.6	199658	5.1	19.5	122209	5.2	17.6	77611	5.3	18.7
308636	4.9	19.7	215648	4.9	18.6	250392	5.0	18.6	399917	5.1	20.7	443788	5.2	20.5	509607	5.3	21.5
247443	4.9	20.5	513856	4.9	21.5	418040	5.0	20.5	57965	5.1	18.4	40316	5.2	16.3	335820	5.3	20.3
168332	4.9	19.1	250492	4.9	18.8	445475	5.0	19.6	448099	5.1	21.7	365442	5.2	20.0	345858	5.3	20.6
536903	4.9	20.7	4007	4.9	17.0	271713	5.0	17.7	214738	5.1	20.2	489952	5.2	21.1	527296	5.3	19.4
239884	4.9	18.8	330616	4.9	21.2	292323	5.0	19.8	251546	5.1	20.9	197996	5.2	19.6	397692	5.3	20.6
151	4.9	12.6	155893	4.9	20.6	3969	5.0	15.7	431823	5.1	20.8	3313	5.2	16.4	508028	5.3	21.0
199683	4.9	19.9	389530	4.9	20.4	433280	5.0	20.5	275938	5.1	19.1	228601	5.2	18.4	295795	5.3	20.0
78370	4.9	18.9	166938	4.9	20.2	320145	5.0	20.5	468639	5.1	21.4	134319	5.2	18.1	410252	5.3	20.4
56894	4.9	19.0	56776	4.9	18.6	444048	5.0	20.3	507368	5.1	21.7	216335	5.2	20.2	467566	5.3	20.2
40235	4.9	17.3	126093	4.9	17.4	182752	5.0	20.0	99195	5.1	18.0	12596	5.2	17.4	100796	5.3	18.9
178006	4.9	19.8	403960	4.9	20.5	45340	5.0	18.2	52109	5.1	18.9	67846	5.2	18.6	237515	5.3	19.1
461855	4.9	22.0	321681	4.9	20.9	226366	5.0	20.9	295497	5.1	19.9	296836	5.2	20.5	1		

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
62515	5.3	19.0	264753	5.3	18.9	282008	5.4	19.3	307588	5.5	20.0	187858	5.5	19.8	461670	5.6	20.4
516997	5.3	20.9	22881	5.3	17.7	363042	5.4	19.0	12422	5.5	16.7	92255	5.5	17.7	74473	5.6	18.5
510700	5.3	20.2	61712	5.3	18.8	169637	5.4	20.1	311560	5.5	20.3	342172	5.5	20.6	152765	5.6	20.0
353230	5.3	19.5	337213	5.3	20.2	474720	5.4	21.0	225213	5.5	19.7	24196	5.5	17.3	481526	5.6	20.0
261984	5.3	19.5	186757	5.3	20.3	408355	5.4	20.1	97796	5.5	17.9	142446	5.5	20.0	90779	5.6	19.2
471079	5.3	21.3	356903	5.3	20.4	315142	5.4	21.2	236637	5.5	20.1	257817	5.5	20.0	118884	5.6	18.5
338831	5.3	20.2	40401	5.3	18.1	445467	5.4	19.8	259052	5.5	19.7	296476	5.5	20.3	525550	5.6	21.3
505131	5.3	21.4	151311	5.3	20.0	462329	5.4	23.6	393647	5.5	19.5	217668	5.5	18.4	36254	5.6	17.4
225089	5.3	19.5	505564	5.3	19.3	340450	5.4	20.8	389881	5.5	19.7	430355	5.5	19.6	214125	5.6	19.3
409347	5.3	19.3	500906	5.3	21.3	96840	5.4	18.4	439729	5.5	21.0	132163	5.5	19.4	482801	5.6	20.2
435233	5.3	20.6	243314	5.3	19.9	248697	5.4	20.5	310684	5.5	20.6	508080	5.5	20.2	125029	5.6	18.8
53500	5.3	18.6	65554	5.3	19.4	509992	5.4	20.1	536329	5.5	21.3	390031	5.5	20.1	183882	5.6	18.9
184026	5.3	19.5	131920	5.3	19.4	91371	5.4	18.9	70618	5.5	18.9	212689	5.5	20.8	149167	5.6	19.1
360410	5.3	20.7	511631	5.3	21.0	52667	5.4	18.7	6767	5.5	16.6	170598	5.5	19.6	87531	5.6	19.4
495327	5.3	21.0	527587	5.3	19.4	130152	5.4	18.1	31246	5.5	17.2	101349	5.5	18.5	383200	5.6	20.2
145010	5.3	19.9	127182	5.3	19.0	84522	5.4	20.3	72284	5.5	18.2	192642	5.5	21.4	127349	5.6	19.7
171450	5.3	18.2	485177	5.4	19.5	101175	5.4	19.6	132506	5.5	19.9	434644	5.5	20.7	70498	5.6	18.3
362573	5.3	20.0	229749	5.4	20.3	309796	5.4	20.8	445509	5.5	20.4	479676	5.5	21.1	255436	5.6	19.6
429675	5.3	20.8	519245	5.4	20.8	262257	5.4	20.2	294916	5.5	21.1	333177	5.5	20.2	250106	5.6	20.7
356865	5.3	20.0	23027	5.4	15.7	312080	5.4	20.2	234796	5.5	20.1	141919	5.5	19.7	250406	5.6	19.1
469907	5.3	20.0	270379	5.4	20.4	338687	5.4	20.2	68275	5.5	19.9	365722	5.5	20.2	374806	5.6	20.9
490026	5.3	20.6	32164	5.4	16.7	67754	5.4	18.5	530776	5.5	20.3	15083	5.5	16.7	184951	5.6	18.8
32457	5.3	17.9	265361	5.4	19.7	45044	5.4	17.9	338516	5.5	19.6	544013	5.5	20.3	385571	5.6	23.4
213497	5.3	20.2	472688	5.4	21.2	270209	5.4	19.4	486749	5.5	20.6	4974	5.5	16.9	316686	5.6	20.3
332609	5.3	19.0	513393	5.4	20.2	349832	5.4	19.2	526829	5.5	20.7	177345	5.5	19.9	110543	5.6	18.8
391771	5.3	20.6	75458	5.4	19.4	113419	5.4	18.8	397450	5.5	20.0	41144	5.5	18.7	6466	5.6	17.8
218423	5.3	19.3	7972	5.4	17.5	480392	5.4	21.0	320422	5.5	20.6	250003	5.5	19.6	212884	5.6	20.1
295570	5.3	20.5	221892	5.4	20.3	510895	5.4	21.0	503196	5.5	20.3	467926	5.5	20.7	323049	5.6	20.5
250698	5.3	19.7	117059	5.4	20.3	108249	5.4	19.6	318930	5.5	19.9	12357	5.5	17.0	251846	5.6	20.3
341129	5.3	19.8	485754	5.4	21.1	119699	5.4	17.3	463529	5.5	21.1	382101	5.5	21.0	146035	5.6	19.6
40193	5.3	17.6	291866	5.4	19.9	294424	5.4	20.6	509583	5.5	21.4	291721	5.5	20.2	255396	5.6	21.1
470869	5.3	20.7	523983	5.4	23.1	474055	5.4	20.7	397012	5.5	20.1	173697	5.5	18.5	213617	5.6	20.4
152374	5.3	20.3	450095	5.4	20.0	500168	5.4	20.5	118404	5.5	18.5	92210	5.6	17.7	123736	5.6	18.4
142465	5.3	18.5	503626	5.4	20.1	183912	5.4	19.6	250751	5.5	19.3	261471	5.6	20.0	429716	5.6	21.2
261516	5.3	19.8	257299	5.4	21.0	245565	5.4	19.7	235913	5.5	20.3	438541	5.6	20.2	442154	5.6	19.9
203562	5.3	19.5	436755	5.4	21.1	357738	5.4	21.4	312962	5.5	19.7	13731	5.6	17.7	398249	5.6	20.7
469553	5.3	18.9	359360	5.4	20.8	334311	5.4	19.2	105822	5.5	19.2	307174	5.6	20.5	392294	5.6	19.5
192059	5.3	19.0	181163	5.4	19.2	511311	5.4	20.4	214094	5.5	19.6	461922	5.6	20.9	257697	5.6	20.6
278795	5.3	21.2	480670	5.4	19.9	333479	5.4	19.2	47531	5.5	17.7	422568	5.6	20.3	235584	5.6	20.2
481453	5.3	21.0	256884	5.4	19.8	200282	5.4	18.8	474093	5.5	20.3	443076	5.6	20.1	513844	5.6	20.7
264770	5.3	20.8	263324	5.4	19.8	336999	5.4	19.4	401458	5.5	21.3	472939	5.6	21.2	76066	5.6	17.8
114439	5.3	17.4	446534	5.4	20.5	368233	5.4	18.9	326113	5.5	19.5	457252	5.6	19.7	125986	5.6	19.6
475662	5.3	20.1	37937	5.4	18.7	456112	5.4	21.2	276972	5.5	19.5	190362	5.6	19.8	180772	5.6	19.2
330008	5.3	20.7	127922	5.4	18.8	97345	5.4	17.8	248560	5.5	18.8	333012	5.6	21.2	229084	5.6	18.9
512552	5.3	20.5	392217	5.4	20.5	327695	5.4	21.3	235187	5.5	19.8	16521	5.6	17.9	278353	5.6	20.1
492444	5.3	21.4	262020	5.4	20.3	475388	5.4	21.4	164966	5.5	19.9	17438	5.6	17.6	512298	5.6	21.3
34673	5.3	18.3	60213	5.4	18.9	461849	5.4	21.3	130932	5.5	19.1	105533	5.6	18.8	62975	5.6	19.1
470898	5.3	19.6	539003	5.4	20.7	242423	5.4	19.4	121906	5.5	20.2	472719	5.6	20.4	408210	5.6	20.7
152292	5.3	18.8	43125	5.4	17.7	402826	5.4	21.6	431086	5.5	20.7	1417	5.6	15.5	69676	5.6	18.6
256933	5.3	20.3	92854	5.4	18.4	127564	5.4	18.1	378319	5.5	21.1	59543	5.6	18.9	516013	5.6	20.4
537609	5.3	20.5	307126	5.4	19.8	391580	5.4	20.4	95835	5.5	20.7	20856	5.6	17.2	438375	5.6	20.4
361090	5.3	21.6	205677	5.4	18.7	403801	5.4	19.6	444199	5.5	20.2	503904	5.6	20.9	405788	5.6	20.3
156835	5.3	19.9	411694	5.4	19.8	440304	5.4	20.7	99648	5.5	19.8	391131	5.6	19.7	206114	5.6	20.4
184903	5.3	20.4	386806	5.4	20.2	333116	5.4	20.0	94094	5.5	18.8	376882	5.6	20.1	186983	5.6	19.7
199804	5.3	20.1	185930	5.4	19.2	73079	5.4	19.0	293313	5.5	20.5	364511	5.6	20.9	186808	5.6	20.3
263800	5.3	20.8	303711	5.4	20.5	471852	5.4	19.7	354347	5.5	20.9	475658	5.6	21.2	338682	5.6	19.3
315936	5.3	19.7	519827	5.4	21.2	162300	5.4	18.1	364557	5.5	20.8	377714	5.6	20.2	432752	5.6	20.6
151358	5.3	19.5	444330	5.4	20.4	380030	5.4	19.8	446173	5.5	20.1	421438	5.6	19.9	261709	5.6	19.4
483002	5.3	21.9	499101	5.4	20.3	1735	5.4	14.9	383245	5.5	20.5	180473	5.6	19.8	367490	5.6	21.5
217334	5.3	19.4	409028	5.4	20.8	259267	5.4	18.5	399016	5.5	20.3	198167	5.6	19.1	28601	5.6	18.0
314526	5.3	20.6	144840	5.4	19.3	58235	5.4	19.1	155827	5.5	17.9	448536	5.6	20.0	449527	5.6	20.8
205260	5.3	19.3	310689	5.4	21.1	460046	5.4	20.4	141460	5.5	19.3	127298	5.6	19.5	494636	5.6	19.7
310652	5.3	19.8	257224	5.4	20.2	150111	5.4	18.4	131786	5.5	19.2	377845	5.6	19.4	32948	5.6	18.0
252825	5.3	19.9	313668	5.4	19.8	15514	5.5	16.6	151198	5.5	19.0	255950	5.6	20.0	478762	5.7	20.8
91316	5.3	20.3	512544	5.4	19.5	273848	5.5	20.8	128182	5.5	19.6	324304	5.6	19.8	240223	5.7	20.0
70279	5.3	18.2	323673	5.4	19.9	250446	5.5	19.3	182357	5.5	18.9	395692	5.6	20.8	247394	5.7	19.9
158490	5.3	19.1	82052	5.4	18.9	172831	5.5	20.0	477517	5.5	20.9	288859	5.6	19.4	387941	5.7	20.5
262536	5.3	21.0	471279	5.4	19.3	504608	5.5	19.8	191148	5.5	17.7	136714	5.6	19.5	145454	5.7	18.7
33508	5.3	18.0	37554	5.4	18.8	507297	5.5	21.7	124118	5.5	18.5	377708	5.6	19.6	533628	5.7	21.0
386987	5.3	21.0	278165	5.4	19.4	239874	5.5	20.7	397015	5.5	19.6	479730	5.6	21.0	394869	5.7	20.6
45820	5.3	18.6	6866	5.4	16.6	493613	5.5	20.5	65127	5.5	16.8	91017	5.6				

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
288796	5.7	18.7	395731	5.7	20.3	92621	5.8	18.8	449448	5.9	20.3	192689	5.9	18.8	85023	6.0	18.5
402797	5.7	21.7	358945	5.7	20.6	436272	5.8	21.6	297536	5.9	20.6	358478	5.9	20.2	403429	6.0	21.2
85484	5.7	17.0	336257	5.7	20.0	398901	5.8	19.7	414139	5.9	19.5	539566	5.9	21.0	427571	6.0	21.9
424551	5.7	20.0	341233	5.7	20.0	159275	5.8	19.1	465635	5.9	20.9	191739	5.9	19.6	316083	6.0	20.8
387548	5.7	20.3	41189	5.7	18.4	444327	5.8	20.0	302222	5.9	18.3	213015	5.9	19.9	350060	6.0	20.0
126096	5.7	19.2	481007	5.7	20.4	166619	5.8	19.6	510053	5.9	21.2	422324	5.9	20.1	54014	6.0	18.0
137976	5.7	18.6	139579	5.7	19.3	95273	5.8	20.3	310530	5.9	19.5	126535	5.9	19.1	218952	6.0	19.7
167608	5.7	18.9	363252	5.7	19.3	7838	5.8	17.0	503269	5.9	20.7	8254	5.9	16.5	292431	6.0	20.2
310659	5.7	20.4	446159	5.7	21.1	414097	5.8	20.5	542359	5.9	21.9	33861	5.9	17.9	91067	6.0	19.2
329168	5.7	20.0	141996	5.7	20.2	396114	5.8	20.5	297129	5.9	20.1	277597	5.9	19.2	379587	6.0	20.4
121249	5.7	18.5	37716	5.7	19.0	175818	5.8	19.0	470353	5.9	20.4	346080	5.9	20.4	496107	6.0	19.6
366060	5.7	21.2	509907	5.7	20.3	73993	5.8	19.3	87972	5.9	19.1	511183	5.9	20.4	236428	6.0	20.4
322070	5.7	19.9	17841	5.7	17.3	402404	5.8	20.4	250791	5.9	19.3	369460	5.9	20.3	44419	6.0	18.5
368110	5.7	21.1	449450	5.7	21.0	103458	5.8	19.4	484696	5.9	20.7	311383	5.9	20.1	218587	6.0	20.2
163085	5.7	17.6	159615	5.7	19.7	53477	5.8	18.8	56697	5.9	17.4	26776	5.9	18.1	61156	6.0	17.8
184971	5.7	19.3	356103	5.7	20.9	537201	5.8	21.4	192393	5.9	20.4	146943	5.9	19.8	47330	6.0	18.2
265002	5.7	20.6	248655	5.7	18.3	157558	5.8	19.7	59629	5.9	17.5	216704	5.9	19.0	521544	6.0	20.2
428527	5.7	20.9	321406	5.7	20.6	70633	5.8	18.7	123854	5.9	19.0	211836	5.9	20.7	390084	6.0	19.7
37277	5.7	17.8	168384	5.7	20.0	382134	5.8	20.7	287125	5.9	20.2	390731	5.9	21.2	26278	6.0	18.0
157659	5.7	20.2	254416	5.7	19.0	398975	5.8	20.7	236556	5.9	19.7	442093	5.9	20.1	246627	6.0	19.4
143902	5.7	18.8	342265	5.7	20.1	406309	5.8	20.2	479932	5.9	20.0	457441	5.9	20.9	295634	6.0	19.4
101796	5.7	16.7	531654	5.7	20.6	294930	5.8	20.8	190701	5.9	20.2	56006	5.9	16.8	263844	6.0	20.5
513174	5.7	20.9	296409	5.7	20.7	539503	5.8	21.2	126971	5.9	19.6	134754	5.9	19.5	173676	6.0	18.6
320588	5.7	20.6	510059	5.7	21.2	326253	5.8	20.5	511793	5.9	20.7	156679	5.9	20.3	23224	6.0	18.5
201162	5.7	20.2	65942	5.8	16.4	74735	5.8	17.7	344713	5.9	20.7	365134	5.9	21.1	51133	6.0	18.9
251928	5.7	19.3	12174	5.8	16.6	500799	5.8	21.9	98187	5.9	18.5	194839	5.9	18.1	12961	6.0	18.6
393914	5.7	20.4	541321	5.8	20.8	8183	5.8	16.9	101659	5.9	17.6	99580	5.9	19.2	360275	6.0	18.7
373389	5.7	20.4	338823	5.8	19.0	156674	5.8	19.7	69116	5.9	19.6	70406	5.9	17.8	64920	6.0	17.7
353761	5.7	19.7	344808	5.8	20.2	528221	5.8	20.0	237581	5.9	19.4	261362	5.9	20.6	79816	6.0	18.6
316092	5.7	21.8	123454	5.8	18.2	205204	5.8	21.1	72000	5.9	17.9	398836	5.9	21.1	361595	6.0	20.4
270294	5.7	19.3	13159	5.8	16.7	195218	5.8	19.4	301944	5.9	20.0	12714	5.9	17.1	534707	6.0	20.3
425570	5.7	19.6	224665	5.8	19.2	33729	5.8	17.3	128492	5.9	19.6	149126	5.9	20.8	445021	6.0	20.7
371862	5.7	21.2	77553	5.8	19.4	201803	5.8	19.1	414199	5.9	20.6	264941	5.9	19.0	340496	6.0	19.9
353364	5.7	19.5	38621	5.8	18.7	199064	5.8	19.8	30321	5.9	18.1	475953	5.9	21.6	62189	6.0	18.6
105418	5.7	19.0	476194	5.8	20.6	352339	5.8	20.5	311592	5.9	20.0	511359	5.9	20.4	121941	6.0	19.1
449395	5.7	20.8	84047	5.8	17.7	81319	5.8	19.2	212033	5.9	19.6	444975	5.9	20.8	127468	6.0	19.2
34637	5.7	18.7	307010	5.8	17.5	78587	5.8	19.4	167298	5.9	18.8	136530	5.9	19.4	478042	6.0	19.8
15881	5.7	17.8	4230	5.8	17.7	425811	5.8	20.9	80638	5.9	19.0	285498	5.9	20.3	286616	6.0	20.8
176819	5.7	19.6	15563	5.8	17.9	361918	5.8	20.6	264015	5.9	20.1	336356	5.9	20.2	360143	6.0	20.9
315431	5.7	18.7	448043	5.8	21.2	245795	5.8	21.3	11472	5.9	16.8	288199	5.9	19.2	137930	6.0	19.2
175249	5.7	20.4	486358	5.8	21.0	441962	5.8	20.6	124298	5.9	18.2	511997	5.9	20.1	524159	6.0	20.1
104430	5.7	19.2	506600	5.8	19.0	47255	5.8	19.2	243267	5.9	20.8	225856	5.9	19.8	624	6.0	14.5
524175	5.7	19.5	102809	5.8	18.9	140492	5.8	18.8	480539	5.9	20.2	414065	5.9	20.9	398893	6.0	21.5
235781	5.7	19.9	166685	5.8	18.5	326938	5.8	20.0	238901	5.9	18.6	406894	5.9	20.0	106139	6.0	19.2
59985	5.7	17.1	40864	5.8	18.2	107939	5.8	19.3	91322	5.9	18.2	18921	5.9	17.0	387388	6.0	20.1
404913	5.7	19.9	92329	5.8	18.4	38852	5.8	17.9	474525	5.9	20.7	340332	5.9	21.1	100784	6.0	19.3
517395	5.7	21.5	518188	5.8	20.6	446207	5.8	20.5	254279	5.9	19.7	357750	5.9	20.6	440453	6.0	19.9
472271	5.7	21.1	182023	5.8	19.9	474153	5.8	20.1	120421	5.9	18.4	433925	5.9	20.9	537741	6.0	20.3
323361	5.7	19.0	343969	5.8	19.9	394733	5.8	20.2	534211	5.9	19.7	461342	5.9	21.4	513807	6.0	20.5
162893	5.7	19.4	176313	5.8	19.9	38165	5.8	17.0	517827	5.9	20.2	338759	5.9	19.3	531198	6.0	21.3
468609	5.7	19.3	289657	5.8	20.1	247447	5.8	19.8	360953	5.9	19.9	433670	5.9	20.4	365996	6.0	20.7
190240	5.7	20.2	246957	5.8	18.9	144292	5.8	20.7	424526	5.9	21.5	249776	5.9	19.4	470375	6.0	19.5
111932	5.7	19.6	482761	5.8	19.7	498403	5.8	20.1	260790	5.9	19.7	256526	5.9	20.0	134720	6.0	18.7
302249	5.7	19.8	247400	5.8	19.5	111994	5.8	18.5	516501	5.9	19.9	92315	5.9	19.7	227495	6.0	19.6
3527	5.7	16.0	3210	5.8	15.6	127102	5.8	18.9	541034	5.9	21.3	131243	5.9	20.3	72928	6.0	19.8
445418	5.7	19.8	482921	5.8	20.4	285378	5.8	19.0	524107	5.9	19.6	208886	5.9	19.5	326171	6.0	20.4
52026	5.7	17.9	175568	5.8	20.1	30825	5.8	20.0	301046	5.9	19.6	186347	5.9	20.0	389067	6.0	20.9
289692	5.7	20.9	500098	5.8	20.1	447682	5.8	21.3	235800	5.9	19.4	469118	5.9	20.0	162552	6.0	17.6
384413	5.7	19.2	132998	5.8	20.2	358003	5.8	21.1	512820	5.9	20.4	228132	5.9	19.5	461902	6.0	20.5
117556	5.7	20.7	314573	5.8	19.7	315335	5.8	19.6	31840	5.9	19.0	240385	5.9	18.3	490935	6.0	20.6
4587	5.7	20.0	67124	5.8	16.6	439732	5.8	20.2	415044	5.9	20.4	380927	5.9	20.5	345965	6.0	20.5
389824	5.7	20.4	358100	5.8	21.2	464567	5.8	20.7	478276	5.9	20.6	491559	5.9	20.3	505395	6.0	21.5
136449	5.7	19.1	290466	5.8	19.4	313383	5.8	20.2	182779	5.9	19.4	151491	5.9	19.5	433637	6.0	19.3
507745	5.7	20.7	65886	5.8	18.1	398210	5.9	20.6	445244	5.9	19.3	36014	5.9	19.2	258996	6.0	18.9
338032	5.7	21.5	52743	5.8	17.3	410172	5.9	20.1	476259	5.9	20.7	457644	5.9	20.4	463406	6.0	21.5
315997	5.7	20.0	253804	5.8	19.4	208648	5.9	20.7	165602	5.9	19.7	507137	5.9	20.9	293845	6.0	20.1
459563	5.7	20.7	277386	5.8	19.7	142932	5.9	19.0	77062	5.9	19.4	59963	5.9	18.3	25938	6.0	18.5
219249	5.7	19.1	420350	5.8	19.9	514293	5.9	21.0	146871	5.9	19.3	457320	5.9	20.4	95090	6.0	19.5
16213	5.7	17.5	103290	5.8	17.9	380555	5.9	19.8	186209	5.9	18.9	536955	5.9	21.1	115024	6.0	19.2
51649	5.7	19.1	87625	5.8	17.6	500064	5.9	20.9	312611	5.9	20.3	34370	5.9	18.2	72955	6.0	20.6
506974	5.7	20.3	526476	5.8	20.4	68573	5.9	19.5	129114	5.9	19.0	502005	5.9	21.4	128056</		

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
137537	6.1	18.9	283222	6.1	19.1	478902	6.2	20.3	227371	6.2	20.5	521868	6.3	21.6	449771	6.4	20.3
20995	6.1	18.2	9840	6.1	16.8	230898	6.2	20.3	190027	6.2	19.6	192942	6.3	20.0	279487	6.4	20.1
38875	6.1	18.3	67203	6.1	19.7	60250	6.2	18.5	479975	6.2	20.4	263898	6.3	20.7	215029	6.4	20.1
357496	6.1	20.9	515108	6.1	20.7	474270	6.2	19.6	489934	6.2	21.1	315957	6.3	19.9	507497	6.4	20.3
388887	6.1	20.6	103181	6.1	18.2	360503	6.2	20.0	466245	6.2	20.5	246980	6.3	19.9	506580	6.4	20.1
318289	6.1	19.4	311171	6.1	19.7	226684	6.2	19.2	228084	6.2	20.6	497087	6.3	19.9	110566	6.4	17.7
491615	6.1	19.3	196452	6.1	20.1	138852	6.2	18.9	95703	6.3	19.0	62072	6.3	17.8	520858	6.4	20.9
116077	6.1	19.2	92069	6.1	19.7	285893	6.2	18.6	504815	6.3	20.6	318943	6.3	20.4	186820	6.4	20.3
46889	6.1	18.6	59889	6.1	17.9	293726	6.2	22.8	526368	6.3	21.5	232056	6.3	18.8	403282	6.4	19.9
463578	6.1	20.5	13370	6.1	16.8	494424	6.2	20.7	279445	6.3	19.8	187652	6.3	19.8	363458	6.4	19.7
67927	6.1	17.8	529542	6.1	21.1	338565	6.2	19.1	156693	6.3	19.6	122511	6.3	18.6	169948	6.4	19.6
325935	6.1	19.6	184720	6.1	20.8	144863	6.2	19.5	190353	6.3	19.0	87835	6.3	19.4	356307	6.4	20.7
91188	6.1	18.4	503966	6.1	23.2	165588	6.2	19.9	186635	6.3	19.8	317477	6.3	20.0	387964	6.4	20.3
429516	6.1	21.3	107473	6.1	19.4	21147	6.2	17.8	343591	6.3	20.0	50251	6.3	19.0	282966	6.4	19.9
353346	6.1	20.5	170231	6.1	20.2	126087	6.2	19.3	379282	6.3	19.9	69386	6.3	19.6	511508	6.4	20.6
69267	6.1	16.5	200396	6.1	17.7	19067	6.2	19.5	106365	6.3	18.7	288069	6.3	20.2	238141	6.4	19.6
425962	6.1	21.1	51269	6.1	19.2	295269	6.2	19.8	239466	6.3	19.7	295621	6.3	20.7	136348	6.4	18.5
91159	6.1	17.3	386465	6.1	20.0	250354	6.2	19.1	415523	6.3	18.9	196440	6.3	19.6	533549	6.4	20.8
526364	6.1	21.5	47280	6.1	19.0	431204	6.2	19.7	96792	6.3	18.5	522359	6.3	21.2	349881	6.4	20.7
323426	6.1	20.3	395961	6.1	20.0	239056	6.2	20.3	37134	6.3	17.4	147836	6.3	20.1	340546	6.4	20.4
22279	6.1	18.3	49081	6.1	17.3	129755	6.2	18.6	260664	6.3	20.8	527024	6.3	19.5	41629	6.4	18.5
372397	6.1	20.5	41752	6.1	17.8	169867	6.2	19.3	304604	6.3	20.4	59715	6.3	19.6	450725	6.4	21.3
392147	6.1	21.5	111958	6.1	18.1	171503	6.2	19.9	367658	6.3	19.6	385695	6.3	23.0	312166	6.4	20.8
21602	6.1	19.1	435646	6.1	21.2	145673	6.2	19.0	169926	6.3	20.0	472464	6.3	21.4	517445	6.4	20.5
355253	6.1	20.2	430764	6.1	20.7	312475	6.2	20.9	305495	6.3	20.1	415432	6.3	19.4	390363	6.4	20.4
84136	6.1	18.4	339950	6.1	21.0	115076	6.2	17.6	45480	6.3	17.7	338055	6.3	20.5	443697	6.4	20.9
128179	6.1	19.4	493532	6.1	20.3	236882	6.2	20.5	433177	6.3	21.1	255204	6.3	20.2	402835	6.4	21.7
216584	6.1	19.7	511486	6.1	21.4	340412	6.2	20.3	74736	6.3	18.1	386097	6.3	20.6	346486	6.4	20.1
62122	6.1	18.3	402774	6.1	21.9	440444	6.2	21.1	59544	6.3	18.7	435142	6.3	21.3	319226	6.4	19.5
2301	6.1	14.6	169851	6.1	18.8	435688	6.2	20.6	24242	6.3	16.6	404038	6.3	20.8	192942	6.4	19.4
506618	6.1	21.6	147167	6.1	19.3	539067	6.2	20.8	198151	6.3	19.8	339199	6.3	19.7	208844	6.4	19.0
44718	6.1	18.1	235117	6.1	18.8	157724	6.2	20.8	506959	6.3	20.7	433679	6.3	21.2	482775	6.4	20.1
358483	6.1	20.0	123638	6.1	19.2	480146	6.2	21.4	333159	6.3	21.5	366555	6.3	18.8	175528	6.4	20.3
503641	6.1	20.2	74167	6.1	18.6	207278	6.2	19.9	413440	6.3	19.5	327819	6.3	19.4	542458	6.4	19.7
415720	6.1	23.5	233377	6.1	19.9	298008	6.2	20.0	446253	6.3	20.6	359868	6.3	20.5	276090	6.4	21.2
516479	6.1	20.8	446236	6.2	20.8	391861	6.2	19.7	477586	6.3	21.0	449085	6.3	20.9	398242	6.4	20.5
358939	6.1	20.3	25179	6.2	18.3	217666	6.2	18.2	280949	6.3	19.4	186339	6.3	19.8	381917	6.4	19.2
262452	6.1	20.5	103779	6.2	18.8	127965	6.2	19.6	144455	6.3	19.7	452141	6.3	20.0	477553	6.4	21.5
404277	6.1	19.9	479021	6.2	20.0	355076	6.2	20.9	384076	6.3	20.6	218057	6.3	20.6	94272	6.4	19.7
396973	6.1	20.5	322637	6.2	19.2	138497	6.2	18.5	202929	6.3	19.6	436241	6.3	20.6	291109	6.4	20.0
243882	6.1	19.7	173857	6.2	19.4	220683	6.2	20.2	248973	6.3	20.0	423600	6.3	19.8	171180	6.4	20.4
366542	6.1	19.2	361892	6.2	20.7	464715	6.2	19.0	117151	6.3	19.3	164368	6.3	18.5	480714	6.4	20.0
294357	6.1	19.8	328191	6.2	21.4	177059	6.2	19.8	316119	6.3	19.9	127012	6.4	19.5	386422	6.4	20.8
358807	6.1	20.1	348983	6.2	20.4	151701	6.2	19.6	542498	6.3	19.8	357312	6.4	19.5	323619	6.4	19.7
9415	6.1	17.5	357178	6.2	21.1	345897	6.2	20.0	540800	6.3	20.8	540774	6.4	20.8	418103	6.4	20.5
152857	6.1	18.2	46780	6.2	15.3	541051	6.2	19.0	20655	6.3	17.6	486994	6.4	20.3	383301	6.4	19.6
105874	6.1	18.4	211794	6.2	18.8	495108	6.2	20.6	58374	6.3	17.0	382751	6.4	19.4	248349	6.4	20.1
2811	6.1	15.5	510312	6.2	19.9	156193	6.2	19.2	483925	6.3	20.6	295869	6.4	20.8	195308	6.4	19.3
234074	6.1	19.0	161879	6.2	20.1	58401	6.2	19.7	99026	6.3	19.5	311963	6.4	21.4	452302	6.4	24.6
53606	6.1	18.5	132121	6.2	20.1	8216	6.2	17.1	422614	6.3	20.9	67049	6.4	17.2	310525	6.4	20.5
93676	6.1	18.4	123734	6.2	18.7	109827	6.2	20.5	499678	6.3	19.9	519178	6.4	20.3	160340	6.4	18.4
50353	6.1	18.2	186981	6.2	19.2	430297	6.2	19.8	540806	6.3	20.2	24307	6.4	17.3	524414	6.4	19.9
329797	6.1	20.5	277257	6.2	19.7	474467	6.2	19.7	107337	6.3	18.9	92004	6.4	19.3	306514	6.4	18.4
125027	6.1	19.1	208598	6.2	19.3	297175	6.2	19.9	193757	6.3	20.6	282288	6.4	19.7	490415	6.4	20.4
54695	6.1	17.6	165642	6.2	19.5	193783	6.2	20.1	53157	6.3	19.3	212586	6.4	19.7	213652	6.4	19.0
514694	6.1	21.3	254292	6.2	19.5	126725	6.2	19.1	239868	6.3	20.2	432356	6.4	20.0	273755	6.4	20.4
342552	6.1	19.5	238239	6.2	19.3	92346	6.2	19.3	483503	6.3	19.7	297237	6.4	20.6	126777	6.4	19.2
15529	6.1	18.4	315150	6.2	20.9	262268	6.2	20.7	70285	6.3	18.5	5652	6.4	16.7	74727	6.4	18.3
38750	6.1	18.1	187783	6.2	19.6	287979	6.2	20.1	539491	6.3	21.2	121636	6.4	19.6	146029	6.4	20.2
9470	6.1	17.6	452052	6.2	20.9	533087	6.2	21.3	474526	6.3	19.9	57915	6.4	19.4	364565	6.4	21.1
514878	6.1	22.4	72975	6.2	19.7	434704	6.2	20.8	276618	6.3	19.1	148189	6.4	19.6	175798	6.4	18.0
5311	6.1	17.9	475440	6.2	20.5	69450	6.2	17.9	529503	6.3	20.1	249247	6.4	19.8	37284	6.4	17.5
533189	6.1	21.3	250375	6.2	19.2	102814	6.2	18.8	347875	6.3	18.9	103423	6.4	19.1	506980	6.4	18.9
399269	6.1	20.5	356380	6.2	20.5	340530	6.2	20.4	542319	6.3	20.2	319155	6.4	20.2	174502	6.4	20.1
146814	6.1	19.2	435620	6.2	20.4	452233	6.2	20.0	479707	6.3	20.8	155234	6.4	19.7	214999	6.4	19.8
217322	6.1	19.2	93171	6.2	19.1	76076	6.2	18.5	91334	6.3	18.4	466282	6.4	21.3	322536	6.4	20.1
66486	6.1	18.5	250323	6.2	18.7	527375	6.2	20.6	41466	6.3	17.1	481208	6.4	19.1	200550	6.4	19.6
188137	6.1	20.9	104470	6.2	19.0	362504	6.2	20.5	535568	6.3	21.2	396382	6.4	20.4	58397	6.4	17.9
291515	6.1	20.3	121836	6.2	19.0	378282	6.2	20.1	303575	6.3	20.8	257387	6.4	20.6	398089	6.4	18.7
481531	6.1	21.8	510127	6.2	19.9	134097	6.2	19.2	272790	6.3	20.2	294730	6.4	20.6	91913	6.4	18.2
100901	6.1	19.1	504956	6.2	21.2	213587	6.2	20.7	23809	6.3	18.2	185867	6.4	19.0			

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
313644	6.4	19.3	264125	6.5	19.3	41371	6.6	17.9	303307	6.7	20.2	239712	6.7	20.1	460889	6.8	19.6
258609	6.4	20.2	537497	6.5	22.5	315025	6.6	21.0	117331	6.7	18.0	365748	6.7	20.6	22335	6.8	17.9
322683	6.4	20.4	282252	6.5	18.9	193222	6.6	18.7	337192	6.7	18.8	434596	6.7	20.6	297191	6.8	19.8
246147	6.4	19.7	313166	6.5	20.2	509880	6.6	19.8	395373	6.7	19.8	129570	6.7	19.8	72040	6.8	19.1
25759	6.4	18.2	121634	6.5	18.1	240627	6.6	19.0	540913	6.7	21.5	436212	6.7	20.0	205680	6.8	18.7
110246	6.4	19.5	251903	6.5	19.9	439234	6.6	20.0	41185	6.7	18.0	209413	6.7	20.0	12525	6.8	18.4
379563	6.5	20.7	280155	6.5	20.4	71853	6.6	18.5	483210	6.7	20.9	8902	6.7	16.9	368488	6.8	21.2
206382	6.5	17.9	445005	6.5	20.1	438131	6.6	20.0	14745	6.7	17.9	404554	6.7	20.3	520929	6.8	19.3
344488	6.5	20.7	68788	6.5	19.7	50869	6.6	18.6	433938	6.7	19.2	234061	6.7	19.7	311890	6.8	20.2
107962	6.5	18.9	102241	6.5	19.8	500871	6.6	20.5	221604	6.7	19.0	122153	6.7	17.8	87366	6.8	19.1
36032	6.5	17.5	413025	6.5	18.3	34918	6.6	18.9	336673	6.7	19.7	402398	6.7	20.1	49100	6.8	18.1
496318	6.5	20.8	49984	6.5	18.4	302233	6.6	19.3	165056	6.7	19.5	234344	6.7	19.3	131060	6.8	19.6
165186	6.5	18.8	466124	6.5	21.1	494221	6.6	20.9	471876	6.7	19.8	440239	6.7	19.1	274471	6.8	19.2
429713	6.5	21.4	249220	6.5	19.8	68604	6.6	19.1	455318	6.7	21.6	539014	6.7	21.3	314661	6.8	20.6
189787	6.5	20.2	278289	6.5	20.2	512518	6.6	20.2	23913	6.7	17.8	39362	6.7	18.7	251879	6.8	19.1
281014	6.5	20.7	353769	6.5	20.5	320278	6.6	18.8	482220	6.7	19.8	196615	6.7	20.4	325018	6.8	21.8
183552	6.5	20.4	337343	6.5	20.4	440950	6.6	20.2	338769	6.7	19.9	364160	6.7	20.3	276154	6.8	19.9
454313	6.5	21.4	478048	6.5	20.8	435137	6.6	21.1	417565	6.7	19.8	431891	6.7	21.0	357827	6.8	21.1
214409	6.5	20.7	404514	6.5	20.3	21370	6.6	18.4	537645	6.7	20.2	444074	6.7	20.3	247791	6.8	18.7
103695	6.5	19.1	492283	6.5	19.2	277092	6.6	20.0	99750	6.7	19.5	510140	6.7	20.7	408148	6.8	21.1
173890	6.5	20.1	120838	6.5	20.6	44581	6.6	19.7	495852	6.7	19.6	131130	6.7	19.6	242498	6.8	19.2
232859	6.5	19.3	442528	6.5	19.9	256379	6.6	20.7	513697	6.7	21.9	261721	6.7	20.2	263938	6.8	20.4
208703	6.5	20.4	209512	6.5	20.0	306930	6.6	19.3	319550	6.7	21.4	72513	6.7	18.7	377701	6.8	20.3
153824	6.5	19.8	497052	6.5	21.2	315421	6.6	19.7	45315	6.7	16.9	203056	6.7	20.2	1715	6.8	16.3
215466	6.5	21.1	521206	6.5	20.6	95384	6.6	19.1	95261	6.7	19.8	178297	6.7	20.0	371495	6.8	20.4
60023	6.5	19.1	152620	6.6	20.1	243460	6.6	19.7	480323	6.7	21.2	239463	6.7	19.7	508981	6.8	20.7
41399	6.5	17.6	393202	6.6	20.7	243335	6.6	20.5	40418	6.7	18.0	438663	6.7	20.4	326173	6.8	20.2
324440	6.5	20.0	490484	6.6	20.1	442599	6.6	19.6	257559	6.7	19.1	96185	6.7	17.3	477496	6.8	21.2
352819	6.5	18.8	446592	6.6	19.0	351610	6.6	20.3	104006	6.7	19.0	285416	6.7	20.5	253193	6.8	19.0
45436	6.5	19.1	479292	6.6	20.5	141726	6.6	19.7	72609	6.7	19.0	445256	6.7	19.6	12988	6.8	18.0
365137	6.5	21.3	62192	6.6	17.7	365695	6.6	20.9	47631	6.7	18.8	542681	6.7	20.6	358462	6.8	21.1
299747	6.5	19.9	309184	6.6	20.1	561	6.6	15.5	46105	6.7	18.8	296498	6.7	20.3	507760	6.8	21.3
48399	6.5	18.8	529978	6.6	19.8	463930	6.6	20.0	190674	6.7	19.0	240072	6.7	20.3	352463	6.8	19.7
434628	6.5	20.2	151486	6.6	19.3	443654	6.6	21.7	256983	6.7	20.3	357226	6.7	21.4	96012	6.8	18.6
296726	6.5	20.5	536571	6.6	22.1	267099	6.6	19.6	473585	6.7	20.1	16313	6.7	18.1	401685	6.8	21.0
335590	6.5	19.7	115091	6.6	18.3	119652	6.6	19.4	30091	6.7	18.3	514477	6.7	20.8	515828	6.8	20.7
88874	6.5	18.5	514306	6.6	20.7	114760	6.6	19.5	129330	6.7	19.2	354698	6.7	20.1	342536	6.8	20.1
39207	6.5	18.2	393214	6.6	20.6	490418	6.6	20.7	317459	6.7	20.2	272501	6.7	19.1	36243	6.8	17.4
71449	6.5	18.5	304473	6.6	20.2	209406	6.6	20.7	402134	6.7	19.4	471560	6.7	21.3	244057	6.8	19.0
250039	6.5	20.0	387764	6.6	19.9	254408	6.6	19.6	25291	6.7	18.9	147729	6.8	19.2	483274	6.8	20.6
95440	6.5	19.4	151297	6.6	19.7	455010	6.6	20.1	98522	6.7	17.4	199224	6.8	19.4	509894	6.8	20.6
95938	6.5	19.0	181250	6.6	20.5	521604	6.6	20.6	100422	6.7	19.1	116122	6.8	18.5	204727	6.8	19.5
70267	6.5	18.3	151746	6.6	19.7	415588	6.6	21.0	249773	6.7	18.5	315919	6.8	20.0	169551	6.8	20.3
327948	6.5	20.2	326204	6.6	19.8	93710	6.6	17.9	373164	6.7	21.3	415555	6.8	20.3	444690	6.8	21.1
88252	6.5	18.2	303177	6.6	19.8	110585	6.6	19.5	181675	6.7	19.7	257972	6.8	20.7	154573	6.8	19.5
528069	6.5	21.9	169531	6.6	20.5	161924	6.6	19.9	386739	6.7	20.7	426541	6.8	21.0	356170	6.8	20.7
65250	6.5	19.0	437207	6.6	20.9	513833	6.6	21.5	280940	6.7	19.7	17711	6.8	16.2	17814	6.8	16.0
324931	6.5	18.4	223815	6.6	19.6	248620	6.6	21.1	455268	6.7	19.1	533547	6.8	21.4	478794	6.8	19.9
154902	6.5	18.9	524870	6.6	19.8	255721	6.6	20.2	32929	6.7	23.2	420717	6.8	20.6	382111	6.8	20.1
68257	6.5	18.4	152709	6.6	18.7	220095	6.6	18.7	191298	6.7	20.7	199120	6.8	20.4	279287	6.8	20.5
109104	6.5	17.3	175703	6.6	20.5	250796	6.6	19.8	401724	6.7	20.5	228096	6.8	20.6	256820	6.8	20.2
366254	6.5	20.5	213468	6.6	19.1	319968	6.6	19.7	402813	6.7	20.5	62651	6.8	17.9	121326	6.8	18.4
156289	6.5	18.8	191715	6.6	18.2	180437	6.6	20.2	285241	6.7	18.5	137866	6.8	18.4	407917	6.8	21.3
511885	6.5	20.5	336676	6.6	19.8	470739	6.6	19.5	161717	6.7	19.5	206036	6.8	19.7	483236	6.8	20.0
322560	6.5	20.5	162073	6.6	17.7	411831	6.6	20.8	259394	6.7	19.5	455289	6.8	20.7	202848	6.8	20.1
302147	6.5	19.6	539143	6.6	20.5	192363	6.6	19.7	438963	6.7	20.0	506527	6.8	19.5	540319	6.8	20.1
356142	6.5	20.4	357812	6.6	20.8	46497	6.6	18.5	393030	6.7	20.5	472950	6.8	20.6	337012	6.8	21.5
369917	6.5	20.8	312807	6.6	20.1	399010	6.6	19.6	315290	6.7	19.2	121908	6.8	18.5	513503	6.8	20.8
377731	6.5	19.3	318627	6.6	21.2	432851	6.6	20.1	420397	6.7	21.0	431358	6.8	20.9	483970	6.8	20.4
217623	6.5	20.7	536801	6.6	21.0	316741	6.6	20.3	58106	6.7	18.8	35699	6.8	18.4	659	6.8	15.3
357728	6.5	20.2	305186	6.6	19.9	97434	6.6	19.1	439532	6.7	20.3	159250	6.8	20.4	371884	6.8	21.7
457257	6.5	19.8	82060	6.6	16.7	502076	6.6	20.1	535149	6.7	21.6	263722	6.8	20.3	505479	6.8	20.1
421376	6.5	19.8	392981	6.6	19.9	408797	6.6	18.2	3516	6.7	15.8	100917	6.8	19.8	50044	6.8	17.4
425623	6.5	18.8	128395	6.6	19.0	448585	6.6	20.3	221454	6.7	19.9	115419	6.8	19.5	239267	6.8	20.7
99614	6.5	19.5	512615	6.6	20.5	445494	6.6	20.4	148561	6.7	19.2	196318	6.8	19.8	489641	6.8	21.3
396940	6.5	20.6	232565	6.6	19.7	323416	6.6	18.7	408947	6.7	20.6	463504	6.8	20.3	12603	6.8	16.4
299894	6.5	19.6	376574	6.6	19.0	393639	6.6	19.4	418009	6.7	19.6	60108	6.8	19.1	332641	6.8	19.2
380287	6.5	19.5	436899	6.6	21.4	436294	6.6	20.8	506463	6.7	21.8	156377	6.8	19.7	119021	6.8	19.2
23389	6.5	19.0	205811	6.6	19.4	308645	6.6	21.1	90846	6.7	19.3	334710	6.8	21.0	392880	6.8	20.5
3937	6.5	16.3	477543	6.6	21.1	470381	6.6	19.7	313161	6.7	20.1	195432	6.8	19.2	360075	6.8	20.6
428796	6.5	19.9	516970	6.6	21.1	80493	6.6	18.6	361101	6.7	19.9	121298	6.8	17.			

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
398284	6.9	19.7	250102	6.9	20.2	390491	7.0	20.0	152855	7.1	19.2	310676	7.1	19.9	356234	7.2	20.9
128037	6.9	19.6	208160	6.9	19.6	208905	7.0	20.1	65896	7.1	17.9	141470	7.1	20.1	322256	7.2	20.1
245517	6.9	19.3	201571	6.9	19.8	378566	7.0	21.1	434653	7.1	19.4	340522	7.1	19.8	478475	7.2	21.2
253858	6.9	20.9	94441	6.9	19.0	245303	7.0	19.6	284419	7.1	20.0	132576	7.1	17.8	538823	7.2	22.1
418028	6.9	20.0	19940	6.9	18.9	309093	7.0	20.4	160998	7.1	20.0	201674	7.1	19.3	204021	7.2	18.7
527177	6.9	19.7	449571	6.9	20.5	5191	7.0	15.7	92125	7.1	18.5	268083	7.2	20.3	440644	7.2	20.2
255445	6.9	20.4	167700	6.9	19.1	393684	7.0	20.5	136795	7.1	20.9	273882	7.2	20.6	187342	7.2	18.9
362044	6.9	20.2	277468	6.9	20.8	139311	7.0	20.4	469472	7.1	19.7	317287	7.2	20.6	517425	7.2	20.9
325061	6.9	19.4	60257	6.9	19.6	252161	7.0	19.6	91363	7.1	19.8	118830	7.2	17.8	37990	7.2	18.9
103320	6.9	17.5	432041	6.9	19.6	531544	7.0	20.8	356958	7.1	18.8	438921	7.2	20.8	537676	7.2	21.6
184518	6.9	20.0	302253	6.9	19.4	380885	7.0	19.6	479749	7.1	21.1	394874	7.2	19.1	281499	7.2	20.3
99245	6.9	19.9	350451	6.9	20.5	80875	7.0	17.6	113710	7.1	19.5	330640	7.2	20.5	397732	7.2	20.9
367231	6.9	20.8	17629	6.9	17.7	86037	7.0	17.9	504036	7.1	20.2	172551	7.2	19.3	470410	7.2	18.9
149118	6.9	19.9	219941	6.9	19.5	161304	7.0	19.5	121838	7.1	19.5	147764	7.2	20.2	364940	7.2	19.8
324269	6.9	20.8	281245	6.9	20.6	142391	7.0	19.7	453702	7.1	20.1	379781	7.2	20.9	356404	7.2	21.1
268972	6.9	20.6	24237	6.9	18.4	249572	7.0	20.3	80971	7.1	18.5	250025	7.2	19.4	396223	7.2	20.6
512333	6.9	19.9	338746	6.9	20.0	393675	7.0	19.9	404485	7.1	20.9	455150	7.2	19.7	337988	7.2	20.9
293280	6.9	19.6	26763	6.9	19.0	232188	7.0	19.6	160140	7.1	19.1	233458	7.2	19.7	241278	7.2	19.8
256411	6.9	20.6	383221	6.9	20.0	1221	7.0	21.1	333637	7.1	19.8	247163	7.2	18.6	243455	7.2	20.3
134959	6.9	19.7	348519	6.9	19.0	264110	7.0	19.9	233550	7.1	20.3	12108	7.2	17.9	243103	7.2	19.6
337315	6.9	19.3	480277	6.9	21.4	389892	7.0	19.3	363036	7.1	19.4	326677	7.2	19.3	531618	7.2	20.8
453218	6.9	20.9	390049	6.9	20.0	65341	7.0	19.6	378258	7.1	21.2	435647	7.2	21.1	434775	7.2	19.5
126638	6.9	20.2	53164	6.9	18.3	468147	7.0	20.0	446722	7.1	20.3	288435	7.2	19.3	343347	7.2	20.5
191296	6.9	20.8	154601	6.9	19.8	19851	7.0	17.4	382462	7.1	18.7	464389	7.2	21.0	112445	7.2	18.0
239109	6.9	20.3	91026	6.9	19.0	392648	7.0	20.2	151473	7.1	20.4	386432	7.2	20.9	376355	7.2	20.1
433930	6.9	19.6	20007	6.9	17.4	540808	7.0	20.3	515857	7.1	20.2	537629	7.2	20.9	278733	7.2	19.0
360525	6.9	19.8	488260	6.9	21.7	504504	7.0	20.7	249227	7.1	19.5	182803	7.2	19.7	30348	7.2	19.3
501653	6.9	20.1	511501	6.9	21.9	196408	7.0	19.3	514763	7.1	20.3	201735	7.2	18.5	62564	7.2	18.5
358975	6.9	21.1	48205	6.9	18.3	79549	7.0	17.7	84054	7.1	17.8	69107	7.2	17.5	384570	7.2	20.6
478472	6.9	20.4	508419	6.9	21.2	53701	7.0	18.2	262065	7.1	20.2	314050	7.2	18.5	58110	7.2	17.6
333205	6.9	19.1	114386	6.9	17.4	71321	7.0	18.8	359609	7.1	19.7	357993	7.2	20.0	333537	7.2	20.2
74917	6.9	19.4	295908	6.9	19.7	122812	7.0	19.4	188370	7.1	20.7	25143	7.2	19.9	73185	7.2	19.4
2193	6.9	15.1	540979	6.9	20.6	513473	7.0	20.9	61415	7.1	18.8	99686	7.2	19.0	389089	7.2	20.5
122510	6.9	19.2	335572	6.9	19.7	315272	7.0	18.9	209310	7.1	19.4	245629	7.2	20.1	99475	7.2	18.6
442520	6.9	21.2	134528	6.9	19.4	497871	7.0	20.3	89878	7.1	19.7	463404	7.2	19.1	445461	7.2	20.9
400503	6.9	21.6	423989	6.9	20.6	431378	7.0	20.9	539458	7.1	20.9	145321	7.2	19.8	511324	7.2	20.9
446229	6.9	20.8	443052	6.9	21.2	476988	7.0	20.1	88862	7.1	18.8	509689	7.2	20.1	409722	7.2	21.1
344138	6.9	19.7	365332	6.9	20.7	192692	7.0	18.1	343332	7.1	20.5	75397	7.2	17.5	86861	7.2	20.0
218285	6.9	19.2	94350	6.9	17.7	114610	7.0	19.6	254150	7.1	19.2	254966	7.2	20.2	343414	7.2	21.1
217348	6.9	18.8	85133	6.9	18.4	321321	7.0	20.6	84536	7.1	18.3	361614	7.2	20.7	84252	7.2	17.8
92789	6.9	19.2	133644	6.9	18.9	17696	7.0	17.2	39691	7.1	19.1	534829	7.2	19.7	109599	7.2	18.8
538744	6.9	21.2	514438	6.9	20.9	439684	7.0	20.3	293782	7.1	20.0	288455	7.2	19.5	362693	7.2	20.2
356282	6.9	21.0	122967	6.9	18.2	444281	7.0	20.1	39874	7.1	17.3	65811	7.2	19.4	213555	7.2	20.3
282241	6.9	20.7	121817	6.9	19.0	417433	7.0	19.4	204516	7.1	19.5	75385	7.2	18.2	154253	7.2	20.0
255105	6.9	19.8	147681	6.9	19.7	404396	7.0	21.3	438099	7.1	21.8	328187	7.2	21.3	143685	7.2	22.3
509076	6.9	19.1	472766	6.9	20.8	63293	7.0	19.4	149106	7.1	19.0	44413	7.2	18.1	69385	7.2	19.4
528688	6.9	19.9	410331	6.9	18.6	386418	7.1	20.4	165	7.1	12.7	527279	7.2	20.6	515652	7.2	21.0
509912	6.9	21.1	244415	6.9	20.6	364508	7.1	21.1	260	7.1	13.7	400961	7.2	20.6	347339	7.3	19.4
130018	6.9	18.9	525258	6.9	22.4	314089	7.1	20.6	276852	7.1	20.6	214688	7.2	20.5	119780	7.3	19.4
260114	6.9	19.8	350921	6.9	19.4	319613	7.1	21.1	411618	7.1	20.8	277486	7.2	20.6	511386	7.3	21.1
250300	6.9	19.9	525435	6.9	21.5	17477	7.1	17.7	259634	7.1	19.7	511863	7.2	21.7	99128	7.3	19.1
217843	6.9	19.1	427742	6.9	20.9	126900	7.1	20.2	482189	7.1	19.0	529431	7.2	20.2	403480	7.3	20.1
255598	6.9	20.1	346732	6.9	20.2	385122	7.1	20.2	201821	7.1	19.6	58361	7.2	18.0	127064	7.3	19.2
420786	6.9	21.0	356393	6.9	20.0	379920	7.1	19.6	221798	7.1	19.4	237038	7.2	19.4	255323	7.3	19.3
254348	6.9	20.0	288662	6.9	19.5	439292	7.1	20.8	312793	7.1	20.5	503045	7.2	21.1	278818	7.3	19.8
241415	6.9	19.3	251687	6.9	20.0	376910	7.1	18.6	448054	7.1	20.8	518942	7.2	21.3	79114	7.3	19.0
471789	6.9	19.7	304554	6.9	20.5	163915	7.1	19.2	399820	7.1	21.2	213693	7.2	19.7	427603	7.3	20.2
59699	6.9	19.4	273967	6.9	21.0	123345	7.1	18.5	276575	7.1	20.0	399834	7.2	20.3	387181	7.3	20.7
314070	6.9	19.9	424250	6.9	19.6	528043	7.1	22.0	312612	7.1	20.4	127008	7.2	20.0	4597	7.3	16.7
50008	6.9	18.6	5584	6.9	17.2	94950	7.1	18.5	324260	7.1	19.3	347029	7.2	21.1	63201	7.3	19.1
534315	6.9	22.5	370864	6.9	21.6	28397	7.1	17.2	18029	7.1	17.4	42159	7.2	18.3	513322	7.3	21.4
495253	6.9	21.0	240706	6.9	20.3	542619	7.1	20.0	48120	7.1	18.7	50659	7.2	18.5	172216	7.3	19.0
35023	6.9	18.4	30770	6.9	17.9	95490	7.1	18.8	90127	7.1	18.4	428291	7.2	22.0	105866	7.3	18.8
236723	6.9	21.1	271691	6.9	19.6	180359	7.1	20.3	112741	7.1	19.1	321925	7.2	19.2	139894	7.3	18.7
38587	6.9	18.6	347413	6.9	20.9	114007	7.1	18.8	513839	7.1	20.8	174798	7.2	19.7	124922	7.3	19.1
299197	6.9	20.7	7244	6.9	16.5	61427	7.1	17.8	204594	7.1	20.2	257505	7.2	19.6	439260	7.3	19.2
251843	6.9	20.7	504737	6.9	20.4	86090	7.1	18.6	315893	7.1	20.3	246013	7.2	19.7	236159	7.3	20.7
166483	6.9	19.3	79169	6.9	17.3	507834	7.1	20.5	312472	7.1	20.7	445815	7.2	20.1	231992	7.3	20.1
436308	6.9	21.1	393926	6.9	20.4	141474	7.1	20.2	306947	7.1	19.8	80251	7.2	19.5	165032	7.3	19.7
322520	6.9	20.4	357875	6.9	19.3	87513	7.1	17.3	63337	7.1	18.9	14220	7.2	16.8	401403	7.3	20.4
492287	6.9	19.4	172753	6.9	19.4	424165	7.1	21.4	43731	7.1	18.6	137460	7.2	19.8	12755		

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
229877	7.3	20.0	469996	7.4	21.1	385030	7.4	20.9	479481	7.5	19.9	278268	7.6	20.6	371617	7.6	19.7
409784	7.3	21.0	398959	7.4	20.9	378700	7.4	19.6	512789	7.5	20.8	282116	7.6	19.1	257223	7.6	20.5
515107	7.3	21.0	430985	7.4	19.8	270357	7.4	20.4	360531	7.5	20.8	328558	7.6	20.9	510465	7.6	20.7
306497	7.3	18.3	88227	7.4	18.7	162744	7.4	18.8	181267	7.5	19.9	55124	7.6	18.6	336860	7.6	20.6
291145	7.3	20.8	209747	7.4	19.8	480520	7.4	20.6	254420	7.5	19.3	366109	7.6	20.5	185942	7.6	19.0
282310	7.3	18.7	539720	7.4	20.1	401284	7.4	20.5	984	7.5	12.6	469937	7.6	21.2	505145	7.6	20.8
132651	7.3	20.2	171301	7.4	18.8	137781	7.4	18.0	508432	7.5	19.4	22970	7.6	17.3	109137	7.6	19.5
381848	7.3	20.0	70957	7.4	17.9	524454	7.4	21.1	428347	7.5	21.2	312400	7.6	19.9	313331	7.6	20.1
225243	7.3	19.6	300663	7.4	20.1	337188	7.4	18.5	132295	7.5	19.0	471142	7.6	20.8	242705	7.6	19.7
358810	7.3	20.7	231692	7.4	19.9	186980	7.4	19.3	264235	7.5	18.6	162113	7.6	17.3	218434	7.6	19.0
523602	7.3	22.2	389418	7.4	20.2	438013	7.4	20.0	175731	7.5	20.7	350912	7.6	20.0	387352	7.6	20.3
47571	7.3	17.9	100787	7.4	19.7	403813	7.4	19.9	75044	7.5	17.2	107360	7.6	18.6	330621	7.6	21.2
255347	7.3	19.6	449009	7.4	20.2	523020	7.4	20.1	434094	7.5	21.4	24479	7.6	18.8	238976	7.6	20.2
392188	7.3	20.7	356280	7.4	20.1	127832	7.4	20.0	369046	7.5	20.5	147244	7.6	19.3	390356	7.6	20.3
503464	7.3	21.3	152066	7.4	20.3	135558	7.4	20.7	437075	7.5	20.6	356371	7.6	20.6	187973	7.6	20.2
35276	7.3	18.5	363096	7.4	19.1	463148	7.4	20.2	472955	7.5	19.5	87506	7.6	18.3	57633	7.6	19.1
328995	7.3	19.5	299396	7.4	19.6	299396	7.4	20.2	17982	7.5	18.2	238208	7.6	20.2	322383	7.6	19.7
513857	7.3	20.8	311445	7.4	20.3	510343	7.4	20.1	424665	7.5	21.7	505944	7.6	20.4	32683	7.6	19.5
481456	7.3	21.1	3821	7.4	16.3	134804	7.4	19.9	182860	7.5	20.4	492227	7.6	19.4	27676	7.6	17.3
497069	7.3	19.8	49741	7.4	19.3	449337	7.4	20.5	263161	7.5	20.5	434099	7.6	20.1	233800	7.6	20.6
164318	7.3	19.9	260698	7.4	19.6	321335	7.4	21.4	468396	7.5	19.6	319402	7.6	20.5	132544	7.6	19.1
250972	7.3	18.8	236606	7.4	20.2	84790	7.4	18.7	357895	7.5	20.5	401217	7.6	20.7	38274	7.6	18.8
321134	7.3	19.9	129625	7.4	19.5	479800	7.4	20.6	309129	7.5	18.6	6343	7.6	16.7	327079	7.6	19.9
255698	7.3	19.9	439703	7.4	20.1	326618	7.4	18.6	356235	7.5	21.1	72133	7.6	18.5	509073	7.6	20.9
204868	7.3	20.3	513112	7.4	19.2	374287	7.4	20.0	293444	7.5	20.9	278197	7.6	20.1	154205	7.6	19.3
186275	7.3	20.5	92436	7.4	19.1	88241	7.4	19.5	432421	7.5	20.5	199437	7.6	20.2	355712	7.6	21.0
122992	7.3	18.7	261581	7.4	20.1	323059	7.4	19.4	529803	7.5	19.5	295699	7.6	20.9	113311	7.6	19.1
467124	7.3	20.8	469518	7.4	19.6	542323	7.4	20.9	539479	7.5	21.6	249222	7.6	20.1	64880	7.6	17.9
470585	7.3	24.3	270329	7.4	19.9	175716	7.4	19.3	235865	7.5	19.8	252157	7.6	19.9	74596	7.6	19.4
120153	7.3	19.6	264139	7.4	20.2	463157	7.4	20.3	128683	7.5	18.4	125238	7.6	19.2	423740	7.6	20.9
319075	7.3	20.1	195434	7.4	20.5	312566	7.4	20.6	316481	7.5	19.9	228290	7.6	20.9	165643	7.6	19.5
141991	7.3	19.1	375227	7.4	21.2	120727	7.4	19.2	274388	7.5	19.5	304311	7.6	20.3	308154	7.6	19.1
395277	7.3	19.7	20443	7.4	16.4	301121	7.4	20.5	70635	7.5	18.8	365542	7.6	19.9	385586	7.6	20.0
440338	7.3	20.5	267240	7.4	18.9	144988	7.4	20.4	416062	7.5	20.4	175671	7.6	20.8	354202	7.6	20.4
496031	7.3	20.4	474541	7.4	19.8	377657	7.4	20.4	321442	7.5	19.7	403897	7.6	20.2	92247	7.6	18.1
220421	7.3	19.0	39400	7.4	19.3	498936	7.4	20.3	90437	7.5	17.7	236941	7.6	20.7	25188	7.6	17.7
18265	7.3	18.2	307985	7.4	19.6	231311	7.4	18.4	212971	7.5	20.9	168127	7.6	19.9	367482	7.6	21.5
436570	7.3	20.1	364121	7.4	21.1	510793	7.4	20.6	515094	7.5	21.0	96079	7.6	18.2	505101	7.6	20.7
338625	7.3	20.6	384589	7.4	20.3	65088	7.4	19.0	439798	7.5	20.7	185414	7.6	19.5	187930	7.7	18.9
440982	7.3	20.6	160061	7.4	20.0	44117	7.4	18.1	519739	7.5	22.0	34377	7.6	17.8	517145	7.7	21.0
78978	7.3	18.4	191670	7.4	20.2	205271	7.4	18.8	192807	7.5	19.0	246526	7.6	20.4	440528	7.7	20.2
363282	7.3	21.2	213556	7.4	20.3	336663	7.5	20.1	161526	7.5	19.6	461600	7.6	19.9	429680	7.7	20.9
260231	7.3	19.4	529004	7.4	20.3	360931	7.5	20.8	274801	7.5	20.4	250020	7.6	21.0	496961	7.7	21.2
421422	7.3	19.8	472696	7.4	20.8	350228	7.5	20.7	446533	7.5	20.5	314397	7.6	20.3	519076	7.7	20.2
190639	7.3	18.3	304538	7.4	20.5	320404	7.5	19.0	125527	7.5	19.9	178256	7.6	19.9	471310	7.7	20.6
349858	7.3	19.7	17502	7.4	18.2	307919	7.5	21.0	23062	7.5	18.8	359940	7.6	20.2	434778	7.7	20.2
255630	7.3	19.5	526762	7.4	19.6	121637	7.5	18.9	92965	7.5	17.8	228325	7.6	18.2	481140	7.7	19.6
529940	7.3	22.5	465856	7.4	18.8	305564	7.5	20.5	519863	7.5	20.2	169932	7.6	19.1	245520	7.7	20.0
488414	7.3	20.3	252211	7.4	20.4	117210	7.5	18.7	314046	7.5	18.5	295564	7.6	19.0	88263	7.7	16.0
380164	7.3	19.2	213544	7.4	20.6	477592	7.5	19.4	64121	7.5	17.2	362021	7.6	19.9	314554	7.7	20.4
248628	7.3	20.3	68808	7.4	19.4	296524	7.5	19.7	2260	7.5	16.1	299828	7.6	20.2	201529	7.7	19.5
524836	7.3	20.6	241784	7.4	19.4	525241	7.5	20.3	207972	7.5	20.0	433713	7.6	19.9	483074	7.7	20.0
533641	7.3	21.1	115161	7.4	18.9	367495	7.5	21.0	293513	7.5	19.1	63202	7.6	18.8	89858	7.7	19.0
409749	7.3	20.8	504766	7.4	19.5	521696	7.5	20.9	328195	7.5	21.3	264084	7.6	20.4	472505	7.7	19.9
296895	7.3	19.7	171670	7.4	19.0	426945	7.5	20.0	462613	7.5	20.1	122046	7.6	19.9	472639	7.7	20.2
448385	7.3	19.7	326284	7.4	19.9	67791	7.5	17.1	55925	7.5	18.8	407633	7.6	20.2	432410	7.7	19.7
203934	7.3	18.5	327492	7.4	21.3	479169	7.5	20.1	327852	7.5	19.6	32688	7.6	18.8	479760	7.7	20.9
505862	7.3	21.4	512680	7.4	20.5	3596	7.5	16.1	537221	7.5	21.7	89918	7.6	19.6	90391	7.7	18.2
50296	7.3	17.6	299216	7.4	20.3	24486	7.5	17.8	15430	7.5	17.7	479849	7.6	20.4	314178	7.7	21.2
3364	7.3	16.5	289064	7.4	20.2	467153	7.5	20.6	444142	7.5	20.0	530016	7.6	21.0	511962	7.7	21.3
139852	7.3	19.1	332105	7.4	20.2	517703	7.5	21.2	316074	7.5	21.0	361543	7.6	19.6	158397	7.7	20.0
371748	7.3	20.2	330314	7.4	20.8	262263	7.5	20.1	107993	7.5	20.1	383297	7.6	21.2	289012	7.7	19.2
161829	7.3	19.4	156558	7.4	19.5	24925	7.5	16.0	500850	7.5	21.3	449408	7.6	20.5	521430	7.7	20.1
93545	7.3	18.2	203966	7.4	18.9	296101	7.5	20.2	39871	7.5	17.9	254275	7.6	21.2	137645	7.7	19.2
178548	7.3	19.0	307157	7.4	19.9	405126	7.5	21.7	445464	7.5	20.4	255228	7.6	20.4	286327	7.7	20.3
170195	7.3	19.8	311122	7.4	19.8	343502	7.5	20.6	216739	7.5	20.2	119950	7.6	19.8	20517	7.7	18.2
448521	7.3	19.9	105977	7.4	18.6	319127	7.5	19.6	143531	7.5	20.0	431964	7.6	20.6	353760	7.7	19.9
338603	7.3	19.3	287290	7.4	19.9	288741	7.5	20.1	35975	7.5	17.7	224747	7.6	20.1	207846	7.7	20.3
310672	7.3	19.9	403702	7.4	20.3	333915	7.5	18.1	99725	7.5	19.5	41770	7.6	15.9	200607	7.7	19.2
441968	7.3	20.8	25778	7.4	17.6	236652	7.5	20.7	846	7.5	13.7	203054	7.6	20.0	422284	7.7	20.4
458232	7.3	21.2	479297	7.4	21.0	211991	7.5	19.0	9513	7.5	15.8	138209	7.6</				



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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
168217	7.7	19.3	20510	7.8	18.5	65724	7.8	19.5	99668	7.9	18.9	511397	7.9	21.2	307210	8.0	19.6
481080	7.7	20.4	223788	7.8	19.6	450961	7.8	21.2	340463	7.9	20.6	411666	7.9	19.1	187633	8.0	20.0
524752	7.7	20.9	87721	7.8	17.6	185369	7.8	20.6	539754	7.9	20.7	260974	7.9	21.0	311955	8.0	20.2
23866	7.7	17.2	186351	7.8	20.0	71541	7.8	19.8	184859	7.9	19.0	287620	7.9	19.8	38413	8.0	19.0
228122	7.7	20.2	376903	7.8	20.1	99999	7.8	19.9	123197	7.9	19.3	233988	7.9	19.5	38669	8.0	17.1
307137	7.7	19.1	352362	7.8	20.8	281962	7.8	20.5	437310	7.9	21.1	344056	7.9	19.4	506581	8.0	20.7
89739	7.7	18.8	540676	7.8	20.8	305762	7.8	20.0	447063	7.9	21.3	314163	7.9	21.5	342766	8.0	18.6
439449	7.7	20.2	325041	7.8	20.9	533802	7.8	20.3	532964	7.9	21.3	499080	7.9	20.5	266259	8.0	19.8
90337	7.7	18.6	514485	7.8	21.0	267746	7.8	20.3	404084	7.9	20.6	59966	7.9	18.8	105514	8.0	18.6
19275	7.7	17.6	241531	7.8	19.8	198015	7.8	19.5	106545	7.9	19.3	420864	7.9	21.1	89269	8.0	18.4
362277	7.7	20.1	94711	7.8	17.6	397789	7.8	20.4	413482	7.9	20.8	379142	7.9	21.2	410198	8.0	21.0
277556	7.7	21.4	349228	7.8	19.4	37265	7.8	17.7	238195	7.9	20.2	315101	7.9	21.3	361940	8.0	21.5
12645	7.7	16.7	432324	7.8	20.8	291994	7.8	20.1	188967	7.9	19.3	368321	7.9	21.3	372913	8.0	20.2
248167	7.7	19.6	228566	7.8	19.1	131177	7.8	20.1	369045	7.9	20.4	456226	7.9	21.4	444895	8.0	20.9
342664	7.7	19.7	322014	7.8	19.1	523643	7.8	20.2	394274	7.9	19.0	273885	7.9	20.2	111926	8.0	19.1
327805	7.7	20.0	62978	7.8	18.1	38933	7.8	18.7	266962	7.9	20.0	345019	7.9	20.4	445792	8.0	20.3
32083	7.7	17.5	10183	7.8	19.7	476192	7.8	20.1	482208	7.9	19.7	521738	7.9	21.5	191116	8.0	19.7
217641	7.7	20.7	513927	7.8	21.1	269344	7.8	21.1	309621	7.9	20.6	310635	7.9	19.4	459657	8.0	20.7
324262	7.7	19.9	44734	7.8	17.8	317795	7.8	19.9	531042	7.9	20.9	206605	7.9	18.8	407278	8.0	21.2
26715	7.7	18.2	321313	7.8	20.4	207429	7.8	20.6	251706	7.9	20.3	54528	7.9	19.5	245307	8.0	19.8
282811	7.7	19.6	338066	7.8	20.3	277409	7.8	20.1	401551	7.9	21.0	450036	7.9	20.3	368123	8.0	20.1
321842	7.7	21.2	157276	7.8	19.6	33926	7.8	17.2	491762	7.9	18.6	504261	7.9	20.9	38822	8.0	18.6
360031	7.7	20.3	273575	7.8	20.6	538157	7.8	20.7	31422	7.9	18.4	484241	7.9	21.6	209685	8.0	18.8
403936	7.7	21.3	228647	7.8	20.1	295210	7.8	21.0	444279	7.9	20.2	524492	7.9	20.9	72153	8.0	17.8
186739	7.7	20.0	173627	7.8	20.2	466104	7.8	21.9	419571	7.9	20.4	48230	7.9	18.8	486674	8.0	19.9
512102	7.7	20.4	32829	7.8	18.8	224138	7.8	19.8	149046	7.9	19.4	65354	7.9	19.8	1748	8.0	15.6
177978	7.7	19.0	319174	7.8	20.6	98821	7.8	19.1	542341	7.9	21.4	33745	7.9	18.4	263269	8.0	20.6
177294	7.7	19.1	193327	7.8	19.0	225540	7.8	18.9	428740	7.9	20.0	166485	7.9	17.7	324162	8.0	20.4
35429	7.7	19.1	346037	7.8	18.6	6013	7.8	17.7	416332	7.9	19.6	11848	7.9	17.4	56428	8.0	19.4
514011	7.7	20.9	440574	7.8	20.3	125370	7.8	18.9	232817	7.9	18.9	505140	7.9	21.0	73911	8.0	19.4
403787	7.7	19.7	229805	7.8	19.8	316123	7.8	19.8	76389	7.9	18.4	167724	7.9	19.5	2381	8.0	14.6
476122	7.7	20.7	174675	7.8	18.8	519740	7.9	21.3	356338	7.9	19.9	34295	7.9	16.9	511687	8.1	20.7
250347	7.7	19.2	324286	7.8	19.1	382904	7.9	19.2	408566	7.9	20.7	239004	7.9	19.0	480747	8.1	19.1
256514	7.7	20.3	87903	7.8	18.6	390350	7.9	21.2	271349	7.9	18.5	386841	7.9	20.7	322519	8.1	19.9
96416	7.7	19.2	490839	7.8	20.9	146986	7.9	19.0	280252	7.9	18.1	105316	7.9	18.5	94286	8.1	19.2
238991	7.7	20.3	459867	7.8	20.4	333270	7.9	17.3	255841	7.9	18.7	19911	7.9	17.6	383231	8.1	19.9
333263	7.7	19.5	1820	7.8	15.4	505672	7.9	20.4	415336	7.9	20.0	185967	7.9	18.5	269684	8.1	19.7
270583	7.7	20.5	127855	7.8	20.0	529741	7.9	19.9	490628	7.9	20.9	147163	7.9	19.4	175996	8.1	18.8
290419	7.7	20.4	66439	7.8	17.2	21569	7.9	18.6	398594	7.9	20.2	361144	7.9	20.2	508190	8.1	20.3
367149	7.7	19.3	44748	7.8	18.9	12179	7.9	17.7	353377	7.9	19.6	250756	7.9	19.5	370921	8.1	19.3
98623	7.7	18.2	34292	7.8	17.2	272585	7.9	19.7	542590	7.9	20.8	537169	7.9	21.5	312458	8.1	20.6
169860	7.7	19.1	126584	7.8	20.5	71260	7.9	17.6	132766	7.9	20.3	240431	7.9	19.4	12865	8.1	17.7
263679	7.7	20.2	395244	7.8	19.9	358932	7.9	21.1	188540	7.9	19.6	108036	7.9	19.4	336818	8.1	20.5
321779	7.7	19.2	134112	7.8	19.5	226380	7.9	20.2	107752	7.9	19.4	186294	7.9	19.7	98470	8.1	18.3
347272	7.7	21.6	416052	7.8	21.1	287212	7.9	20.3	469916	7.9	19.8	40779	7.9	18.1	308393	8.1	20.4
515255	7.7	21.1	66387	7.8	20.2	442037	7.9	25.4	180151	7.9	20.2	150788	7.9	19.1	313939	8.1	19.6
70275	7.7	17.7	433187	7.8	20.7	438844	7.9	21.1	540962	7.9	20.7	66669	7.9	18.4	467127	8.1	21.5
395818	7.7	20.1	386390	7.8	20.4	528139	7.9	21.9	286097	7.9	18.9	397765	7.9	20.5	425037	8.1	20.9
91922	7.7	18.0	184220	7.8	20.0	92027	7.9	18.9	525562	7.9	21.7	183351	7.9	19.5	56651	8.1	19.4
536911	7.7	21.5	186300	7.8	20.3	212762	7.9	20.2	311209	7.9	19.5	3746	7.9	16.5	220866	8.1	19.4
187413	7.7	20.9	144312	7.8	19.4	235959	7.9	19.4	198146	7.9	19.9	207031	7.9	20.5	139247	8.1	19.4
255002	7.7	19.0	256467	7.8	19.8	533626	7.9	21.7	178931	7.9	19.8	476555	7.9	20.6	283451	8.1	21.7
506585	7.7	20.4	16266	7.8	18.2	165981	7.9	18.8	50818	7.9	17.5	297287	7.9	20.1	312465	8.1	20.4
127343	7.7	19.1	369095	7.8	19.8	15789	7.9	22.9	528756	7.9	22.4	500822	7.9	21.3	539581	8.1	21.5
440494	7.7	20.7	209280	7.8	18.8	4215	7.9	15.9	17290	7.9	18.4	439731	7.9	21.2	11395	8.1	16.7
520972	7.7	19.9	96191	7.8	18.9	202850	7.9	20.0	33626	7.9	18.8	396133	7.9	20.6	211266	8.1	19.5
37927	7.7	19.0	349377	7.8	19.2	23911	7.9	18.4	155316	7.9	19.7	536449	7.9	22.3	321359	8.1	21.3
401029	7.7	20.5	165299	7.8	18.9	464492	7.9	19.6	2198	7.9	16.5	463705	8.0	20.7	131067	8.1	19.7
249815	7.7	19.4	533702	7.8	22.0	13229	7.9	18.7	249612	7.9	19.2	198337	8.0	19.2	386749	8.1	20.1
157432	7.7	18.8	66903	7.8	19.8	494470	7.9	20.2	365837	7.9	20.2	67676	8.0	18.8	250804	8.1	19.6
463537	7.7	20.3	490133	7.8	20.6	256475	7.9	20.0	403857	7.9	21.4	442544	8.0	20.2	537028	8.1	21.9
189826	7.7	20.2	506284	7.8	20.8	181200	7.9	19.2	321918	7.9	19.6	512839	8.0	21.1	95337	8.1	20.0
474083	7.7	20.2	59643	7.8	17.9	415542	7.9	21.6	445481	7.9	21.0	354351	8.0	20.0	74358	8.1	17.9
261891	7.7	20.6	448601	7.8	20.3	107633	7.9	19.8	280917	7.9	19.8	523750	8.0	21.6	351833	8.1	20.4
431797	7.7	19.9	127762	7.8	20.2	118833	7.9	18.9	290509	7.9	20.8	343425	8.0	20.1	329528	8.1	19.1
318776	7.7	19.5	362735	7.8	20.2	383209	7.9	20.2	347051	7.9	19.3	17520	8.0	17.1	128261	8.1	19.7
14228	7.7	18.2	397725	7.8	20.4	312190	7.9	20.0	251742	7.9	20.3	444999	8.0	21.6	172453	8.1	19.3
399664	7.7	19.5	123461	7.8	18.9	517113	7.9	20.6	381131	7.9	20.4	501791	8.0	20.4	284424	8.1	20.2
473287	7.7	20.5	91154	7.8	18.7	62425	7.9	18.5	294248	7.9	20.1	92428	8.0	19.5	63269	8.1	18.8
378527	7.7	20.6	213631	7.8	20.7	511944	7.9	21.3	121422	7.9	18.8	129512	8.0	19.1	375215	8.1	20.2
537323	7.8	21.7	234168	7.8	18.0	382460	7.9	18.7	44441	7.9	18.0	220831	8.0	19.6	401660</		

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
312474	8.1	19.9	168152	8.2	19.8	162822	8.2	19.3	103295	8.3	18.6	201676	8.4	19.2	185268	8.5	20.3
319289	8.1	21.0	365665	8.2	20.3	490837	8.2	20.6	468894	8.3	19.7	333254	8.4	20.3	500817	8.5	21.3
259083	8.1	19.0	316528	8.2	20.0	273858	8.3	20.0	163223	8.3	19.2	402348	8.4	20.7	168244	8.5	19.8
316153	8.1	19.9	288699	8.2	19.6	354227	8.3	20.9	332106	8.3	19.8	176680	8.4	19.3	157086	8.5	19.8
257503	8.1	20.7	396212	8.2	20.5	67335	8.3	18.5	534751	8.3	19.6	312986	8.4	21.1	79313	8.5	18.2
345940	8.1	19.7	120829	8.2	19.5	131152	8.3	19.7	40797	8.3	17.9	390349	8.4	20.3	188914	8.5	20.0
319290	8.1	20.4	536883	8.2	22.0	385022	8.3	20.8	265542	8.3	19.6	66078	8.4	18.6	316229	8.5	19.9
402783	8.1	21.3	299847	8.2	19.8	387850	8.3	19.3	268164	8.3	19.2	107586	8.4	19.5	393810	8.5	20.3
319985	8.1	20.7	382952	8.2	18.5	166467	8.3	19.4	57910	8.3	19.0	312486	8.4	20.3	398285	8.5	20.9
288729	8.1	20.2	464034	8.2	19.7	20429	8.3	20.1	476825	8.3	20.4	513831	8.4	21.2	362533	8.5	20.3
312469	8.1	20.3	118946	8.2	19.1	368866	8.3	21.4	289381	8.3	20.3	350434	8.4	20.1	391603	8.5	20.7
280345	8.1	19.2	141961	8.2	19.8	329758	8.3	22.5	496848	8.3	19.5	444961	8.4	21.1	159647	8.5	20.1
76517	8.1	19.2	432391	8.2	19.5	358457	8.3	20.8	359875	8.3	21.3	389360	8.4	20.7	427574	8.5	21.6
300792	8.1	19.8	52565	8.2	19.4	362897	8.3	20.0	10292	8.3	17.2	514029	8.4	21.0	468394	8.5	20.3
367176	8.1	20.2	245130	8.2	19.3	200022	8.3	18.9	344665	8.3	19.1	517904	8.4	21.0	315151	8.5	20.8
322285	8.1	19.9	359584	8.2	19.8	395268	8.3	20.7	192784	8.3	18.9	325096	8.4	19.6	544516	8.5	20.4
131116	8.1	19.5	166415	8.2	19.9	34216	8.3	17.8	183932	8.3	19.7	43050	8.4	18.3	414057	8.5	20.9
131770	8.1	18.7	393904	8.2	20.8	131218	8.3	19.4	432824	8.3	21.5	182992	8.4	19.0	507925	8.5	20.8
437862	8.1	19.7	155163	8.2	19.9	299912	8.3	20.1	384009	8.3	20.6	142221	8.4	19.9	192034	8.5	19.3
328878	8.1	20.2	471660	8.2	19.8	160558	8.3	19.6	184642	8.3	19.4	477559	8.4	19.3	130150	8.5	17.9
482936	8.1	20.8	463391	8.2	21.5	29253	8.3	17.5	321597	8.3	19.1	263697	8.4	19.8	404847	8.5	20.0
426885	8.1	20.0	22676	8.2	17.6	285215	8.3	20.1	161262	8.3	18.8	32414	8.4	17.1	374056	8.5	18.5
338583	8.1	19.1	330684	8.2	21.1	509838	8.3	21.3	436174	8.3	20.3	316812	8.4	19.9	529938	8.5	22.2
2506	8.1	15.8	276124	8.2	20.2	476424	8.3	20.5	154112	8.3	19.2	540360	8.4	20.9	441369	8.5	19.9
415045	8.1	19.8	254330	8.2	19.2	257676	8.3	19.9	418225	8.3	20.5	133176	8.4	19.9	542503	8.5	20.8
80589	8.1	19.1	420536	8.2	20.4	420861	8.3	20.8	457754	8.3	20.8	433159	8.4	19.4	231460	8.5	20.2
102769	8.1	19.5	266233	8.2	19.3	353146	8.3	20.7	16193	8.3	18.3	453229	8.4	20.3	442588	8.5	19.7
345862	8.1	20.3	217820	8.2	19.9	162467	8.3	20.2	155551	8.3	19.4	3802	8.4	16.9	292608	8.5	20.6
355781	8.1	20.4	392652	8.2	19.9	531302	8.3	20.5	292367	8.3	19.6	36366	8.4	18.7	332631	8.5	19.9
400935	8.1	19.2	113945	8.2	18.9	104741	8.3	19.6	82109	8.3	19.6	125417	8.4	19.0	61030	8.5	19.3
8411	8.1	17.9	203992	8.2	19.6	435228	8.3	21.3	447765	8.3	21.1	184523	8.4	20.0	374030	8.5	21.1
440207	8.1	21.6	10425	8.2	18.1	371503	8.3	19.8	389111	8.3	19.6	70822	8.4	19.2	495963	8.5	20.8
86146	8.1	17.7	316274	8.2	20.0	10733	8.3	17.1	286065	8.3	20.0	309646	8.4	19.7	354686	8.5	20.2
253845	8.1	19.6	161712	8.2	19.5	447317	8.3	20.4	166521	8.3	20.0	476236	8.4	20.6	420484	8.5	21.5
146068	8.1	20.2	499547	8.2	20.6	253742	8.3	19.4	502099	8.3	19.8	92472	8.4	19.9	523199	8.5	20.3
280991	8.1	20.3	505937	8.2	19.9	315273	8.3	20.2	119846	8.3	20.2	154157	8.4	20.5	127272	8.5	19.7
71959	8.1	19.0	360669	8.2	20.6	447051	8.3	20.8	504063	8.3	20.8	332576	8.4	18.9	105541	8.5	18.6
196601	8.1	19.4	156741	8.2	18.6	41087	8.3	17.8	468304	8.3	20.7	271798	8.4	21.4	384556	8.5	20.2
111833	8.1	18.9	439311	8.2	20.5	286844	8.3	19.7	310665	8.3	20.4	364137	8.4	20.4	237923	8.5	20.4
311982	8.1	19.8	94266	8.2	19.3	321538	8.3	20.4	234256	8.3	18.6	371912	8.4	21.0	175137	8.5	19.7
379322	8.1	19.8	92387	8.2	19.5	213608	8.3	19.9	361895	8.3	21.4	117689	8.4	18.6	499763	8.5	20.5
285159	8.1	19.8	128078	8.2	19.6	391991	8.3	19.7	240950	8.4	20.8	198059	8.4	19.5	360679	8.5	18.6
338058	8.1	19.8	366049	8.2	21.1	392321	8.3	19.7	219595	8.4	18.2	190272	8.4	20.6	264120	8.5	19.5
24426	8.1	18.7	244413	8.2	20.4	106358	8.3	19.1	247737	8.4	20.4	90073	8.4	18.5	479641	8.5	20.7
477123	8.1	21.4	472753	8.2	20.6	420329	8.3	20.3	431365	8.4	20.5	466727	8.4	18.7	288815	8.5	19.2
272532	8.1	20.0	403938	8.2	20.5	499070	8.3	21.1	399924	8.4	20.6	93355	8.4	18.8	27043	8.5	17.6
356249	8.1	20.7	519443	8.2	19.7	394227	8.3	20.6	510325	8.4	20.3	518622	8.4	21.0	376591	8.5	19.3
262042	8.1	20.8	82334	8.2	18.4	480589	8.3	21.1	33781	8.4	18.3	59387	8.4	18.9	5527	8.5	16.6
273956	8.1	21.2	369970	8.2	20.5	35348	8.3	18.5	342359	8.4	19.6	358229	8.4	20.0	540232	8.5	20.0
65697	8.1	18.6	206733	8.2	19.6	63525	8.3	18.0	178295	8.4	19.6	392161	8.4	20.3	152876	8.5	18.4
11476	8.1	18.4	418344	8.2	19.8	72100	8.3	18.4	481086	8.4	20.2	324677	8.4	20.3	209886	8.5	19.6
137061	8.1	18.2	352202	8.2	20.2	145189	8.3	21.0	187923	8.4	19.0	189471	8.4	20.3	510546	8.5	20.8
395271	8.1	21.4	340444	8.2	20.6	24156	8.3	18.3	25879	8.4	17.5	492400	8.4	20.8	211229	8.5	20.4
120863	8.2	18.2	62021	8.2	17.5	420428	8.3	21.2	246932	8.4	20.3	494521	8.4	20.3	239086	8.5	19.8
21842	8.2	17.7	479002	8.2	20.7	235175	8.3	19.0	4836	8.4	16.4	221471	8.4	20.1	234283	8.5	18.1
442141	8.2	19.8	256990	8.2	20.1	352430	8.3	20.3	17060	8.4	17.8	294866	8.4	20.6	362532	8.5	20.0
47461	8.2	16.9	514404	8.2	20.7	320969	8.3	19.9	70557	8.4	18.3	167965	8.4	19.9	117931	8.5	18.8
28950	8.2	19.1	331887	8.2	21.1	382924	8.3	20.0	210300	8.4	19.8	309114	8.4	20.2	525797	8.5	20.9
108510	8.2	19.4	235761	8.2	18.8	30102	8.3	17.7	57819	8.4	18.4	216524	8.4	19.8	216156	8.5	21.3
282795	8.2	17.5	87524	8.2	19.6	481296	8.3	20.3	419594	8.4	20.1	446947	8.4	20.7	378307	8.5	21.1
386730	8.2	20.4	213559	8.2	18.4	293538	8.3	20.0	345887	8.4	19.5	361882	8.4	20.3	96474	8.5	19.6
92067	8.2	19.3	342152	8.2	20.5	387768	8.3	19.9	360115	8.4	21.2	488900	8.4	19.9	70608	8.5	19.0
302880	8.2	20.2	510969	8.2	21.3	14084	8.3	17.0	249486	8.4	19.5	310074	8.4	20.0	168811	8.5	18.4
68881	8.2	20.0	116019	8.2	19.6	237964	8.3	20.2	112335	8.4	18.7	208045	8.4	19.0	316483	8.5	20.9
182799	8.2	19.4	187839	8.2	18.6	520420	8.3	20.9	93541	8.4	19.0	383613	8.4	20.3	519779	8.5	21.3
352302	8.2	19.8	218294	8.2	19.1	63858	8.3	18.6	182677	8.4	20.1	188537	8.4	19.0	319357	8.5	20.5
472859	8.2	21.0	422898	8.2	19.7	500803	8.3	20.8	535512	8.4	20.6	253781	8.5	19.4	422348	8.5	20.2
369051	8.2	20.2	536754	8.2	21.9	519644	8.3	20.7	94455	8.4	17.2	325740	8.5	19.3	215460	8.5	20.1
95002	8.2	19.3	514264	8.2	19.9	59601	8.3	20.0	45899	8.4	18.0	87882	8.5	18.4	481112	8.5	20.4
273843	8.2	20.4	294363	8.2	20.1	120843	8.3	19.2	7393	8.4	14.9	429607	8.5	21.2	483634	8.5	19.5
225632	8.2	19.1	102294	8.2	20.4	56753	8.3	18.1	254241	8.4	19.1	211739	8.5				

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
323678	8.5	21.0	23746	8.6	17.5	195284	8.7	20.3	254157	8.7	19.9	354745	8.8	19.9	515259	8.9	21.3
289861	8.5	19.5	511772	8.6	20.0	13372	8.7	18.0	459471	8.7	21.0	444660	8.8	21.2	313344	8.9	21.0
250372	8.5	19.7	283204	8.6	21.0	245373	8.7	20.4	363699	8.7	20.1	247855	8.8	18.7	397764	8.9	21.6
17595	8.5	17.4	246712	8.6	20.1	261643	8.7	20.6	31732	8.7	17.5	89300	8.8	18.7	183560	8.9	19.5
65977	8.5	18.8	156650	8.6	19.7	164151	8.7	18.4	529578	8.7	21.8	311930	8.8	20.3	485338	8.9	20.8
74928	8.5	18.5	241462	8.6	20.1	443616	8.7	19.6	184190	8.8	19.7	105437	8.8	18.9	446429	8.9	19.9
470694	8.5	20.6	16014	8.6	18.1	506793	8.7	21.7	298127	8.8	20.4	333900	8.8	20.5	271592	8.9	20.3
346792	8.5	20.3	66116	8.6	18.1	282780	8.7	19.3	355775	8.8	20.9	109820	8.8	20.9	513298	8.9	21.0
107018	8.5	19.5	381539	8.6	20.2	445242	8.7	20.6	8051	8.8	16.6	293917	8.8	20.3	183549	8.9	20.3
405036	8.5	19.6	223268	8.6	19.5	153225	8.7	18.8	445532	8.8	19.6	380550	8.8	20.2	517668	8.9	21.5
27091	8.5	18.5	285533	8.6	20.7	200341	8.7	19.6	322126	8.8	20.3	145443	8.8	19.3	537603	8.9	21.3
22649	8.5	17.8	37346	8.6	18.5	361975	8.7	21.1	271598	8.8	20.4	142343	8.8	18.4	26286	8.9	17.1
218501	8.5	20.1	380656	8.6	20.0	521422	8.7	21.3	432005	8.8	20.4	28870	8.8	18.8	10525	8.9	15.8
91726	8.5	19.3	152500	8.6	20.2	527779	8.7	21.8	61361	8.8	17.5	66342	8.8	19.2	109009	8.9	19.0
288577	8.5	20.9	350033	8.6	20.6	367148	8.7	19.2	246644	8.8	20.7	537521	8.8	20.9	428514	8.9	21.6
318377	8.5	19.4	332155	8.6	20.1	392850	8.7	20.6	510675	8.8	20.4	189798	8.8	19.8	437914	8.9	21.2
307199	8.5	19.4	336206	8.6	19.0	15940	8.7	17.6	149763	8.8	19.5	390419	8.8	20.9	528033	8.9	21.4
40056	8.5	17.6	89911	8.6	18.3	257675	8.7	20.8	445788	8.8	20.3	524914	8.8	21.4	245625	8.9	19.3
444138	8.5	19.1	461656	8.6	21.2	336866	8.7	20.1	96196	8.8	18.6	312428	8.8	20.4	420831	8.9	20.8
19334	8.5	17.4	481055	8.6	20.2	400424	8.7	20.7	507748	8.8	21.1	20265	8.8	18.5	504480	8.9	20.9
420810	8.5	21.6	119913	8.6	19.3	442164	8.7	20.6	39492	8.8	17.8	512179	8.8	20.1	268952	8.9	19.4
385098	8.5	19.9	9375	8.6	17.3	480666	8.7	21.7	496293	8.8	20.6	36100	8.8	18.1	361428	8.9	20.9
497088	8.5	19.8	14029	8.6	17.4	132402	8.7	19.1	238621	8.8	20.0	202087	8.8	19.2	392682	8.9	20.5
72430	8.5	20.3	371901	8.6	20.7	131017	8.7	18.9	192790	8.8	19.7	498063	8.8	19.8	506458	8.9	19.5
507356	8.5	20.0	293970	8.6	20.6	206944	8.7	19.1	5935	8.8	16.9	529013	8.8	21.9	445002	8.9	21.9
224515	8.5	19.5	321511	8.6	19.9	81347	8.7	19.4	513823	8.8	21.1	282251	8.8	19.6	78956	8.9	18.5
28520	8.5	17.4	528003	8.6	22.1	35526	8.7	19.4	247541	8.8	19.0	60181	8.8	17.2	398869	8.9	21.5
244680	8.5	20.3	365637	8.6	20.1	405014	8.7	20.0	232183	8.8	20.1	242267	8.8	19.6	484882	8.9	19.9
3291	8.5	17.1	391602	8.6	20.6	415279	8.7	20.5	56239	8.8	18.3	496128	8.8	20.3	416385	8.9	19.7
370206	8.5	20.6	39754	8.6	19.1	140149	8.7	18.5	258670	8.8	21.0	76644	8.8	17.8	528988	8.9	21.4
32998	8.5	19.0	7855	8.6	17.2	451334	8.7	20.3	209559	8.8	18.7	293794	8.8	20.6	500190	8.9	21.9
326054	8.5	19.2	478607	8.6	21.0	511961	8.7	19.8	373546	8.8	19.6	107439	8.8	20.0	297552	8.9	19.6
314034	8.6	20.0	479559	8.6	21.0	294296	8.7	20.6	64455	8.8	17.8	342742	8.8	19.7	408302	8.9	20.7
361073	8.6	20.2	94750	8.6	17.7	199638	8.7	19.8	477766	8.8	20.9	506594	8.8	19.8	357897	8.9	20.6
380921	8.6	20.2	308710	8.6	20.8	373618	8.7	22.8	140865	8.8	19.1	35969	8.8	18.9	420890	8.9	20.6
472039	8.6	20.4	75348	8.6	18.4	189361	8.7	20.3	540990	8.8	20.4	261838	8.8	19.8	390670	8.9	19.1
535711	8.6	20.8	361982	8.6	20.9	43161	8.7	18.1	532441	8.8	20.9	175566	8.9	19.7	445015	8.9	20.7
537302	8.6	20.6	112117	8.6	19.0	311228	8.7	20.9	281750	8.8	20.3	444981	8.9	21.6	195324	8.9	19.5
237262	8.6	19.2	193455	8.6	18.7	172342	8.7	19.5	285228	8.8	20.8	388898	8.9	20.8	535038	8.9	21.0
401801	8.6	20.6	514373	8.6	20.3	521302	8.7	21.3	430266	8.8	20.1	213575	8.9	20.1	231896	8.9	17.9
42382	8.6	19.1	130487	8.6	18.0	360100	8.7	20.1	2759	8.8	17.3	285273	8.9	20.1	540131	8.9	20.6
346457	8.6	20.6	244865	8.6	19.4	443705	8.7	21.0	462810	8.8	20.1	38979	8.9	17.8	437730	8.9	20.9
432784	8.6	21.6	1623	8.6	14.9	390362	8.7	21.0	366317	8.8	21.0	291451	8.9	21.0	61550	8.9	19.8
521522	8.6	21.2	218802	8.6	20.1	77449	8.7	19.5	313584	8.8	20.4	438867	8.9	20.4	45115	8.9	18.2
365692	8.6	20.6	233314	8.6	20.3	4255	8.7	19.4	450921	8.8	21.2	473174	8.9	20.7	78502	8.9	18.9
206622	8.6	18.6	313916	8.6	19.3	66768	8.7	19.0	510044	8.8	21.2	387362	8.9	20.2	167947	8.9	19.4
182013	8.6	19.7	504555	8.6	21.6	254254	8.7	19.9	453997	8.8	21.2	509522	8.9	20.7	326153	8.9	20.2
449796	8.6	21.2	10880	8.6	18.0	508023	8.7	20.9	95829	8.8	19.5	480707	8.9	20.4	65611	8.9	18.3
342782	8.6	20.1	221017	8.6	21.1	535582	8.7	20.9	174114	8.8	21.2	321380	8.9	20.1	410182	8.9	20.4
410308	8.6	19.7	210096	8.6	19.1	138253	8.7	19.9	390183	8.8	20.5	403452	8.9	20.6	250371	8.9	19.2
392092	8.6	20.6	25062	8.6	18.7	58515	8.7	18.7	152729	8.8	18.8	536838	8.9	20.7	512164	8.9	21.1
389491	8.6	20.3	239093	8.6	20.3	198184	8.7	18.1	252206	8.8	20.1	107620	8.9	19.3	257099	8.9	20.2
26653	8.6	16.6	325488	8.6	20.4	112248	8.7	19.3	418253	8.8	21.3	133917	8.9	18.7	253835	8.9	20.2
359607	8.6	20.5	184681	8.6	20.3	512535	8.7	19.8	426382	8.8	20.3	177792	8.9	19.8	70155	8.9	17.8
136356	8.6	17.8	358222	8.6	20.7	117200	8.7	18.6	278827	8.8	19.7	432996	8.9	20.3	302203	8.9	19.9
283888	8.6	18.7	162905	8.6	19.2	358921	8.7	20.0	294090	8.8	20.4	153913	8.9	19.0	161031	8.9	20.5
207488	8.6	20.1	500074	8.6	20.8	26033	8.7	18.2	34424	8.8	18.4	531143	8.9	21.6	327826	8.9	20.7
74904	8.6	19.4	212191	8.6	19.9	171780	8.7	18.8	104648	8.8	19.2	203922	8.9	20.7	188790	8.9	20.8
512216	8.6	20.4	77374	8.6	18.9	247404	8.7	20.2	212845	8.8	19.6	577	8.9	14.0	489635	8.9	19.3
453683	8.6	20.4	243358	8.6	20.7	531058	8.7	21.8	343928	8.8	19.8	371517	8.9	19.8	171350	8.9	19.9
44386	8.6	18.3	241452	8.6	21.3	183530	8.7	19.8	195121	8.8	20.0	410203	8.9	20.6	203274	8.9	20.4
521475	8.6	20.6	246271	8.6	19.1	291545	8.7	21.6	253887	8.8	19.1	251959	8.9	20.0	472888	8.9	19.8
97224	8.6	18.7	163717	8.7	19.5	429613	8.7	21.3	296236	8.8	19.7	498243	8.9	20.8	169074	8.9	19.5
538260	8.6	21.1	487781	8.7	20.1	462242	8.7	21.8	164526	8.8	20.0	291464	8.9	19.0	360705	8.9	19.2
68338	8.6	19.6	10352	8.7	16.4	25644	8.7	16.5	222570	8.8	18.7	2658	8.9	17.3	6484	8.9	15.2
276971	8.6	18.7	476270	8.7	20.7	20781	8.7	17.6	126234	8.8	19.2	437309	8.9	20.7	181807	8.9	19.5
166510	8.6	19.9	524217	8.7	23.0	154235	8.7	19.7	315040	8.8	20.1	492391	8.9	21.1	377328	8.9	19.6
37179	8.6	18.7	307009	8.7	17.4	489312	8.7	19.9	430997	8.8	19.4	310870	8.9	20.6	390106	8.9	19.7
203033	8.6	20.4	71443	8.7	18.9	526012	8.7	20.8	313640	8.8	18.7	504048	8.9	20.9	284608	8.9	19.8
103818	8.6	18.9	308980	8.7	20.2	485992	8.7	20.6	179460	8.8	19.8	307359	8.9	18.7	329148	8.9	19.8
212810	8.6	20.3	417533	8.7	19.4	191321	8.7	19.2	275179	8.8	20.2	27333	8.9	18.1	65		

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
398837	8.9	20.5	13380	9.0	17.4	517989	9.1	21.0	454170	9.2	20.9	479885	9.2	20.0	35502	9.3	17.1
107560	8.9	20.1	420395	9.0	21.0	182755	9.1	17.8	115141	9.2	18.4	294463	9.2	20.7	497585	9.3	21.9
299202	8.9	21.3	126548	9.0	19.7	237575	9.1	19.0	22644	9.2	18.1	251948	9.2	19.1	144098	9.3	19.4
383334	8.9	21.1	309779	9.0	19.8	391519	9.1	19.8	9462	9.2	16.7	39057	9.2	18.1	528335	9.3	20.8
22549	8.9	17.6	246000	9.0	20.1	100601	9.1	18.4	248537	9.2	19.2	12130	9.2	18.2	392909	9.3	20.5
349833	8.9	20.2	477076	9.0	20.3	206309	9.1	18.9	375213	9.2	21.3	468782	9.2	20.8	160940	9.3	18.0
321628	8.9	20.9	166041	9.0	19.6	121485	9.1	19.2	511799	9.2	20.2	230331	9.2	20.0	397772	9.3	19.9
439398	8.9	20.9	401725	9.0	20.5	293952	9.1	19.9	67110	9.2	17.5	472469	9.2	21.6	392222	9.3	20.8
420408	8.9	21.3	176726	9.0	19.9	29006	9.1	17.6	398416	9.2	19.7	182857	9.2	20.3	36801	9.3	19.1
436182	8.9	20.6	363489	9.0	20.3	70967	9.1	17.0	254483	9.2	20.4	32007	9.2	17.4	540941	9.3	20.9
237595	8.9	19.8	183953	9.0	20.4	463439	9.1	20.8	312965	9.2	20.2	119576	9.2	18.5	48096	9.3	19.3
542706	8.9	21.6	537732	9.0	20.6	389080	9.1	19.8	234321	9.2	19.0	45811	9.2	18.7	154893	9.3	19.5
501721	8.9	20.9	61583	9.0	17.6	204638	9.1	19.0	238236	9.2	19.4	323730	9.2	20.5	15102	9.3	16.8
306993	8.9	19.4	366573	9.0	19.4	437177	9.1	19.9	515026	9.2	19.7	373394	9.3	18.8	201127	9.3	20.8
479876	8.9	20.9	479648	9.0	20.9	147571	9.1	19.4	456317	9.2	20.1	407759	9.3	19.9	125232	9.3	18.9
42359	8.9	18.7	259991	9.0	19.2	499529	9.1	19.5	83073	9.2	19.5	317576	9.3	19.7	263594	9.3	19.7
201706	8.9	18.7	291600	9.1	20.9	246775	9.1	20.6	19435	9.2	16.6	225029	9.3	20.6	25565	9.3	18.2
443696	8.9	20.5	533089	9.1	20.7	216956	9.1	17.9	414112	9.2	19.4	459578	9.3	21.5	288920	9.3	18.6
198438	8.9	19.0	432637	9.1	20.4	222458	9.1	18.9	183841	9.2	19.3	415988	9.3	20.5	301037	9.3	19.8
354192	8.9	21.7	204980	9.1	19.6	202420	9.1	20.7	348391	9.2	20.0	501859	9.3	20.6	444346	9.3	20.9
444120	8.9	20.3	144764	9.1	19.3	214483	9.1	20.5	168331	9.2	20.1	240394	9.3	19.4	43950	9.3	19.1
289829	8.9	19.7	393628	9.1	20.9	423832	9.1	19.8	222854	9.2	19.9	54994	9.3	18.8	19171	9.3	17.7
9803	8.9	17.3	326165	9.1	19.4	170186	9.1	19.7	512153	9.2	20.3	98397	9.3	18.0	506430	9.3	19.4
256975	8.9	20.9	104220	9.1	19.2	366579	9.1	19.9	63161	9.2	19.7	307194	9.3	20.2	394309	9.3	20.0
271308	8.9	20.7	254261	9.1	19.7	436803	9.1	20.2	261887	9.2	20.7	150303	9.3	19.2	213926	9.3	18.6
64427	8.9	18.6	342500	9.1	20.0	184771	9.1	19.4	404551	9.2	21.3	73181	9.3	18.8	146863	9.3	19.4
300262	8.9	21.1	195188	9.1	20.0	147786	9.1	19.0	342221	9.2	21.5	313385	9.3	21.1	439006	9.3	19.8
514053	8.9	21.0	136567	9.1	19.4	527905	9.1	21.6	43569	9.2	17.8	242150	9.3	20.8	161285	9.3	19.9
354800	8.9	19.9	466123	9.1	21.7	123832	9.1	19.0	264164	9.2	20.1	219625	9.3	18.3	359569	9.3	21.5
200489	8.9	19.7	123778	9.1	19.0	521315	9.1	20.8	258625	9.2	20.0	384515	9.3	21.3	154672	9.3	20.6
46203	8.9	18.6	280313	9.1	19.3	388626	9.1	20.0	530085	9.2	24.8	36101	9.3	17.1	230338	9.3	19.8
311360	8.9	19.0	505412	9.1	22.6	331919	9.1	19.4	126906	9.2	18.9	526834	9.3	20.4	118049	9.3	18.9
414397	8.9	21.0	245250	9.1	18.0	509876	9.1	20.8	532260	9.2	21.4	85394	9.3	19.3	87608	9.3	18.2
421485	8.9	21.4	440251	9.1	20.2	144050	9.1	19.2	225913	9.2	19.8	136632	9.3	20.2	314525	9.3	19.9
21329	8.9	18.9	582136	9.1	21.9	268988	9.1	20.4	22325	9.2	17.1	404712	9.3	21.0	177126	9.3	20.3
436203	8.9	20.9	123740	9.1	19.3	152739	9.1	17.9	415742	9.2	21.1	122847	9.3	18.7	16949	9.3	17.2
432972	8.9	19.3	334335	9.1	20.1	326642	9.1	19.1	496530	9.2	20.6	442107	9.3	19.6	39051	9.3	18.8
46141	8.9	19.4	515221	9.1	20.8	17468	9.1	17.1	361908	9.2	19.9	63640	9.3	18.1	537183	9.3	21.1
326213	8.9	20.9	459665	9.1	21.1	259647	9.1	18.7	500182	9.2	21.3	395695	9.3	20.6	472328	9.3	21.3
202228	8.9	19.2	453257	9.1	20.6	400967	9.1	19.7	453191	9.2	20.6	474704	9.3	19.6	16564	9.3	17.6
72656	9.0	19.6	342837	9.1	20.4	136794	9.1	20.0	164258	9.2	19.8	260011	9.3	20.7	431290	9.3	20.3
248944	9.0	19.6	397748	9.1	19.9	94314	9.1	18.6	385246	9.2	18.7	511414	9.3	21.6	247410	9.3	20.1
201847	9.0	19.0	12805	9.1	17.8	528078	9.1	19.7	500899	9.2	20.7	95572	9.3	19.3	178942	9.3	20.8
345872	9.0	20.4	255192	9.1	20.4	320456	9.1	20.7	447331	9.2	20.4	211843	9.3	19.8	447235	9.3	20.5
190589	9.0	19.8	322205	9.1	19.9	123806	9.1	19.0	12076	9.2	19.5	133120	9.3	18.5	170610	9.3	19.9
377733	9.0	20.7	422072	9.1	20.4	464206	9.1	20.7	382127	9.2	20.1	195487	9.3	19.5	141446	9.3	19.4
139655	9.0	19.8	435145	9.1	20.4	66041	9.1	18.7	315126	9.2	20.1	396159	9.3	20.1	251462	9.3	20.2
60247	9.0	18.6	472910	9.1	21.1	223978	9.1	20.1	358855	9.2	21.2	209052	9.3	19.5	183541	9.3	20.1
439660	9.0	20.4	308374	9.1	20.0	430947	9.1	21.1	250925	9.2	18.9	353884	9.3	19.9	326250	9.3	21.2
479719	9.0	21.1	288566	9.1	20.2	483256	9.2	19.9	48552	9.2	18.4	455109	9.3	19.8	328132	9.3	20.4
71829	9.0	18.2	444729	9.1	21.6	508786	9.2	25.1	9131	9.2	16.7	382989	9.3	20.9	2866	9.3	15.4
296012	9.0	21.0	261985	9.1	20.4	165369	9.2	18.3	45447	9.2	17.8	438521	9.3	19.5	157830	9.3	18.6
361588	9.0	19.5	364145	9.1	21.4	65043	9.2	19.8	195195	9.2	20.7	214521	9.3	19.1	461449	9.3	21.6
358046	9.0	21.2	310541	9.1	21.2	121437	9.2	18.2	305779	9.2	20.2	49720	9.3	16.6	358833	9.3	19.6
414045	9.0	20.6	255615	9.1	20.1	416810	9.2	21.4	321690	9.2	20.5	85822	9.3	18.8	130472	9.3	19.5
353461	9.0	19.8	356447	9.1	20.3	129517	9.2	18.8	41644	9.2	18.3	290354	9.3	19.6	289508	9.3	21.4
114704	9.0	18.4	129131	9.1	19.4	318255	9.2	19.9	4428	9.2	16.3	469542	9.3	21.0	157799	9.3	20.2
76362	9.0	18.5	458093	9.1	21.1	225894	9.2	19.5	393149	9.2	21.0	251567	9.3	20.2	474020	9.3	21.5
365475	9.0	20.0	476910	9.1	20.6	228098	9.2	20.4	135209	9.2	19.0	228585	9.3	20.0	313925	9.3	19.7
416295	9.0	19.2	301964	9.1	17.7	316144	9.2	20.4	344137	9.2	19.9	99196	9.3	19.4	66469	9.3	18.3
127687	9.0	20.5	64498	9.1	18.6	306887	9.2	18.7	417934	9.2	19.8	385855	9.3	20.6	501735	9.3	20.2
206580	9.0	18.8	260283	9.1	20.6	210019	9.2	20.6	469272	9.2	19.7	314078	9.3	19.3	336154	9.3	20.7
164014	9.0	19.5	166608	9.1	19.6	443614	9.2	20.3	288970	9.2	20.8	154973	9.3	19.9	185800	9.3	19.2
61766	9.0	19.0	522574	9.1	20.5	393796	9.2	21.3	168242	9.2	20.6	175540	9.3	20.0	907	9.4	13.4
185319	9.0	19.5	277364	9.1	19.9	74991	9.2	18.7	393367	9.2	20.5	310546	9.3	20.0	31679	9.4	18.1
69338	9.0	19.2	142413	9.1	19.0	368959	9.2	19.0	463094	9.2	20.1	160943	9.3	17.6	95507	9.4	19.5
252992	9.0	20.7	449647	9.1	20.7	26495	9.2	17.6	349411	9.2	19.9	425885	9.3	21.3	356268	9.4	20.0
67170	9.0	17.3	181902	9.1	24.1	266774	9.2	20.3	166601	9.2	20.0	516116	9.3	20.0	8392	9.4	16.7
155746	9.0	19.3	67980	9.1	17.7	467212	9.2	21.0	262839	9.2	19.6	509435	9.3	22.3	170640	9.4	19.1
361954	9.0	20.6	255029	9.1	19.3	183950	9.2	19.0	307942	9.2	19.0	471708	9.3	20.8	162544	9.4	19.4
521473	9.0	20.3	10677	9.1	17.0	539024	9.2	21.3	267063	9.2	20.1	246546	9.3	19			

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
350197	9.4	20.6	239480	9.4	19.8	263544	9.5	21.1	390351	9.6	20.7	321078	9.7	20.1	448087	9.7	20.7
504294	9.4	19.9	527952	9.4	21.9	91779	9.5	18.4	165010	9.6	19.8	438358	9.7	21.1	252149	9.7	18.9
296961	9.4	20.3	259032	9.4	18.1	4083	9.5	15.0	35965	9.6	17.5	103901	9.7	20.8	476044	9.7	20.7
34664	9.4	17.9	121994	9.4	19.9	153287	9.5	19.7	479305	9.6	20.1	200188	9.7	19.6	422897	9.7	19.2
187350	9.4	20.4	340999	9.4	20.9	280936	9.5	20.7	280144	9.6	20.3	24530	9.7	18.0	184993	9.7	19.2
175124	9.4	19.0	456075	9.4	21.4	390740	9.5	19.8	527119	9.6	21.1	314502	9.7	20.6	468853	9.7	21.0
517875	9.4	20.8	321496	9.5	19.9	150602	9.5	19.1	426032	9.6	20.8	438332	9.7	20.3	58407	9.7	19.8
70785	9.4	18.4	304032	9.5	20.8	175847	9.5	18.7	25637	9.6	18.4	535064	9.7	20.9	466598	9.7	20.4
198436	9.4	19.5	25807	9.5	18.0	283117	9.5	19.2	253755	9.6	19.4	278742	9.7	19.2	5126	9.7	17.9
164056	9.4	19.2	365957	9.5	20.6	315293	9.5	19.6	534215	9.6	19.8	531210	9.7	21.6	301188	9.7	20.4
533642	9.4	20.8	394209	9.5	20.7	509369	9.5	21.5	519147	9.6	21.3	188951	9.7	20.2	145241	9.7	20.4
87649	9.4	17.7	479085	9.5	19.9	343561	9.5	21.0	207871	9.6	20.1	292579	9.7	20.6	164787	9.7	20.4
56657	9.4	19.2	168865	9.5	18.9	159960	9.5	19.6	365720	9.6	20.4	81565	9.7	18.9	44157	9.7	17.5
170983	9.4	19.2	365900	9.5	20.6	173669	9.5	20.3	187360	9.6	20.3	16504	9.7	16.8	269043	9.7	20.8
12080	9.4	17.0	422221	9.5	20.0	356990	9.5	20.7	459620	9.6	20.7	536611	9.7	21.4	241246	9.7	20.1
163383	9.4	19.1	254397	9.5	19.9	534073	9.5	22.3	111771	9.6	19.5	490671	9.7	21.9	250514	9.7	18.8
187799	9.4	21.1	164985	9.5	20.4	53761	9.5	18.2	65053	9.6	19.2	539051	9.7	21.4	227077	9.7	19.7
216141	9.4	21.1	449388	9.5	21.1	264001	9.5	19.7	210544	9.6	19.6	50340	9.7	18.5	392128	9.7	20.8
274428	9.4	19.0	250765	9.5	19.3	66437	9.5	19.3	17750	9.6	19.0	428335	9.7	21.3	55997	9.7	19.0
369899	9.4	20.3	242563	9.5	20.2	477205	9.5	20.8	440858	9.6	20.7	185821	9.7	19.9	157178	9.7	18.7
515252	9.4	21.0	87075	9.5	18.9	47985	9.5	18.8	108180	9.6	19.7	423192	9.7	20.6	392074	9.7	20.3
516285	9.4	20.7	236470	9.5	19.4	13178	9.5	17.9	362981	9.6	19.4	359638	9.7	19.9	495390	9.7	19.3
479750	9.4	20.1	186741	9.5	19.9	323724	9.5	20.1	437760	9.6	20.9	233625	9.7	20.6	309216	9.8	20.2
147970	9.4	19.5	326149	9.5	20.3	263599	9.5	19.8	18857	9.6	17.3	1985	9.7	16.1	20426	9.8	18.4
255442	9.4	20.3	535376	9.5	21.4	358419	9.5	21.2	521337	9.6	21.3	157681	9.7	18.6	399258	9.8	20.2
238019	9.4	20.9	289910	9.5	20.1	215849	9.5	20.7	362266	9.6	19.9	358761	9.7	20.4	432945	9.8	20.2
237525	9.4	19.3	180155	9.5	19.5	537509	9.5	20.7	343421	9.6	20.9	35855	9.7	18.0	442048	9.8	20.8
351370	9.4	21.0	179618	9.5	19.4	427522	9.5	21.5	265623	9.6	20.1	314368	9.7	20.3	277017	9.8	20.8
99052	9.4	19.6	359701	9.5	20.9	66399	9.6	19.0	497843	9.6	20.5	402390	9.7	20.9	349425	9.8	20.1
481297	9.4	21.1	432859	9.5	21.4	216951	9.6	19.1	42564	9.6	18.9	111596	9.7	17.4	251934	9.8	18.7
369941	9.4	21.4	367911	9.5	21.0	468783	9.6	21.5	320045	9.6	19.6	165292	9.7	18.8	188565	9.8	20.1
304231	9.4	20.2	511134	9.5	20.0	506616	9.6	21.4	123637	9.6	19.7	152509	9.7	20.1	499585	9.8	21.5
65012	9.4	17.0	203968	9.5	19.0	442568	9.6	20.0	142174	9.6	19.2	497639	9.7	20.2	39264	9.8	17.4
82347	9.4	19.1	249580	9.5	20.8	542352	9.6	20.8	481099	9.6	19.2	322589	9.7	20.4	87561	9.8	16.4
117209	9.4	18.6	171726	9.5	18.4	33464	9.6	16.9	24279	9.6	18.7	227626	9.7	20.8	451565	9.8	20.5
201004	9.4	19.3	255446	9.5	21.0	429724	9.6	20.8	106877	9.6	18.5	145025	9.7	20.6	315876	9.8	19.5
272165	9.4	19.2	273977	9.5	20.3	466111	9.6	20.7	195418	9.6	20.1	30859	9.7	16.4	96358	9.8	19.6
288722	9.4	20.8	114463	9.5	18.2	291248	9.6	21.5	144928	9.6	20.4	215987	9.7	19.9	425626	9.8	20.0
163012	9.4	19.6	298662	9.5	20.0	301545	9.6	19.9	6775	9.6	17.4	412837	9.7	21.3	195512	9.8	19.8
220574	9.4	19.8	217858	9.5	19.5	364720	9.6	20.1	354707	9.6	19.4	138873	9.7	18.8	434079	9.8	19.1
72080	9.4	19.3	478642	9.5	20.7	203979	9.6	19.3	321567	9.6	20.0	429761	9.7	20.0	462000	9.8	21.0
392332	9.4	20.9	508112	9.5	20.0	426272	9.6	19.9	85056	9.6	18.5	48742	9.7	19.2	501962	9.8	20.8
482219	9.4	20.6	380792	9.5	20.4	112530	9.6	19.5	311451	9.6	20.3	221116	9.7	20.6	98456	9.8	17.7
209374	9.4	19.9	314644	9.5	20.6	511186	9.6	21.2	467090	9.6	21.3	105543	9.7	18.6	266707	9.8	20.0
187297	9.4	19.9	46432	9.5	19.5	420811	9.6	20.4	56388	9.6	17.6	217112	9.7	19.0	172845	9.8	19.3
444131	9.4	19.5	288744	9.5	19.3	440692	9.6	19.8	314607	9.6	20.5	244745	9.7	19.7	195056	9.8	19.8
297367	9.4	20.2	73247	9.5	19.2	130576	9.6	18.7	69753	9.6	18.5	401686	9.7	21.3	243490	9.8	19.3
483290	9.4	19.3	17532	9.5	18.7	407861	9.6	21.1	331922	9.6	19.7	479955	9.7	19.8	156956	9.8	19.4
82228	9.4	16.8	84029	9.5	17.1	254301	9.6	19.5	126109	9.6	19.6	396980	9.7	20.1	103448	9.8	19.6
78725	9.4	18.6	210267	9.5	19.7	181906	9.6	18.7	322060	9.6	20.8	464550	9.7	21.3	411207	9.8	20.1
252814	9.4	19.7	351908	9.5	20.5	141519	9.6	20.6	38598	9.6	19.2	24971	9.7	16.6	152031	9.8	20.3
48729	9.4	18.2	20216	9.5	17.9	330082	9.6	20.2	533386	9.6	20.5	322145	9.7	19.7	102958	9.8	18.5
238854	9.4	19.6	23750	9.5	18.1	41259	9.6	18.5	328225	9.6	21.4	437754	9.7	20.7	94131	9.8	19.0
519152	9.4	20.6	210037	9.5	20.1	180389	9.6	20.1	151318	9.6	20.3	402433	9.7	21.2	63893	9.8	16.5
107659	9.4	18.6	315127	9.5	19.9	336180	9.6	19.8	193568	9.6	17.8	318458	9.7	21.2	27556	9.8	17.2
174080	9.4	19.7	254178	9.5	20.0	41996	9.6	17.3	523051	9.6	20.3	422685	9.7	19.7	524815	9.8	21.0
276491	9.4	20.5	471307	9.5	20.7	7148	9.6	16.1	438822	9.6	20.5	345971	9.7	20.7	263174	9.8	18.4
404479	9.4	21.4	60141	9.5	18.7	65618	9.6	17.8	167226	9.7	19.7	412125	9.7	20.2	479140	9.8	20.6
36371	9.4	16.8	170912	9.5	18.5	475983	9.6	20.3	157203	9.7	19.9	125368	9.7	17.7	216569	9.8	19.0
415574	9.4	21.2	401850	9.5	19.6	370917	9.6	20.1	221748	9.7	20.5	385095	9.7	20.9	407461	9.8	20.2
406823	9.4	20.0	428344	9.5	21.2	510319	9.6	20.9	320095	9.7	20.5	400933	9.7	20.8	313065	9.8	19.0
319952	9.4	20.7	28426	9.5	18.6	436107	9.6	21.0	444304	9.7	20.4	228005	9.7	20.0	232444	9.8	20.7
304583	9.4	20.6	317513	9.5	19.7	198158	9.6	19.0	294517	9.7	19.0	396413	9.7	21.2	402355	9.8	21.6
203993	9.4	20.1	89437	9.5	19.1	267015	9.6	20.5	365769	9.7	19.5	143120	9.7	18.7	59082	9.8	17.8
462851	9.4	20.6	285854	9.5	20.2	158171	9.6	18.6	401474	9.7	19.9	321664	9.7	20.8	95939	9.8	19.3
493254	9.4	20.1	437728	9.5	21.0	48111	9.6	19.0	12560	9.7	18.1	506559	9.7	20.6	373460	9.8	21.2
274753	9.4	20.2	338509	9.5	18.7	318332	9.6	19.8	320685	9.7	20.8	333779	9.7	19.8	133719	9.8	19.0
211570	9.4	18.8	508318	9.5	21.3	231792	9.6	22.1	469995	9.7	20.9	468778	9.7	20.6	383608	9.8	20.7
315203	9.4	20.8	514292	9.5	20.4	246654	9.6	19.8	391536	9.7	20.9	112001	9.7	18.9	341184	9.8	20.2
389188	9.4	20.4	514879	9.5	20.4	449314	9.6	20.4	437060	9.7	20.5	183089	9.7	19.5	264704	9.8	20.3
470306	9.4	21.3	86312	9.5	18.9	205040	9.6	19.7	14172	9.7	17.2	238690	9.7	2			

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
428290	9.8	22.3	200963	9.9	18.8	285362	9.9	19.9	430931	10.0	20.1	64260	10.1	19.0	525429	10.1	22.1
4354	9.8	16.3	446651	9.9	20.3	358940	9.9	21.0	14690	10.0	17.4	314042	10.1	18.9	251861	10.1	19.6
504222	9.8	20.7	499612	9.9	19.7	281256	9.9	20.5	460837	10.0	20.7	164456	10.1	20.1	278983	10.1	20.2
466710	9.8	20.6	176669	9.9	20.3	319388	9.9	21.0	523863	10.0	20.9	511393	10.1	20.9	206132	10.1	19.3
396232	9.8	21.3	468189	9.9	19.8	320701	9.9	20.6	120805	10.0	20.2	423122	10.1	20.0	204874	10.1	20.1
13997	9.8	17.0	18888	9.9	17.9	78304	9.9	17.5	161044	10.0	19.0	396890	10.1	18.6	10010	10.1	17.5
34018	9.8	17.4	308535	9.9	19.0	89904	9.9	18.9	60034	10.0	18.5	201949	10.1	18.6	340347	10.1	20.2
123270	9.8	18.6	49302	9.9	18.0	170214	9.9	19.7	209516	10.0	18.3	528188	10.1	21.8	540194	10.1	20.8
424570	9.8	21.0	174141	9.9	20.1	25926	9.9	19.0	459123	10.0	22.1	430678	10.1	19.2	347027	10.1	20.1
158133	9.8	19.8	92113	9.9	18.4	192867	9.9	19.9	67071	10.0	18.4	118444	10.1	17.3	165026	10.1	19.4
235836	9.8	19.1	490587	9.9	20.2	203362	9.9	18.6	292784	10.0	20.2	5212	10.1	16.2	44285	10.1	18.1
263868	9.8	19.8	523449	9.9	21.9	295248	9.9	20.5	106748	10.0	18.9	477674	10.1	21.0	310693	10.1	18.5
494321	9.8	20.9	17187	9.9	16.4	4208	9.9	15.8	404860	10.0	20.3	287120	10.1	20.6	342168	10.1	20.4
495360	9.8	20.3	498108	9.9	20.5	503898	9.9	19.8	258717	10.0	20.2	80526	10.1	18.6	99187	10.1	19.6
157891	9.8	20.2	358413	9.9	21.2	452526	9.9	20.8	315890	10.0	20.8	443575	10.1	20.3	458965	10.1	21.0
353753	9.8	20.5	23939	9.9	18.0	506513	9.9	20.4	29551	10.0	18.3	521186	10.1	20.4	207731	10.1	20.2
212393	9.8	20.7	388994	9.9	18.7	134775	9.9	19.9	208040	10.0	19.4	483293	10.1	20.3	537186	10.1	20.3
481004	9.8	20.3	423689	9.9	21.0	158686	9.9	20.1	90793	10.0	19.0	315320	10.1	20.3	181131	10.1	20.7
296423	9.8	20.0	23378	9.9	19.0	537617	9.9	20.8	71610	10.0	18.6	18308	10.1	18.5	313057	10.2	19.5
197947	9.8	19.4	62578	9.9	17.9	25056	9.9	17.5	35139	10.0	17.6	314567	10.1	20.1	160105	10.2	18.0
212337	9.8	20.6	287236	9.9	19.6	387525	9.9	18.6	237290	10.0	20.3	496754	10.1	20.8	513574	10.2	21.0
514886	9.8	21.9	467197	9.9	20.8	382986	9.9	20.7	63259	10.0	20.1	364715	10.1	20.4	467936	10.2	20.4
449069	9.8	20.3	444240	9.9	21.1	4063	9.9	15.3	432687	10.0	19.5	238012	10.1	20.6	384485	10.2	20.8
380816	9.8	20.9	410735	9.9	20.2	316146	9.9	20.4	357887	10.0	20.3	17610	10.1	16.6	158472	10.2	19.7
33190	9.8	18.9	295529	9.9	20.1	225853	9.9	19.3	426438	10.0	20.0	498400	10.1	20.6	268933	10.2	19.4
288999	9.8	19.1	386793	9.9	20.0	401243	9.9	21.0	418906	10.0	20.4	42933	10.1	17.5	104765	10.2	19.3
158716	9.8	20.1	396879	9.9	19.2	130455	9.9	18.4	264247	10.0	20.0	70489	10.1	19.3	92025	10.2	17.9
518206	9.8	21.2	316387	9.9	19.9	65412	9.9	19.0	137228	10.0	18.9	143930	10.1	19.2	506013	10.2	21.2
44955	9.8	18.7	94766	9.9	18.5	440499	9.9	20.7	442159	10.0	20.1	361985	10.1	21.7	294302	10.2	20.2
314593	9.8	21.1	134695	9.9	17.7	526314	9.9	21.9	176740	10.0	20.2	371983	10.1	21.2	377713	10.2	21.1
348060	9.8	18.9	533854	9.9	21.1	204543	9.9	19.7	18063	10.0	18.1	29071	10.1	17.7	316157	10.2	20.6
128663	9.8	19.8	32347	9.9	18.3	236504	9.9	20.9	248593	10.0	20.8	321533	10.1	21.2	438937	10.2	21.1
440726	9.8	19.8	361519	9.9	20.3	12887	9.9	16.8	496302	10.0	20.9	318926	10.1	20.4	510592	10.2	21.0
118983	9.8	18.9	362577	9.9	20.3	68834	9.9	18.5	378305	10.0	20.4	504488	10.1	21.1	396987	10.2	20.2
293448	9.8	19.7	526287	9.9	21.6	415503	9.9	20.0	244746	10.0	19.7	229232	10.1	19.7	251396	10.2	20.3
8462	9.8	19.0	220255	9.9	18.7	510517	9.9	20.4	25815	10.0	17.6	303958	10.1	20.5	513853	10.2	21.8
35928	9.8	17.3	385808	9.9	19.8	250424	9.9	19.6	222840	10.0	19.5	355633	10.1	20.1	255474	10.2	19.4
292216	9.8	19.2	37485	9.9	18.0	364161	9.9	20.8	520462	10.0	20.7	211192	10.1	20.5	120696	10.2	19.8
362554	9.8	20.6	366006	9.9	20.7	274330	9.9	21.1	454836	10.0	19.9	97504	10.1	18.1	69150	10.2	19.4
519572	9.8	20.4	213263	9.9	19.3	400756	9.9	20.2	360513	10.0	21.0	359581	10.1	19.7	48503	10.2	19.5
457736	9.8	21.7	68711	9.9	19.5	309078	9.9	20.2	102760	10.0	18.7	520161	10.1	21.0	519040	10.2	20.2
77619	9.8	19.8	286360	9.9	19.2	67681	9.9	17.3	126193	10.0	19.4	263794	10.1	20.2	214892	10.2	18.7
177171	9.8	17.9	477023	9.9	20.7	514282	9.9	20.4	181032	10.0	19.2	44301	10.1	18.7	255208	10.2	19.1
21066	9.8	18.2	133342	9.9	19.2	528400	9.9	20.6	100934	10.0	19.8	299194	10.1	21.4	267206	10.2	19.9
533668	9.8	21.6	97296	9.9	18.4	325026	9.9	21.5	512050	10.0	21.6	355066	10.1	20.9	527935	10.2	22.0
321651	9.8	20.0	23879	9.9	17.8	426470	9.9	19.6	141456	10.0	19.9	93378	10.1	18.7	315389	10.2	20.9
476238	9.8	20.1	63152	9.9	16.6	389574	9.9	20.2	357706	10.0	20.2	482742	10.1	21.0	255606	10.2	20.4
393667	9.8	19.6	285421	9.9	20.4	162047	9.9	19.3	194852	10.0	19.5	24505	10.1	18.2	342462	10.2	20.1
346538	9.8	20.2	61914	9.9	17.3	92215	9.9	18.3	69981	10.0	18.7	251317	10.1	18.9	149115	10.2	19.6
74889	9.8	19.0	423872	9.9	20.4	200793	9.9	18.8	319548	10.0	20.7	172458	10.1	18.8	44579	10.2	18.3
363979	9.8	21.0	98577	9.9	18.8	44461	9.9	18.2	482202	10.0	20.2	115661	10.1	19.2	456631	10.2	20.2
350336	9.8	20.1	322571	9.9	21.0	114405	9.9	17.9	155157	10.0	19.4	533297	10.1	21.1	131006	10.2	19.2
126395	9.8	19.4	406543	9.9	19.0	249527	9.9	20.9	389130	10.0	21.1	312328	10.1	19.9	41256	10.2	18.2
513842	9.8	22.3	309780	9.9	20.7	523211	9.9	21.0	224820	10.0	20.2	111620	10.1	19.4	87550	10.2	18.1
62120	9.9	17.5	205799	9.9	18.5	474390	9.9	21.1	296809	10.0	19.9	65021	10.1	19.6	117743	10.2	20.3
449971	9.9	20.3	159972	9.9	19.9	158351	9.9	19.8	361435	10.0	20.7	386376	10.1	20.2	132596	10.2	20.0
370912	9.9	20.0	360426	9.9	21.6	140805	9.9	19.8	21946	10.0	18.2	182168	10.1	18.8	383895	10.2	19.8
154556	9.9	19.5	346689	9.9	20.1	275042	9.9	19.3	357810	10.1	21.1	478503	10.1	20.7	480461	10.2	20.9
455417	9.9	20.4	259672	9.9	19.9	254191	9.9	20.0	426876	10.1	20.0	446269	10.1	19.8	317739	10.2	20.0
390908	9.9	20.5	420451	9.9	20.8	498462	9.9	21.1	33654	10.1	17.5	214960	10.1	20.6	287180	10.2	20.9
459593	9.9	20.6	169685	9.9	19.5	488411	9.9	20.6	65386	10.1	16.9	342280	10.1	20.7	245577	10.2	20.4
274479	9.9	19.5	199750	9.9	19.1	98320	9.9	18.3	220867	10.1	20.0	24217	10.1	17.9	530532	10.2	21.3
338678	9.9	20.1	16888	9.9	17.5	100381	9.9	18.9	3396	10.1	15.2	334359	10.1	19.4	154174	10.2	19.6
515659	9.9	20.6	15277	9.9	17.7	289642	9.9	20.8	382102	10.1	21.2	239534	10.1	18.7	538834	10.2	22.2
465383	9.9	20.9	338735	9.9	19.6	263752	9.9	20.0	255456	10.1	19.4	12519	10.1	18.7	50284	10.2	18.8
237470	9.9	19.9	66295	9.9	18.3	427536	9.9	20.0	427347	10.1	20.1	477947	10.1	20.9	129734	10.2	18.3
322703	9.9	19.9	220888	9.9	19.7	63113	9.9	19.0	435714	10.1	20.9	327630	10.1	20.8	513753	10.2	20.1
510981	9.9	21.3	172225	9.9	19.5	263797	9.9	19.8	25895	10.1	18.4	298238	10.1	19.1	126389	10.2	19.3
324417	9.9	19.1	222209	9.9	19.4	16099	9.9	17.3	463894	10.1	20.6	396819	10.1	20.2	531567	10.2	20.3
376905	9.9	20.4	291010	9.9	20.2	297572	9.9	19.7	311443	10.1	20.7						

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
124134	10.2	18.8	527955	10.3	21.7	506597	10.4	19.9	529981	10.4	20.9	183786	10.5	20.7	348747	10.6	20.1
88210	10.2	17.9	66293	10.3	18.4	209522	10.4	18.3	498501	10.4	20.2	481333	10.5	20.6	192974	10.6	19.7
67018	10.2	18.3	392364	10.3	21.1	102147	10.4	17.8	48093	10.4	19.0	401648	10.5	20.6	521819	10.6	20.3
143287	10.2	19.4	533886	10.3	20.2	191913	10.4	20.1	505391	10.4	21.7	344758	10.5	19.7	130315	10.6	19.4
168083	10.2	20.7	220522	10.3	20.6	71073	10.4	18.6	402503	10.4	20.8	258906	10.5	20.6	498502	10.6	20.5
91660	10.2	18.2	308085	10.3	19.9	137770	10.4	19.0	257574	10.4	20.5	46106	10.5	18.2	362599	10.6	20.3
318444	10.2	19.0	214472	10.3	20.4	89673	10.4	18.8	491686	10.4	20.7	130366	10.5	19.7	304823	10.6	20.2
193641	10.2	19.4	322558	10.3	19.7	98954	10.4	19.6	205293	10.4	19.0	191738	10.5	19.3	509697	10.6	21.2
133347	10.2	19.2	282392	10.3	19.2	509162	10.4	20.4	58698	10.4	19.4	56767	10.5	18.3	376919	10.6	19.9
361529	10.2	19.8	131030	10.3	18.8	53732	10.4	19.5	348470	10.4	20.4	106537	10.5	18.7	49154	10.6	19.1
59687	10.2	19.1	531506	10.3	20.9	207466	10.4	20.1	308462	10.4	20.1	509845	10.5	20.3	361049	10.6	20.4
508964	10.2	19.8	191681	10.3	19.3	133471	10.4	18.9	328790	10.4	19.2	529973	10.5	20.4	515394	10.6	21.6
478572	10.2	20.6	359020	10.3	19.8	115919	10.4	19.5	408653	10.4	20.8	496130	10.5	19.1	147690	10.6	19.4
103495	10.2	18.6	263850	10.3	21.2	424596	10.4	21.3	519690	10.4	20.2	108685	10.5	17.7	250593	10.6	19.1
144999	10.2	20.2	382090	10.3	20.1	510728	10.4	18.5	330760	10.4	19.5	245364	10.5	19.9	244342	10.6	18.5
364512	10.2	21.4	532896	10.3	20.9	522872	10.4	20.7	293686	10.4	18.7	322057	10.5	19.6	175506	10.6	19.8
154228	10.2	19.2	122438	10.3	19.2	466121	10.4	21.4	361067	10.4	20.5	382014	10.5	20.0	53211	10.6	19.7
97277	10.2	16.7	256673	10.3	20.9	66613	10.4	17.9	32848	10.4	18.2	291407	10.5	19.0	26654	10.6	17.7
405877	10.2	20.3	64868	10.3	18.4	167500	10.4	18.5	173763	10.4	19.5	417456	10.5	19.1	435658	10.6	20.9
218971	10.2	18.7	499017	10.3	20.4	121512	10.4	18.7	537695	10.4	20.6	361100	10.5	19.5	447752	10.6	20.4
384823	10.2	20.7	311343	10.3	20.2	38088	10.4	17.8	231254	10.4	20.4	314563	10.5	20.5	79135	10.6	17.9
533987	10.2	19.8	404088	10.3	20.0	482372	10.4	20.6	162138	10.4	19.4	515017	10.5	21.3	390153	10.6	20.5
238663	10.2	20.1	69487	10.3	16.3	399865	10.4	20.5	343304	10.4	20.7	340330	10.5	19.6	47544	10.6	17.5
297652	10.2	20.4	318194	10.3	19.8	160552	10.4	17.6	291664	10.4	19.4	111233	10.5	20.5	286578	10.6	20.7
426242	10.2	20.9	137547	10.3	20.8	301022	10.4	21.3	186380	10.4	19.7	478916	10.5	20.4	197370	10.6	19.6
452149	10.2	20.6	480058	10.3	19.7	59471	10.4	19.8	389212	10.4	20.1	362788	10.5	20.4	116323	10.6	19.6
359534	10.2	20.7	382395	10.3	20.8	106099	10.4	18.9	108248	10.4	19.1	199605	10.5	20.6	46143	10.6	18.9
66686	10.2	18.1	512801	10.3	21.1	343959	10.4	21.7	322538	10.4	20.0	355612	10.5	20.2	195283	10.6	20.2
195064	10.2	20.1	397669	10.3	21.2	181685	10.4	18.1	414117	10.4	19.8	212952	10.5	19.7	443517	10.6	22.0
369735	10.2	19.7	309233	10.3	20.9	276011	10.4	19.4	54699	10.4	18.7	12463	10.5	17.1	538749	10.6	21.4
214790	10.2	20.2	149941	10.3	20.5	302194	10.4	19.8	358435	10.4	20.9	51033	10.5	17.7	152099	10.6	19.8
23356	10.2	17.9	249082	10.3	20.7	540312	10.4	21.0	192524	10.4	19.7	229895	10.5	19.1	262933	10.6	19.6
337	10.2	11.3	170204	10.3	20.0	503682	10.4	20.2	440701	10.4	19.5	9636	10.5	18.4	291388	10.6	20.2
311979	10.2	20.8	389199	10.3	21.3	3449	10.4	16.3	337200	10.4	18.7	429678	10.5	21.5	389058	10.6	19.9
220846	10.2	19.5	297070	10.3	20.4	509805	10.4	20.5	251550	10.4	20.4	124884	10.5	17.5	413316	10.6	20.8
393977	10.2	20.6	434132	10.3	20.6	218097	10.4	20.0	511590	10.4	21.4	254561	10.5	20.8	315454	10.6	18.2
490722	10.2	21.0	216965	10.3	19.1	100767	10.4	19.7	361949	10.4	20.9	20582	10.5	18.0	355583	10.6	20.9
219094	10.2	19.1	84430	10.3	19.0	475972	10.4	21.6	537345	10.4	21.6	181569	10.5	20.7	542397	10.6	21.2
537084	10.2	22.0	251974	10.3	19.6	34827	10.4	17.6	519536	10.4	20.5	533103	10.5	21.2	16154	10.6	17.2
523065	10.2	21.0	42832	10.3	17.8	9354	10.4	16.9	417914	10.4	21.1	441710	10.5	20.5	472083	10.6	20.1
700	10.2	14.3	234722	10.3	19.9	276106	10.4	20.1	97158	10.4	19.0	129481	10.5	18.9	139108	10.6	20.3
214571	10.2	20.4	430851	10.3	20.1	435759	10.4	19.0	255081	10.4	20.6	511788	10.5	21.3	188749	10.6	20.0
468011	10.2	20.6	334704	10.3	20.3	442569	10.4	19.8	129548	10.4	19.9	158230	10.5	19.7	330622	10.6	21.1
508726	10.2	20.6	432799	10.3	20.0	219730	10.4	18.7	245742	10.5	19.8	456781	10.5	20.9	451597	10.6	21.4
309076	10.3	20.0	392026	10.3	21.3	454479	10.4	20.2	42447	10.5	18.5	483338	10.5	20.6	415077	10.6	20.6
494252	10.3	20.6	280052	10.3	19.9	91614	10.4	18.6	62421	10.5	19.1	352398	10.5	20.3	516286	10.6	20.2
25224	10.3	17.7	196219	10.3	18.5	137771	10.4	18.3	159728	10.5	19.9	179514	10.5	19.9	89864	10.6	19.1
465879	10.3	19.0	533765	10.3	20.2	440657	10.4	20.4	99158	10.5	19.9	22796	10.5	17.6	120854	10.6	18.7
356273	10.3	20.7	413153	10.3	20.0	214941	10.4	18.7	227871	10.5	20.2	140034	10.5	18.4	315789	10.6	20.1
504716	10.3	20.5	2308	10.3	16.0	416734	10.4	21.2	251823	10.5	19.1	75261	10.5	18.5	94648	10.6	19.2
258790	10.3	20.3	390437	10.3	19.9	190197	10.4	19.6	363713	10.5	19.5	538818	10.5	21.6	225623	10.6	19.3
433294	10.3	21.5	74126	10.3	18.7	262580	10.4	20.7	401816	10.5	20.8	500771	10.5	21.3	362987	10.6	21.1
356205	10.3	20.1	48875	10.3	18.3	254218	10.4	19.4	458807	10.5	21.0	314406	10.5	19.3	24198	10.6	16.6
42732	10.3	17.7	57989	10.3	19.1	315156	10.4	19.5	315945	10.5	20.8	440466	10.5	20.8	344452	10.6	21.4
437389	10.3	19.7	105542	10.3	18.6	85652	10.4	19.4	454429	10.5	20.8	49731	10.5	18.1	217346	10.6	19.6
197570	10.3	20.4	319187	10.3	21.6	396670	10.4	20.6	508224	10.5	21.7	217378	10.5	19.3	341095	10.6	19.9
47768	10.3	18.6	344462	10.3	20.9	118883	10.4	18.5	343957	10.5	19.8	325949	10.5	21.6	262833	10.6	19.4
280964	10.3	21.3	508175	10.3	21.6	338582	10.4	19.8	443782	10.5	21.0	512465	10.5	20.7	128648	10.6	19.0
305289	10.3	20.5	387927	10.3	20.0	182199	10.4	19.9	318901	10.5	19.6	131024	10.5	18.3	475529	10.6	20.4
32687	10.3	18.5	42387	10.3	18.3	184303	10.4	20.4	166486	10.5	19.5	246198	10.5	21.3	171874	10.6	19.6
18332	10.3	17.6	167133	10.3	19.1	49698	10.4	18.3	481058	10.5	20.8	393190	10.5	20.7	55782	10.6	19.4
361534	10.3	20.7	43208	10.3	17.2	432690	10.4	20.1	481052	10.5	22.1	493605	10.5	20.6	311486	10.6	20.6
116727	10.3	19.1	398091	10.3	20.3	67602	10.4	17.8	520946	10.5	20.8	444955	10.5	21.2	392436	10.6	20.6
74067	10.3	17.9	211051	10.3	20.3	309128	10.4	20.8	401599	10.5	20.5	182020	10.5	20.1	297190	10.6	19.5
26890	10.3	16.3	285124	10.3	20.2	20861	10.4	18.0	471157	10.5	19.7	207489	10.5	20.6	219001	10.6	18.6
276013	10.3	20.0	503576	10.3	20.8	49744	10.4	19.3	328126	10.5	21.3	358844	10.5	21.0	387094	10.6	19.7
37212	10.3	18.4	465103	10.3	20.6	398802	10.4	20.5	203423	10.5	19.2	273927	10.6	18.8	310670	10.6	19.8
93308	10.3	18.7	385034	10.3	21.0	363085	10.4	19.6	267010	10.5	20.6	481478	10.6	20.4	408735	10.6	21.4
421575	10.3	20.2	392320	10.3	21.2	249553	10										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
100192	10.6	18.4	219971	10.7	20.9	286738	10.8	21.0	84282	10.8	19.1	361504	10.9	20.6	368369	10.9	20.7
25561	10.6	17.9	443150	10.7	21.7	371406	10.8	20.6	252885	10.8	20.0	313969	10.9	20.5	387956	10.9	19.7
422910	10.6	20.2	228090	10.7	19.8	218092	10.8	19.6	435718	10.8	20.4	532048	10.9	21.4	531195	10.9	21.5
437589	10.6	21.2	159353	10.7	20.7	307583	10.8	21.1	111225	10.8	20.0	511417	10.9	21.4	16152	10.9	18.3
10389	10.6	15.6	419684	10.7	20.3	255427	10.8	19.4	373148	10.8	21.3	47752	10.9	18.4	48181	10.9	18.8
252176	10.6	19.8	61426	10.7	17.4	70924	10.8	19.5	423157	10.8	20.5	328284	10.9	18.9	146771	10.9	19.5
249636	10.6	18.8	183647	10.7	19.3	533168	10.8	21.7	137689	10.8	19.3	187484	10.9	19.2	313333	10.9	19.6
99486	10.6	18.5	302146	10.7	19.8	361587	10.8	19.4	110629	10.8	19.7	489670	10.9	20.7	86121	10.9	19.0
368936	10.6	19.4	176341	10.7	18.7	81418	10.8	19.4	120098	10.8	19.4	231747	10.9	20.3	404525	10.9	19.9
12405	10.6	17.9	388167	10.7	20.7	338000	10.8	21.7	146031	10.8	20.3	72951	10.9	19.6	170619	10.9	19.6
6609	10.6	15.9	446142	10.7	20.6	161707	10.8	19.4	424391	10.8	20.6	254669	10.9	19.0	352604	10.9	21.4
435775	10.6	20.8	86799	10.7	18.8	311152	10.8	18.1	331348	10.8	21.3	360942	10.9	19.8	311915	10.9	19.9
147182	10.6	19.1	478354	10.7	19.3	435772	10.8	20.1	387741	10.8	20.0	417426	10.9	20.8	337974	10.9	20.4
157208	10.6	20.0	116954	10.7	19.6	431910	10.8	20.7	191281	10.8	19.9	107100	10.9	18.8	414064	10.9	19.7
100145	10.6	19.5	504462	10.7	21.6	101612	10.8	19.5	316538	10.8	19.8	510680	10.9	20.6	224614	10.9	21.0
498306	10.6	20.1	35560	10.7	19.3	39880	10.8	18.1	244773	10.8	19.5	188172	10.9	20.0	408157	10.9	21.4
344958	10.6	18.8	446580	10.7	20.9	237839	10.8	19.5	252886	10.8	21.1	61440	10.9	18.7	417488	10.9	20.2
383847	10.6	20.9	377127	10.7	22.7	188175	10.8	20.3	264983	10.8	19.9	512522	10.9	20.9	148340	10.9	20.3
473298	10.6	20.3	333898	10.7	19.0	240447	10.8	18.5	400140	10.8	20.5	53464	10.9	18.8	129041	10.9	19.2
17448	10.6	17.9	138923	10.7	20.2	169819	10.8	19.6	39079	10.8	17.4	12089	10.9	18.2	87589	10.9	19.2
471519	10.6	22.1	98864	10.7	18.4	352123	10.8	20.9	118061	10.9	18.5	427924	10.9	21.4	441741	10.9	21.6
254906	10.6	20.2	36653	10.7	17.8	525574	10.8	20.2	259024	10.9	19.1	8710	10.9	18.2	515329	10.9	21.1
478020	10.6	20.5	41078	10.7	18.7	211097	10.8	20.7	159416	10.9	19.5	424561	10.9	20.7	118530	10.9	20.6
393304	10.6	20.7	31980	10.7	17.9	447698	10.8	21.0	250691	10.9	20.1	196231	10.9	19.5	481326	10.9	20.4
107355	10.6	19.0	263280	10.7	19.6	422322	10.8	20.5	288870	10.9	19.8	385614	10.9	20.9	90928	10.9	19.8
420465	10.6	21.1	465835	10.7	19.9	349812	10.8	20.4	474493	10.9	20.3	366556	10.9	19.9	400963	10.9	21.4
477109	10.6	21.3	40813	10.7	18.8	403903	10.8	20.8	168586	10.9	18.4	506956	10.9	20.3	375796	10.9	20.5
309602	10.6	21.3	80656	10.7	18.5	451609	10.8	20.9	311119	10.9	20.2	24485	10.9	18.3	121328	10.9	19.1
121805	10.6	19.3	6393	10.7	16.7	187355	10.8	20.4	49208	10.9	19.0	509160	10.9	21.4	459960	10.9	20.0
288171	10.6	19.7	12618	10.7	18.5	506545	10.8	20.9	110901	10.9	19.8	510020	10.9	21.4	287987	10.9	19.7
359335	10.6	21.0	343779	10.7	21.9	428940	10.8	19.9	288431	10.9	20.9	154484	10.9	20.5	334703	10.9	21.6
240650	10.6	20.3	445012	10.7	21.5	257138	10.8	21.1	509402	10.9	21.8	217134	10.9	19.6	542791	10.9	20.3
107221	10.6	19.9	340019	10.7	21.6	210419	10.8	19.6	291759	10.9	20.3	40196	10.9	17.7	340946	10.9	21.7
522992	10.6	20.9	175871	10.7	19.1	107957	10.8	19.4	45938	10.9	17.9	366703	10.9	19.7	372154	10.9	19.6
506330	10.6	21.2	325861	10.7	19.8	187406	10.8	18.3	210919	10.9	20.0	300690	10.9	20.4	3356	10.9	16.0
161079	10.6	20.5	508351	10.7	19.9	133747	10.8	18.2	33488	10.9	17.9	376179	10.9	20.8	476861	11.0	20.2
86701	10.6	20.1	520311	10.7	21.9	34969	10.8	18.0	430584	10.9	20.4	170721	10.9	19.0	481752	11.0	20.8
316169	10.6	21.1	211060	10.7	20.0	199198	10.8	19.4	448735	10.9	20.6	508416	10.9	20.3	418921	11.0	21.5
256536	10.6	19.7	402803	10.7	21.3	355836	10.8	20.1	164028	10.9	18.6	135836	10.9	19.4	123655	11.0	18.2
153200	10.6	18.7	313739	10.7	20.1	266268	10.8	19.0	200028	10.9	19.2	183625	10.9	18.7	445826	11.0	20.0
87821	10.6	18.4	464863	10.7	21.0	516378	10.8	20.3	137994	10.9	19.6	439673	10.9	20.7	346637	11.0	20.2
399084	10.6	20.6	61446	10.7	19.1	180874	10.8	20.3	392458	10.9	21.0	95526	10.9	19.5	179435	11.0	19.6
499521	10.7	21.7	294562	10.7	20.5	227442	10.8	18.9	443574	10.9	21.0	260807	10.9	19.9	316102	11.0	19.8
386813	10.7	21.2	210768	10.7	19.0	360007	10.8	19.6	198909	10.9	19.4	261271	10.9	20.1	512324	11.0	19.6
57899	10.7	18.7	445470	10.7	20.4	202464	10.8	19.8	81094	10.9	18.9	46715	10.9	19.7	431497	11.0	18.9
62675	10.7	19.1	133491	10.7	18.6	503357	10.8	21.1	125558	10.9	19.3	142230	10.9	19.2	537601	11.0	21.6
176289	10.7	19.6	226707	10.7	20.9	87315	10.8	19.1	93672	10.9	18.8	436530	10.9	21.6	390025	11.0	20.6
537008	10.7	22.0	151324	10.7	19.9	175750	10.8	20.5	504489	10.9	20.6	353587	10.9	20.4	358416	11.0	20.4
384965	10.7	21.0	20782	10.7	17.1	527634	10.8	20.4	48954	10.9	17.9	360441	10.9	20.8	219480	11.0	19.3
155849	10.7	19.7	475623	10.7	19.8	189580	10.8	19.0	96369	10.9	17.3	465366	10.9	20.4	89529	11.0	19.3
56350	10.7	18.7	514032	10.7	21.8	408709	10.8	20.5	122731	10.9	18.9	497718	10.9	19.7	91840	11.0	20.1
483735	10.7	20.5	11251	10.7	18.9	166406	10.8	18.1	32677	10.9	19.1	166515	10.9	20.2	478648	11.0	21.5
342386	10.7	20.6	203258	10.7	19.3	468743	10.8	21.2	296783	10.9	19.9	48546	10.9	18.3	388636	11.0	20.6
261018	10.7	19.8	366572	10.7	19.4	9577	10.8	19.0	153295	10.9	20.2	332528	10.9	20.0	503623	11.0	21.0
476759	10.7	20.3	307018	10.7	19.4	202532	10.8	21.0	237184	10.9	19.7	521421	10.9	20.4	449393	11.0	20.4
266656	10.7	20.4	357881	10.7	20.1	255888	10.8	20.1	200546	10.9	19.7	356253	10.9	21.3	493747	11.0	20.0
375163	10.7	21.4	228321	10.7	20.1	448073	10.8	19.2	131980	10.9	19.5	145718	10.9	20.5	361845	11.0	21.0
149729	10.7	19.0	167212	10.7	18.1	40167	10.8	18.4	245556	10.9	19.4	450119	10.9	20.5	128764	11.0	19.7
248950	10.7	19.9	524788	10.7	20.4	315911	10.8	19.3	518184	10.9	21.7	10989	10.9	17.8	99950	11.0	19.1
169935	10.7	19.4	63389	10.7	19.3	354543	10.8	20.8	58480	10.9	19.1	359333	10.9	21.1	149525	11.0	19.5
508425	10.7	20.2	102691	10.7	18.9	31158	10.8	18.2	126766	10.9	19.2	477859	10.9	21.5	189528	11.0	18.6
236973	10.7	20.4	209283	10.7	18.7	509381	10.8	21.3	154955	10.9	18.5	379732	10.9	20.1	97765	11.0	17.7
345987	10.7	19.4	208621	10.7	20.8	199241	10.8	20.4	291448	10.9	20.0	448393	10.9	20.9	46656	11.0	17.7
392219	10.7	20.6	133227	10.7	17.6	516928	10.8	20.9	112493	10.9	16.6	525102	10.9	20.1	238865	11.0	20.3
169884	10.7	18.9	384027	10.7	20.5	215107	10.8	19.7	481149	10.9	20.1	201427	10.9	19.2	322196	11.0	20.0
395665	10.7	19.8	438011	10.7	19.4	1739	10.8	15.8	134526	10.9	18.4	188548	10.9	19.4	442134	11.0	20.9
535560	10.7	20.8	466244	10.7	20.9	422461	10.8	20.5	231922	10.9	21.0	498575	10.9	19.9	321269	11.0	19.8
91066	10.7	17.2	322194	10.7	20.0	290670	10.8	20.5	26801	10.9	19.0	525505	10.9	21.9	376635	11.0	19.2
316662	10.7	20.0	305581	10.7	20.2	319207</											



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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
356905	11.0	20.6	389858	11.1	19.2	122319	11.2	18.1	263407	11.2	20.6	262976	11.3	20.7	478769	11.4	20.0
428058	11.0	21.2	133965	11.1	20.0	532413	11.2	21.4	205682	11.2	19.0	211169	11.3	21.1	165185	11.4	19.9
157879	11.0	18.8	164334	11.1	19.8	56374	11.2	19.7	12083	11.2	16.7	293505	11.3	20.6	102351	11.4	18.2
130066	11.0	18.7	521535	11.1	20.9	209610	11.2	19.5	446163	11.2	21.1	121421	11.3	19.5	416439	11.4	20.2
498143	11.0	21.5	385104	11.1	20.2	323386	11.2	18.8	35090	11.2	17.3	200735	11.3	18.4	130929	11.4	19.0
508160	11.0	21.2	324373	11.1	20.0	215155	11.2	19.9	509656	11.2	21.6	316987	11.3	21.1	510855	11.4	21.7
249803	11.0	18.8	306999	11.1	20.0	277476	11.2	19.8	390902	11.2	21.3	154197	11.3	20.0	298128	11.4	20.9
524432	11.0	20.3	263803	11.1	19.7	345913	11.2	21.0	150327	11.2	20.4	482783	11.3	20.8	495189	11.4	22.9
295410	11.1	20.3	367711	11.1	20.7	216435	11.2	20.3	34425	11.3	18.3	490877	11.3	19.6	251874	11.4	20.4
77015	11.1	19.7	539037	11.1	21.0	251895	11.2	19.2	325093	11.3	20.4	463564	11.3	21.4	423970	11.4	20.8
261666	11.1	19.9	498493	11.1	20.6	11765	11.2	17.8	13593	11.3	16.8	392411	11.3	20.4	77094	11.4	19.4
266550	11.1	18.9	10868	11.1	17.4	288985	11.2	19.8	359892	11.3	20.7	539405	11.3	20.3	203318	11.4	18.6
312853	11.1	19.8	157365	11.1	19.1	448078	11.2	21.4	31358	11.3	18.6	318593	11.3	19.8	398222	11.4	20.0
163369	11.1	19.3	92252	11.1	18.8	316130	11.2	19.9	5993	11.3	16.8	392438	11.3	20.1	376880	11.4	19.9
61348	11.1	16.7	107884	11.1	19.2	244646	11.2	20.2	181158	11.3	19.7	169129	11.3	19.8	8201	11.4	20.0
359594	11.1	20.4	320059	11.1	20.8	132469	11.2	19.6	437625	11.3	21.0	371933	11.3	20.5	71308	11.4	18.2
94302	11.1	17.7	43459	11.1	19.4	531737	11.2	20.2	103708	11.3	20.1	245544	11.3	19.7	171151	11.4	19.9
365532	11.1	21.1	392440	11.1	20.0	221747	11.2	19.5	535588	11.3	21.2	410288	11.3	19.4	433675	11.4	20.6
235263	11.1	20.3	45108	11.1	18.6	26337	11.2	18.6	163352	11.3	19.3	196182	11.3	19.9	358881	11.4	21.2
305570	11.1	20.2	355813	11.1	21.1	264150	11.2	20.3	284923	11.3	21.2	390055	11.3	20.4	215777	11.4	19.7
289820	11.1	20.9	249050	11.1	20.4	415792	11.2	21.1	393206	11.3	21.0	402380	11.3	20.7	538798	11.4	21.2
86317	11.1	18.9	92439	11.1	18.6	91232	11.2	18.3	100911	11.3	20.3	25264	11.3	18.0	387114	11.4	20.8
509878	11.1	21.7	360273	11.1	19.5	321444	11.2	20.0	458141	11.3	21.3	537376	11.3	21.2	314132	11.4	21.5
384741	11.1	20.3	383905	11.1	20.3	265804	11.2	19.8	391241	11.3	20.5	477249	11.3	20.9	510021	11.4	21.7
11610	11.1	16.5	252923	11.1	20.4	241956	11.2	20.2	531415	11.3	20.4	384536	11.3	20.1	151396	11.4	19.9
510682	11.1	19.8	154215	11.1	19.4	123809	11.2	18.6	95959	11.3	19.7	322555	11.3	21.0	53261	11.4	18.9
298292	11.1	20.0	355	11.1	13.2	463512	11.2	20.5	235833	11.3	18.7	382006	11.3	19.8	408216	11.4	21.3
434091	11.1	21.4	137923	11.1	20.0	466527	11.2	19.4	188539	11.3	18.7	78863	11.3	18.3	15739	11.4	17.6
127591	11.1	19.4	136445	11.1	20.3	467941	11.2	21.4	305316	11.3	19.9	21037	11.3	17.9	76617	11.4	19.0
337212	11.1	19.2	540727	11.1	20.7	285390	11.2	18.7	420874	11.3	19.8	167730	11.3	20.6	333598	11.4	20.2
434705	11.1	20.5	313908	11.1	20.1	981	11.2	14.6	41420	11.3	17.6	58440	11.3	19.8	35049	11.4	18.8
6151	11.1	15.8	156732	11.1	19.3	424169	11.2	21.4	390897	11.3	21.6	534627	11.4	22.3	244229	11.4	20.1
132649	11.1	18.7	252939	11.1	20.7	515986	11.2	20.9	183241	11.3	19.7	514676	11.4	20.4	154151	11.4	20.9
364503	11.1	21.2	414757	11.1	21.5	322007	11.2	19.9	229813	11.3	20.2	282727	11.4	20.2	310688	11.4	20.5
257551	11.1	19.4	463714	11.1	19.3	17197	11.2	18.1	66125	11.3	17.7	488652	11.4	19.3	513337	11.4	21.0
131229	11.1	19.2	473811	11.1	20.8	456173	11.2	21.7	93342	11.3	18.6	249757	11.4	20.1	484787	11.4	20.3
536228	11.1	21.4	152073	11.1	19.5	7533	11.2	16.9	465315	11.3	20.6	112136	11.4	19.2	164171	11.4	18.4
10101	11.1	16.3	498510	11.1	21.5	449294	11.2	20.1	404060	11.3	20.6	487668	11.4	20.4	273950	11.4	20.1
201661	11.1	19.0	383258	11.1	19.9	135653	11.2	19.0	106370	11.3	19.1	479099	11.4	20.8	164483	11.4	19.6
521410	11.1	20.8	144628	11.1	19.6	319355	11.2	20.3	36500	11.3	18.5	92281	11.4	19.3	346658	11.4	20.2
237592	11.1	20.5	213231	11.1	19.0	494853	11.2	19.9	386790	11.3	21.3	38614	11.4	19.0	252209	11.4	19.1
55848	11.1	18.5	406738	11.1	20.2	120456	11.2	19.4	535828	11.3	22.0	440307	11.4	19.9	396442	11.4	20.3
384816	11.1	19.9	285459	11.2	19.7	253630	11.2	18.8	446962	11.3	21.1	475398	11.4	21.7	398635	11.4	20.3
286811	11.1	20.2	331907	11.2	19.2	70707	11.2	18.5	502296	11.3	20.8	443593	11.4	20.1	261618	11.4	20.2
344792	11.1	18.4	108392	11.2	20.0	1903	11.2	15.0	89559	11.3	18.7	112843	11.4	19.9	39284	11.4	18.9
276074	11.1	21.1	43248	11.2	18.2	542720	11.2	20.7	308609	11.3	18.6	347867	11.4	20.0	8115	11.4	17.2
434654	11.1	21.1	374020	11.2	20.8	320375	11.2	20.5	188737	11.3	19.4	401262	11.4	20.3	512510	11.4	20.5
400517	11.1	19.6	316081	11.2	21.2	43546	11.2	18.8	315077	11.3	20.4	187076	11.4	19.4	24701	11.4	18.2
393225	11.1	20.6	479768	11.2	21.0	306336	11.2	20.5	474680	11.3	20.7	512860	11.4	20.9	367121	11.4	20.4
299818	11.1	20.3	401466	11.2	21.1	257564	11.2	18.8	307026	11.3	19.6	374348	11.4	19.1	13349	11.4	18.1
17611	11.1	17.6	235192	11.2	19.4	168471	11.2	19.4	452152	11.3	20.5	17282	11.4	17.1	60097	11.4	19.4
409284	11.1	19.9	389704	11.2	19.9	351864	11.2	19.9	257731	11.3	19.9	470767	11.4	19.9	301300	11.4	20.2
126728	11.1	18.4	158945	11.2	18.7	101481	11.2	18.1	390011	11.3	18.8	366457	11.4	21.1	509125	11.4	20.5
33718	11.1	16.7	390856	11.2	19.9	529675	11.2	21.6	241528	11.3	21.1	452198	11.4	19.5	269529	11.4	21.0
116688	11.1	18.7	293837	11.2	20.4	215637	11.2	20.5	20736	11.3	16.9	89590	11.4	19.5	250409	11.4	19.1
202589	11.1	20.2	527953	11.2	21.7	355766	11.2	20.7	260232	11.3	20.3	311520	11.4	19.9	470677	11.4	19.4
20716	11.1	18.0	248598	11.2	20.7	103009	11.2	16.9	117474	11.3	20.1	450711	11.4	21.4	156667	11.4	19.7
158320	11.1	18.7	539218	11.2	21.8	163125	11.2	18.1	28046	11.3	17.2	166539	11.4	19.2	166974	11.4	19.5
144948	11.1	20.3	119330	11.2	19.2	505821	11.2	20.4	469557	11.3	20.3	457591	11.4	21.4	24628	11.4	18.8
491756	11.1	20.9	48169	11.2	18.4	125757	11.2	19.5	266232	11.3	20.2	257713	11.4	19.5	94291	11.4	18.7
384525	11.1	21.2	243996	11.2	19.6	392316	11.2	20.3	6727	11.3	16.3	118786	11.4	18.0	316156	11.4	20.1
15240	11.1	19.2	61732	11.2	19.0	273814	11.2	20.7	42609	11.3	19.0	172518	11.4	19.7	524134	11.4	19.6
221913	11.1	20.1	205191	11.2	20.2	298719	11.2	18.9	80430	11.3	19.5	218447	11.4	19.7	386427	11.4	20.7
443505	11.1	20.1	175154	11.2	20.7	103642	11.2	19.4	112053	11.3	20.2	497461	11.4	19.6	366691	11.5	21.4
485293	11.1	20.5	133272	11.2	19.2	225212	11.2	19.2	223251	11.3	19.2	441387	11.4	20.6	285454	11.5	19.0
517206	11.1	20.4	495851	11.2	20.2	26510	11.2	19.0	362918	11.3	19.6	295254	11.4	20.2	59246	11.5	19.0
228620	11.1	18.9	385569	11.2	19.6	207468	11.2	20.0	520936	11.3	20.2	24282	11.4	17.6	512124	11.5	19.9
540361	11.1	20.3	86225	11.2	17.9	395729	11.2	19.9	472026	11.3	20.4	354752	11.4	20.5	237471	11.5	20.4
155846	11.1	19.2	454015	11.2	21.0	177347	11.2										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
281999	11.5	19.2	207749	11.5	19.1	61478	11.6	19.3	93157	11.7	17.3	181633	11.7	20.4	155325	11.8	17.8
338618	11.5	19.6	323592	11.5	19.7	96130	11.6	18.8	256522	11.7	19.9	263814	11.7	19.8	483202	11.8	20.4
322776	11.5	20.5	160208	11.5	20.6	466312	11.6	20.8	446228	11.7	21.7	139179	11.7	20.3	537418	11.8	21.9
9237	11.5	17.2	403674	11.5	20.9	225878	11.6	18.2	121282	11.7	19.7	347851	11.7	21.1	263687	11.8	19.8
188465	11.5	20.1	249005	11.5	19.5	189202	11.6	20.1	300255	11.7	21.3	327744	11.8	19.7	437761	11.8	21.1
239272	11.5	20.1	36336	11.5	17.4	529581	11.6	21.1	5924	11.7	16.7	306135	11.8	20.3	528142	11.8	21.2
105651	11.5	18.4	329194	11.5	21.0	524799	11.6	19.6	473064	11.7	20.3	215676	11.8	18.9	356237	11.8	20.4
207397	11.5	19.2	155858	11.5	18.3	198210	11.6	20.6	216636	11.7	20.0	514735	11.8	20.6	516947	11.8	21.4
519292	11.5	21.0	48118	11.5	18.8	390847	11.6	20.5	155861	11.7	19.5	430762	11.8	19.5	167112	11.8	20.6
482405	11.5	20.4	3637	11.5	15.5	192358	11.6	18.7	31000	11.7	17.5	312629	11.8	20.7	424114	11.8	21.9
477875	11.5	21.1	271765	11.5	19.4	299663	11.6	19.0	328096	11.7	20.0	59649	11.8	17.6	473881	11.8	21.3
439592	11.5	20.5	78454	11.5	18.6	387208	11.6	19.2	189847	11.7	21.1	248530	11.8	19.1	3794	11.8	16.9
166380	11.5	20.4	445757	11.5	20.6	471590	11.6	19.5	46499	11.7	19.8	12889	11.8	18.0	178013	11.8	19.4
8437	11.5	18.2	25805	11.5	17.2	255728	11.6	19.5	261380	11.7	20.6	164602	11.8	18.7	136962	11.8	18.6
385476	11.5	19.8	439000	11.5	19.7	318710	11.6	21.3	313996	11.7	20.9	250123	11.8	19.3	503793	11.8	20.6
135516	11.5	19.9	160411	11.5	18.8	286090	11.6	18.9	338519	11.7	20.1	315834	11.8	21.3	164012	11.8	20.0
400409	11.5	21.2	177380	11.5	20.4	197869	11.6	20.3	528087	11.7	21.7	204601	11.8	20.2	168660	11.8	19.8
183743	11.5	19.3	70005	11.5	17.4	328420	11.6	21.1	206914	11.7	18.9	146127	11.8	19.0	392942	11.8	20.6
289497	11.5	19.6	170279	11.5	20.3	18458	11.6	18.6	56296	11.7	16.2	525254	11.8	20.8	274049	11.8	20.2
455020	11.5	20.3	88224	11.5	18.4	532307	11.6	20.6	475403	11.7	21.4	250835	11.8	19.6	447288	11.8	20.4
26164	11.5	16.3	18176	11.5	17.7	447084	11.6	20.4	316511	11.7	19.8	303200	11.8	20.4	509892	11.8	21.9
462137	11.5	20.6	303450	11.5	21.3	46112	11.6	17.9	251904	11.7	19.5	540057	11.8	20.4	342533	11.8	20.9
45425	11.5	18.8	439522	11.5	20.4	512664	11.6	19.9	340319	11.7	20.3	22519	11.8	18.0	407870	11.8	20.5
112750	11.5	19.4	118234	11.5	20.7	527014	11.6	20.8	34861	11.7	17.6	213837	11.8	19.6	483989	11.8	24.1
391822	11.5	20.8	70146	11.5	19.0	311340	11.6	20.4	395043	11.7	20.9	360557	11.8	21.6	148362	11.8	18.8
114844	11.5	18.9	393791	11.6	20.3	436273	11.6	20.2	67736	11.7	19.3	220406	11.8	19.0	542448	11.8	21.7
162048	11.5	19.5	263828	11.6	20.0	93346	11.6	18.9	355524	11.7	20.9	316320	11.8	20.8	151504	11.8	20.0
250015	11.5	19.6	41795	11.6	18.8	42338	11.6	19.3	467951	11.7	19.3	322405	11.8	20.6	425571	11.8	19.1
128474	11.5	19.7	12082	11.6	17.6	257057	11.6	21.0	338680	11.7	19.4	141598	11.8	19.7	322998	11.8	20.8
129765	11.5	19.9	53928	11.6	18.6	350409	11.6	20.5	293302	11.7	20.4	137423	11.8	19.6	375267	11.8	20.2
101743	11.5	19.2	490105	11.6	20.1	355835	11.6	20.7	469419	11.7	20.3	93746	11.8	18.2	387047	11.8	20.5
235268	11.5	19.8	255082	11.6	19.6	434665	11.6	19.8	487079	11.7	20.3	190351	11.8	19.5	212415	11.8	19.4
334396	11.5	19.5	104502	11.6	19.6	427511	11.6	20.7	401740	11.7	21.0	188396	11.8	20.9	300733	11.8	20.1
389090	11.5	20.7	117102	11.6	19.1	5971	11.6	16.5	365682	11.7	21.0	366478	11.8	20.7	152084	11.8	20.0
74031	11.5	20.0	408806	11.6	20.2	337187	11.6	19.8	93108	11.7	18.6	12299	11.8	16.3	479311	11.8	19.7
422951	11.5	19.1	18783	11.6	18.4	403286	11.6	19.8	112204	11.7	19.6	128993	11.8	18.2	486689	11.8	20.4
46252	11.5	18.5	128139	11.6	19.4	525644	11.6	19.9	165988	11.7	19.7	539614	11.8	21.7	111402	11.8	18.4
386401	11.5	19.5	390335	11.6	20.4	106046	11.6	19.3	312615	11.7	20.0	228661	11.8	19.4	247454	11.8	20.3
535733	11.5	20.3	519866	11.6	21.3	56482	11.6	17.3	157714	11.7	20.0	436057	11.8	20.9	55574	11.8	19.1
536712	11.5	20.4	478532	11.6	21.0	399932	11.6	20.4	513323	11.7	21.5	334381	11.8	20.0	418227	11.8	20.9
480858	11.5	23.4	39285	11.6	19.2	344931	11.6	19.0	448705	11.7	20.1	151034	11.8	19.9	202937	11.8	19.7
442494	11.5	20.6	465119	11.6	20.5	72518	11.6	18.7	268325	11.7	19.6	319990	11.8	21.4	86785	11.8	20.2
225993	11.5	19.7	165646	11.6	20.0	139174	11.6	18.2	317360	11.7	20.6	313384	11.8	21.0	198055	11.8	17.6
414102	11.5	19.5	203307	11.6	20.0	52082	11.6	18.9	539230	11.7	20.5	505682	11.8	21.5	52134	11.8	17.5
316222	11.5	19.5	365619	11.6	20.9	169788	11.6	19.3	155500	11.7	17.4	59084	11.8	17.6	139287	11.8	20.0
416353	11.5	19.0	67140	11.6	17.9	207799	11.6	20.2	274178	11.7	20.0	433346	11.8	21.4	428824	11.8	21.2
502698	11.5	20.1	359573	11.6	20.3	35565	11.6	18.8	289812	11.7	20.8	471528	11.8	21.5	263796	11.8	20.6
91337	11.5	18.5	539602	11.6	20.5	462615	11.6	21.9	108935	11.7	19.2	13417	11.8	16.8	354747	11.8	20.1
507009	11.5	19.2	220422	11.6	19.6	49198	11.6	17.8	361943	11.7	20.5	389159	11.8	20.8	382192	11.8	20.1
520056	11.5	20.1	357656	11.6	20.3	510354	11.6	20.4	202665	11.7	20.2	393614	11.8	20.1	245337	11.8	20.2
114714	11.5	19.6	441389	11.6	20.4	221726	11.6	20.3	36907	11.7	18.0	333299	11.8	19.6	435778	11.8	20.7
512925	11.5	20.0	4580	11.6	16.3	286907	11.6	20.4	439382	11.7	19.8	234418	11.8	20.0	54591	11.8	19.0
364592	11.5	19.9	65860	11.6	17.6	334374	11.7	20.8	73865	11.7	20.3	167126	11.8	19.0	187637	11.8	19.9
6510	11.5	17.2	437339	11.6	19.5	94220	11.7	18.6	411181	11.7	20.8	14402	11.8	21.8	267758	11.9	21.4
468149	11.5	20.7	4449	11.6	16.7	205963	11.7	20.1	274643	11.7	19.7	193576	11.8	18.7	379362	11.9	20.7
296706	11.5	20.2	228842	11.6	19.9	312802	11.7	19.7	327812	11.7	19.6	93406	11.8	17.8	24415	11.9	19.0
213065	11.5	18.9	431867	11.6	21.0	3247	11.7	16.8	499611	11.7	20.6	323758	11.8	20.6	201528	11.9	19.0
153647	11.5	18.8	6503	11.6	17.0	346708	11.7	20.2	250758	11.7	19.8	368348	11.8	20.3	511411	11.9	21.5
539492	11.5	20.4	219884	11.6	20.6	243977	11.7	20.0	95992	11.7	19.1	542438	11.8	20.7	213831	11.9	19.2
184041	11.5	18.6	340524	11.6	20.1	66660	11.7	18.4	125113	11.7	19.1	424506	11.8	20.7	249610	11.9	18.3
261434	11.5	20.5	118819	11.6	18.1	460272	11.7	19.5	357942	11.7	20.0	76853	11.8	18.7	329755	11.9	20.9
511225	11.5	20.8	244545	11.6	20.6	242476	11.7	20.0	223926	11.7	19.2	256741	11.8	19.9	480938	11.9	20.5
383851	11.5	20.4	1781	11.6	15.4	263035	11.7	20.8	467858	11.7	21.1	279409	11.8	20.6	186552	11.9	19.5
44766	11.5	17.7	207779	11.6	19.5	181269	11.7	20.0	380279	11.7	20.1	263435	11.8	20.0	353047	11.9	19.0
523223	11.5	20.3	320830	11.6	21.3	289408	11.7	19.8	69955	11.7	18.1	278751	11.8	21.0	480740	11.9	20.5
523964	11.5	20.8	178678	11.6	18.9	434693	11.7	21.4	271080	11.7	20.9	490382	11.8	20.5	313376	11.9	21.2
343884	11.5	21.2	460894	11.6	20.2	68766	11.7	19.7	432452	11.7	20.4	354775	11.8	21.2	391377	11.9	19.7
169075	11.5	19.4	339373	11.6	20.4	472363	11.7	20.9	355717	11.7	20.7	136441	11.8	20.7	87568	11.9	17.1
405797	11.5	20.1	426329	11.6	21.2	418188	11.7										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
360090	11.9	20.0	475617	11.9	21.0	407914	12.0	21.2	201083	12.1	20.4	537281	12.2	21.1	86089	12.2	19.0
50023	11.9	18.8	538055	11.9	20.5	422687	12.0	19.8	342247	12.1	19.8	72250	12.2	18.0	1548	12.2	16.1
202607	11.9	19.6	145249	11.9	20.0	107608	12.0	20.0	280637	12.1	19.2	111901	12.2	19.3	250360	12.2	19.2
151153	11.9	19.8	266434	11.9	19.4	173092	12.0	19.7	92039	12.1	18.8	62139	12.2	18.5	460461	12.2	21.0
369912	11.9	21.1	472056	11.9	20.4	295462	12.0	20.1	188146	12.1	19.9	350034	12.2	20.6	309790	12.2	19.8
74705	11.9	19.0	316147	11.9	19.8	158762	12.0	18.0	400876	12.1	18.1	294047	12.2	19.2	87938	12.2	17.3
69957	11.9	17.7	230679	11.9	20.0	485906	12.0	20.7	170882	12.1	18.8	12063	12.2	18.5	41400	12.2	17.2
22722	11.9	17.7	151426	11.9	20.1	96801	12.0	19.1	353489	12.1	19.6	260275	12.2	18.9	215472	12.2	19.8
33108	11.9	17.9	128328	11.9	18.8	166394	12.0	18.5	335103	12.1	20.6	248102	12.2	19.4	318227	12.2	19.3
195574	11.9	19.5	450341	11.9	20.1	219316	12.0	19.3	112046	12.1	19.1	519603	12.2	19.9	408716	12.2	21.0
317975	11.9	20.2	139106	11.9	20.2	247059	12.0	18.3	2656	12.1	16.0	336819	12.2	20.6	461482	12.2	21.1
239125	11.9	20.0	445004	11.9	21.6	318568	12.0	20.7	146265	12.1	19.7	303190	12.2	20.2	386967	12.2	20.9
417442	11.9	20.1	59429	11.9	19.6	230037	12.0	17.6	229809	12.1	20.0	144343	12.2	19.7	356907	12.2	19.6
390811	11.9	21.3	474054	11.9	20.7	311430	12.0	19.9	333592	12.1	21.0	127755	12.2	19.8	507659	12.2	21.1
195368	11.9	20.6	258807	11.9	20.0	454942	12.0	19.9	326015	12.1	19.9	19443	12.2	16.5	509702	12.2	20.0
161493	11.9	19.2	183796	11.9	20.8	58124	12.0	18.5	193378	12.1	18.5	315271	12.2	19.7	476052	12.2	20.9
462235	11.9	21.8	319177	11.9	20.7	68317	12.0	17.7	329036	12.1	18.9	218297	12.2	19.0	525168	12.2	20.8
153269	11.9	19.7	268051	11.9	19.6	295653	12.0	19.7	418433	12.1	20.2	392106	12.2	21.1	70178	12.2	19.0
319054	11.9	19.4	282566	11.9	20.3	494822	12.0	20.4	113105	12.1	19.7	10898	12.2	17.4	403984	12.2	20.5
227078	11.9	19.9	218416	11.9	19.0	4461	12.0	15.9	52670	12.1	19.3	80954	12.2	18.5	356928	12.2	19.2
66397	11.9	18.3	482049	11.9	20.0	397138	12.0	20.2	232871	12.1	19.0	80666	12.2	16.5	26477	12.3	16.7
462849	11.9	19.9	255500	11.9	18.4	35379	12.0	17.9	129602	12.1	19.0	265444	12.2	19.5	532934	12.3	21.7
37539	11.9	18.2	64116	11.9	18.3	423169	12.0	21.4	314094	12.1	21.1	542399	12.2	20.8	356196	12.3	20.3
102644	11.9	18.0	313454	11.9	21.4	331412	12.0	19.8	134599	12.1	18.7	364070	12.2	21.8	208382	12.3	19.6
168087	11.9	20.3	5702	11.9	17.2	361051	12.0	20.5	462347	12.1	18.6	141811	12.2	19.6	96652	12.3	19.4
514531	11.9	20.3	313152	11.9	20.6	30714	12.0	19.1	236195	12.1	18.5	247476	12.2	19.9	433743	12.3	19.1
181275	11.9	20.3	338502	11.9	19.1	176132	12.0	20.0	276882	12.1	20.0	216077	12.2	19.9	345023	12.3	20.3
523734	11.9	21.5	416321	11.9	18.6	130441	12.0	17.6	164067	12.1	19.5	93778	12.2	18.2	189566	12.3	18.4
300699	11.9	20.5	384034	11.9	21.2	469600	12.0	21.4	474676	12.1	20.8	42585	12.2	19.0	245648	12.3	19.6
129267	11.9	20.1	161842	11.9	19.4	125061	12.0	19.4	20815	12.1	17.6	519110	12.2	20.7	289109	12.3	19.1
469163	11.9	21.5	364538	11.9	22.2	349840	12.0	21.2	533863	12.1	22.0	19007	12.2	17.7	19733	12.3	17.5
196454	11.9	20.5	242187	11.9	18.5	496309	12.0	20.7	512149	12.1	21.0	316134	12.2	20.3	490698	12.3	20.3
435162	11.9	21.1	418945	11.9	20.5	77390	12.0	19.5	533459	12.1	21.8	191135	12.2	18.8	240320	12.3	20.7
49030	11.9	18.1	210845	11.9	19.4	43690	12.0	19.3	58420	12.1	18.4	314232	12.2	18.5	175700	12.3	19.4
475437	11.9	20.0	449370	11.9	21.6	125716	12.0	18.3	167501	12.1	18.9	525792	12.2	21.0	202731	12.3	19.6
531705	11.9	20.4	312854	11.9	20.2	423910	12.0	19.7	444071	12.1	19.4	369474	12.2	21.1	316266	12.3	20.4
177355	11.9	19.0	415053	11.9	20.4	176663	12.0	19.4	260701	12.1	19.8	445471	12.2	19.9	390853	12.3	20.1
27428	11.9	17.2	400482	11.9	21.3	31092	12.0	17.9	331619	12.1	18.9	52439	12.2	16.1	387656	12.3	20.3
286644	11.9	20.9	322550	11.9	21.0	318370	12.0	20.1	512592	12.1	20.9	52133	12.2	18.8	310540	12.3	20.4
19449	11.9	18.4	435613	11.9	20.6	316931	12.0	19.1	97279	12.1	18.8	510117	12.2	20.1	512229	12.3	20.0
332512	11.9	21.2	123343	11.9	18.7	139729	12.1	18.3	488406	12.1	19.1	78101	12.2	18.9	282442	12.3	19.2
111539	11.9	18.6	73025	11.9	19.2	19129	12.1	16.7	49070	12.1	18.1	267199	12.2	19.1	481746	12.3	20.8
237999	11.9	19.9	419542	11.9	20.7	24587	12.1	18.7	69329	12.1	18.5	336270	12.2	20.5	175612	12.3	19.9
199566	11.9	19.9	540803	11.9	20.7	298040	12.1	19.7	525916	12.1	19.9	276084	12.2	19.5	97319	12.3	18.4
248327	11.9	20.1	338648	11.9	20.3	237994	12.1	20.0	358863	12.1	20.8	292986	12.2	19.8	540937	12.3	20.9
389417	11.9	20.6	473360	11.9	21.0	321041	12.1	20.4	197931	12.1	19.7	200512	12.2	19.2	494608	12.3	20.5
536809	11.9	20.6	42146	11.9	18.7	440173	12.1	20.5	147865	12.1	19.3	260857	12.2	19.9	179438	12.3	19.4
62888	11.9	18.9	33449	11.9	19.4	195466	12.1	19.7	341842	12.1	20.1	108104	12.2	18.9	511480	12.3	21.5
21595	11.9	17.4	257454	11.9	19.2	128440	12.1	19.4	154873	12.1	19.3	59674	12.2	17.9	278347	12.3	21.3
286813	11.9	20.2	531815	11.9	20.9	362603	12.1	20.2	336914	12.1	20.6	331367	12.2	19.9	112816	12.3	18.2
258899	11.9	20.1	217815	11.9	19.1	43962	12.1	17.1	277291	12.1	19.1	228107	12.2	20.5	106923	12.3	18.9
510973	11.9	21.1	266869	11.9	19.3	355818	12.1	20.9	177688	12.1	20.3	237083	12.2	19.7	433332	12.3	20.3
20106	11.9	18.1	528095	11.9	21.1	352320	12.1	20.3	40832	12.1	18.0	237628	12.2	18.7	497079	12.3	20.1
70683	11.9	17.8	292600	11.9	20.3	385539	12.1	18.7	177734	12.1	19.9	367504	12.2	21.2	348393	12.3	20.5
537654	11.9	21.1	496535	11.9	21.1	26308	12.1	21.8	291380	12.1	19.8	326158	12.2	20.2	168777	12.3	19.3
432389	11.9	18.3	508679	11.9	19.9	32101	12.1	17.4	254194	12.1	20.3	387618	12.2	21.2	187326	12.3	20.1
120941	11.9	19.8	442084	11.9	20.7	533986	12.1	19.4	4277	12.1	15.8	459624	12.2	20.8	206312	12.3	20.1
437035	11.9	19.0	192811	11.9	18.0	92222	12.1	19.3	529461	12.1	19.4	153911	12.2	19.6	274342	12.3	20.7
91165	11.9	19.0	398085	11.9	20.3	171826	12.1	20.7	174659	12.1	19.1	320019	12.2	20.4	341225	12.3	19.7
533215	11.9	21.5	209735	11.9	20.6	52828	12.1	17.2	462595	12.1	21.1	196068	12.2	23.2	451318	12.3	20.7
323765	11.9	20.1	310865	11.9	20.4	510920	12.1	21.3	100114	12.1	19.3	195312	12.2	19.6	147825	12.3	19.6
260442	11.9	18.6	397388	11.9	20.2	232102	12.1	18.5	366587	12.1	18.6	93968	12.2	18.1	448529	12.3	20.6
389114	11.9	19.6	84414	11.9	18.9	443681	12.1	21.6	11789	12.1	16.5	402367	12.2	20.5	36930	12.3	17.7
458211	11.9	19.9	528196	11.9	21.3	94447	12.1	17.9	449708	12.1	20.2	244493	12.2	19.0	95933	12.3	19.3
69904	11.9	18.9	260755	11.9	21.1	444223	12.1	20.0	60856	12.1	19.0	254522	12.2	19.7	254286	12.3	19.5
490153	11.9	20.8	23325	11.9	18.8	338608	12.1	19.9	202788	12.1	18.9	255303	12.2	20.0	88366	12.3	19.2
344779	11.9	19.4	500816	11.9	22.3	394649	12.1	20.3	511166	12.1	20.8	80730	12.2	18.7	507144	12.3	20.5
425966	11.9	20.8	533019	11.9	21.2	57540	12.1	17.6	92322	12.1	19.7	293299	12.2	20.8	460139	12.3	21.1
109797	11.9	20.2	123955	11.9	20.6	405431	12.1										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
228351	12.3	18.7	406495	12.4	19.9	282137	12.4	20.0	76482	12.5	18.5	525397	12.6	22.2	472420	12.6	21.4
515989	12.3	20.1	211650	12.4	19.7	266281	12.4	19.6	254351	12.5	19.9	341054	12.6	20.2	101499	12.6	19.2
14534	12.3	16.8	254323	12.4	19.2	76586	12.4	18.9	440757	12.5	21.6	212687	12.6	19.7	193428	12.6	17.3
53850	12.3	18.7	437683	12.4	20.6	65941	12.4	17.1	516583	12.5	21.7	312955	12.6	20.8	462204	12.6	20.0
350199	12.3	20.0	410742	12.4	20.4	89430	12.4	17.0	22135	12.5	16.9	254577	12.6	20.7	383222	12.6	20.7
453706	12.3	19.8	128913	12.4	19.1	524002	12.4	20.3	319190	12.5	19.9	174113	12.6	20.5	296683	12.6	20.4
156404	12.3	19.6	346668	12.4	19.8	521731	12.4	21.4	52573	12.5	18.7	255398	12.6	18.7	262716	12.6	19.4
48212	12.3	18.2	93912	12.4	17.7	288832	12.4	19.1	178458	12.5	19.6	374462	12.6	20.2	434744	12.6	21.0
500169	12.3	20.7	60258	12.4	17.4	468810	12.4	19.3	70561	12.5	18.2	482441	12.6	20.5	163076	12.6	19.6
91715	12.3	18.1	211186	12.4	20.4	163240	12.4	19.6	232212	12.5	20.4	64985	12.6	19.8	432643	12.6	20.4
285172	12.3	20.2	325859	12.4	20.2	199373	12.4	19.3	503537	12.5	19.9	286701	12.6	20.1	289107	12.6	19.3
164355	12.3	19.4	296533	12.4	19.4	102070	12.4	18.8	531119	12.5	21.5	37281	12.6	18.6	382600	12.6	20.0
2582	12.3	15.0	311504	12.4	20.0	405781	12.4	21.6	257457	12.5	19.6	359508	12.6	19.0	513391	12.6	21.2
79150	12.3	20.1	56295	12.4	17.7	216180	12.4	20.1	393182	12.5	20.6	204909	12.6	19.9	421965	12.6	20.4
295029	12.3	20.6	220868	12.4	18.8	314972	12.4	19.4	526391	12.5	21.6	539163	12.6	21.7	40233	12.7	18.9
98563	12.3	18.5	128559	12.4	17.9	99811	12.4	19.1	471125	12.5	20.8	481292	12.6	20.0	440267	12.7	19.2
46838	12.3	18.1	220672	12.4	18.8	499550	12.4	20.7	107563	12.5	19.7	71956	12.6	19.1	44576	12.7	19.3
105268	12.3	18.5	476975	12.4	20.0	87061	12.4	19.1	116530	12.5	19.3	358929	12.6	20.5	85832	12.7	17.1
439344	12.3	20.1	342657	12.4	19.1	13548	12.5	17.5	521392	12.5	20.7	38617	12.6	18.8	255308	12.7	20.0
214544	12.3	19.1	471296	12.4	21.3	17888	12.5	17.8	529804	12.5	20.4	202435	12.6	20.6	29427	12.7	19.4
52063	12.3	18.3	338646	12.4	19.5	429782	12.5	20.6	228112	12.5	19.8	45729	12.6	16.7	37620	12.7	18.2
433273	12.3	20.4	93392	12.4	18.6	178299	12.5	20.0	308068	12.5	19.8	53965	12.6	18.2	349830	12.7	20.4
510336	12.3	20.0	443385	12.4	21.2	365717	12.5	20.7	255802	12.5	20.0	312837	12.6	20.1	48013	12.7	19.2
217374	12.3	19.6	316479	12.4	20.1	526579	12.5	20.4	46095	12.5	19.4	497917	12.6	20.3	539553	12.7	20.7
253632	12.3	18.9	450097	12.4	20.7	399933	12.5	20.0	505401	12.5	21.1	296538	12.6	19.2	294563	12.7	20.4
542518	12.3	20.8	359963	12.4	19.9	9572	12.5	17.1	304294	12.5	20.0	260573	12.6	20.9	184956	12.7	19.6
417969	12.3	20.9	516335	12.4	19.9	126358	12.5	18.7	444035	12.5	20.7	503334	12.6	21.5	350382	12.7	19.7
64120	12.3	18.4	512263	12.4	21.4	45178	12.5	17.5	8752	12.5	18.4	204590	12.6	19.5	22319	12.7	18.2
147842	12.3	19.0	362012	12.4	19.7	63158	12.5	19.4	176122	12.5	20.2	112392	12.6	18.3	483643	12.7	19.3
123716	12.3	19.1	361515	12.4	20.6	107506	12.5	18.9	111108	12.5	17.7	157775	12.6	19.4	248822	12.7	18.3
313708	12.3	19.2	256917	12.4	19.9	158985	12.5	19.7	407275	12.5	20.5	432751	12.6	19.0	262957	12.7	19.9
336220	12.3	19.4	324422	12.4	20.3	1348505	12.5	19.8	435708	12.5	20.7	405403	12.6	20.5	439183	12.7	20.5
436592	12.3	20.5	336660	12.4	18.7	385457	12.5	20.8	265115	12.5	19.7	294818	12.6	20.8	273700	12.7	19.6
116232	12.3	19.5	121744	12.4	19.4	376890	12.5	18.7	480762	12.5	20.4	183355	12.6	19.2	533651	12.7	19.7
437980	12.3	18.9	5546	12.4	16.5	282307	12.5	19.1	126498	12.5	19.3	449605	12.6	20.2	366145	12.7	20.5
321259	12.3	19.7	427751	12.4	19.8	31835	12.5	18.1	144347	12.5	19.7	259755	12.6	19.8	42347	12.7	18.7
285892	12.3	19.9	99173	12.4	19.6	527575	12.5	20.1	395708	12.5	18.9	230886	12.6	19.3	466838	12.7	21.2
105826	12.3	18.8	34143	12.4	18.4	438299	12.5	21.0	235122	12.5	18.9	449787	12.6	20.8	37550	12.7	19.0
184029	12.3	20.6	399674	12.4	20.4	217031	12.5	19.5	528963	12.5	20.7	317371	12.6	21.3	111498	12.7	18.9
524389	12.3	20.6	14366	12.4	18.3	244877	12.5	19.2	288140	12.5	19.7	499020	12.6	21.0	363695	12.7	20.2
319299	12.3	20.0	188558	12.4	18.6	35717	12.5	17.2	87243	12.5	18.8	379259	12.6	19.3	282393	12.7	19.2
527475	12.3	20.8	325583	12.4	19.1	359381	12.5	19.9	235005	12.5	20.7	275957	12.6	19.1	336261	12.7	19.6
148334	12.3	18.8	342874	12.4	20.3	507176	12.5	20.5	161388	12.5	18.3	355025	12.6	20.1	325980	12.7	19.9
142295	12.3	18.5	293045	12.4	19.2	311920	12.5	19.9	256906	12.5	20.2	478602	12.6	19.0	88999	12.7	17.9
239609	12.3	19.4	47542	12.4	17.7	514238	12.5	20.5	264153	12.5	19.7	393342	12.6	19.5	72411	12.7	18.1
436535	12.3	21.6	147692	12.4	19.7	39108	12.5	18.3	134900	12.5	19.3	306844	12.6	18.5	151344	12.7	19.0
16058	12.3	15.8	444191	12.4	20.3	124031	12.5	18.2	367687	12.5	19.6	394936	12.6	19.6	4645	12.7	16.0
12077	12.3	17.8	304690	12.4	20.1	35846	12.5	18.0	257071	12.5	20.1	84510	12.6	18.8	255605	12.7	20.1
364540	12.3	20.4	123853	12.4	19.1	11010	12.5	17.5	507238	12.5	20.8	524184	12.6	21.0	80699	12.7	17.7
520842	12.3	20.8	65000	12.4	19.2	384955	12.5	20.0	428763	12.5	21.0	271909	12.6	19.3	169574	12.7	19.5
387528	12.3	21.9	428343	12.4	21.6	169454	12.5	19.2	318615	12.5	21.1	141838	12.6	19.5	358856	12.7	20.7
324388	12.4	21.3	126928	12.4	20.0	300647	12.5	19.3	39607	12.5	18.2	61813	12.6	18.0	466087	12.7	20.7
259845	12.4	19.5	234196	12.4	18.7	68247	12.5	19.4	5225	12.5	15.7	365108	12.6	20.6	537616	12.7	21.2
344465	12.4	20.8	260087	12.4	20.5	356897	12.5	20.0	357848	12.5	19.5	389544	12.6	20.5	140108	12.7	19.5
437212	12.4	20.4	66311	12.4	19.5	312641	12.5	19.3	501680	12.6	20.1	166258	12.6	19.4	274821	12.7	19.1
91884	12.4	18.7	314131	12.4	20.3	386711	12.5	20.3	434675	12.6	21.4	272496	12.6	19.5	354187	12.7	20.8
260562	12.4	20.7	284261	12.4	20.5	328981	12.5	19.2	22086	12.6	17.8	13463	12.6	18.1	191915	12.7	19.0
420964	12.4	20.4	508557	12.4	19.6	389470	12.5	21.0	153275	12.6	19.8	289187	12.6	20.0	298083	12.7	20.0
345904	12.4	19.9	4660	12.4	14.8	437503	12.5	20.0	118437	12.6	18.3	6032	12.6	16.2	225515	12.7	19.4
499128	12.4	19.6	314286	12.4	19.6	376830	12.5	20.0	482225	12.6	20.2	86288	12.6	17.4	417651	12.7	20.7
10225	12.4	16.3	296757	12.4	20.0	225216	12.5	19.2	49037	12.6	18.2	530260	12.6	21.4	392313	12.7	21.1
416224	12.4	19.9	155463	12.4	19.2	387046	12.5	20.1	198237	12.6	19.8	26686	12.6	19.6	210628	12.7	18.9
113051	12.4	19.9	110372	12.4	18.8	123709	12.5	19.1	125808	12.6	18.9	354354	12.6	20.0	353806	12.7	19.7
325808	12.4	19.5	316719	12.4	19.0	219483	12.5	20.0	222618	12.6	18.3	441804	12.6	21.0	95582	12.7	19.7
248927	12.4	20.1	85700	12.4	18.8	77334	12.5	18.7	366094	12.6	21.0	474336	12.6	20.0	250083	12.7	21.3
613	12.4	13.5	295650	12.4	21.1	432350	12.5	19.3	237727	12.6	20.4	139887	12.6	18.9	477130	12.7	21.1
467408	12.4	21.6	28063	12.4	17.8	93762	12.5	18.5	266851	12.6	20.2	392186	12.6	21.1	47083	12.7	17.1
161518	12.4	19.5	191019	12.4	18.9	61065	12.5	19.3	12625	12.6	16.8	248128	12.6	19.3	96828	12.7	18.2
15503	12.4	17.6	407921	12.4	21.1	127065	12.5	19.7	2								

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
472922	12.7	21.0	173269	12.8	18.0	17709	12.8	17.8	241408	12.9	18.4	21035	12.9	15.7	141983	13.0	19.5
396843	12.7	19.2	540929	12.8	19.6	159855	12.8	19.0	432761	12.9	21.3	375482	12.9	19.3	177136	13.0	20.0
38827	12.7	18.2	46650	12.8	17.7	435153	12.8	20.7	414137	12.9	20.2	402408	12.9	20.3	73708	13.0	18.9
44775	12.7	18.4	483632	12.8	19.6	294501	12.8	19.5	23331	12.9	18.7	237938	12.9	20.6	82039	13.0	19.8
336417	12.7	19.0	173758	12.8	20.3	63381	12.8	17.7	255480	12.9	20.0	371879	12.9	20.5	234460	13.0	20.2
468040	12.7	21.2	383261	12.8	20.9	144897	12.8	20.4	262934	12.9	20.9	436621	12.9	20.5	299144	13.0	21.0
235088	12.7	20.1	429697	12.8	21.1	35864	12.9	17.3	103936	12.9	19.1	434749	12.9	20.5	404387	13.0	20.9
136588	12.7	19.6	192462	12.8	20.0	62354	12.9	18.8	255636	12.9	18.9	398882	12.9	20.9	311283	13.0	20.9
449305	12.7	21.2	404606	12.8	19.8	390069	12.9	20.1	465643	12.9	21.2	316574	12.9	17.4	462237	13.0	21.3
448645	12.7	20.8	144958	12.8	19.8	312467	12.9	20.3	317940	12.9	20.4	261828	12.9	19.8	221836	13.0	20.9
455291	12.7	21.3	18719	12.8	18.0	70100	12.9	19.0	384008	12.9	20.6	527328	12.9	23.1	407611	13.0	20.5
251830	12.7	18.8	340536	12.8	19.8	495847	12.9	20.8	448724	12.9	20.9	275333	12.9	20.4	249	13.0	13.3
160349	12.7	18.9	533265	12.8	20.7	252891	12.9	20.2	189071	12.9	20.5	152585	12.9	19.1	296153	13.1	20.0
506503	12.7	20.7	437289	12.8	20.6	386849	12.9	20.9	302879	12.9	19.9	80549	12.9	19.3	364197	13.1	20.4
221885	12.7	20.6	510036	12.8	21.3	98111	12.9	19.2	91839	12.9	18.7	53469	12.9	18.9	250373	13.1	19.5
536879	12.7	22.0	325432	12.8	20.5	353288	12.9	19.7	481138	12.9	20.0	63273	12.9	19.1	359001	13.1	20.3
426992	12.7	20.9	505775	12.8	20.8	352481	12.9	19.4	290094	12.9	20.1	467627	12.9	20.3	87970	13.1	17.5
185112	12.7	19.2	32419	12.8	18.0	309146	12.9	18.6	536155	12.9	20.7	6482	12.9	17.8	234336	13.1	20.5
38755	12.7	17.5	187309	12.8	20.3	301043	12.9	21.2	509734	12.9	19.7	438534	12.9	19.9	359403	13.1	21.5
71352	12.7	18.6	254384	12.8	21.1	365880	12.9	20.2	8130	12.9	18.0	529629	12.9	20.1	368656	13.1	21.5
134554	12.7	18.4	519788	12.8	20.4	41859	12.9	18.4	70681	12.9	18.6	129532	12.9	19.0	528015	13.1	21.3
364472	12.7	20.0	335045	12.8	20.3	412888	12.9	21.4	436193	12.9	20.3	362860	12.9	20.4	539331	13.1	21.3
237967	12.7	19.7	335775	12.8	20.4	464888	12.9	21.2	357573	12.9	20.3	61516	12.9	17.8	218087	13.1	19.8
260050	12.7	19.5	72603	12.8	18.9	154575	12.9	20.1	1558	12.9	14.8	257382	12.9	19.8	136360	13.1	17.4
188925	12.7	20.0	60617	12.8	19.2	68934	12.9	18.7	270407	12.9	19.1	202320	12.9	19.3	464644	13.1	19.5
335072	12.7	19.1	261772	12.8	20.7	37604	12.9	18.4	535323	12.9	20.4	366473	12.9	20.0	465348	13.1	18.8
129918	12.7	18.3	430443	12.8	19.6	211077	12.9	20.3	287256	12.9	19.1	517890	12.9	20.9	448692	13.1	20.2
40497	12.7	18.7	526916	12.8	22.3	310534	12.9	21.4	350846	12.9	20.3	131965	12.9	17.9	276009	13.1	18.8
10906	12.7	17.9	410215	12.8	20.3	295792	12.9	19.8	184745	12.9	20.9	48229	12.9	18.3	30020	13.1	18.7
412273	12.7	20.4	17710	12.8	17.6	280032	12.9	19.7	144046	12.9	19.7	489356	12.9	20.8	522518	13.1	21.2
436140	12.7	20.3	426135	12.8	19.8	389226	12.9	20.6	223968	12.9	19.1	322182	12.9	19.6	404580	13.1	20.8
315146	12.7	20.9	523743	12.8	21.9	96560	12.9	18.3	393164	12.9	20.1	507291	12.9	21.4	438205	13.1	19.5
357191	12.7	21.0	128793	12.8	19.0	250416	12.9	20.8	66798	12.9	18.5	477081	12.9	20.2	462568	13.1	21.1
133129	12.7	18.0	211088	12.8	20.1	203277	12.9	19.5	35695	12.9	18.2	129528	12.9	18.7	348095	13.1	20.2
356918	12.7	20.0	329349	12.8	20.7	246958	12.9	19.6	401255	12.9	20.4	74475	12.9	19.2	397279	13.1	21.5
172535	12.7	18.1	285211	12.8	20.0	478634	12.9	19.8	374349	12.9	19.9	514066	12.9	22.2	423432	13.1	20.4
440539	12.7	20.2	232905	12.8	20.5	68802	12.9	19.0	279748	12.9	19.3	513400	12.9	20.6	472920	13.1	20.9
539414	12.7	20.6	333639	12.8	20.5	392701	12.9	20.6	511176	12.9	20.7	76929	12.9	17.0	71153	13.1	17.6
509781	12.7	20.5	444730	12.8	20.6	278401	12.9	21.0	193477	12.9	18.7	156255	12.9	19.5	294762	13.1	20.0
275350	12.7	19.8	183138	12.8	20.2	67879	12.9	17.9	241240	12.9	20.0	86634	12.9	19.6	264145	13.1	19.9
37420	12.7	17.8	380598	12.8	19.6	129356	12.9	18.7	240568	12.9	19.7	23070	12.9	18.3	449563	13.1	20.8
310699	12.8	19.7	796	12.8	11.0	251310	12.9	19.9	126815	12.9	20.2	538965	12.9	20.5	121439	13.1	18.5
244236	12.8	19.7	156544	12.8	19.4	207237	12.9	20.0	233349	12.9	19.4	469204	12.9	20.6	435630	13.1	19.9
462824	12.8	20.2	404002	12.8	21.2	267181	12.9	19.1	477531	12.9	21.7	35800	13.0	17.4	6513	13.1	15.9
167349	12.8	19.7	257109	12.8	20.3	129654	12.9	18.4	508992	12.9	21.1	183118	13.0	19.2	323037	13.1	19.2
426510	12.8	21.2	449368	12.8	19.6	477045	12.9	19.6	439077	12.9	20.8	511983	13.0	20.5	27661	13.1	17.7
504049	12.8	20.2	416334	12.8	19.6	231923	12.9	20.1	167510	12.9	18.7	507738	13.0	18.9	494523	13.1	20.1
441821	12.8	19.1	395070	12.8	19.6	527348	12.9	19.4	442318	12.9	20.9	245585	13.0	19.6	459599	13.1	21.0
359621	12.8	20.5	24567	12.8	18.7	474111	12.9	19.8	385568	12.9	19.6	13219	13.0	17.2	471521	13.1	21.5
359369	12.8	22.7	67905	12.8	17.4	499107	12.9	20.4	262940	12.9	20.2	539243	13.0	22.1	449022	13.1	20.3
76087	12.8	18.3	443595	12.8	19.5	408151	12.9	20.4	264936	12.9	19.5	482772	13.0	21.0	32298	13.1	18.0
22427	12.8	19.9	540203	12.8	21.5	364469	12.9	21.8	472054	12.9	20.4	314014	13.0	21.2	514036	13.1	20.8
237399	12.8	20.4	435659	12.8	21.0	260167	12.9	19.6	440909	12.9	19.9	245803	13.0	20.0	178387	13.1	19.6
78927	12.8	19.1	390274	12.8	20.3	60028	12.9	18.9	35048	12.9	19.5	123964	13.0	19.8	121267	13.1	19.2
354674	12.8	20.1	482373	12.8	20.5	85665	12.9	17.8	314537	12.9	20.1	470301	13.0	20.7	391806	13.1	21.2
505486	12.8	19.5	14054	12.8	18.0	530172	12.9	20.5	507514	12.9	20.5	117290	13.0	18.7	459600	13.1	21.5
440048	12.8	19.0	187614	12.8	20.0	60233	12.9	18.4	97028	12.9	18.5	356254	13.0	20.4	509153	13.1	20.5
258687	12.8	21.1	393175	12.8	20.6	182354	12.9	19.3	254166	12.9	20.0	514056	13.0	21.5	449060	13.1	20.2
181313	12.8	18.4	244841	12.8	19.5	476587	12.9	20.4	469559	12.9	19.7	356334	13.0	21.1	409340	13.1	19.5
249609	12.8	19.2	534247	12.8	19.3	54787	12.9	17.5	401636	12.9	20.7	462606	13.0	20.9	537720	13.1	21.0
356539	12.8	20.6	332655	12.8	19.7	60111	12.9	19.0	257140	12.9	19.9	441000	13.0	20.1	473080	13.1	20.1
238989	12.8	19.9	1211	12.8	15.0	20657	12.9	17.6	383590	12.9	19.8	166345	13.0	20.3	347038	13.1	20.6
259134	12.8	19.1	390367	12.8	20.1	505993	12.9	20.3	314144	12.9	19.6	470783	13.0	19.9	16789	13.1	17.2
437947	12.8	20.6	140899	12.8	19.1	387526	12.9	19.9	461952	12.9	20.0	416710	13.0	20.8	386767	13.1	20.3
155087	12.8	19.6	177939	12.8	20.9	174734	12.9	19.0	467628	12.9	19.5	254267	13.0	19.5	177839	13.1	20.5
189590	12.8	18.3	356369	12.8	19.2	108161	12.9	19.0	262110	12.9	19.6	20381	13.0	17.2	195799	13.1	19.0
356262	12.8	20.8	280650	12.8	19.8	237134	12.9	20.2	414127	12.9	19.6	101329	13.0	18.9	526474	13.1	21.9
187925	12.8	18.9	192340	12.8	20.1	535665	12.9	21.5	324206	12.9	19.8	20022	13.0	18.8	508791	13.1	22.6
212071	12.8	20.5	325377	12.8	20.7	356270	12.										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
206691	13.1	19.9	276871	13.2	20.8	207019	13.3	18.9	429531	13.3	20.9	322524	13.4	20.2	399065	13.5	19.9
192964	13.1	19.2	495186	13.2	20.3	293577	13.3	20.4	480305	13.3	20.3	542521	13.4	20.2	394703	13.5	20.1
393890	13.1	20.2	282293	13.2	18.7	526880	13.3	22.0	474077	13.3	19.8	498691	13.4	20.6	236224	13.5	20.0
338597	13.1	19.1	502368	13.2	20.8	540787	13.3	20.2	298717	13.3	20.7	420490	13.4	19.2	232107	13.5	19.7
149030	13.1	19.9	254159	13.2	19.4	365229	13.3	21.5	382565	13.3	18.1	507420	13.4	20.5	139093	13.5	19.3
399233	13.1	20.2	515097	13.2	20.3	385219	13.3	21.4	4606	13.3	15.3	15843	13.4	18.1	511307	13.5	21.4
218522	13.1	20.3	69456	13.2	17.6	166123	13.3	19.9	78644	13.3	18.5	312479	13.4	20.7	73484	13.5	18.1
383145	13.1	19.4	405835	13.2	20.0	6918	13.3	16.8	87573	13.3	18.4	513392	13.4	20.9	380118	13.5	20.3
316036	13.1	21.5	250836	13.2	18.9	435584	13.3	20.6	457409	13.3	19.8	139186	13.4	19.6	534065	13.5	20.1
521691	13.1	20.6	393268	13.2	19.3	347157	13.3	20.7	443644	13.3	20.4	249481	13.4	19.5	216649	13.5	18.7
128618	13.1	18.1	289506	13.2	20.1	380553	13.3	19.9	163968	13.3	19.3	365677	13.4	20.3	151296	13.5	20.3
453772	13.1	20.6	105147	13.2	18.5	180455	13.3	20.3	332521	13.3	19.8	318591	13.4	20.9	38260	13.5	18.0
542677	13.1	20.9	291623	13.2	20.5	121714	13.3	18.2	150011	13.3	20.3	539565	13.4	20.8	529959	13.5	20.2
59788	13.1	18.1	176429	13.2	19.5	345041	13.3	20.3	529733	13.3	20.2	396256	13.4	20.0	580873	13.5	19.7
38141	13.1	18.3	91945	13.2	18.2	472385	13.3	20.0	387766	13.3	19.8	312605	13.4	20.2	253662	13.5	20.1
380557	13.1	21.2	501712	13.2	20.2	198041	13.3	20.8	499625	13.3	19.5	322121	13.4	20.9	179526	13.5	19.6
379848	13.1	20.3	457756	13.2	20.8	187610	13.3	18.7	163004	13.3	19.3	317901	13.4	19.5	513982	13.5	19.9
520086	13.1	20.5	510380	13.2	21.1	310642	13.3	19.9	463549	13.3	21.3	301248	13.4	21.0	472216	13.5	20.2
459553	13.1	21.4	78677	13.2	18.6	302852	13.3	20.2	443589	13.3	20.3	539465	13.4	21.1	417424	13.5	20.2
41543	13.1	17.3	97489	13.2	17.9	21593	13.3	18.1	487378	13.3	21.0	17693	13.4	17.6	525097	13.5	19.5
408956	13.1	19.5	246180	13.2	19.8	328013	13.3	19.2	532623	13.3	20.5	398200	13.4	20.3	300517	13.5	20.7
474042	13.1	20.5	237127	13.2	18.4	388836	13.3	21.0	448599	13.3	20.3	35623	13.4	17.2	68138	13.5	19.2
289055	13.1	18.9	328263	13.2	20.0	61952	13.3	17.6	356904	13.3	19.8	597	13.4	12.3	78660	13.5	16.9
256996	13.1	20.6	4138	13.2	16.7	472809	13.3	20.8	479723	13.3	20.5	473353	13.4	20.2	6694	13.5	16.3
186795	13.1	19.7	449417	13.2	20.6	249589	13.3	19.7	497761	13.3	20.4	376872	13.4	18.7	171140	13.5	20.0
493526	13.1	21.0	397118	13.2	20.5	125260	13.3	19.4	313769	13.3	19.6	134217	13.4	18.8	163238	13.5	19.0
266749	13.1	19.9	2740	13.2	15.7	202422	13.3	19.4	289473	13.3	20.5	295982	13.4	20.3	525519	13.5	20.9
362526	13.1	20.6	416771	13.2	20.9	483306	13.3	20.3	169668	13.3	20.4	156971	13.4	20.7	54726	13.5	17.3
111760	13.1	19.3	533807	13.2	20.1	127091	13.3	19.0	539187	13.3	20.4	72094	13.4	18.9	381423	13.5	21.1
362545	13.1	20.0	481160	13.2	19.8	324382	13.3	19.9	310669	13.3	20.2	81794	13.4	18.3	401670	13.5	20.7
129438	13.1	19.5	262061	13.2	19.8	537141	13.3	20.9	530511	13.3	21.7	252862	13.4	19.1	523015	13.5	20.7
202190	13.1	18.8	65800	13.2	17.8	335172	13.3	19.4	358992	13.3	20.8	408666	13.4	20.2	303953	13.5	20.9
513575	13.1	20.0	42256	13.2	16.6	96045	13.3	18.4	70490	13.3	19.3	291201	13.4	19.8	315819	13.5	20.0
221008	13.1	20.0	148104	13.2	19.3	475964	13.3	21.5	340235	13.3	20.9	520430	13.4	21.9	480653	13.5	20.9
348109	13.1	18.6	437025	13.2	20.2	181183	13.3	20.2	307036	13.3	18.5	539430	13.4	20.4	41355	13.5	19.1
264224	13.1	20.1	35771	13.2	17.7	238847	13.3	20.5	442095	13.3	20.3	428163	13.4	19.8	301740	13.5	20.3
445520	13.1	19.5	68799	13.2	19.8	350254	13.3	19.8	108592	13.4	18.0	19831	13.4	18.1	521622	13.5	21.2
305436	13.1	19.7	166126	13.2	19.2	286775	13.3	20.2	382470	13.4	18.1	237955	13.4	19.6	414409	13.5	20.8
460523	13.1	20.4	385831	13.2	20.2	438948	13.3	20.9	201798	13.4	20.2	70330	13.4	17.1	508963	13.5	20.0
191292	13.1	20.2	496510	13.2	20.0	262073	13.3	19.9	157462	13.4	19.6	207286	13.4	19.3	441989	13.5	19.6
503326	13.1	20.1	413142	13.2	20.7	25190	13.3	18.4	246435	13.4	20.0	166922	13.4	20.0	106753	13.5	18.8
524458	13.2	21.2	21907	13.2	16.8	438767	13.3	20.1	249168	13.4	18.8	351178	13.4	19.7	348026	13.5	19.5
242182	13.2	19.6	55637	13.2	19.7	153957	13.3	21.9	380289	13.4	19.8	182946	13.4	19.3	340339	13.5	20.2
355776	13.2	20.9	436328	13.2	20.3	467968	13.3	20.7	90339	13.4	19.0	346378	13.4	20.1	365949	13.5	20.8
129090	13.2	18.9	169000	13.2	19.2	481754	13.3	20.6	134830	13.4	19.1	475560	13.4	19.8	17686	13.5	16.3
407036	13.2	21.6	71482	13.2	18.9	448680	13.3	20.4	105666	13.4	19.2	494	13.4	13.4	338495	13.5	20.3
74273	13.2	19.0	246833	13.2	19.8	455362	13.3	19.5	8347	13.4	17.2	334398	13.4	20.0	342340	13.5	20.2
464502	13.2	20.4	79653	13.2	17.7	333195	13.3	20.1	86143	13.4	18.9	499688	13.4	19.7	446890	13.5	21.1
6669	13.2	15.4	530854	13.2	20.4	215969	13.3	20.1	502909	13.4	19.9	356461	13.4	19.9	251833	13.5	18.9
314080	13.2	19.9	435560	13.2	21.1	440003	13.3	20.3	507664	13.4	21.7	482385	13.4	19.9	244483	13.5	20.3
264243	13.2	19.9	443183	13.2	21.8	443494	13.3	21.2	73815	13.4	18.5	85435	13.4	19.5	85603	13.5	19.5
374417	13.2	19.1	49119	13.2	18.6	229811	13.3	19.9	356630	13.4	20.0	44474	13.4	17.8	79591	13.5	18.5
284069	13.2	19.6	387053	13.2	20.0	239481	13.3	21.5	364991	13.4	20.2	75857	13.4	18.9	10067	13.5	16.6
495380	13.2	21.1	249367	13.2	20.4	306539	13.3	19.0	62610	13.4	18.3	340426	13.4	20.8	515241	13.5	21.2
422227	13.2	20.4	214516	13.2	19.7	168496	13.3	18.4	7756	13.4	17.3	121338	13.4	19.1	178373	13.5	20.3
304504	13.2	19.9	404275	13.2	21.6	506803	13.3	21.0	308000	13.4	18.5	497673	13.4	21.0	172855	13.5	20.1
183987	13.2	20.7	455317	13.2	21.5	50781	13.3	18.6	108314	13.4	18.8	13099	13.4	16.0	508100	13.5	21.3
364273	13.2	20.2	225519	13.2	18.7	209507	13.3	19.0	110882	13.4	19.7	360719	13.4	18.9	511921	13.5	20.0
162452	13.2	21.8	239591	13.2	20.4	469508	13.3	20.3	290657	13.4	19.8	318516	13.4	21.2	212318	13.5	19.6
534233	13.2	19.1	337195	13.2	19.7	323725	13.3	20.3	251733	13.4	20.6	137608	13.4	18.6	15428	13.5	17.6
306006	13.2	20.4	196499	13.2	20.0	475461	13.3	20.0	206111	13.4	19.4	355756	13.4	20.4	66112	13.5	18.3
154510	13.2	20.4	218392	13.2	19.3	134200	13.3	17.9	428827	13.4	20.2	269366	13.4	21.0	168892	13.5	18.6
86835	13.2	18.6	187440	13.2	19.6	310645	13.3	20.3	484896	13.4	18.7	444988	13.4	21.8	420436	13.5	21.5
404102	13.2	19.3	427995	13.2	21.4	275983	13.3	18.9	5735	13.4	17.1	257643	13.4	19.0	531417	13.5	20.8
63298	13.2	19.3	50503	13.2	18.5	156276	13.3	17.9	361035	13.4	19.8	480329	13.4	21.4	187520	13.5	18.7
509701	13.2	20.0	254231	13.2	20.5	25095	13.3	17.2	297611	13.4	20.7	262220	13.4	20.1	367150	13.5	20.0
321381	13.2	19.8	17133	13.2	17.0	20491	13.3	18.2	312498	13.4	20.4	63301	13.4	19.1	168479	13.5	18.4
507264	13.2	21.0	292732	13.2	19.8	149236	13.3	19.5	148477	13.4	20.4	223630	13.5	20.8	445782	13.5	20.3
61326	13.2	19.0	44898	13.2	19.3	401608	13.3										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
188563	13.5	19.4	427718	13.6	20.7	479539	13.7	19.9	188764	13.8	18.5	34136	13.8	18.0	318470	13.9	20.3
250713	13.6	20.1	358966	13.6	20.6	410212	13.7	21.1	476114	13.8	20.3	167923	13.8	19.5	171396	13.9	19.7
51668	13.6	18.0	158915	13.6	19.1	472796	13.7	20.8	408614	13.8	20.8	126774	13.8	19.0	89290	13.9	18.1
533678	13.6	20.6	494350	13.6	20.1	286685	13.7	20.0	251372	13.8	19.1	160553	13.8	17.9	490065	13.9	20.7
512567	13.6	19.9	333815	13.6	20.8	164042	13.7	19.2	302117	13.8	19.3	363429	13.8	19.1	540550	13.9	20.6
294704	13.6	19.8	528162	13.6	20.4	122655	13.7	18.5	123794	13.8	19.3	193617	13.8	18.8	280054	13.9	20.5
357908	13.6	20.9	491304	13.6	20.8	316430	13.7	20.1	77214	13.8	18.9	344084	13.8	19.3	245593	13.9	19.1
123836	13.6	18.7	303967	13.6	20.7	71086	13.7	18.5	129973	13.8	17.9	250340	13.8	19.1	444077	13.9	20.8
411637	13.6	19.9	449333	13.6	21.0	541041	13.7	20.8	91821	13.8	18.4	50167	13.8	17.9	25810	13.9	17.7
315069	13.6	20.2	297018	13.6	19.9	236718	13.7	18.2	522200	13.8	21.1	16996	13.8	18.2	406805	13.9	20.3
481343	13.6	21.0	364675	13.6	19.5	66159	13.7	18.4	470311	13.8	20.8	129569	13.8	19.9	212692	13.9	19.8
416281	13.6	21.0	263647	13.6	20.4	285210	13.7	21.1	132490	13.8	20.1	77486	13.8	19.2	313062	13.9	19.3
323395	13.6	19.5	376893	13.6	18.2	446171	13.7	20.5	340377	13.8	20.4	203214	13.8	20.1	386713	13.9	20.5
262986	13.6	20.6	479851	13.6	20.6	46121	13.7	18.8	94526	13.8	19.6	475303	13.8	20.9	437916	13.9	21.7
505958	13.6	21.4	276942	13.6	19.7	253758	13.7	19.1	58691	13.8	18.4	278834	13.8	20.6	482926	13.9	21.0
173593	13.6	19.1	62841	13.6	18.4	418919	13.7	20.7	155366	13.8	19.3	127388	13.8	19.2	117649	13.9	20.0
197565	13.6	19.7	338668	13.6	20.8	217612	13.7	19.4	203801	13.8	19.4	325796	13.8	19.4	325879	13.9	18.8
172126	13.6	19.8	105374	13.6	17.5	427740	13.7	20.0	496977	13.8	20.6	509792	13.8	19.1	73334	13.9	19.8
143671	13.6	19.2	539778	13.6	21.0	162497	13.7	17.8	468471	13.8	19.7	435792	13.8	19.8	385592	13.9	20.8
529577	13.6	22.4	466095	13.6	20.1	423962	13.7	20.3	269072	13.8	20.7	154202	13.8	19.5	312368	13.9	19.7
53803	13.6	18.7	408164	13.6	21.1	443690	13.7	20.2	255000	13.8	19.8	1146	13.9	14.7	540663	13.9	19.8
341831	13.6	20.6	278277	13.6	20.1	528962	13.7	21.1	315164	13.8	21.0	423403	13.9	21.0	477169	13.9	19.4
513502	13.6	20.8	156929	13.6	20.3	281252	13.7	18.5	202660	13.8	19.5	511895	13.9	21.4	472592	13.9	20.0
249514	13.6	20.3	507460	13.6	18.4	436400	13.7	19.2	25253	13.8	17.4	13880	13.9	17.8	76052	13.9	18.1
475955	13.6	21.6	71479	13.6	19.3	148106	13.7	18.5	470374	13.8	19.6	291197	13.9	21.5	10323	13.9	16.6
456077	13.6	19.0	269357	13.6	18.8	48753	13.7	18.3	536776	13.8	21.7	399041	13.9	20.7	326967	13.9	20.3
13897	13.6	18.1	198338	13.6	18.6	336125	13.7	20.6	128223	13.8	19.5	7301	13.9	16.6	478927	13.9	20.0
94615	13.6	19.1	69377	13.6	16.8	232537	13.7	18.8	360107	13.8	20.1	437684	13.9	20.9	219956	13.9	19.8
260240	13.6	19.0	233915	13.6	19.7	187373	13.7	19.7	507827	13.8	21.0	251651	13.9	19.2	198578	13.9	19.5
511852	13.6	20.4	104210	13.6	19.7	507215	13.7	19.7	170491	13.8	19.1	411206	13.9	20.2	471324	13.9	20.9
529460	13.6	21.3	133134	13.6	19.3	382454	13.7	19.0	36806	13.8	18.5	59178	13.9	17.0	136926	13.9	18.6
486696	13.6	20.7	224208	13.6	19.4	249116	13.7	19.8	315948	13.8	20.4	309115	13.9	20.4	356916	13.9	20.5
243898	13.6	20.1	280960	13.6	20.7	160739	13.7	17.1	508320	13.8	20.8	42913	13.9	17.6	348774	13.9	19.6
91328	13.6	20.3	343424	13.6	20.4	482418	13.7	20.1	168356	13.8	19.1	84984	13.9	18.8	110851	13.9	18.0
79056	13.6	17.6	184200	13.6	20.3	29983	13.7	18.2	173084	13.8	18.9	356987	13.9	19.6	103747	13.9	19.0
93051	13.6	18.5	288719	13.6	19.8	437601	13.7	19.8	153730	13.8	19.3	143793	13.9	18.9	385600	13.9	20.6
446250	13.6	20.0	323081	13.7	19.6	434759	13.7	21.4	394769	13.8	20.6	327681	13.9	20.2	57662	13.9	18.5
221453	13.6	19.2	220975	13.7	20.6	412917	13.7	20.1	225858	13.8	19.6	321871	13.9	20.0	41237	13.9	18.1
70214	13.6	18.7	276556	13.7	19.8	42555	13.7	19.1	36602	13.8	18.7	419629	13.9	19.2	125777	13.9	19.6
272685	13.6	19.8	349273	13.7	19.5	237502	13.7	18.9	472169	13.8	20.7	496966	13.9	20.0	399095	13.9	21.0
131653	13.6	18.3	191730	13.7	19.5	282853	13.7	19.2	149121	13.8	19.4	255726	13.9	18.7	495098	13.9	20.9
203892	13.6	20.1	416753	13.7	21.4	296402	13.7	20.5	515846	13.8	20.5	185843	13.9	19.7	32489	13.9	17.8
467482	13.6	20.9	449378	13.7	21.2	269549	13.7	20.1	164073	13.8	18.9	141671	13.9	19.5	472034	13.9	21.0
184790	13.6	20.9	539578	13.7	20.9	211193	13.7	20.8	502190	13.8	19.8	213307	13.9	19.1	361965	13.9	20.4
126435	13.6	18.4	531665	13.7	20.9	451657	13.7	23.4	530839	13.8	22.0	333102	13.9	20.0	245578	13.9	20.6
468780	13.6	20.6	521776	13.7	20.5	162861	13.7	18.7	353577	13.8	20.7	206623	13.9	17.9	400685	13.9	21.2
191680	13.6	19.0	385185	13.7	23.6	325668	13.7	20.5	66312	13.8	18.4	101573	13.9	18.3	311403	13.9	19.6
298752	13.6	19.7	190361	13.7	20.6	133332	13.7	18.9	384441	13.8	20.0	224678	13.9	21.2	462603	13.9	21.3
120780	13.6	20.5	468855	13.7	20.8	306464	13.7	20.0	535746	13.8	20.7	475456	13.9	20.8	515181	13.9	20.5
473065	13.6	20.0	316155	13.7	19.8	6769	13.7	16.1	425599	13.8	19.7	336994	13.9	20.7	192217	13.9	19.6
154763	13.6	19.4	89829	13.7	19.1	374985	13.7	19.7	349267	13.8	20.9	536180	13.9	20.5	320623	13.9	21.2
53177	13.6	18.4	357328	13.7	18.8	213944	13.7	18.5	187691	13.8	21.2	357041	13.9	19.5	105389	13.9	18.6
429660	13.6	20.1	136861	13.7	19.8	341755	13.7	19.6	151767	13.8	19.0	526070	13.9	20.5	35600	13.9	18.4
7880	13.6	16.8	501617	13.7	21.5	382123	13.7	20.3	494867	13.8	21.2	326956	13.9	19.7	418191	13.9	19.3
251734	13.6	19.2	98370	13.7	18.7	266573	13.7	20.2	101524	13.8	17.2	308326	13.9	20.8	252700	13.9	19.8
429543	13.6	19.9	361433	13.7	21.0	37687	13.7	18.1	67527	13.8	19.3	248576	13.9	20.3	329955	13.9	20.1
386448	13.6	19.8	124780	13.7	19.7	261317	13.7	21.1	317288	13.8	20.5	247572	13.9	20.5	9767	13.9	22.4
487682	13.6	20.2	9645	13.7	16.8	185858	13.7	20.5	74778	13.8	18.3	272686	13.9	20.3	20906	13.9	18.6
345956	13.6	19.1	192493	13.7	19.6	360714	13.7	20.6	379997	13.8	20.2	255390	13.9	19.3	395229	13.9	20.9
216462	13.6	19.1	416853	13.7	20.2	488625	13.7	20.2	263817	13.8	20.7	366524	13.9	19.8	231917	13.9	20.9
422882	13.6	19.3	359008	13.7	20.6	14005	13.7	16.8	251881	13.8	19.2	21087	13.9	16.8	103687	13.9	19.4
186937	13.6	19.2	350147	13.7	21.2	186972	13.7	19.1	513319	13.8	21.0	224218	13.9	19.5	394492	13.9	19.8
11908	13.6	18.0	255787	13.7	19.0	149542	13.7	19.7	128383	13.8	19.9	148380	13.9	19.2	27083	13.9	17.1
223531	13.6	21.1	530155	13.7	20.6	72528	13.7	19.6	437567	13.8	19.5	437311	13.9	20.7	491767	13.9	23.4
93061	13.6	19.3	44081	13.7	17.8	106481	13.7	17.1	167473	13.8	17.7	308131	13.9	18.6	479575	13.9	21.0
415328	13.6	19.9	519767	13.7	20.5	98221	13.7	18.5	90679	13.8	20.5	64543	13.9	18.4	486880	13.9	20.9
499644	13.6	20.4	40408	13.7	18.1	397092	13.7	20.2	219913	13.8	20.2	237310	13.9	20.3	80778	13.9	20.0
533197	13.6	21.1	450083	13.7	20.2	197987	13.7	18.4	286188	13.8	19.8	210760	13.9	18.4	99600	13.9	19.8
117234	13.6	19.1	183156	13.7	18.3	1587											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
203770	13.9	19.3	28829	14.0	17.3	531051	14.1	21.6	10595	14.2	17.1	4502	14.3	15.5	14997	14.3	16.7
372363	13.9	21.3	191695	14.0	19.6	338739	14.1	18.8	364562	14.2	20.3	14773	14.3	18.5	93670	14.3	18.9
189455	13.9	18.1	392776	14.0	20.0	186337	14.1	19.8	102621	14.2	19.0	233434	14.3	18.7	277007	14.3	19.3
367286	13.9	20.8	113554	14.0	18.2	278357	14.1	20.6	511499	14.2	20.9	365592	14.3	20.8	482450	14.3	21.0
449385	13.9	21.1	102521	14.0	19.9	472433	14.1	21.2	230313	14.2	19.7	343654	14.3	19.8	117821	14.3	19.7
77674	13.9	19.3	58957	14.0	19.1	431377	14.1	21.4	432764	14.2	21.6	260584	14.3	20.9	523098	14.3	20.6
183675	13.9	17.9	238662	14.0	19.9	17105	14.1	16.6	405704	14.2	21.1	9766	14.3	17.0	399799	14.3	19.6
23061	13.9	18.3	239529	14.0	19.3	349095	14.1	19.7	325845	14.2	20.4	60039	14.3	18.3	321447	14.4	20.5
230354	13.9	19.9	502398	14.0	20.0	297168	14.1	20.1	449630	14.2	20.6	481353	14.3	21.0	173415	14.4	19.3
342153	13.9	20.1	129095	14.0	18.9	525134	14.1	19.6	94476	14.2	18.8	423909	14.3	19.8	220997	14.4	20.8
367061	13.9	20.3	290742	14.0	20.9	239155	14.1	20.1	41269	14.2	18.5	308973	14.3	20.5	233444	14.4	19.1
142049	13.9	19.2	16445	14.1	17.2	313402	14.1	20.7	359937	14.2	20.2	504584	14.3	19.4	283829	14.4	20.1
368298	13.9	20.6	327201	14.1	19.5	324959	14.1	19.8	511504	14.2	20.8	329753	14.3	21.1	157287	14.4	19.2
313357	13.9	20.0	465354	14.1	21.5	403666	14.1	20.0	242917	14.2	20.4	243706	14.3	20.5	32349	14.4	18.0
205316	13.9	20.0	398090	14.1	20.6	273939	14.1	21.4	415358	14.2	20.2	457635	14.3	20.6	466316	14.4	21.5
159650	13.9	19.4	92928	14.1	17.6	419715	14.1	19.8	528059	14.2	22.0	136057	14.3	19.2	223615	14.4	20.2
228648	13.9	19.9	359340	14.1	20.6	86952	14.1	17.1	165394	14.2	18.4	48738	14.3	18.7	311364	14.4	19.8
440675	13.9	20.7	128263	14.1	19.5	536990	14.1	20.4	476136	14.2	20.9	128740	14.3	19.6	446264	14.4	21.1
290131	13.9	20.7	11101	14.1	17.8	351907	14.1	20.8	464508	14.2	21.5	516087	14.3	20.5	396134	14.4	20.9
213331	13.9	19.2	444998	14.1	20.8	515653	14.1	20.9	168136	14.2	20.2	421043	14.3	20.3	497657	14.4	21.0
527739	13.9	21.1	521236	14.1	20.8	524154	14.1	19.8	137494	14.2	18.5	509941	14.3	20.6	479794	14.4	21.1
216094	13.9	19.4	488901	14.1	20.4	254249	14.1	20.3	404082	14.2	18.6	31825	14.3	16.7	445502	14.4	20.1
313910	13.9	19.9	435303	14.1	19.7	12175	14.1	16.6	240597	14.2	19.5	12563	14.3	16.1	539521	14.4	20.7
357536	13.9	20.9	92792	14.1	18.7	476216	14.1	20.4	312676	14.2	19.9	461838	14.3	21.7	371877	14.4	21.1
353095	13.9	20.5	535511	14.1	20.9	419635	14.1	20.6	93650	14.2	18.8	200311	14.3	20.1	93099	14.4	18.4
340248	13.9	19.7	483167	14.1	21.0	124011	14.1	19.1	14587	14.2	16.5	199708	14.3	19.5	230300	14.4	19.7
425055	13.9	21.4	13357	14.1	17.3	309064	14.1	19.7	183907	14.2	19.7	279431	14.3	19.6	529009	14.4	22.1
42954	13.9	18.0	160232	14.1	19.9	504257	14.1	20.2	23649	14.2	19.3	495363	14.3	20.8	55072	14.4	17.5
343903	13.9	19.6	269487	14.1	19.5	12683	14.1	17.0	202264	14.2	19.5	319372	14.3	20.1	285693	14.4	19.6
453662	13.9	19.7	13244	14.1	16.7	451816	14.1	20.7	352793	14.2	20.7	505397	14.3	21.7	12235	14.4	16.4
348171	13.9	20.1	248635	14.1	19.5	56386	14.1	17.7	38635	14.2	17.8	129465	14.3	19.7	530257	14.4	20.2
121313	13.9	19.9	153192	14.1	19.9	133246	14.1	19.3	210864	14.2	19.5	217581	14.3	19.4	393901	14.4	20.6
195413	13.9	20.7	172875	14.1	20.1	322003	14.2	19.6	440487	14.2	20.8	371616	14.3	19.9	244302	14.4	18.9
151815	13.9	19.7	26099	14.1	16.9	19918	14.2	17.5	181764	14.2	20.0	436942	14.3	20.0	141606	14.4	20.4
155881	13.9	19.2	363710	14.1	18.7	317415	14.2	20.4	389944	14.2	19.6	360157	14.3	20.9	335021	14.4	19.7
263115	13.9	20.0	236473	14.1	18.6	36690	14.2	17.4	80772	14.2	18.0	182239	14.3	21.3	65211	14.4	19.5
45359	14.0	17.5	367117	14.1	19.9	465841	14.2	19.8	164804	14.2	19.4	414113	14.3	20.4	451366	14.4	19.8
158112	14.0	19.4	129777	14.1	19.1	224176	14.2	19.1	323680	14.2	20.6	526392	14.3	21.7	295201	14.4	20.5
37837	14.0	17.7	100326	14.1	19.4	371563	14.2	20.3	397678	14.2	20.6	376578	14.3	20.6	525394	14.4	21.1
178844	14.0	19.2	136749	14.1	20.1	166032	14.2	19.8	180757	14.2	19.1	131239	14.3	19.1	182032	14.4	20.7
238248	14.0	19.2	260669	14.1	19.2	310537	14.2	20.2	211842	14.2	19.7	261605	14.3	20.8	94290	14.4	16.7
17404	14.0	17.5	189016	14.1	18.9	387955	14.2	20.8	438919	14.2	19.5	68698	14.3	19.0	88369	14.4	18.7
274795	14.0	20.1	428226	14.1	21.0	184344	14.2	20.7	531009	14.2	21.6	348250	14.3	18.6	504912	14.4	20.6
183538	14.0	20.7	252175	14.1	19.9	521468	14.2	19.7	276146	14.2	21.0	291639	14.3	19.5	196527	14.4	20.1
239889	14.0	19.9	213887	14.1	19.0	510499	14.2	21.3	186318	14.2	20.6	541918	14.3	21.4	114743	14.4	18.0
291266	14.0	18.6	512931	14.1	20.3	18203	14.2	18.3	90481	14.2	18.8	393186	14.3	20.1	537149	14.4	21.1
467526	14.0	20.6	46484	14.1	19.0	312145	14.2	19.2	539748	14.2	20.0	485762	14.3	19.5	70123	14.4	18.7
362500	14.0	20.4	129349	14.1	19.4	312630	14.2	20.0	315672	14.2	20.0	500860	14.3	21.4	44772	14.4	19.1
143054	14.0	19.1	207211	14.1	18.6	208699	14.2	19.8	133584	14.2	18.4	366501	14.3	19.9	38758	14.4	17.5
448425	14.0	19.5	24083	14.1	18.6	512729	14.2	20.1	193532	14.2	18.9	275137	14.3	18.6	336487	14.4	18.6
362379	14.0	19.6	205102	14.1	18.6	70566	14.2	19.7	314396	14.2	19.9	49205	14.3	18.0	59762	14.4	18.8
343036	14.0	18.5	140064	14.1	19.4	139095	14.2	19.7	469469	14.2	19.9	231487	14.3	19.0	121240	14.4	18.7
320101	14.0	20.1	210319	14.1	20.5	217826	14.2	19.5	477102	14.2	20.3	366096	14.3	20.1	82920	14.4	18.1
495831	14.0	20.8	392415	14.1	19.9	536285	14.2	21.7	462544	14.2	21.4	240993	14.3	19.7	66966	14.4	18.6
324956	14.0	19.7	514268	14.1	20.8	160508	14.2	18.8	107101	14.2	18.3	6182	14.3	15.8	512356	14.4	20.4
362910	14.0	21.1	371612	14.1	19.3	293574	14.2	21.0	343810	14.2	19.1	316772	14.3	20.0	19686	14.4	16.7
343855	14.0	20.8	538326	14.1	20.3	40200	14.2	18.1	140980	14.3	19.6	95794	14.3	19.6	153051	14.4	19.4
494547	14.0	20.5	167727	14.1	19.4	159335	14.2	19.3	365669	14.3	19.7	130556	14.3	18.3	264141	14.4	18.9
429619	14.0	20.9	528075	14.1	21.8	36805	14.2	18.6	331337	14.3	20.3	497121	14.3	21.1	317912	14.4	19.4
408347	14.0	20.3	43508	14.1	19.2	46569	14.2	18.9	36239	14.3	18.3	151442	14.3	19.3	335809	14.4	19.6
56851	14.0	18.8	477847	14.1	21.0	392122	14.2	20.3	36536	14.3	16.9	416787	14.3	21.1	238466	14.4	19.8
507089	14.0	20.2	85618	14.1	19.1	134763	14.2	19.7	511431	14.3	20.7	259810	14.3	20.5	281542	14.4	21.0
9964	14.0	17.3	299690	14.1	20.0	228115	14.2	20.1	346743	14.3	20.1	382269	14.3	20.6	370690	14.4	21.0
541035	14.0	20.0	155503	14.1	18.7	133982	14.2	19.0	358466	14.3	20.5	480722	14.3	20.0	437729	14.4	20.8
482433	14.0	21.0	315905	14.1	20.4	512923	14.2	20.7	91103	14.3	17.1	446156	14.3	20.3	509019	14.4	21.6
124412	14.0	17.5	311971	14.1	20.0	334370	14.2	19.2	64150	14.3	16.7	793	14.3	13.5	201160	14.4	19.7
473055	14.0	20.9	65224	14.1	19.8	448069	14.2	20.9	148262	14.3	20.2	497755	14.3	19.8	402018	14.4	20.4
270504	14.0	20.6	348782	14.1	19.8	400529	14.2	20.4	41497	14.3	16.6	472327	14.3	21.6	522777	14.4	21.0
41217	14.0	17.2	377661	14.1	20.7	402393	14.2										



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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
336247	14.4	19.4	20186	14.5	18.3	523856	14.5	20.3	52753	14.6	18.2	165002	14.7	19.2	483199	14.7	20.3
310152	14.4	19.3	290999	14.5	18.0	177008	14.5	19.5	441997	14.6	19.6	359357	14.7	20.0	36651	14.8	18.8
63286	14.4	18.6	275959	14.5	20.1	439716	14.5	19.9	75530	14.6	19.3	60383	14.7	18.0	39527	14.8	17.2
312461	14.4	20.2	64597	14.5	18.2	433828	14.6	21.1	201458	14.6	19.8	205231	14.7	20.2	263861	14.8	20.5
351179	14.4	20.7	312394	14.5	19.8	423044	14.6	19.1	114552	14.6	19.0	512816	14.7	21.1	19327	14.8	17.7
254682	14.4	19.5	323371	14.5	19.1	323641	14.6	19.8	323399	14.6	21.4	207405	14.7	20.1	420901	14.8	21.0
258756	14.4	20.4	261667	14.5	19.7	10254	14.6	17.5	178332	14.6	19.6	189346	14.7	20.6	441951	14.8	21.1
893	14.4	13.6	531254	14.5	20.9	200433	14.6	19.3	491768	14.6	23.5	387635	14.7	19.5	412477	14.8	20.1
342491	14.4	20.2	473288	14.5	19.8	64890	14.6	19.4	99875	14.6	18.9	322092	14.7	20.0	295365	14.8	20.6
483246	14.4	20.7	467729	14.5	22.3	21126	14.6	17.0	131308	14.6	20.3	370161	14.7	18.5	41039	14.8	18.7
33586	14.4	18.5	47054	14.5	18.5	522593	14.6	21.0	445420	14.6	20.1	201782	14.7	18.5	369931	14.8	20.9
389010	14.4	18.9	79058	14.5	18.8	324572	14.6	20.1	432673	14.6	20.0	257186	14.7	20.0	19880	14.8	18.6
100286	14.4	19.4	96867	14.5	18.3	60566	14.6	18.5	231268	14.6	19.8	225048	14.7	20.0	147089	14.8	18.9
455045	14.4	20.5	47533	14.5	17.4	73234	14.6	19.7	260182	14.6	21.1	519230	14.7	21.2	182897	14.8	20.5
342248	14.4	21.1	504580	14.5	19.1	447347	14.6	19.9	468526	14.6	19.5	397006	14.7	19.4	42777	14.8	18.4
246361	14.4	20.1	387069	14.5	20.5	513803	14.6	21.8	442862	14.6	20.1	201723	14.7	18.7	521642	14.8	20.0
316175	14.4	19.8	261776	14.5	19.4	1804	14.6	15.3	259998	14.6	19.4	287671	14.7	19.2	512227	14.8	21.6
265577	14.4	19.5	102402	14.5	18.1	514305	14.6	20.7	182193	14.6	19.0	346768	14.7	19.8	198650	14.8	19.6
512319	14.4	20.5	242525	14.5	19.3	126409	14.6	19.5	18545	14.6	17.4	131824	14.7	19.4	190711	14.8	19.9
86884	14.4	17.9	511853	14.5	20.2	157873	14.6	18.2	386360	14.6	20.2	129323	14.7	19.9	471904	14.8	21.3
251681	14.4	19.7	423953	14.5	20.2	51391	14.6	18.6	248333	14.6	20.3	5244	14.7	17.3	262088	14.8	19.6
470356	14.4	19.5	173641	14.5	19.9	385572	14.6	19.0	290766	14.6	20.8	435786	14.7	20.7	283722	14.8	19.0
465079	14.4	20.0	199979	14.5	19.9	175992	14.6	18.7	214199	14.6	20.0	158157	14.7	19.3	476034	14.8	20.4
312543	14.4	19.5	490740	14.5	20.9	291710	14.6	19.1	435366	14.6	20.4	225138	14.7	19.5	487286	14.8	21.1
215866	14.4	19.8	508813	14.5	18.8	33456	14.6	18.5	121274	14.6	19.2	171738	14.7	19.0	135625	14.8	20.3
256513	14.4	19.2	388709	14.5	19.5	268922	14.6	19.5	320388	14.6	20.4	104344	14.7	19.4	370906	14.8	21.8
338030	14.4	20.2	147886	14.5	18.4	87772	14.6	18.7	462578	14.6	20.7	190666	14.7	18.4	59870	14.8	18.3
430249	14.4	20.0	62348	14.5	17.6	312462	14.6	20.6	233834	14.6	20.3	27167	14.7	17.8	172997	14.8	20.0
260929	14.4	19.7	261668	14.5	20.0	230396	14.6	20.3	263724	14.6	19.8	338487	14.7	20.3	202113	14.8	18.9
62942	14.4	17.9	172262	14.5	19.4	238435	14.6	19.8	216475	14.6	18.8	447688	14.7	21.1	400981	14.8	20.1
396179	14.4	20.8	140031	14.5	18.3	479628	14.6	20.7	360272	14.6	19.8	249398	14.7	19.8	516106	14.8	21.1
152087	14.4	19.7	20031	14.5	17.0	201138	14.6	20.0	524811	14.6	20.2	210336	14.7	19.7	367893	14.8	19.7
540771	14.4	19.2	324419	14.5	19.8	126140	14.6	18.3	62131	14.6	17.8	9758	14.7	17.6	209849	14.8	20.3
315940	14.4	20.4	315055	14.5	20.2	244387	14.6	19.2	144327	14.6	19.3	128424	14.7	18.1	479766	14.8	20.8
65194	14.4	19.1	343437	14.5	19.7	2384	14.6	16.1	401559	14.6	21.0	71550	14.7	18.3	276654	14.8	19.5
139124	14.4	18.4	350424	14.5	19.5	335831	14.6	19.6	217545	14.6	20.1	312452	14.7	20.5	72564	14.8	18.8
322507	14.4	19.1	208281	14.5	19.5	386978	14.6	19.0	373245	14.6	19.8	325687	14.7	19.7	59655	14.8	18.2
521172	14.4	20.8	299844	14.5	19.9	408460	14.6	21.2	39795	14.6	18.9	379202	14.7	19.6	405766	14.8	20.2
92427	14.4	19.1	347042	14.5	20.8	132679	14.6	19.9	390667	14.6	19.9	176649	14.7	20.4	25266	14.8	18.7
196162	14.4	19.2	317180	14.5	19.8	422961	14.6	20.1	513136	14.6	20.6	521735	14.7	21.3	401261	14.8	20.2
368789	14.4	18.9	192525	14.5	18.2	163891	14.6	18.5	186317	14.6	19.7	127931	14.7	19.3	222162	14.8	18.9
333570	14.4	18.7	241700	14.5	17.8	151441	14.6	20.2	242054	14.6	20.6	379303	14.7	19.1	179243	14.8	19.6
455580	14.4	20.9	100931	14.5	19.8	489994	14.6	19.0	361399	14.6	20.2	476196	14.7	20.4	537770	14.8	20.3
537672	14.4	21.1	328206	14.5	20.6	218293	14.6	19.2	264009	14.7	19.3	319256	14.7	19.7	476047	14.8	20.4
467540	14.4	20.7	345962	14.5	19.8	161027	14.6	19.1	72633	14.7	18.1	69681	14.7	18.7	303248	14.8	21.9
7199	14.4	17.2	399894	14.5	21.1	69628	14.6	18.2	231925	14.7	19.2	93265	14.7	17.5	518285	14.8	21.2
241721	14.4	19.2	211100	14.5	20.3	362585	14.6	20.1	181050	14.7	19.6	72485	14.7	19.5	107754	14.8	19.0
511370	14.4	21.0	49764	14.5	19.7	56271	14.6	16.8	489031	14.7	18.9	520113	14.7	19.5	32009	14.8	17.3
386417	14.4	20.7	486719	14.5	20.2	176623	14.6	20.1	128053	14.7	19.3	518282	14.7	20.7	164044	14.8	19.9
26657	14.4	18.1	152480	14.5	19.4	400937	14.6	20.0	15808	14.7	17.7	445828	14.7	20.0	244962	14.8	20.0
328950	14.4	19.7	436919	14.5	20.0	219	14.6	11.3	262211	14.7	19.8	336275	14.7	19.9	91227	14.8	19.0
506461	14.5	20.8	285497	14.5	20.3	205570	14.6	19.9	358909	14.7	21.2	397105	14.7	20.4	380322	14.8	20.6
151741	14.5	19.8	390265	14.5	20.3	345506	14.6	19.4	440298	14.7	20.1	300253	14.7	21.1	365260	14.8	20.1
454837	14.5	20.1	159356	14.5	20.4	473997	14.6	21.2	93683	14.7	18.8	206672	14.7	18.9	368661	14.8	20.6
285155	14.5	20.3	497900	14.5	19.8	423860	14.6	19.6	342297	14.7	19.5	222404	14.7	19.9	261766	14.8	19.7
384387	14.5	20.7	364474	14.5	21.3	307025	14.6	18.5	320914	14.7	20.4	187295	14.7	20.0	6138	14.8	17.6
154611	14.5	19.3	150359	14.5	18.2	383937	14.6	20.4	363681	14.7	18.8	56369	14.7	17.9	221921	14.8	20.4
231741	14.5	18.4	482732	14.5	20.5	38232	14.6	18.3	390443	14.7	20.0	103029	14.7	17.7	389951	14.8	19.4
476672	14.5	20.5	130111	14.5	19.6	424108	14.6	22.0	14839	14.7	16.8	531025	14.7	21.3	21069	14.8	18.0
472262	14.5	19.9	423896	14.5	19.9	1383	14.6	15.4	300248	14.7	20.9	518267	14.7	18.9	84122	14.8	19.8
401696	14.5	20.4	215681	14.5	19.4	537633	14.6	21.1	484073	14.7	20.1	444097	14.7	19.4	469058	14.8	21.1
195315	14.5	20.4	276816	14.5	20.5	195309	14.6	19.5	457658	14.7	21.3	243185	14.7	20.2	295909	14.8	20.6
74379	14.5	18.5	107461	14.5	19.1	310199	14.6	19.9	24749	14.7	17.5	366541	14.7	20.0	325661	14.8	20.2
212115	14.5	19.0	44173	14.5	19.3	531769	14.6	20.8	449355	14.7	20.0	397042	14.7	19.5	185462	14.8	19.8
513852	14.5	21.7	405803	14.5	20.3	500901	14.6	20.8	482909	14.7	20.5	212052	14.7	19.8	89727	14.8	19.4
446257	14.5	20.3	83247	14.5	19.0	242271	14.6	18.6	12252	14.7	16.4	316269	14.7	19.5	422888	14.8	20.3
229834	14.5	20.2	165044	14.5	19.3	213474	14.6	19.5	367947	14.7	21.2	130084	14.7	19.4	342783	14.8	20.7
93175	14.5	18.7	285606	14.5	19.7	325040	14.6	18.6	405235	14.7	21.0	338754	14.7	19.7	419807	14.8	19.7
313158	14.5	20.9	313073	14.5	19.5	387235	14.6										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
378578	14.8	20.8	390157	14.9	20.3	199659	14.9	20.2	178411	15.0	20.0	5569	15.1	17.0	113465	15.2	18.5
347467	14.8	20.0	208341	14.9	20.2	91571	14.9	18.3	289332	15.0	19.7	160528	15.1	19.0	214518	15.2	19.1
329393	14.8	18.8	248981	14.9	19.5	136673	14.9	20.7	225938	15.0	18.7	472113	15.1	20.4	512068	15.2	20.8
260225	14.8	19.2	288988	14.9	20.2	185340	14.9	18.9	257073	15.0	19.7	472024	15.1	19.7	276874	15.2	20.7
396509	14.8	20.8	434782	14.9	20.9	449293	14.9	21.4	510717	15.0	19.9	394324	15.1	20.3	174105	15.2	20.6
126632	14.8	19.7	397037	14.9	19.6	513281	14.9	20.1	314609	15.0	20.5	352269	15.1	20.6	158281	15.2	19.1
29768	14.8	17.4	521502	14.9	21.2	438831	14.9	21.0	370019	15.0	20.6	185147	15.1	20.2	273499	15.2	20.4
419643	14.8	20.1	203676	14.9	19.5	535697	14.9	21.2	20015	15.0	17.3	279462	15.1	19.4	398279	15.2	20.4
94747	14.8	19.0	344629	14.9	20.2	383169	14.9	20.2	170415	15.0	18.8	112029	15.1	19.6	22502	15.2	17.1
442003	14.8	20.2	370012	14.9	19.2	254342	14.9	20.2	510072	15.0	21.0	360996	15.1	21.1	238605	15.2	19.6
508796	14.8	22.6	432838	14.9	21.3	284425	14.9	20.0	78970	15.0	18.6	381063	15.1	21.4	438602	15.2	20.8
432305	14.8	20.7	376886	14.9	18.7	445488	14.9	20.5	65459	15.0	19.5	424480	15.1	20.7	174125	15.2	20.3
210346	14.8	19.8	400978	14.9	19.4	200039	14.9	20.1	13183	15.0	17.9	237485	15.1	19.6	41124	15.2	18.6
48404	14.8	17.7	46971	14.9	18.2	77138	14.9	19.5	357928	15.0	20.4	245581	15.1	19.7	349821	15.2	20.4
60481	14.8	18.6	479070	14.9	21.1	156652	14.9	19.8	155732	15.0	18.4	375950	15.1	19.9	464188	15.2	20.9
236887	14.8	19.6	244810	14.9	19.6	60143	14.9	18.5	361133	15.0	21.0	365550	15.1	19.7	16067	15.2	18.2
438086	14.8	19.8	192898	14.9	19.2	342570	14.9	19.0	291946	15.0	20.5	207321	15.1	19.9	97041	15.2	18.3
361004	14.8	21.0	39482	14.9	19.2	36324	14.9	17.5	518187	15.0	21.3	69440	15.1	19.4	263025	15.2	20.4
531700	14.8	20.7	132041	14.9	19.6	394708	14.9	21.0	481482	15.0	20.6	516109	15.1	21.1	381993	15.2	21.5
280944	14.8	19.4	273818	14.9	21.5	165825	14.9	19.2	199235	15.0	19.8	184260	15.1	20.0	8810	15.2	17.7
52791	14.8	17.6	431346	14.9	19.7	322546	14.9	19.9	369932	15.0	21.0	17804	15.1	17.4	418097	15.2	19.8
321112	14.8	19.8	200536	14.9	19.4	193467	14.9	18.9	320183	15.1	20.2	27041	15.1	17.8	494475	15.2	20.4
22962	14.8	18.7	90805	14.9	19.1	133338	14.9	19.5	426593	15.1	20.2	86719	15.1	19.9	526393	15.2	22.2
202781	14.8	19.2	261578	14.9	20.4	206311	14.9	19.9	292433	15.1	21.0	515243	15.1	21.2	28065	15.2	17.6
256539	14.8	19.1	533772	14.9	21.0	394489	14.9	20.1	327508	15.1	19.6	195153	15.1	19.7	516119	15.2	20.5
397651	14.8	20.6	398266	14.9	20.7	515224	14.9	20.7	477550	15.1	20.1	210198	15.1	18.9	355251	15.2	21.3
3393	14.8	16.2	512107	14.9	20.0	500908	14.9	21.1	157670	15.1	20.2	234214	15.1	18.8	207391	15.2	18.9
532250	14.8	20.6	260483	14.9	20.1	264156	14.9	19.9	158398	15.1	19.7	186992	15.1	16.6	232868	15.2	19.5
115098	14.8	18.7	147189	14.9	19.1	455013	14.9	20.6	53339	15.1	18.1	316079	15.1	21.0	216675	15.2	19.9
176625	14.8	20.3	515375	14.9	21.9	349237	14.9	20.1	361556	15.1	20.4	122920	15.1	18.8	258844	15.2	19.9
389948	14.8	20.5	247534	14.9	20.0	96972	14.9	19.0	241199	15.1	19.6	204415	15.1	19.6	255238	15.2	19.7
307073	14.8	20.2	36897	14.9	17.7	333462	14.9	19.8	382268	15.1	19.8	476164	15.1	20.4	417499	15.2	19.9
104597	14.8	19.8	80943	14.9	19.0	282589	14.9	20.4	238632	15.1	20.0	537597	15.1	20.2	448710	15.2	21.0
419602	14.8	21.1	51661	14.9	18.3	199535	14.9	19.0	444701	15.1	20.7	221484	15.1	19.1	176138	15.2	19.9
282059	14.8	19.9	251943	14.9	18.1	217635	14.9	19.9	45634	15.1	17.8	206015	15.1	20.3	91591	15.2	20.1
528113	14.8	22.2	510526	14.9	20.3	86876	14.9	19.4	93128	15.1	18.9	396074	15.1	20.5	391891	15.2	20.1
351169	14.9	20.2	511137	14.9	23.0	521898	14.9	20.5	497817	15.1	19.7	34407	15.1	17.5	279124	15.2	19.3
525835	14.9	20.9	207836	14.9	20.0	406385	14.9	19.0	302289	15.1	19.8	203542	15.1	19.7	435013	15.2	19.0
483963	14.9	21.2	354768	14.9	19.9	449300	14.9	21.3	161636	15.1	20.2	316069	15.1	21.4	182953	15.2	18.9
218089	14.9	20.1	974	14.9	13.0	29432	14.9	18.9	52607	15.1	17.6	353197	15.1	20.5	224955	15.2	20.0
344787	14.9	20.3	449977	14.9	20.5	375693	14.9	20.4	322633	15.1	18.8	304589	15.1	20.1	164208	15.2	19.2
329461	14.9	21.3	291863	14.9	20.3	51561	14.9	18.0	105862	15.1	18.7	507451	15.1	20.3	445435	15.2	20.2
509167	14.9	20.7	428220	14.9	20.7	370445	14.9	19.7	221916	15.1	19.8	127290	15.1	19.2	471508	15.2	21.8
42593	14.9	19.0	322117	14.9	20.2	509638	14.9	21.4	443813	15.1	20.3	54063	15.1	19.3	511226	15.2	21.0
162352	14.9	19.2	127000	14.9	20.2	187481	14.9	18.4	25800	15.1	18.9	236916	15.1	19.9	119435	15.2	17.4
77423	14.9	19.5	539294	14.9	21.0	500868	14.9	21.9	433501	15.1	19.9	283358	15.1	20.0	399333	15.2	19.3
24549	14.9	18.8	321590	14.9	20.0	171215	14.9	19.7	131242	15.1	19.3	76481	15.1	18.4	304557	15.2	20.2
529693	14.9	21.6	63239	14.9	18.9	513840	14.9	22.7	33500	15.1	18.5	187008	15.1	19.5	75809	15.2	18.6
429949	14.9	20.9	369056	14.9	20.8	185556	14.9	20.2	359677	15.1	19.1	390353	15.1	20.0	103874	15.2	19.6
352298	14.9	18.6	308677	14.9	20.8	156963	14.9	19.3	338617	15.1	19.9	119036	15.1	18.3	234327	15.2	19.9
303214	14.9	19.9	410200	14.9	19.7	99021	14.9	19.4	315004	15.1	19.9	395101	15.1	21.4	352169	15.2	19.1
531209	14.9	21.6	479725	14.9	21.0	145262	15.0	19.0	95851	15.1	19.8	248519	15.1	18.9	46784	15.2	20.5
141803	14.9	19.1	521513	14.9	21.0	74329	15.0	19.2	310654	15.1	20.2	222192	15.1	19.8	25006	15.2	17.3
480091	14.9	22.3	220884	14.9	19.3	539446	15.0	20.3	518183	15.1	21.1	311399	15.1	19.2	507370	15.2	21.0
529612	14.9	21.0	477954	14.9	20.9	438022	15.0	20.0	327689	15.1	19.8	189131	15.1	19.0	12774	15.2	17.5
22615	14.9	18.0	180858	14.9	20.1	425598	15.0	19.9	513162	15.1	19.1	125195	15.1	18.6	168112	15.2	19.9
215394	14.9	19.9	359393	14.9	19.8	136948	15.0	18.9	290944	15.1	19.2	485775	15.1	21.1	58366	15.2	19.7
41352	14.9	17.6	246560	14.9	19.7	513307	15.0	21.9	441794	15.1	20.7	45022	15.1	17.9	190210	15.2	20.6
383599	14.9	19.6	152363	14.9	19.5	154177	15.0	19.9	387369	15.1	19.9	295921	15.1	19.5	135553	15.2	19.9
66389	14.9	19.4	134545	14.9	19.1	431994	15.0	19.8	472834	15.1	20.9	539368	15.1	20.1	18259	15.2	18.5
59309	14.9	17.7	367295	14.9	20.2	5259	15.0	17.5	285743	15.1	20.3	41534	15.1	17.3	255852	15.2	20.2
437106	14.9	20.2	292540	14.9	19.6	313686	15.0	21.0	361021	15.1	20.8	468118	15.1	20.7	213528	15.2	20.3
2449	14.9	16.9	505415	14.9	20.4	331330	15.0	20.3	363768	15.1	20.3	318651	15.1	19.5	150908	15.2	19.7
234564	14.9	19.5	153274	14.9	20.3	338639	15.0	19.1	56407	15.1	19.2	185011	15.2	20.0	357844	15.2	20.0
481732	14.9	20.7	422385	14.9	19.7	50513	15.0	19.2	501852	15.1	20.0	470326	15.2	18.8	61493	15.2	18.2
200594	14.9	18.0	516685	14.9	20.9	321949	15.0	19.9	181342	15.1	17.7	487172	15.2	20.3	243223	15.2	19.0
65727	14.9	19.5	299173	14.9	20.9	166929	15.0	18.5	338814	15.1	19.6	182736	15.2	19.3	415276	15.2	21.0
506608	14.9	20.5	334428	14.9	21.0	335551	15.0	19.9	463139	15.1	19.3	188853	15.2	19.9	450339	15.2	20.0
312482	14.9	20.2	253833	14.9	19.1	461359											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
506797	15.2	21.2	539270	15.3	20.6	444119	15.4	20.1	432667	15.4	21.6	166953	15.5	19.6	289993	15.6	19.6
452134	15.2	20.6	501092	15.3	20.5	252916	15.4	20.0	255373	15.4	19.3	449739	15.5	20.2	376881	15.6	19.5
106110	15.2	18.6	476949	15.3	20.7	210467	15.4	20.7	209399	15.4	20.2	473043	15.5	20.7	513402	15.6	21.6
512171	15.2	20.6	435305	15.3	20.1	149078	15.4	19.2	260318	15.4	20.1	188955	15.5	19.8	443606	15.6	20.2
152393	15.2	18.9	428328	15.3	21.1	387149	15.4	20.9	394566	15.4	20.0	240426	15.5	19.7	261782	15.6	19.4
51451	15.2	19.4	158152	15.3	19.4	430537	15.4	20.7	534219	15.4	20.9	333897	15.5	18.4	247744	15.6	19.5
446183	15.2	20.8	425967	15.3	21.0	531457	15.4	20.6	195559	15.4	19.6	276921	15.5	20.5	97329	15.6	18.8
426112	15.2	21.2	59385	15.3	18.6	220890	15.4	19.1	345889	15.4	20.2	291103	15.5	20.0	537003	15.6	21.8
480405	15.2	20.6	19530	15.3	17.5	232523	15.4	19.5	477482	15.5	20.2	40572	15.5	18.4	183662	15.6	19.3
477512	15.2	20.6	320302	15.3	20.0	522986	15.4	21.3	233299	15.5	19.6	525414	15.5	20.7	239872	15.6	20.5
177840	15.2	20.4	205775	15.3	20.0	35246	15.4	18.7	528193	15.5	21.3	512438	15.5	20.1	516267	15.6	21.0
251784	15.2	19.6	452236	15.3	20.6	387389	15.4	20.1	477893	15.5	20.7	355637	15.5	19.7	144207	15.6	19.8
49036	15.2	23.7	319276	15.3	20.7	41779	15.4	18.6	285965	15.5	20.0	347471	15.5	19.9	349221	15.6	21.1
362812	15.2	20.5	280147	15.3	19.5	191290	15.4	20.7	212771	15.5	20.2	23300	15.5	18.8	80742	15.6	18.0
203315	15.2	18.9	382153	15.3	18.8	296727	15.4	19.1	356498	15.5	20.1	507274	15.5	19.9	33555	15.6	18.6
325971	15.2	21.0	25902	15.3	18.2	294838	15.4	21.1	394953	15.5	20.8	55829	15.5	19.2	1922	15.6	18.5
97834	15.2	17.2	246399	15.3	20.3	320498	15.4	20.0	103496	15.5	19.0	119786	15.5	19.4	342041	15.6	20.2
167760	15.2	18.6	39620	15.3	17.0	163067	15.4	23.7	472923	15.5	20.4	408238	15.5	21.0	199118	15.6	21.0
444372	15.2	19.7	205663	15.3	18.3	58787	15.4	17.5	69355	15.5	19.4	10832	15.5	17.1	312420	15.6	20.0
371922	15.2	20.7	158449	15.3	19.9	145788	15.4	20.1	380812	15.5	20.4	515240	15.5	21.1	53478	15.6	19.2
386344	15.3	19.4	261935	15.3	20.5	479976	15.4	20.3	430539	15.5	21.1	410726	15.5	20.0	367550	15.6	20.9
158437	15.3	19.6	31082	15.3	18.0	399878	15.4	20.3	524589	15.5	22.5	297194	15.5	19.6	416773	15.6	20.8
481527	15.3	21.1	38565	15.3	19.2	63291	15.4	19.3	89684	15.5	17.5	538666	15.5	21.3	302197	15.6	19.5
187676	15.3	19.8	332466	15.3	21.0	158394	15.4	19.1	151423	15.5	20.8	362579	15.5	19.8	159152	15.6	19.7
171041	15.3	20.1	230608	15.3	20.6	364485	15.4	21.6	260620	15.5	21.2	131874	15.5	19.1	302279	15.6	19.6
455952	15.3	20.4	509658	15.3	21.2	166285	15.4	19.8	365684	15.5	20.3	373227	15.5	20.6	142347	15.6	20.5
382633	15.3	20.2	406270	15.3	21.0	250534	15.4	19.3	83481	15.5	19.3	393209	15.5	20.8	254182	15.6	19.7
129461	15.3	19.6	340244	15.3	20.4	410189	15.4	21.0	123652	15.5	18.3	274090	15.5	20.3	35052	15.6	19.1
255478	15.3	19.9	189550	15.3	18.9	373175	15.4	21.0	51836	15.5	18.7	27755	15.5	17.8	380809	15.6	18.9
98702	15.3	18.7	95105	15.3	18.4	203167	15.4	18.7	101880	15.5	19.1	42132	15.5	18.9	159247	15.6	19.4
378186	15.3	20.2	288757	15.3	20.7	531322	15.4	22.1	105527	15.5	18.6	261694	15.6	19.5	3680	15.6	15.3
63299	15.3	19.6	335159	15.3	20.1	389463	15.4	20.2	279481	15.5	20.0	407193	15.6	20.7	444111	15.6	20.1
496854	15.3	20.5	40675	15.3	18.4	169596	15.4	20.3	216380	15.5	19.8	309664	15.6	19.5	133090	15.6	16.2
402148	15.3	19.7	391081	15.3	21.3	39324	15.4	17.0	516503	15.5	21.5	69716	15.6	18.4	367491	15.6	21.2
271869	15.3	20.4	327208	15.3	21.5	280952	15.4	20.3	382883	15.5	20.0	302100	15.6	21.7	365815	15.6	20.0
477874	15.3	21.2	113028	15.3	19.4	127113	15.4	16.4	100630	15.5	18.1	1592	15.6	16.4	400917	15.6	19.8
180390	15.3	19.3	325457	15.3	19.5	363435	15.4	20.6	476892	15.5	20.4	477900	15.6	19.9	531401	15.6	20.8
435180	15.3	19.2	70365	15.3	18.7	32937	15.4	16.7	49553	15.5	17.7	63315	15.6	20.0	115511	15.7	18.1
470616	15.3	21.4	359388	15.3	20.8	20650	15.4	18.1	146808	15.5	18.9	514453	15.6	20.8	477897	15.7	20.5
221849	15.3	21.2	507288	15.3	21.3	539046	15.4	20.6	250772	15.5	19.9	359957	15.6	20.6	463486	15.7	20.7
59924	15.3	17.9	380172	15.4	19.3	444696	15.4	20.6	13665	15.5	16.9	423906	15.6	19.6	403222	15.7	20.3
146844	15.3	19.8	159441	15.4	18.0	130975	15.4	18.8	504973	15.5	19.4	390835	15.6	21.2	177274	15.7	19.8
439251	15.3	20.4	432000	15.4	20.5	186319	15.4	20.3	509490	15.5	20.2	252969	15.6	20.8	483617	15.7	20.3
89935	15.3	19.4	418178	15.4	19.1	328929	15.4	18.9	387292	15.5	20.1	357162	15.6	21.4	75066	15.7	17.8
94878	15.3	18.2	24220	15.4	17.5	213487	15.4	20.1	410038	15.5	22.3	469928	15.6	20.5	533584	15.7	21.8
367267	15.3	19.5	252715	15.4	19.8	183844	15.4	19.5	184487	15.5	20.2	358513	15.6	20.7	12946	15.7	17.7
227441	15.3	19.7	94209	15.4	18.3	523237	15.4	20.4	17618	15.5	17.0	356478	15.6	20.7	445417	15.7	20.7
195412	15.3	18.9	397017	15.4	20.7	454137	15.4	20.6	471819	15.5	19.7	59380	15.6	18.9	159007	15.7	18.0
273795	15.3	20.0	357732	15.4	19.4	289165	15.4	19.9	226357	15.5	20.1	350286	15.6	20.3	447699	15.7	20.8
108153	15.3	18.8	228097	15.4	20.0	132505	15.4	18.9	341031	15.5	20.4	230397	15.6	20.4	192755	15.7	18.3
218531	15.3	17.9	287171	15.4	21.4	213535	15.4	20.9	508476	15.5	20.1	149143	15.6	19.8	221501	15.7	19.5
58560	15.3	19.2	262283	15.4	18.4	292629	15.4	19.0	249762	15.5	18.7	219301	15.6	20.7	26272	15.7	17.5
51476	15.3	18.6	183746	15.4	20.1	252842	15.4	20.6	158841	15.5	19.2	251840	15.6	20.0	430050	15.7	19.9
310031	15.3	21.0	341136	15.4	20.3	164676	15.4	19.9	321378	15.5	20.4	516088	15.6	20.1	54685	15.7	17.1
503498	15.3	21.0	4076	15.4	15.7	516836	15.4	21.0	532087	15.5	20.9	423213	15.6	19.4	380177	15.7	18.0
324423	15.3	20.0	537287	15.4	21.5	423883	15.4	20.1	157872	15.5	20.0	371416	15.6	21.6	535037	15.7	20.4
481474	15.3	21.0	390545	15.4	20.8	114924	15.4	17.4	178704	15.5	18.4	169963	15.6	18.7	154224	15.7	19.6
199339	15.3	18.9	345484	15.4	20.7	77416	15.4	19.4	254426	15.5	19.1	348885	15.6	20.8	539699	15.7	20.5
46389	15.3	18.5	537120	15.4	21.2	453729	15.4	20.0	395593	15.5	20.9	339378	15.6	20.3	195245	15.7	20.3
400703	15.3	20.0	301774	15.4	19.7	498057	15.4	20.2	48089	15.5	19.6	509745	15.6	20.3	117311	15.7	18.3
183830	15.3	18.8	297110	15.4	19.8	401639	15.4	20.5	124661	15.5	18.0	32819	15.6	17.9	233888	15.7	19.3
432820	15.3	22.0	42703	15.4	18.3	208521	15.4	18.9	361480	15.5	21.9	225628	15.6	20.3	226351	15.7	20.7
254214	15.3	18.8	39415	15.4	19.1	518257	15.4	20.6	218389	15.5	20.1	316909	15.6	18.9	380281	15.7	20.1
209349	15.3	20.2	208020	15.4	18.9	342537	15.4	20.5	178847	15.5	20.4	374950	15.6	18.8	459435	15.7	21.2
262372	15.3	19.7	64996	15.4	18.5	512797	15.4	20.6	395387	15.5	21.0	260340	15.6	19.3	315303	15.7	19.5
352319	15.3	20.1	533725	15.4	19.6	341202	15.4	19.1	291701	15.5	19.0	406995	15.6	20.8	357885	15.7	19.6
40573	15.3	16.5	349810	15.4	20.5	406513	15.4	19.6	188949	15.5	19.9	302181	15.6	19.4	401275	15.7	20.5
226036	15.3	19.6	529508	15.4	20.7	216710	15.4	20.4	46394	15.5	16.9	278885	15.6	20.1	192494	15.7	19.6
157897	15.3	20.3	145028	15.4	20.8	94											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
525006	15.7	19.9	112766	15.8	19.0	280421	15.8	19.2	386805	15.9	20.5	360008	15.9	19.4	22437	16.0	18.9
33642	15.7	17.2	427580	15.8	23.0	200524	15.8	20.1	207900	15.9	20.0	303213	15.9	20.1	269356	16.0	19.9
78223	15.7	19.0	11399	15.8	17.3	113834	15.8	18.6	470911	15.9	20.8	257189	15.9	20.2	91753	16.0	18.6
137941	15.7	20.2	369961	15.8	20.5	457747	15.8	21.3	431069	15.9	20.1	440427	15.9	20.3	273855	16.0	19.4
252199	15.7	19.8	245127	15.8	19.2	99172	15.8	18.8	171796	15.9	18.7	249502	15.9	19.9	390172	16.0	20.7
297196	15.7	20.0	435328	15.8	21.1	500083	15.8	20.6	386859	15.9	19.8	178836	15.9	20.3	207454	16.0	20.7
164514	15.7	19.8	182092	15.8	19.5	378550	15.8	20.9	124249	15.9	18.7	418043	15.9	21.0	130771	16.0	20.1
469283	15.7	20.0	219125	15.8	19.2	378200	15.8	20.5	307189	15.9	21.1	259362	15.9	18.7	213681	16.0	19.7
438600	15.7	20.9	91724	15.8	18.9	235348	15.8	19.7	388585	15.9	20.4	370428	15.9	19.6	278574	16.0	20.4
222227	15.7	20.9	320672	15.8	20.7	481117	15.8	20.3	510520	15.9	20.9	513382	15.9	22.1	413772	16.0	20.7
482399	15.7	19.4	43988	15.8	18.6	367302	15.8	19.0	239450	15.9	20.0	338499	15.9	19.1	60852	16.0	19.0
510842	15.7	21.6	51573	15.8	19.3	71330	15.8	19.0	306202	15.9	21.6	535783	15.9	20.9	284805	16.0	20.2
530409	15.7	21.6	318349	15.8	19.7	339273	15.8	19.3	236631	15.9	20.9	537378	15.9	21.2	98724	16.0	18.1
207602	15.7	19.8	258930	15.8	19.5	383215	15.8	19.8	346624	15.9	20.4	477570	15.9	21.4	60894	16.0	18.2
271063	15.7	21.5	481503	15.8	21.0	66160	15.8	17.3	322758	15.9	20.6	64799	15.9	18.4	402951	16.0	19.7
198922	15.7	20.3	325045	15.8	21.2	219511	15.8	20.0	74821	15.9	17.6	200572	15.9	20.2	159029	16.0	18.9
236719	15.7	20.6	436247	15.8	20.3	391990	15.8	19.3	396701	15.9	19.9	36246	15.9	19.6	436551	16.0	20.3
77711	15.7	19.2	342332	15.8	18.1	441746	15.8	21.3	14405	15.9	17.3	340383	15.9	20.2	386753	16.0	20.6
357550	15.7	20.5	472873	15.8	21.6	170241	15.8	19.1	288763	15.9	19.7	416523	15.9	19.1	358912	16.0	20.2
327215	15.7	20.8	504129	15.8	20.4	182908	15.8	19.9	514064	15.9	21.0	252174	15.9	18.9	294942	16.0	20.9
475949	15.7	21.9	235249	15.8	19.5	316951	15.8	20.1	278518	15.9	20.4	114418	15.9	18.2	471245	16.0	20.6
280946	15.7	20.9	537459	15.8	21.5	119505	15.8	18.3	513801	15.9	21.8	244854	15.9	19.1	256535	16.1	20.0
4737	15.7	16.6	438961	15.8	20.5	28270	15.8	17.3	321481	15.9	21.4	60070	15.9	19.7	438138	16.1	20.4
389826	15.7	20.3	329622	15.8	19.6	383624	15.8	19.7	355506	15.9	20.5	499622	15.9	19.4	129390	16.1	18.7
463399	15.7	21.1	10646	15.8	17.1	256579	15.8	20.1	497707	15.9	19.8	284286	15.9	20.7	50761	16.1	18.2
380832	15.7	18.0	269826	15.8	19.6	39180	15.8	17.4	271591	15.9	19.9	366118	15.9	19.7	319280	16.1	20.3
254208	15.7	20.1	380273	15.8	20.0	15723	15.8	16.6	312492	15.9	19.5	106034	15.9	19.3	302255	16.1	19.7
185681	15.7	20.2	440568	15.8	21.1	516108	15.8	21.2	449976	15.9	21.3	284544	15.9	20.2	66101	16.1	18.0
13569	15.7	18.1	511338	15.8	20.7	72272	15.8	18.6	196497	15.9	19.8	433961	15.9	20.1	256637	16.1	20.2
509074	15.7	20.8	539354	15.8	21.3	58574	15.8	19.5	438136	15.9	20.4	476693	15.9	21.0	352036	16.1	20.0
66238	15.7	19.4	261546	15.8	20.0	164633	15.8	19.9	103491	15.9	18.4	254390	15.9	19.0	408535	16.1	20.9
487184	15.7	20.3	122688	15.8	18.2	364480	15.8	21.2	21860	15.9	17.3	217526	15.9	19.1	133196	16.1	19.7
225221	15.7	20.1	364096	15.8	20.6	24244	15.8	18.0	168406	15.9	20.1	346996	15.9	20.8	365530	16.1	20.1
355286	15.7	20.9	240937	15.8	20.4	120645	15.8	20.2	214083	15.9	20.5	374289	15.9	20.1	475727	16.1	19.9
512147	15.7	19.9	335059	15.8	19.5	49151	15.8	19.2	127211	15.9	19.5	349748	15.9	20.7	405759	16.1	20.4
468655	15.7	19.1	173638	15.8	20.3	290962	15.8	19.7	211760	15.9	20.8	492335	15.9	20.4	295491	16.1	20.4
486760	15.7	20.7	65189	15.8	19.4	242597	15.8	20.0	244445	15.9	19.7	145425	15.9	19.2	68587	16.1	19.0
187378	15.7	19.7	287906	15.8	20.1	261736	15.8	19.7	312639	15.9	19.8	136693	15.9	21.0	2775	16.1	15.4
532812	15.7	19.4	331323	15.8	20.0	103190	15.8	17.8	487300	15.9	21.7	344776	15.9	18.6	512582	16.1	21.0
181118	15.7	20.0	516084	15.8	20.9	78511	15.8	18.5	161011	15.9	19.6	400448	15.9	20.4	399831	16.1	20.8
276979	15.7	19.1	435650	15.8	19.5	100824	15.8	19.7	263580	15.9	19.9	264555	15.9	20.0	424510	16.1	20.3
226358	15.7	20.0	131156	15.8	20.2	385573	15.9	19.4	336732	15.9	19.4	194131	15.9	19.9	222408	16.1	20.1
449651	15.7	22.0	255053	15.8	20.4	138300	15.9	21.4	129242	15.9	19.5	476281	15.9	20.6	471503	16.1	21.0
222861	15.7	19.2	420406	15.8	20.0	497578	15.9	22.0	473892	15.9	20.9	85789	15.9	18.0	177077	16.1	21.0
250845	15.7	19.2	211120	15.8	20.1	509182	15.9	21.3	230330	15.9	19.9	48752	15.9	19.0	110893	16.1	19.4
489091	15.7	19.6	86397	15.8	17.6	259799	15.9	18.8	74258	15.9	19.1	345972	15.9	20.7	94377	16.1	18.5
216703	15.7	19.4	497944	15.8	19.9	537464	15.9	21.6	158123	15.9	20.6	384643	16.0	19.5	383183	16.1	20.6
209547	15.7	20.4	348815	15.8	19.2	356915	15.9	20.6	185476	15.9	20.2	134525	16.0	18.3	447034	16.1	21.0
178849	15.7	19.6	46825	15.8	18.0	243771	15.9	19.1	94860	15.9	18.0	221153	16.0	19.7	232878	16.1	18.8
34394	15.7	18.8	336629	15.8	20.6	230630	15.9	19.9	172432	15.9	19.0	296355	16.0	21.1	6960	16.1	17.2
419584	15.7	21.0	260958	15.8	20.7	274410	15.9	20.1	260426	15.9	19.4	65870	16.0	16.5	4219	16.1	17.2
476172	15.7	20.5	17540	15.8	17.0	154127	15.9	19.6	187684	15.9	20.0	291378	16.0	20.0	56241	16.1	17.8
251340	15.7	19.4	293385	15.8	20.4	203965	15.9	19.4	338006	15.9	19.8	292416	16.0	20.6	134891	16.1	19.2
443383	15.7	20.9	312426	15.8	20.4	195490	15.9	19.4	177343	15.9	18.9	74266	16.0	18.9	471750	16.1	20.4
329008	15.7	20.6	506596	15.8	20.7	509874	15.9	19.2	435796	15.9	18.9	60066	16.0	19.0	396813	16.1	19.2
499748	15.7	19.2	426072	15.8	21.5	318517	15.9	20.0	60174	15.9	19.1	431974	16.0	20.7	185272	16.1	20.6
64717	15.7	18.2	348269	15.8	20.2	173559	15.9	19.5	266992	15.9	19.4	225296	16.0	20.3	491285	16.1	20.2
443262	15.7	19.5	513371	15.8	22.2	22719	15.9	16.8	72166	15.9	18.1	263787	16.0	19.7	272124	16.1	20.2
342086	15.7	20.4	512646	15.8	20.5	356199	15.9	20.6	282195	15.9	21.0	26600	16.0	17.4	514691	16.1	21.9
23719	15.7	18.0	71290	15.8	17.7	215733	15.9	19.4	178184	15.9	20.9	383207	16.0	20.4	126898	16.1	19.4
321599	15.7	20.8	381136	15.8	19.1	347052	15.9	21.1	442035	15.9	19.9	164015	16.0	19.4	461152	16.1	20.9
261677	15.7	19.1	398272	15.8	20.9	120336	15.9	19.3	285517	15.9	20.3	313324	16.0	20.5	252137	16.1	19.6
353759	15.7	20.2	121759	15.8	18.3	288482	15.9	20.6	403470	15.9	19.7	390122	16.0	20.4	468612	16.1	20.9
24599	15.7	18.7	159381	15.8	19.3	437471	15.9	19.6	482185	15.9	19.9	390920	16.0	21.4	61297	16.1	19.0
167297	15.7	19.6	120758	15.8	19.8	163825	15.9	19.5	539246	15.9	20.8	319870	16.0	20.8	510618	16.1	19.0
74314	15.7	18.3	75157	15.8	18.8	12020	15.9	16.5	45404	15.9	19.6	149919	16.0	19.5	216800	16.1	19.9
400534	15.7	19.8	44590	15.8	17.6	302206	15.9	19.3	26491	15.9	18.0	336822	16.0	20.7	507468	16.1	20.5
46635	15.7	17.2	472195	15.8	19.9	403156	15.9	21.8	324503	15.9	20.1	501059	16.0	20.6	92056	16.1	18.1
203397	15.7	19.4	362828	15.8	20.5	367288											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
525664	16.1	21.0	475564	16.2	21.0	291686	16.2	20.7	441824	16.3	20.6	112043	16.3	20.1	439073	16.4	20.6
355008	16.1	19.3	319773	16.2	20.9	133462	16.2	18.8	255719	16.3	19.2	438726	16.3	20.8	254222	16.4	20.1
405792	16.1	20.8	209774	16.2	20.3	237619	16.2	20.4	361957	16.3	20.8	410688	16.3	19.7	325806	16.4	19.0
23473	16.1	16.9	251778	16.2	19.7	132571	16.2	18.7	216820	16.3	20.3	128824	16.3	18.0	160679	16.4	18.9
3286	16.1	16.8	514861	16.2	21.3	176704	16.2	20.3	446193	16.3	21.2	313356	16.3	21.0	440669	16.4	20.6
360320	16.1	20.1	215817	16.2	18.9	329131	16.2	18.6	449390	16.3	20.6	71369	16.3	16.7	257056	16.4	20.8
181012	16.1	20.4	296457	16.2	20.6	514881	16.2	21.8	403242	16.3	20.3	105690	16.3	18.8	45221	16.4	17.4
359840	16.1	20.9	254277	16.2	18.8	388719	16.2	20.0	533411	16.3	21.0	435773	16.3	20.8	391880	16.4	21.1
401597	16.1	20.8	476010	16.2	20.9	244418	16.2	18.6	98738	16.3	18.4	131071	16.3	18.7	399656	16.4	19.5
234082	16.1	19.8	9187	16.2	18.2	251316	16.2	19.6	389140	16.3	19.9	48295	16.4	19.7	474343	16.4	21.1
303294	16.1	20.3	403288	16.2	19.0	321677	16.2	20.1	137027	16.3	20.4	344135	16.4	18.9	218490	16.4	19.6
63423	16.1	19.1	92537	16.2	18.7	355161	16.2	20.2	49398	16.3	17.3	231360	16.4	20.2	312651	16.4	19.3
441811	16.1	20.9	625	16.2	13.2	254126	16.2	19.0	2854	16.3	16.0	348647	16.4	19.5	63294	16.4	19.5
17260	16.1	16.4	62802	16.2	17.8	264130	16.2	19.6	284551	16.3	21.6	19439	16.4	17.9	436293	16.4	21.6
345879	16.1	19.9	314524	16.2	20.5	73026	16.2	19.5	117325	16.3	18.6	135615	16.4	19.7	389864	16.4	18.8
407742	16.1	19.8	323204	16.2	18.1	22230	16.2	18.8	78704	16.3	17.3	232881	16.4	19.3	154147	16.4	20.0
302182	16.1	19.4	489928	16.2	20.1	401402	16.2	20.9	274124	16.3	20.0	60924	16.4	19.0	405090	16.4	18.9
2574	16.1	15.5	262926	16.2	19.2	488598	16.2	21.3	315102	16.3	20.1	206977	16.4	18.9	478796	16.4	19.6
518190	16.1	21.1	255235	16.2	19.9	309656	16.2	21.0	365543	16.3	19.3	193555	16.4	18.8	419691	16.4	19.7
102880	16.1	19.5	355809	16.2	20.8	267057	16.2	19.9	290785	16.3	20.0	253604	16.4	18.4	315134	16.4	20.4
380551	16.1	19.8	366543	16.2	19.4	347280	16.2	21.6	159095	16.3	19.8	358961	16.4	20.4	515085	16.4	20.7
267406	16.1	18.9	389790	16.2	21.1	321804	16.2	18.7	185638	16.3	20.5	404148	16.4	21.1	115751	16.4	18.5
488297	16.1	19.8	477873	16.2	21.8	43225	16.2	17.4	360717	16.3	20.0	68293	16.4	17.1	358906	16.4	20.2
297543	16.1	20.3	17478	16.2	17.4	295676	16.2	20.7	17037	16.3	17.3	260632	16.4	21.4	30086	16.4	17.6
224977	16.1	20.6	120348	16.2	20.2	382405	16.2	20.9	386720	16.3	22.5	343914	16.4	20.2	529620	16.4	21.0
311557	16.1	20.6	302169	16.2	20.3	96808	16.2	19.5	66138	16.3	18.4	508744	16.4	20.1	480541	16.4	20.5
425936	16.1	20.6	169939	16.2	19.7	66273	16.2	18.6	343738	16.3	20.3	511239	16.4	20.7	202855	16.4	19.4
530426	16.1	21.0	113946	16.2	19.6	416396	16.2	19.6	185802	16.3	19.3	311922	16.4	20.3	361005	16.4	20.8
169097	16.1	20.3	161586	16.2	18.9	153219	16.2	21.1	283088	16.3	19.2	126453	16.4	19.0	404056	16.4	20.4
96821	16.1	19.0	266996	16.2	19.7	400215	16.2	21.2	175580	16.3	20.3	143751	16.4	23.9	59887	16.4	18.3
308888	16.1	20.8	477140	16.2	20.2	235826	16.2	19.1	386352	16.3	19.6	176222	16.4	19.5	428113	16.4	20.3
174740	16.1	18.9	228645	16.2	21.0	78818	16.2	19.2	266717	16.3	20.1	508036	16.4	21.1	425026	16.4	21.0
252845	16.1	19.6	363957	16.2	20.6	529631	16.2	21.6	291352	16.3	19.6	283706	16.4	19.0	336243	16.4	19.8
62400	16.1	18.4	506478	16.2	19.3	254229	16.2	19.2	249238	16.3	20.4	382139	16.4	20.7	102439	16.4	18.5
84311	16.1	17.7	247813	16.2	18.4	521785	16.2	21.0	276903	16.3	19.3	150599	16.4	19.3	283318	16.4	20.1
322986	16.1	20.7	529669	16.2	20.1	453216	16.3	21.1	208865	16.3	19.5	401401	16.4	20.6	263062	16.4	20.5
392427	16.1	20.3	348616	16.2	20.3	71929	16.3	18.1	180159	16.3	20.1	90888	16.4	17.4	397532	16.4	20.3
276524	16.1	19.4	320224	16.2	21.1	230326	16.3	18.8	452691	16.3	20.7	387508	16.4	20.4	187497	16.4	19.2
391341	16.1	20.8	240701	16.2	20.2	315918	16.3	20.8	267748	16.3	20.4	468044	16.4	21.2	160375	16.4	20.5
394722	16.1	20.9	533053	16.2	20.4	214086	16.3	17.4	360445	16.3	22.0	137870	16.4	19.2	416749	16.4	20.5
145225	16.1	19.9	471743	16.2	20.4	426049	16.3	20.3	33280	16.3	18.1	293478	16.4	20.5	428516	16.4	19.2
289443	16.1	20.1	62545	16.2	19.1	233862	16.3	19.9	467927	16.3	20.7	424031	16.4	19.9	3200	16.4	17.3
148266	16.1	19.5	359385	16.2	20.5	37540	16.3	19.1	483310	16.3	20.7	348366	16.4	20.6	528411	16.4	20.4
168899	16.1	19.2	35175	16.2	18.2	76073	16.3	18.7	287773	16.3	20.4	66623	16.4	18.9	401910	16.4	19.3
205627	16.1	18.6	412679	16.2	20.1	100505	16.3	18.4	357830	16.3	20.6	528414	16.4	20.7	383584	16.4	20.5
287280	16.1	19.9	50015	16.2	18.0	295724	16.3	20.3	527070	16.3	20.4	34240	16.4	18.3	354008	16.4	20.1
335526	16.1	20.6	311551	16.2	19.8	313411	16.3	22.0	389185	16.3	20.0	373156	16.4	20.9	190245	16.4	21.0
142115	16.1	17.6	180451	16.2	20.3	407844	16.3	21.0	390479	16.3	19.9	35284	16.4	17.6	472331	16.4	20.3
231911	16.1	18.2	472459	16.2	21.9	295520	16.3	20.2	83303	16.3	19.9	192938	16.4	19.5	434583	16.4	20.0
249389	16.1	20.0	169546	16.2	20.2	296482	16.3	20.8	113256	16.3	18.4	315857	16.4	20.7	107198	16.4	17.9
321377	16.1	19.5	314505	16.2	19.8	482407	16.3	21.1	515231	16.3	21.5	284122	16.4	20.2	500160	16.4	20.2
472549	16.1	21.0	259594	16.2	18.9	68060	16.3	19.0	428185	16.3	20.4	112330	16.4	19.5	457699	16.5	21.6
535154	16.1	20.4	411923	16.2	20.8	514223	16.3	19.7	356318	16.3	21.2	289306	16.4	20.0	271679	16.5	19.2
184821	16.1	20.1	437360	16.2	22.0	159148	16.3	19.4	531061	16.3	21.8	203786	16.4	19.4	206523	16.5	18.4
131123	16.1	18.4	477931	16.2	20.6	448712	16.3	20.5	378262	16.3	19.8	42020	16.4	18.5	493572	16.5	21.5
354355	16.1	20.7	256676	16.2	20.5	78439	16.3	18.9	441919	16.3	21.1	434100	16.4	21.7	296190	16.5	20.3
444057	16.1	20.4	386799	16.2	20.8	389521	16.3	20.3	321495	16.3	20.5	355842	16.4	20.5	69145	16.5	19.5
472849	16.1	19.4	249056	16.2	20.0	501683	16.3	19.9	283671	16.3	19.9	131231	16.4	19.2	33693	16.5	17.6
416354	16.1	20.6	96380	16.2	18.3	264024	16.3	19.7	114	16.3	12.0	93412	16.4	18.3	251808	16.5	20.6
44797	16.1	17.1	159066	16.2	18.7	92870	16.3	18.7	348135	16.3	19.5	466917	16.4	20.2	125690	16.5	19.4
359386	16.1	20.9	175691	16.2	20.1	277568	16.3	18.8	396772	16.3	19.4	33174	16.4	17.4	58479	16.5	19.4
218894	16.1	19.3	525165	16.2	19.5	471555	16.3	20.9	338673	16.3	19.6	365010	16.4	20.6	274345	16.5	20.8
348399	16.1	20.5	27018	16.2	17.8	23156	16.3	17.2	539207	16.3	20.5	516252	16.4	20.6	145392	16.5	19.1
77284	16.1	18.6	531127	16.2	21.3	156702	16.3	19.5	428228	16.3	19.3	448086	16.4	20.8	516585	16.5	21.9
241543	16.1	21.0	7342	16.2	17.0	246450	16.3	20.6	444248	16.3	20.4	2766	16.4	15.7	448641	16.5	20.2
338510	16.1	20.8	368343	16.2	21.3	511693	16.3	21.1	229957	16.3	20.0	77870	16.4	17.5	44771	16.5	18.8
101424	16.1	18.0	445837	16.2	19.8	210015	16.3	20.1	514654	16.3	20.8	221636	16.4	19.7	382824	16.5	18.3
528203	16.1	21.8	380129	16.2	19.3	526402	16.3	21.8	374023	16.3	20.8	130905	16.4	19.4	365978	16.5	20.6
88223	16.1	17.8	167169	16.2	18.9	72444											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
203566	16.5	20.7	312643	16.6	20.0	65235	16.6	19.7	252172	16.7	19.7	530838	16.8	22.8	390090	16.8	20.4
432843	16.5	21.3	143436	16.6	19.7	58974	16.6	18.0	48505	16.7	19.3	42904	16.8	18.8	448108	16.8	21.3
149775	16.5	20.7	301579	16.6	19.5	131126	16.6	19.3	490702	16.7	19.7	99174	16.8	19.0	536587	16.8	21.3
454824	16.5	19.9	37408	16.6	17.6	355204	16.6	20.3	9074	16.7	18.0	316159	16.8	20.8	296316	16.8	20.6
50001	16.5	18.2	336255	16.6	18.6	249256	16.6	20.6	527016	16.7	20.1	390104	16.8	20.2	430632	16.8	19.8
469657	16.5	20.2	204507	16.6	19.8	430636	16.6	20.2	524166	16.7	20.0	424483	16.8	20.9	228852	16.8	20.3
260115	16.5	19.8	504714	16.6	21.1	402524	16.6	20.0	402436	16.7	20.6	268913	16.8	20.0	149784	16.8	20.1
325127	16.5	19.7	47565	16.6	17.6	511448	16.6	20.5	65343	16.7	19.1	415595	16.8	21.0	397094	16.8	21.2
43333	16.5	17.1	362854	16.6	20.2	527099	16.6	20.3	316551	16.7	20.5	289008	16.8	20.4	275006	16.8	19.5
256430	16.5	20.4	204580	16.6	20.6	66646	16.6	17.7	224547	16.7	20.4	19644	16.8	17.5	390344	16.8	20.9
298827	16.5	20.3	528884	16.6	21.6	474640	16.6	23.4	241656	16.7	19.6	266676	16.8	18.2	420967	16.8	20.3
437949	16.5	20.9	5526	16.6	15.3	176703	16.6	20.0	171269	16.7	19.7	510602	16.8	20.0	533578	16.9	21.3
449427	16.5	20.9	508020	16.6	21.1	70339	16.6	17.2	127116	16.7	20.3	1092	16.8	15.3	182716	16.9	19.0
318495	16.5	19.9	161477	16.6	18.8	444448	16.6	20.0	383965	16.7	20.0	378649	16.8	21.6	295104	16.9	21.0
276149	16.5	20.0	77796	16.6	18.4	34332	16.6	18.4	36193	16.7	18.7	23067	16.8	18.8	174744	16.9	18.8
294744	16.5	20.9	392087	16.6	20.4	535520	16.6	20.5	510498	16.7	20.5	136676	16.8	19.8	4667	16.9	16.5
132175	16.5	19.6	396576	16.6	20.6	239192	16.6	20.9	331900	16.7	20.6	210560	16.8	19.3	459192	16.9	21.4
308325	16.5	19.7	377735	16.6	18.7	496846	16.6	21.3	191762	16.7	20.0	529507	16.8	21.0	75837	16.9	17.4
325926	16.5	20.2	329284	16.6	21.6	392711	16.6	20.6	401663	16.7	20.3	7701	16.8	16.8	406274	16.9	21.8
133072	16.5	19.7	391587	16.6	20.7	446268	16.6	21.1	176708	16.7	20.2	90310	16.8	17.9	298766	16.9	20.8
77259	16.5	18.6	196512	16.6	19.2	345585	16.6	19.3	175718	16.7	19.5	387308	16.8	21.4	259115	16.9	18.8
428280	16.5	21.3	186848	16.6	20.8	531419	16.6	20.5	29665	16.7	17.9	54908	16.8	17.6	428080	16.9	21.2
313156	16.5	21.1	537699	16.6	21.0	264022	16.6	19.4	315925	16.7	20.7	464388	16.8	20.5	365216	16.9	20.7
304030	16.5	20.2	537270	16.6	20.2	45128	16.6	17.3	370905	16.7	20.6	103316	16.8	17.8	32363	16.9	18.5
169802	16.5	19.4	184328	16.6	19.8	59537	16.6	18.9	106219	16.7	18.0	85301	16.8	18.6	300513	16.9	19.2
432863	16.5	19.8	392097	16.6	20.5	316437	16.6	19.6	98644	16.7	19.0	363251	16.8	21.3	151475	16.9	18.9
393337	16.5	19.4	390766	16.6	20.7	33266	16.6	17.6	159258	16.7	20.0	409273	16.8	20.6	266352	16.9	20.8
504633	16.5	18.6	31007	16.6	17.1	306037	16.6	20.4	165124	16.7	20.9	311134	16.8	20.1	445264	16.9	19.4
449381	16.5	20.7	8893	16.6	18.0	526644	16.6	20.5	264928	16.7	19.0	355640	16.8	20.5	343541	16.9	19.7
506156	16.5	21.5	322569	16.6	20.7	89004	16.6	17.4	270449	16.7	20.1	504474	16.8	21.3	536455	16.9	21.7
390170	16.5	20.4	188061	16.6	19.6	421847	16.6	20.8	435733	16.7	20.8	275559	16.8	20.0	159858	16.9	20.2
532184	16.5	22.5	449015	16.6	20.2	214174	16.6	20.4	172658	16.7	19.1	254280	16.8	20.0	341157	16.9	18.8
297124	16.5	20.4	496749	16.6	19.9	92340	16.6	19.2	452243	16.7	20.1	255959	16.8	20.1	502178	16.9	19.8
198157	16.5	18.9	474340	16.6	20.1	528150	16.6	20.7	33367	16.7	18.7	527349	16.8	19.7	272408	16.9	21.4
342177	16.5	20.6	291855	16.6	19.4	309023	16.6	21.1	388623	16.7	19.9	447090	16.8	20.0	361514	16.9	19.9
517453	16.5	21.0	103328	16.6	18.2	90762	16.6	18.2	281407	16.7	19.6	134018	16.8	18.0	252212	16.9	18.5
298593	16.5	18.9	231865	16.6	17.3	366050	16.7	20.8	197951	16.7	20.4	240159	16.8	20.3	178236	16.9	20.3
406753	16.5	22.1	122602	16.6	18.9	192849	16.7	18.2	22816	16.7	17.9	386398	16.8	19.9	449026	16.9	20.9
312411	16.5	19.9	295987	16.6	20.7	358941	16.7	20.8	339434	16.7	19.5	347587	16.8	21.0	94071	16.9	18.7
361445	16.5	21.1	433314	16.6	20.1	4033	16.7	16.7	24963	16.7	17.6	295701	16.8	20.2	368965	16.9	19.0
446233	16.5	20.4	297688	16.6	19.3	224718	16.7	20.2	91725	16.7	18.2	180508	16.8	20.3	160642	16.9	20.0
268014	16.5	19.5	193353	16.6	19.1	158463	16.7	19.5	234526	16.7	18.4	218066	16.8	19.9	243090	16.9	20.2
254429	16.5	19.1	253149	16.6	18.9	502725	16.7	19.7	410696	16.7	19.9	536688	16.8	21.0	323351	16.9	19.4
67097	16.5	18.0	522357	16.6	20.9	117983	16.7	20.4	199863	16.7	20.2	52499	16.8	19.4	276052	16.9	19.9
299766	16.5	19.4	319352	16.6	20.4	390783	16.7	18.8	60727	16.7	18.2	229859	16.8	18.8	444139	16.9	20.2
285423	16.5	19.7	280983	16.6	20.1	192886	16.7	17.6	509151	16.7	20.8	428272	16.8	20.0	540916	16.9	19.3
44832	16.5	18.9	98195	16.6	18.7	104724	16.7	19.1	463312	16.7	20.8	360903	16.8	20.6	145109	16.9	20.5
232841	16.5	19.4	62321	16.6	17.5	57230	16.7	16.9	260136	16.7	20.2	144966	16.8	19.1	75737	16.9	18.1
294851	16.5	20.9	505925	16.6	21.0	125216	16.7	19.1	255077	16.7	19.6	78489	16.8	18.5	221880	16.9	19.7
166549	16.5	18.3	180385	16.6	19.8	50156	16.7	17.5	399027	16.7	20.6	476078	16.8	20.7	236949	16.9	20.5
414124	16.5	20.9	349903	16.6	20.1	1795	16.7	16.4	434360	16.7	19.2	189186	16.8	19.8	19896	16.9	18.7
463456	16.5	21.4	69225	16.6	19.3	449392	16.7	20.8	363269	16.7	21.8	310229	16.8	20.0	31896	16.9	19.0
266982	16.5	19.8	56304	16.6	18.0	6854	16.7	15.3	198937	16.7	20.3	490442	16.8	20.8	301749	16.9	19.5
348152	16.5	19.8	529945	16.6	20.9	335804	16.7	20.7	344775	16.7	19.5	276042	16.8	19.5	309176	16.9	19.7
451610	16.5	20.7	437490	16.6	19.3	132485	16.7	19.6	170176	16.7	20.0	471097	16.8	19.3	70706	16.9	19.2
180900	16.5	20.9	329763	16.6	21.1	325078	16.7	21.3	217343	16.7	19.5	43329	16.8	17.6	215567	16.9	19.8
66100	16.5	19.1	263305	16.6	20.0	257714	16.7	19.1	525729	16.7	22.3	147695	16.8	20.5	438043	16.9	20.8
455027	16.5	20.7	321985	16.6	19.9	382566	16.7	18.2	5919	16.7	17.2	53329	16.8	18.4	260134	16.9	20.5
257042	16.5	20.8	31418	16.6	17.6	539351	16.7	20.6	390352	16.7	20.7	166374	16.8	18.1	158174	16.9	18.8
240134	16.5	19.9	205398	16.6	20.6	438102	16.7	21.3	26586	16.7	17.6	253805	16.8	18.8	93704	16.9	17.6
508514	16.5	19.9	361942	16.6	21.4	480586	16.7	20.1	449054	16.7	20.5	9453	16.8	17.3	408669	16.9	20.5
378193	16.5	20.7	474351	16.6	21.0	211582	16.7	20.2	74299	16.7	18.5	47299	16.8	18.0	23144	16.9	18.1
199789	16.5	19.5	18993	16.6	16.9	434120	16.7	21.0	273701	16.7	21.1	212334	16.8	20.1	76612	16.9	19.3
300691	16.5	20.4	345835	16.6	20.2	151674	16.7	18.5	519381	16.7	20.7	359413	16.8	20.1	460310	16.9	21.0
514034	16.5	20.6	542723	16.6	20.3	316710	16.7	21.2	448365	16.7	21.4	512108	16.8	20.2	22430	16.9	17.8
95200	16.5	19.1	297031	16.6	20.0	35345	16.7	17.8	252760	16.7	20.5	67760	16.8	17.8	334480	16.9	20.7
136368	16.5	17.9	257920	16.6	19.9	214995	16.7	20.0	312477	16.7	20.5	440286	16.8	20.0	465295	16.9	20.3
279773	16.5	20.8	250600	16.6	20.4	215522	16.7	18.7	94074	16.7	18.5	191052	16.8	19.7	468159	16.9	20.9
508787	16.5	21.8	509138	16.6	21.3	447967	16.7	21									

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
105390	16.9	17.2	259795	16.9	20.2	243499	17.0	19.6	40400	17.1	19.3	318306	17.2	20.4	60917	17.3	19.5
42400	16.9	18.3	510641	16.9	19.6	98601	17.0	18.3	23622	17.1	18.3	161925	17.2	20.0	449592	17.3	20.3
501863	16.9	19.5	284291	16.9	20.6	146933	17.0	20.3	252879	17.1	21.2	237264	17.2	19.7	336138	17.3	21.7
512191	16.9	20.5	205014	16.9	19.5	450559	17.0	20.4	24341	17.1	18.8	186003	17.2	20.5	524587	17.3	20.0
205198	16.9	20.9	348820	16.9	20.8	538560	17.0	20.1	359645	17.1	19.2	296585	17.2	19.9	524462	17.3	21.1
162046	16.9	19.7	283123	16.9	19.7	99244	17.0	18.6	451139	17.1	20.3	379345	17.2	20.1	260630	17.3	20.9
355783	16.9	21.0	217469	16.9	20.0	80541	17.1	18.5	261737	17.1	19.8	485249	17.2	20.3	98839	17.3	18.8
524146	16.9	18.9	320691	16.9	20.9	131140	17.1	18.9	262315	17.1	20.3	8861	17.2	16.9	478994	17.3	20.3
173086	16.9	18.9	443376	16.9	21.3	530411	17.1	20.7	316046	17.1	19.2	311285	17.2	20.8	358439	17.3	20.7
481293	16.9	20.6	129159	16.9	19.0	237556	17.1	17.7	390126	17.1	20.4	17881	17.2	18.3	256496	17.3	19.6
178512	16.9	18.3	29507	16.9	18.1	311421	17.1	20.0	127911	17.1	21.2	316072	17.2	21.2	109019	17.3	18.4
340512	16.9	19.6	317996	16.9	20.0	150298	17.1	18.9	330864	17.1	20.2	218893	17.2	20.3	404041	17.3	20.7
248109	16.9	19.2	89934	16.9	19.1	448375	17.1	20.9	177659	17.1	20.0	160936	17.2	18.2	510047	17.3	19.5
513295	16.9	21.0	357318	16.9	20.9	401727	17.1	20.0	269034	17.1	21.0	509501	17.2	20.2	358962	17.3	20.8
122822	16.9	17.6	316977	16.9	21.2	168717	17.1	19.6	107949	17.1	20.3	140043	17.2	18.6	430314	17.3	18.7
170400	16.9	19.8	468247	16.9	19.7	161807	17.1	19.1	207877	17.1	19.6	542280	17.2	21.0	331207	17.3	19.4
316984	16.9	20.8	413792	16.9	20.8	523541	17.1	20.4	121650	17.1	19.3	222554	17.2	19.3	315051	17.3	20.5
7718	16.9	16.6	230034	16.9	19.5	470317	17.1	21.5	529089	17.1	21.3	141688	17.2	19.8	31625	17.3	17.8
346995	16.9	21.1	4942	16.9	16.4	196892	17.1	20.5	535024	17.1	22.0	285409	17.2	20.6	362537	17.3	21.0
206535	16.9	19.0	462577	16.9	20.9	253701	17.1	19.1	518258	17.1	20.3	47575	17.2	18.2	80682	17.3	19.7
439635	16.9	19.9	166482	16.9	19.5	272756	17.1	19.1	421959	17.1	19.7	44409	17.2	18.2	274404	17.3	20.8
482957	16.9	20.7	223342	16.9	20.9	435308	17.1	20.4	383214	17.1	19.6	363514	17.2	20.5	372342	17.3	21.7
53309	16.9	18.5	449726	16.9	20.0	398258	17.1	20.7	82721	17.1	19.6	320046	17.2	20.3	106806	17.3	17.8
151403	16.9	19.5	467578	16.9	19.5	385036	17.1	20.1	73821	17.1	18.5	65546	17.2	18.8	453222	17.3	20.5
509818	16.9	19.8	170524	16.9	19.5	502051	17.1	20.0	363280	17.1	21.8	321364	17.2	19.4	290198	17.3	19.6
527403	16.9	19.6	510562	16.9	20.8	229998	17.1	20.5	17250	17.1	18.0	291879	17.2	19.6	445358	17.3	20.6
337959	16.9	20.2	84106	16.9	18.4	287078	17.1	20.4	134618	17.1	18.5	155869	17.2	19.9	316552	17.3	20.4
36879	16.9	18.2	294086	16.9	20.3	442527	17.1	20.5	415100	17.1	19.9	4847	17.2	17.5	313425	17.3	21.3
508543	16.9	20.0	349846	17.0	19.8	476766	17.1	20.5	38037	17.1	19.5	228625	17.2	18.3	206464	17.3	18.2
152824	16.9	18.9	284269	17.0	20.2	484199	17.1	21.1	476577	17.1	20.1	270355	17.2	19.3	80807	17.3	19.0
290949	16.9	20.1	412288	17.0	20.3	93338	17.1	18.8	56844	17.1	19.8	401281	17.2	20.0	39621	17.3	19.4
442904	16.9	20.7	198025	17.0	19.8	311194	17.1	19.7	169049	17.1	19.8	473109	17.2	20.7	268860	17.3	19.8
512113	16.9	20.4	498192	17.0	21.0	394654	17.1	21.2	310111	17.1	20.0	481282	17.2	20.2	228205	17.3	21.0
160063	16.9	20.3	314545	17.0	21.0	284997	17.1	19.6	386374	17.1	19.4	362284	17.2	21.4	298535	17.3	19.7
513882	16.9	22.1	315806	17.0	20.4	323388	17.1	19.8	5041	17.1	17.6	246241	17.2	20.0	103488	17.3	18.9
446703	16.9	20.1	139192	17.0	19.8	449401	17.1	20.9	150326	17.1	20.4	321238	17.2	18.4	542671	17.3	21.3
110738	16.9	19.1	96620	17.0	18.6	176621	17.1	20.1	225899	17.1	20.2	434064	17.2	20.0	374879	17.3	19.7
50767	16.9	18.7	378776	17.0	20.0	460822	17.1	20.6	328161	17.1	20.3	367137	17.2	20.2	243313	17.3	19.6
290747	16.9	21.2	472186	17.0	20.8	170707	17.1	19.2	43454	17.1	17.6	220404	17.2	19.2	257199	17.3	20.0
483618	16.9	20.6	149697	17.0	20.1	233918	17.1	19.7	388649	17.2	20.3	4568	17.2	16.5	526538	17.3	21.5
395499	16.9	20.6	315070	17.0	20.0	424100	17.1	20.9	68249	17.2	19.6	425520	17.2	19.8	357199	17.3	21.2
143861	16.9	19.4	258684	17.0	20.3	199086	17.1	19.9	342820	17.2	19.9	131236	17.2	19.3	57820	17.3	17.1
383238	16.9	19.7	188514	17.0	20.0	535140	17.1	20.1	25090	17.2	17.8	77632	17.2	18.8	44923	17.3	17.8
493538	16.9	21.4	104503	17.0	19.5	512421	17.1	20.6	62781	17.2	18.9	535264	17.2	21.3	34122	17.3	17.9
479853	16.9	20.8	56870	17.0	18.8	44458	17.1	17.3	229526	17.2	19.1	177662	17.2	20.0	247083	17.3	19.3
526029	16.9	20.1	72425	17.0	19.5	341070	17.1	21.3	285144	17.2	19.0	16633	17.2	18.6	307223	17.3	20.1
241301	16.9	19.8	41194	17.0	18.3	354722	17.1	20.8	94708	17.2	19.2	344445	17.2	21.4	436157	17.3	19.7
113640	16.9	19.3	338015	17.0	20.1	18989	17.1	16.5	361526	17.2	21.5	260279	17.2	18.6	31541	17.3	18.3
302218	16.9	20.0	59639	17.0	18.9	290532	17.1	20.6	383275	17.2	21.0	496975	17.2	21.0	121459	17.3	18.6
362600	16.9	20.1	468595	17.0	19.9	151313	17.1	19.9	247097	17.2	19.0	481310	17.2	19.3	365826	17.3	20.7
342308	16.9	20.7	9029	17.0	18.2	251913	17.1	19.5	311947	17.2	19.8	236650	17.2	20.7	356652	17.3	20.3
176687	16.9	19.3	21594	17.0	18.0	168502	17.1	18.4	11723	17.2	17.6	227518	17.2	19.5	256727	17.3	19.8
70328	16.9	19.4	87175	17.0	18.3	530906	17.1	20.9	314418	17.2	20.0	255026	17.2	20.1	542631	17.3	20.8
514456	16.9	20.9	234740	17.0	19.5	539019	17.1	21.5	540422	17.2	21.0	399727	17.2	19.8	286099	17.3	20.2
45253	16.9	18.4	483208	17.0	20.1	294320	17.1	19.9	263078	17.2	18.9	434352	17.2	19.9	196947	17.3	20.3
445513	16.9	19.9	420892	17.0	20.8	204927	17.1	20.2	23897	17.2	17.7	531226	17.2	21.3	442647	17.3	20.9
128988	16.9	19.0	152453	17.0	19.9	126938	17.1	19.3	4382	17.2	14.8	271062	17.2	21.1	497929	17.3	20.2
396370	16.9	20.0	406303	17.0	21.3	429877	17.1	21.5	394744	17.2	20.7	169621	17.2	19.1	37307	17.3	18.8
189074	16.9	20.4	505679	17.0	22.4	482366	17.1	20.6	272714	17.2	19.8	183938	17.2	20.6	360073	17.3	20.4
418946	16.9	20.3	299090	17.0	20.0	22217	17.1	17.6	385143	17.2	19.1	15540	17.2	18.5	360271	17.3	19.7
441206	16.9	20.3	251736	17.0	19.5	441826	17.1	20.6	47818	17.2	16.7	273672	17.2	20.5	513673	17.3	19.7
18506	16.9	17.4	184480	17.0	19.9	41203	17.1	18.5	438170	17.2	19.1	444342	17.2	19.7	137705	17.3	19.0
313313	16.9	20.5	303972	17.0	19.3	387961	17.1	21.2	468635	17.2	20.4	444375	17.2	20.6	62059	17.3	19.5
128444	16.9	19.3	85109	17.0	19.1	243824	17.1	19.7	35814	17.2	19.0	509671	17.2	21.8	404340	17.3	20.4
90038	16.9	19.2	428281	17.0	21.6	317470	17.1	20.1	443717	17.2	20.0	120327	17.2	20.0	537457	17.3	20.8
405437	16.9	19.9	255227	17.0	19.9	384577	17.1	20.9	393016	17.2	20.6	514059	17.2	21.3	290681	17.3	20.3
398277	16.9	21.1	113338	17.0	18.8	518742	17.1	20.8	443141	17.2	20.2	198163	17.2	18.0	400175	17.3	21.0
72313	16.9	17.0	132103	17.0	18.5	91858	17.1	17.8	125285	17.2	19.1	356896	17.2	20.3	66180	17.3	18.5
412887	16.9	19.5	283668	17.0	20.2	50879	17.1										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
122020	17.3	19.4	418050	17.4	20.3	133984	17.5	19.4	161370	17.5	19.4	440910	17.6	20.2	73180	17.7	20.0
364509	17.3	22.1	129494	17.4	18.9	63010	17.5	18.8	250417	17.5	19.2	278684	17.6	20.6	14646	17.7	17.3
468794	17.3	21.6	404452	17.4	21.3	288965	17.5	19.6	468402	17.5	21.9	472551	17.6	20.4	531696	17.7	20.4
3099	17.3	16.1	314086	17.4	19.7	537408	17.5	22.5	400495	17.5	20.9	292542	17.6	19.8	448002	17.7	21.9
331636	17.3	21.3	176720	17.4	19.4	8911	17.5	17.5	126850	17.5	19.7	24403	17.6	18.5	527280	17.7	20.5
410184	17.3	19.8	469271	17.4	19.8	291643	17.5	20.4	435176	17.5	19.2	38182	17.6	20.3	367510	17.7	18.9
136997	17.3	17.8	202150	17.4	19.9	530393	17.5	21.7	264251	17.5	20.0	26134	17.6	18.8	147240	17.7	18.8
404683	17.3	20.4	100586	17.4	19.5	491841	17.5	20.8	221432	17.5	21.0	38209	17.6	19.5	432679	17.7	21.4
69381	17.3	18.0	450043	17.4	20.8	8113	17.5	17.3	289410	17.5	19.7	78742	17.6	18.9	233408	17.7	20.6
42783	17.3	16.8	158457	17.4	19.5	61622	17.5	18.0	355671	17.5	21.0	106312	17.6	18.8	376871	17.7	18.8
245164	17.3	20.4	524050	17.4	21.3	292886	17.5	20.7	101953	17.5	18.4	440328	17.6	19.7	286588	17.7	20.4
147874	17.3	17.8	192821	17.4	19.5	60664	17.5	18.8	309726	17.5	20.2	504491	17.6	21.4	530495	17.7	20.6
444734	17.3	19.4	170443	17.4	18.8	365037	17.5	20.4	96260	17.5	18.8	107978	17.6	19.2	122030	17.7	20.2
235790	17.3	19.1	199014	17.4	19.4	68680	17.5	19.5	27938	17.5	17.4	217380	17.6	19.4	132640	17.7	19.3
92730	17.3	18.9	300671	17.4	19.6	254313	17.5	19.3	77240	17.5	18.7	491456	17.6	20.1	111969	17.7	19.6
235184	17.3	18.7	525528	17.4	21.5	198356	17.5	18.6	276048	17.5	21.0	127195	17.6	19.9	376885	17.7	18.4
441226	17.3	18.1	63393	17.4	18.1	477827	17.5	21.7	257499	17.5	20.0	535170	17.6	20.9	353532	17.7	20.3
353744	17.3	20.6	524900	17.4	23.2	210642	17.5	19.7	386395	17.5	20.7	20992	17.6	17.3	38606	17.7	18.5
121768	17.3	20.4	313287	17.4	20.0	69617	17.5	18.1	533522	17.5	21.0	231577	17.6	19.4	254404	17.7	19.4
483552	17.3	19.4	514768	17.4	21.2	496447	17.5	19.8	315975	17.5	20.1	162530	17.6	19.1	282258	17.7	21.2
295630	17.3	19.8	381824	17.4	20.3	311414	17.5	19.4	403233	17.6	20.8	318554	17.6	20.2	123003	17.7	19.1
525821	17.3	20.0	69443	17.4	19.5	263801	17.5	20.1	70238	17.6	18.1	181366	17.6	18.9	23592	17.7	17.2
131215	17.3	19.4	347872	17.4	20.1	391935	17.5	19.3	246565	17.6	20.4	477960	17.6	20.6	271702	17.7	20.5
513305	17.3	20.5	403913	17.4	20.6	354813	17.5	20.5	295710	17.6	20.4	451169	17.6	20.2	438057	17.7	18.8
143707	17.3	21.1	25911	17.4	18.6	288107	17.5	19.3	195543	17.6	19.2	158058	17.6	19.2	4236	17.7	16.2
490214	17.3	20.0	355849	17.4	20.6	358002	17.5	20.7	128144	17.6	19.0	520137	17.6	21.1	453664	17.7	20.0
69787	17.3	18.6	8953	17.4	17.4	287215	17.5	20.6	282294	17.6	19.4	115603	17.6	19.2	407864	17.7	21.0
42976	17.3	18.6	248610	17.4	20.5	338666	17.5	20.4	269290	17.6	20.9	463444	17.6	21.3	268968	17.7	19.3
166099	17.3	19.6	461537	17.4	19.6	308628	17.5	20.0	71138	17.6	17.8	65131	17.6	20.0	316830	17.7	19.8
289881	17.3	19.8	353113	17.4	20.3	396984	17.5	21.6	447310	17.6	20.3	283044	17.6	19.5	481706	17.7	20.9
208633	17.3	21.5	74029	17.4	19.0	227856	17.5	20.8	524903	17.6	20.8	1717	17.6	14.2	360180	17.7	20.3
34374	17.3	17.6	377935	17.4	20.6	36110	17.5	18.5	201719	17.6	18.9	495091	17.6	20.6	537490	17.7	21.4
323268	17.3	20.5	91814	17.4	19.2	169073	17.5	19.1	134844	17.6	19.2	436211	17.6	20.4	48271	17.7	19.0
23793	17.3	17.3	192161	17.4	20.9	367473	17.5	20.8	93318	17.6	17.8	459603	17.6	21.7	531237	17.7	22.2
225985	17.3	20.8	314421	17.4	19.3	243729	17.5	20.4	358070	17.6	20.3	262563	17.6	19.3	48185	17.7	18.9
508969	17.3	20.1	70014	17.4	18.2	308962	17.5	20.7	410827	17.6	20.7	537367	17.6	21.0	492277	17.7	17.9
217227	17.3	18.8	481363	17.4	20.2	470748	17.5	20.9	252676	17.6	20.5	237322	17.6	21.1	257259	17.7	21.0
443078	17.4	20.1	472999	17.4	20.0	166651	17.5	18.9	156651	17.6	19.3	539305	17.6	21.5	404001	17.7	20.9
7635	17.4	15.6	388587	17.4	20.4	33228	17.5	17.2	293440	17.6	20.5	479993	17.6	20.8	14434	17.7	18.0
242312	17.4	18.0	41551	17.4	17.7	345915	17.5	20.4	225253	17.6	18.9	102513	17.6	20.5	469632	17.7	21.1
75296	17.4	18.2	121875	17.4	19.3	361930	17.5	21.4	79053	17.6	18.1	226033	17.6	20.3	402843	17.7	19.6
426675	17.4	21.4	521073	17.4	21.4	28988	17.5	19.5	74816	17.6	18.3	539617	17.6	21.3	535220	17.7	20.6
389919	17.4	19.7	89575	17.4	17.6	82867	17.5	18.3	290140	17.6	19.6	204055	17.6	19.3	117127	17.7	18.9
446251	17.4	19.9	512650	17.4	20.8	95841	17.5	18.0	188783	17.6	20.2	386384	17.6	20.2	503699	17.7	21.3
477036	17.4	20.8	442466	17.4	21.0	459641	17.5	20.8	306455	17.6	20.5	255443	17.6	19.5	518555	17.7	21.1
112961	17.4	20.2	481448	17.4	19.9	325237	17.5	21.0	122869	17.6	17.9	208358	17.7	20.4	444037	17.7	20.8
477913	17.4	21.0	144949	17.4	20.7	502161	17.5	20.2	339205	17.6	20.7	134248	17.7	19.3	12552	17.7	17.1
39371	17.4	18.7	441360	17.4	21.4	92084	17.5	18.1	258690	17.6	20.9	505454	17.7	21.0	73345	17.7	19.8
306061	17.4	21.2	495357	17.4	20.5	251695	17.5	19.0	293659	17.6	19.5	64681	17.7	19.4	452146	17.7	20.3
454316	17.4	21.1	145802	17.4	19.0	437806	17.5	20.6	363259	17.6	20.3	324583	17.7	20.0	185775	17.7	19.0
393973	17.4	20.9	345855	17.4	19.9	388730	17.5	20.5	151166	17.6	19.5	432880	17.7	21.1	138065	17.7	20.0
183360	17.4	19.7	443043	17.4	20.4	474372	17.5	19.5	511277	17.6	20.7	184950	17.7	19.8	227743	17.7	18.9
255451	17.4	19.9	23981	17.4	17.1	508413	17.5	21.9	75065	17.6	17.5	511241	17.7	20.2	409261	17.7	21.3
312031	17.4	19.8	515787	17.4	20.4	180416	17.5	20.9	21556	17.6	17.9	139916	17.7	19.1	201397	17.7	19.4
309972	17.4	20.4	233683	17.4	20.3	166395	17.5	20.1	116932	17.6	19.8	488395	17.7	19.7	427999	17.7	20.5
380549	17.4	19.8	165229	17.4	19.7	58881	17.5	20.0	439757	17.6	20.5	440920	17.7	20.5	338750	17.7	19.9
9213	17.4	17.0	200032	17.4	19.6	234409	17.5	20.3	203398	17.6	19.4	310477	17.7	19.3	165022	17.7	19.4
112348	17.4	20.7	424000	17.4	20.6	354837	17.5	20.7	282739	17.6	19.0	101556	17.7	18.6	505134	17.7	20.4
71364	17.4	17.6	444976	17.4	20.4	272818	17.5	20.8	359346	17.6	20.6	35947	17.7	17.0	192747	17.7	19.1
382605	17.4	20.2	382569	17.4	20.1	67019	17.5	19.1	338455	17.6	21.2	169552	17.7	19.5	188126	17.7	20.8
431938	17.4	20.0	512397	17.4	21.0	355538	17.5	20.1	320770	17.6	20.4	6045	17.7	16.7	511185	17.7	19.2
64220	17.4	16.2	180761	17.4	20.5	465603	17.5	20.9	9667	17.6	17.2	117843	17.7	19.5	43968	17.7	19.9
193221	17.4	17.9	120845	17.4	19.3	117801	17.5	20.2	376412	17.6	20.6	198916	17.7	19.4	99778	17.7	19.7
284770	17.4	20.8	42193	17.4	18.0	499139	17.5	20.2	46030	17.6	19.0	66841	17.7	18.4	343693	17.7	21.8
396816	17.4	20.2	341520	17.4	21.3	409700	17.5	21.3	41563	17.6	17.8	271207	17.7	20.3	276520	17.7	19.5
273957	17.4	20.6	139009	17.4	19.2	457208	17.5	20.9	482463	17.6	19.7	510748	17.7	20.0	84199	17.7	19.2
118940	17.4	18.6	529125	17.4	22.0	347519	17.5	19.9	316165	17.6	20.0	488746	17.7	20.5	289595	17.7	20.4
397362	17.4	20.3	33522	17.4	18.0	11551	17.5	17.4	237366	17.6	19.9	123892	17.7	19.3	162094	17.7	18.9
300790	17.4	20.7	351834	17.4	20.0	438949	17.5	19									



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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
531605	17.7	21.3	265607	17.8	20.5	352412	17.9	20.9	495123	17.9	20.6	420813	18.0	20.1	11012	18.1	18.5
33731	17.7	17.7	121657	17.8	18.3	41142	17.9	19.6	297114	17.9	20.7	79735	18.0	18.2	84737	18.1	17.0
417929	17.7	20.2	266988	17.8	19.7	331131	17.9	20.0	47306	17.9	17.9	22400	18.0	17.8	211360	18.1	19.7
68880	17.7	19.1	80620	17.8	17.7	286535	17.9	20.6	469613	17.9	21.8	213040	18.0	20.9	474542	18.1	19.8
366617	17.7	21.8	237338	17.8	19.8	11781	17.9	17.3	497765	17.9	20.8	376899	18.0	18.9	134674	18.1	18.4
402786	17.7	21.7	134965	17.8	19.1	337174	17.9	18.5	261701	17.9	20.3	379372	18.0	20.1	165046	18.1	19.1
396309	17.7	20.7	308339	17.8	19.8	407137	17.9	20.2	192457	17.9	19.2	212475	18.0	20.2	206673	18.1	19.5
263816	17.7	19.5	22965	17.8	18.9	316608	17.9	20.1	64371	17.9	19.7	125582	18.0	19.0	70107	18.1	19.2
20967	17.7	18.2	323353	17.8	20.9	221482	17.9	20.0	221500	17.9	20.0	152848	18.0	19.1	377254	18.1	19.6
318646	17.7	19.9	541045	17.8	21.6	450087	17.9	20.5	124164	17.9	20.6	258699	18.0	20.2	447058	18.1	20.5
477065	17.7	20.4	395507	17.8	21.1	120804	17.9	19.4	136960	17.9	19.4	61456	18.0	17.5	177416	18.1	20.2
433463	17.8	20.3	50439	17.8	19.1	443474	17.9	20.4	486624	17.9	20.9	281663	18.0	20.1	262471	18.1	19.7
66810	17.8	17.8	111014	17.8	19.5	407498	17.9	20.4	213019	17.9	21.0	341206	18.0	19.7	252207	18.1	19.7
514007	17.8	21.7	66856	17.8	18.2	20937	17.9	17.6	400506	17.9	22.0	258745	18.0	20.3	245650	18.1	20.8
418323	17.8	21.4	127134	17.8	19.2	116312	17.9	18.8	533498	17.9	20.7	218095	18.0	20.1	504844	18.1	20.0
467779	17.8	20.0	4501	17.8	17.1	316900	17.9	18.4	33002	17.9	18.0	429658	18.0	21.3	235788	18.1	18.1
62106	17.8	20.3	296964	17.8	21.0	240846	17.9	19.4	44398	17.9	18.2	17566	18.0	17.3	537353	18.1	21.9
414143	17.8	20.6	92065	17.8	19.0	338518	17.9	20.0	520549	17.9	21.2	90369	18.0	19.2	320736	18.1	20.4
278029	17.8	20.1	314643	17.8	20.1	402495	17.9	20.1	479658	17.9	21.1	499603	18.0	21.2	157611	18.1	19.1
44399	17.8	18.2	32422	17.8	18.2	263498	17.9	20.4	237332	17.9	19.6	315954	18.0	20.6	260780	18.1	19.8
210965	17.8	19.3	423834	17.8	20.4	412426	17.9	20.7	283654	17.9	20.2	228089	18.0	20.6	261449	18.1	20.4
77590	17.8	19.0	397846	17.8	19.4	125525	17.9	19.3	514321	17.9	21.5	451570	18.0	20.3	298696	18.1	20.2
269939	17.8	19.6	99222	17.8	19.8	537189	17.9	21.4	327717	17.9	19.3	342126	18.0	20.6	135608	18.1	19.0
321479	17.8	19.5	503446	17.8	21.6	170964	17.9	19.8	451783	17.9	21.5	80708	18.1	18.1	206072	18.1	19.8
155251	17.8	19.6	392535	17.8	20.2	476169	17.9	20.9	41881	17.9	18.4	482187	18.1	19.5	263383	18.1	20.0
367035	17.8	20.0	172330	17.8	19.1	324274	17.9	21.6	282551	17.9	20.0	533575	18.1	20.6	91863	18.1	17.7
176350	17.8	19.0	383202	17.8	19.0	417986	17.9	20.4	97152	17.9	19.0	105525	18.1	19.6	489943	18.1	20.6
10063	17.8	18.4	361092	17.8	20.4	25042	17.9	17.3	315088	17.9	20.7	288474	18.1	21.0	274615	18.1	20.8
314137	17.8	20.3	210065	17.8	20.7	321674	17.9	19.7	198288	17.9	19.9	33277	18.1	18.1	147141	18.1	19.0
386328	17.8	19.2	255206	17.8	20.8	219669	17.9	18.5	332657	17.9	19.5	531749	18.1	20.5	193035	18.1	18.7
420578	17.8	20.2	514277	17.8	20.2	117231	17.9	20.0	115279	17.9	18.9	151386	18.1	19.4	139107	18.1	19.9
190483	17.8	18.0	430455	17.8	20.2	236156	17.9	19.9	283661	17.9	20.2	360515	18.1	20.4	444719	18.1	20.7
249606	17.8	19.1	114999	17.8	18.5	473370	17.9	20.0	224727	17.9	20.5	213958	18.1	20.0	37715	18.1	19.0
355546	17.8	21.7	407007	17.8	21.1	349943	17.9	20.2	57939	17.9	18.4	174816	18.1	19.0	404750	18.1	20.7
135980	17.8	20.0	155865	17.8	19.5	154673	17.9	18.6	339414	17.9	19.4	498450	18.1	20.8	128537	18.1	19.4
58608	17.8	19.7	234225	17.8	17.7	319553	17.9	20.2	212538	17.9	20.4	41979	18.1	18.8	333657	18.1	20.0
293428	17.8	19.7	278915	17.8	19.4	512798	17.9	20.7	377700	17.9	19.5	485128	18.1	19.9	314492	18.1	19.3
266754	17.8	20.1	40899	17.8	18.3	229714	17.9	20.3	62526	17.9	18.5	297683	18.1	19.5	58461	18.1	19.0
342155	17.8	20.7	281450	17.8	20.4	231260	17.9	19.3	310620	17.9	20.8	506511	18.1	21.2	309193	18.1	20.2
289389	17.8	20.3	31741	17.8	17.7	162118	17.9	19.9	171209	17.9	20.1	195355	18.1	19.5	365186	18.1	20.8
420843	17.8	20.6	374898	17.8	19.7	354716	17.9	19.8	264003	17.9	19.5	98309	18.1	18.3	402158	18.1	19.7
372861	17.8	20.0	180864	17.9	20.0	431804	17.9	21.2	151122	17.9	19.5	251476	18.1	20.3	515315	18.1	19.1
196300	17.8	21.4	218803	17.9	19.4	22732	17.9	18.5	287927	17.9	18.5	69567	18.1	19.2	103466	18.1	19.0
510740	17.8	21.1	152845	17.9	20.0	446230	17.9	20.2	331518	17.9	20.1	506341	18.1	20.2	482820	18.1	19.8
316304	17.8	19.8	164802	17.9	19.5	511889	17.9	21.4	510515	18.0	20.7	508381	18.1	21.1	9557	18.1	17.8
173815	17.8	19.5	421428	17.9	20.5	139002	17.9	20.1	338709	18.0	19.1	411648	18.1	19.8	437623	18.1	20.9
386995	17.8	20.3	260522	17.9	20.2	13908	17.9	17.9	221434	18.0	20.4	269714	18.1	20.5	274958	18.1	19.9
509787	17.8	20.3	2518	17.9	17.0	62175	17.9	19.4	174121	18.0	20.9	171648	18.1	19.8	513501	18.1	21.0
227439	17.8	20.1	95709	17.9	19.2	191828	17.9	19.7	315910	18.0	20.5	55571	18.1	19.0	53224	18.1	18.5
244495	17.8	19.6	72530	17.9	18.9	384540	17.9	19.8	57921	18.0	19.3	358935	18.1	20.4	505838	18.1	21.1
392038	17.8	19.8	517807	17.9	20.6	268944	17.9	21.6	184861	18.0	20.0	479507	18.1	20.9	315042	18.1	20.1
315937	17.8	20.6	240212	17.9	21.2	140358	17.9	19.3	470003	18.0	20.4	261909	18.1	20.3	189453	18.1	20.2
269029	17.8	20.2	313326	17.9	20.4	121392	17.9	18.9	288814	18.0	19.8	228886	18.1	20.4	333174	18.1	19.9
112587	17.8	18.9	76179	17.9	17.3	534412	17.9	20.3	536812	18.0	21.6	392278	18.1	20.8	366829	18.1	19.9
131680	17.8	18.5	256929	17.9	19.2	21258	17.9	18.5	501177	18.0	20.7	412148	18.1	21.5	361099	18.1	20.2
311347	17.8	19.6	58395	17.9	19.8	382968	17.9	19.2	118960	18.0	17.9	330839	18.1	19.5	1822	18.1	16.3
254326	17.8	19.7	263310	17.9	21.3	381846	17.9	20.4	231870	18.0	19.7	499504	18.1	20.7	384492	18.1	21.2
186760	17.8	19.6	305849	17.9	20.1	356487	17.9	20.3	436756	18.0	20.7	112097	18.1	20.4	129042	18.1	18.8
168772	17.8	18.9	92702	17.9	18.8	442557	17.9	20.4	220719	18.0	19.1	168612	18.1	19.7	419595	18.1	19.5
256541	17.8	20.0	58997	17.9	19.4	542636	17.9	20.6	605202	18.0	18.8	108768	18.1	18.9	479578	18.1	19.8
260000	17.8	19.8	13230	17.9	17.8	16254	17.9	18.4	358851	18.0	20.6	106732	18.1	19.3	254201	18.1	19.6
16502	17.8	17.7	43138	17.9	18.2	499684	17.9	20.8	281225	18.0	20.9	324093	18.1	20.0	493565	18.1	20.5
390447	17.8	20.4	242583	17.9	20.2	134737	17.9	18.0	188499	18.0	19.0	178481	18.1	18.3	72669	18.1	19.0
508552	17.8	20.0	213688	17.9	18.2	381175	17.9	19.4	263521	18.0	19.8	274644	18.1	19.9	92190	18.1	18.8
112881	17.8	18.5	403727	17.9	20.1	22317	17.9	18.5	53423	18.0	18.0	479630	18.1	21.4	516058	18.1	20.2
278314	17.8	21.0	266936	17.9	19.1	58460	17.9	17.6	172430	18.0	18.7	151482	18.1	20.6	305443	18.1	20.4
470298	17.8	20.9	321390	17.9	19.9	513793	17.9	21.3	356892	18.0	20.4	209112	18.1	18.6	121964	18.1	19.7
94271	17.8	19.0	236553	17.9	20.4	94555	17.9	19.0	52146	18.0	17.6	121873	18.1	19.0	517889	18.1	19.8
157902	17.8	17.8	250077	17.9	19.1	37158	1										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
181915	18.2	19.6	252183	18.2	19.7	337131	18.3	19.3	476280	18.4	20.6	101935	18.4	18.3	144071	18.5	18.4
157419	18.2	19.4	399806	18.2	20.4	531562	18.3	21.1	55703	18.4	18.3	75533	18.4	18.0	395140	18.5	19.8
190248	18.2	20.3	172141	18.2	18.3	449289	18.3	21.0	133579	18.4	18.9	289001	18.4	19.5	338524	18.5	21.9
512183	18.2	20.2	220375	18.2	19.8	476627	18.3	20.4	213943	18.4	18.5	129132	18.4	20.1	402836	18.5	20.3
402785	18.2	20.9	449066	18.2	20.2	501996	18.3	20.4	429168	18.4	20.2	485778	18.4	19.8	395964	18.5	20.4
56467	18.2	19.2	489951	18.2	21.0	536325	18.3	21.2	244645	18.4	19.4	533480	18.4	21.7	433300	18.5	20.6
262067	18.2	20.9	134697	18.2	18.8	401671	18.3	20.6	296673	18.4	19.9	488055	18.5	21.1	323280	18.5	20.3
159382	18.2	20.2	484543	18.2	20.6	120957	18.3	19.3	466789	18.4	21.4	189355	18.5	20.0	366024	18.5	21.1
385838	18.2	21.0	205850	18.2	21.2	192490	18.3	20.4	192677	18.4	18.9	542236	18.5	20.6	185725	18.5	18.7
379846	18.2	20.9	316858	18.2	19.1	68197	18.3	19.1	139302	18.4	20.5	200689	18.5	20.0	320731	18.5	19.9
325431	18.2	21.3	19976	18.2	17.0	357507	18.3	20.1	221763	18.4	20.8	23346	18.5	18.3	512785	18.5	19.5
144178	18.2	19.3	222666	18.2	18.7	191728	18.3	19.2	68889	18.4	18.8	22421	18.5	18.0	71856	18.5	18.8
188974	18.2	20.2	279535	18.2	19.5	98891	18.3	20.1	376451	18.4	21.3	239140	18.5	19.8	69953	18.5	17.5
362857	18.2	21.0	180433	18.2	18.8	434699	18.3	21.0	25816	18.4	18.3	480375	18.5	20.2	454810	18.5	19.2
12104	18.2	17.0	298247	18.2	19.0	51891	18.3	17.7	80776	18.4	18.8	421037	18.5	21.5	390360	18.5	21.0
506704	18.2	20.3	527770	18.2	21.6	511451	18.3	21.1	404991	18.4	20.7	507943	18.5	20.8	158622	18.5	20.1
47401	18.2	18.7	123774	18.2	19.6	366791	18.3	19.2	314495	18.4	20.0	476253	18.5	20.3	219475	18.5	19.8
249453	18.2	19.4	412643	18.2	21.5	440615	18.3	19.4	535	18.4	12.8	52419	18.5	18.7	352474	18.5	19.6
433800	18.2	20.3	451792	18.2	20.1	522735	18.3	21.0	294685	18.4	21.0	926	18.5	15.5	24439	18.5	17.6
299179	18.2	20.5	336161	18.2	20.9	362871	18.3	20.3	481507	18.4	21.0	247926	18.5	19.2	91050	18.5	18.0
201931	18.2	18.6	123946	18.2	19.9	298018	18.3	21.2	527260	18.4	21.2	467973	18.5	19.3	284229	18.5	21.2
37574	18.2	18.5	13393	18.2	16.8	92233	18.3	18.0	273799	18.4	20.9	533576	18.5	21.5	362589	18.5	20.9
343574	18.2	20.0	59083	18.2	17.4	422689	18.3	20.0	86820	18.4	19.0	203694	18.5	18.9	382572	18.5	20.4
263738	18.2	20.6	65299	18.2	19.2	211931	18.3	19.0	188463	18.4	19.5	96835	18.5	17.9	189118	18.5	16.7
463872	18.2	19.0	237905	18.2	20.3	516073	18.3	21.2	345974	18.4	20.6	370883	18.5	21.3	503335	18.5	21.7
214550	18.2	19.3	254494	18.2	20.8	202854	18.3	20.0	315091	18.4	20.2	50592	18.5	17.2	488388	18.5	19.2
390912	18.2	21.1	29440	18.2	18.1	279783	18.3	18.8	398650	18.4	19.5	87786	18.5	19.1	356238	18.5	20.3
113616	18.2	19.6	361584	18.2	18.8	395628	18.3	20.3	158326	18.4	19.2	5525	18.5	15.9	6750	18.5	16.6
136851	18.2	20.2	531153	18.3	21.4	97291	18.3	18.7	35887	18.4	18.7	24870	18.5	18.8	152463	18.5	18.7
38865	18.2	18.3	448404	18.3	21.7	456720	18.3	20.5	121105	18.4	20.0	315086	18.5	21.1	198565	18.5	19.7
322031	18.2	19.5	67844	18.3	19.3	471085	18.3	20.4	301400	18.4	20.4	425048	18.5	20.7	410844	18.5	20.0
287754	18.2	19.9	243055	18.3	20.5	475458	18.3	20.5	246506	18.4	19.8	534032	18.5	19.6	263644	18.5	21.0
496986	18.2	20.0	539035	18.3	20.9	45156	18.3	17.6	510430	18.4	21.1	539064	18.5	20.8	102737	18.5	19.8
373180	18.2	21.5	459551	18.3	21.5	96744	18.3	20.3	381893	18.4	19.3	362758	18.5	20.9	388960	18.5	19.7
517607	18.2	20.3	509594	18.3	23.2	200743	18.3	19.6	384449	18.4	20.1	233388	18.5	20.9	425630	18.5	20.3
316834	18.2	21.0	516110	18.3	20.9	516942	18.3	20.9	524759	18.4	19.6	17617	18.5	16.0	506734	18.5	20.5
537623	18.2	21.3	457626	18.3	20.9	8258	18.3	16.6	437305	18.4	21.2	289070	18.5	20.6	323736	18.5	21.0
366571	18.2	20.1	287514	18.3	18.8	507385	18.3	21.6	476505	18.4	19.5	184247	18.5	18.8	114755	18.5	18.8
509682	18.2	20.7	181256	18.3	20.0	134745	18.3	17.9	129947	18.4	19.1	9857	18.5	17.4	517870	18.5	20.9
446413	18.2	20.2	181431	18.3	19.8	166982	18.3	21.0	304593	18.4	20.2	523007	18.5	20.3	513755	18.5	20.5
129583	18.2	19.2	159833	18.3	20.1	499307	18.3	19.3	402218	18.4	20.0	246969	18.5	19.2	175349	18.5	20.0
256418	18.2	20.5	293906	18.3	20.6	135876	18.3	19.4	255230	18.4	20.5	130190	18.5	19.0	56394	18.6	19.0
403995	18.2	19.9	438279	18.3	19.7	315082	18.3	20.9	246667	18.4	20.4	239612	18.5	20.9	109113	18.6	19.5
523618	18.2	22.0	219297	18.3	20.5	436853	18.3	21.4	117466	18.4	19.0	251885	18.5	18.9	66285	18.6	19.1
316249	18.2	19.2	467305	18.3	21.3	48928	18.3	18.8	202639	18.4	20.7	513091	18.5	20.0	152616	18.6	20.3
95669	18.2	18.2	168659	18.3	20.5	398008	18.3	19.4	101118	18.4	19.1	132805	18.5	18.9	321028	18.6	21.0
46944	18.2	18.4	16467	18.3	17.3	107143	18.3	20.4	436604	18.4	20.1	174489	18.5	19.7	191944	18.6	19.3
132550	18.2	19.0	355814	18.3	20.7	397702	18.3	21.8	153537	18.4	19.4	21023	18.5	16.3	443419	18.6	20.9
180339	18.2	20.3	368146	18.3	21.0	115402	18.3	18.8	328739	18.4	19.6	397736	18.5	21.5	47828	18.6	17.9
521042	18.2	19.8	527523	18.3	21.1	509813	18.3	20.4	149252	18.4	19.3	104327	18.5	19.7	181986	18.6	19.9
273620	18.2	20.8	163984	18.3	18.4	198560	18.3	19.9	67495	18.4	18.8	179870	18.5	19.0	251489	18.6	19.8
188138	18.2	20.6	487992	18.3	20.5	289762	18.3	20.8	55756	18.4	18.1	263043	18.5	20.8	240505	18.6	19.7
424607	18.2	21.0	398208	18.3	20.6	353007	18.4	19.9	288928	18.4	19.6	127400	18.5	19.4	311273	18.6	20.9
211145	18.2	19.4	243410	18.3	20.0	18813	18.4	17.2	279351	18.4	20.6	323618	18.5	20.1	149057	18.6	20.1
263015	18.2	20.5	91690	18.3	19.6	289980	18.4	18.3	475968	18.4	21.5	124093	18.5	18.8	182846	18.6	20.2
62690	18.2	19.7	25730	18.3	16.0	123379	18.4	19.8	406323	18.4	21.2	523733	18.5	22.3	228126	18.6	19.6
483289	18.2	20.8	368393	18.3	20.6	173856	18.4	19.6	255048	18.4	19.5	255251	18.5	20.6	449467	18.6	20.6
71457	18.2	17.2	291986	18.3	19.7	432814	18.4	21.5	138430	18.4	19.8	359951	18.5	19.6	386413	18.6	20.2
430556	18.2	21.7	436567	18.3	20.2	474337	18.4	21.8	231572	18.4	20.1	402829	18.5	21.6	68824	18.6	17.7
438609	18.2	20.6	355682	18.3	19.9	239829	18.4	19.2	462564	18.4	21.7	322748	18.5	18.6	123972	18.6	19.4
346887	18.2	19.2	42445	18.3	19.0	542193	18.4	20.4	365235	18.4	21.0	287011	18.5	20.5	427686	18.6	20.2
466597	18.2	20.1	23518	18.3	18.2	155923	18.4	19.4	96575	18.4	18.5	128925	18.5	20.7	388715	18.6	20.6
202812	18.2	19.9	257282	18.3	21.0	398215	18.4	19.6	421568	18.4	20.2	526613	18.5	20.8	361778	18.6	19.7
93484	18.2	19.8	100577	18.3	20.1	153210	18.4	19.4	144232	18.4	19.8	537516	18.5	20.4	39272	18.6	18.9
354099	18.2	20.8	233593	18.3	19.9	253087	18.4	18.8	299384	18.4	19.8	397714	18.5	21.1	172318	18.6	19.7
414071	18.2	19.4	267726	18.3	20.7	263831	18.4	19.5	284687	18.4	21.1	154183	18.5	19.4	205237	18.6	19.6
254184	18.2	19.5	508104	18.3	21.5	424187	18.4	20.9	262891	18.4	20.6	233191	18.5	21.3	141596	18.6	19.3
70075	18.2	19.9	219966	18.3	19.4	250769	18.4	20.1	246023	18.4	20.4	94269	18.5	18.6	499617	18.6	20.6
259438	18.2	19.0	333647	18.3	19.6	8636											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
7974	18.6	17.2	481164	18.7	21.3	33169	18.7	18.2	319195	18.8	20.0	360019	18.9	18.4	109258	18.9	18.5
416651	18.6	19.8	103811	18.7	20.2	315906	18.7	19.6	512603	18.8	20.4	4682	18.9	15.8	261683	18.9	19.9
411586	18.6	20.5	542721	18.7	20.8	460453	18.7	20.0	482768	18.8	20.4	227436	18.9	20.2	121285	18.9	18.5
137523	18.6	18.5	250689	18.7	19.9	58954	18.7	18.9	521363	18.8	21.2	401580	18.9	21.4	285433	18.9	20.4
399137	18.6	20.2	435167	18.7	20.3	336329	18.7	19.9	306003	18.8	20.1	270702	18.9	20.2	152300	18.9	19.7
260352	18.6	19.6	114858	18.7	18.2	42150	18.7	19.1	184249	18.8	20.6	373752	18.9	19.5	154248	18.9	19.8
530727	18.6	19.9	477518	18.7	21.3	73330	18.7	19.7	250790	18.8	18.8	60929	18.9	17.0	342151	18.9	20.1
32158	18.6	15.8	312640	18.7	20.0	230360	18.7	19.9	433365	18.8	20.6	344484	18.9	19.8	46919	18.9	18.2
359942	18.6	19.7	525554	18.7	21.5	100888	18.7	19.5	449716	18.8	20.4	336292	18.9	19.2	62423	18.9	19.0
540292	18.6	20.6	326056	18.7	19.3	322568	18.7	20.3	447046	18.8	20.8	191033	18.9	19.8	179894	18.9	19.4
75757	18.6	18.1	305968	18.7	18.9	313641	18.7	19.5	418073	18.8	19.2	387777	18.9	19.8	8102	18.9	17.3
313936	18.6	20.0	326669	18.7	19.0	210237	18.7	19.5	50654	18.8	18.4	415532	18.9	20.5	272517	18.9	20.7
342749	18.6	19.9	288499	18.7	19.6	190431	18.7	18.7	188105	18.8	19.2	73819	18.9	18.2	444132	18.9	20.1
79000	18.6	18.9	73910	18.7	19.5	120400	18.7	19.1	275887	18.8	18.7	293496	18.9	20.4	91235	18.9	17.3
431732	18.6	21.1	263209	18.7	20.9	390098	18.8	19.7	283695	18.8	19.3	513507	18.9	20.6	302160	18.9	19.4
66827	18.6	19.4	435565	18.7	20.8	453504	18.8	21.2	304606	18.8	19.6	37122	18.9	18.9	177735	18.9	19.9
34397	18.6	18.5	485858	18.7	20.7	450013	18.8	20.3	199951	18.8	20.4	345490	18.9	21.5	86381	18.9	17.9
447293	18.6	20.3	176165	18.7	19.3	415343	18.8	20.6	403777	18.8	21.3	537332	18.9	21.7	245311	18.9	20.0
418849	18.6	21.7	481026	18.7	19.7	43438	18.8	18.1	154823	18.8	18.7	131852	18.9	18.9	516968	18.9	20.6
471599	18.6	20.2	143251	18.7	19.5	298599	18.8	20.3	13854	18.8	18.0	529270	18.9	22.2	135132	18.9	18.8
510522	18.6	20.6	301384	18.7	20.1	456672	18.8	21.6	44460	18.8	18.3	291026	18.9	21.0	434655	18.9	21.0
530521	18.6	22.7	231277	18.7	19.9	233818	18.8	19.5	164784	18.8	19.0	128193	18.9	18.5	479406	18.9	20.5
477552	18.6	21.7	324707	18.7	19.8	23943	18.8	18.7	497751	18.8	19.5	361644	18.9	21.1	52578	18.9	19.8
208108	18.6	20.0	134713	18.7	20.0	312363	18.8	20.7	213546	18.8	20.1	150563	18.9	19.4	73195	18.9	18.9
533173	18.6	21.4	217361	18.7	19.1	128110	18.8	19.1	233200	18.8	18.0	144927	18.9	20.7	313096	18.9	18.3
235871	18.6	19.1	474193	18.7	18.9	370691	18.8	19.9	217403	18.8	20.4	434742	18.9	22.4	390838	18.9	20.2
59820	18.6	18.3	523550	18.7	21.0	138588	18.8	19.0	537335	18.8	21.1	488690	18.9	19.2	6679	18.9	16.2
499569	18.6	21.1	293548	18.7	20.6	324395	18.8	21.0	28152	18.8	17.9	377719	18.9	19.0	186843	18.9	20.7
199195	18.6	20.2	513600	18.7	21.0	394808	18.8	21.0	144430	18.8	19.8	76160	18.9	19.0	269139	18.9	19.7
217583	18.6	20.4	86120	18.7	18.8	155475	18.8	18.3	441199	18.8	20.7	71383	18.9	17.7	345509	18.9	20.4
212998	18.6	18.8	499341	18.7	19.5	251772	18.8	20.3	288774	18.8	19.5	447733	18.9	20.3	42182	18.9	18.8
408372	18.6	20.9	73072	18.7	18.9	168236	18.8	19.4	516750	18.8	21.0	346676	18.9	20.2	349290	18.9	19.9
334058	18.6	20.3	3480	18.7	18.8	34214	18.8	18.9	3237	18.8	15.2	404933	18.9	20.5	41426	18.9	19.5
258832	18.6	19.2	257129	18.7	20.7	266256	18.8	20.5	438934	18.8	20.7	308139	18.9	19.8	224280	18.9	20.3
509492	18.6	20.2	366252	18.7	19.4	424522	18.8	19.7	249400	18.8	20.4	314411	18.9	19.4	342569	18.9	20.1
461883	18.6	21.8	319855	18.7	20.0	343857	18.8	20.4	538516	18.8	21.1	195241	18.9	19.7	107981	18.9	19.1
80803	18.6	18.3	132574	18.7	20.5	35638	18.8	18.1	1606	18.8	14.8	260574	18.9	20.4	472436	18.9	21.0
73790	18.6	19.2	460484	18.7	20.5	377646	18.8	20.0	4086	18.8	15.6	240314	18.9	19.7	471078	18.9	20.5
308538	18.6	19.9	435639	18.7	21.0	67068	18.8	18.9	374361	18.8	19.7	253714	18.9	19.6	86137	18.9	19.4
216773	18.6	20.6	99721	18.7	19.5	477932	18.8	21.2	189050	18.8	19.2	159475	18.9	18.1	208273	18.9	19.4
472023	18.6	20.5	533653	18.7	20.7	442607	18.8	20.7	358971	18.8	20.3	521818	18.9	20.3	490561	18.9	20.0
126490	18.6	19.5	129953	18.7	18.5	527682	18.8	19.4	465637	18.8	21.3	404742	18.9	20.3	250715	18.9	20.6
271840	18.6	18.8	306945	18.7	19.5	204692	18.8	19.6	233863	18.8	20.6	515722	18.9	20.7	211548	18.9	19.7
162158	18.6	17.3	294644	18.7	20.2	231873	18.8	19.1	220366	18.8	19.1	187442	18.9	19.0	347958	18.9	19.8
434195	18.6	21.4	396053	18.7	21.0	136230	18.8	18.7	519095	18.8	21.1	35656	18.9	17.5	19982	18.9	15.4
309202	18.6	20.7	163540	18.7	18.7	472150	18.8	20.7	167686	18.8	19.1	255797	18.9	19.2	52429	18.9	19.3
127933	18.6	19.8	172450	18.7	17.6	540125	18.8	20.0	235713	18.8	19.1	431435	18.9	19.3	63176	18.9	19.2
367710	18.6	20.3	1512	18.7	15.8	213069	18.8	18.4	465626	18.8	21.5	45968	18.9	18.6	539712	18.9	20.6
455113	18.6	20.9	10743	18.7	16.0	453654	18.8	20.5	39584	18.8	18.4	166524	18.9	19.3	70427	18.9	16.7
321067	18.6	20.4	327615	18.7	21.5	71474	18.8	18.8	53084	18.8	17.8	504930	18.9	21.1	398988	18.9	19.9
213686	18.6	19.6	296111	18.7	19.9	99157	18.8	19.7	463905	18.8	20.6	102398	18.9	19.4	132504	18.9	19.1
96796	18.6	18.6	384809	18.7	19.2	291212	18.8	20.3	158515	18.8	19.4	178543	18.9	19.4	288085	18.9	18.9
531389	18.6	21.0	77363	18.7	19.7	136503	18.8	20.0	384046	18.9	19.1	67663	18.9	18.5	187843	18.9	19.1
510280	18.6	21.4	288901	18.7	20.1	336188	18.8	20.6	524108	18.9	20.2	507156	18.9	20.8	242718	18.9	19.6
342801	18.6	20.1	516487	18.7	20.8	147272	18.8	18.0	320085	18.9	20.2	429505	18.9	21.0	357225	18.9	20.8
404005	18.6	21.3	374026	18.7	20.6	344786	18.8	19.4	384606	18.9	19.1	212250	18.9	20.5	521287	18.9	20.2
367489	18.6	20.9	32415	18.7	18.8	418060	18.8	19.7	504074	18.9	20.0	365457	18.9	19.9	312549	19.0	20.3
312480	18.6	20.0	335127	18.7	20.1	68976	18.8	19.1	39468	18.9	18.8	359592	18.9	20.4	233584	19.0	20.7
53017	18.6	17.3	368890	18.7	19.5	79164	18.8	19.4	350993	18.9	20.8	266342	18.9	19.4	345842	19.0	20.7
539598	18.6	20.2	317475	18.7	20.8	431424	18.8	20.0	69160	18.9	17.3	291615	18.9	21.0	291836	19.0	19.9
492150	18.6	20.3	315909	18.7	20.2	470681	18.8	20.5	114953	18.9	19.1	537576	18.9	21.8	334023	19.0	19.0
59474	18.6	19.3	458184	18.7	21.3	145820	18.8	18.7	20108	18.9	23.5	190005	18.9	19.8	522698	19.0	19.6
1992	18.6	17.1	394198	18.7	20.2	341171	18.8	19.8	177943	18.9	20.0	47047	18.9	17.3	427741	19.0	19.5
243778	18.6	19.2	97817	18.7	18.1	93723	18.8	19.3	351859	18.9	19.8	521173	18.9	20.0	343632	19.0	19.8
445505	18.6	19.8	32426	18.7	18.7	514524	18.8	20.3	12389	18.9	17.6	345496	18.9	20.7	463615	19.0	21.4
470825	18.6	20.9	65325	18.7	19.6	33559	18.8	16.6	169846	18.9	19.2	392033	18.9	20.1	210880	19.0	19.5
30349	18.6	19.2	279121	18.7	18.8	20515	18.8	17.5	487810	18.9	20.5	508434	18.9	20.1	539466	19.0	21.5
64887	18.6	18.2	498465	18.7	21.1	251878	18.8	19.4	165569	18.9	19.7	144574	18.9	20.9	16366	19.0	16.1
144163	18.6	18.5	134705	18.7	18.4	163945	18.8	19.4									

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
512498	19.0	20.4	520094	19.1	20.5	217665	19.2	19.6	62495	19.3	17.5	444282	19.3	20.8	382448	19.4	20.8
477986	19.0	20.6	360202	19.1	20.6	282567	19.2	20.3	58969	19.3	17.2	506070	19.3	20.0	302824	19.4	20.4
345009	19.0	19.8	152532	19.1	19.4	35805	19.2	18.3	530966	19.3	20.6	169494	19.3	19.8	58822	19.4	18.2
138030	19.0	19.2	299150	19.1	20.2	503437	19.2	20.9	246497	19.3	20.6	462128	19.3	20.5	485752	19.4	21.1
140201	19.0	19.3	131735	19.1	18.8	458970	19.2	20.2	394661	19.3	21.7	449288	19.3	21.6	482143	19.4	20.4
121907	19.0	18.7	394684	19.1	20.6	258842	19.2	20.2	125447	19.3	18.7	197633	19.3	19.1	387924	19.4	19.8
540884	19.0	21.3	333945	19.1	18.4	293409	19.2	20.3	85692	19.3	19.0	392008	19.3	20.0	130931	19.4	19.2
122135	19.0	19.9	127710	19.1	20.2	201562	19.2	20.3	185796	19.3	19.5	528204	19.3	21.8	129547	19.4	19.0
315932	19.0	20.3	472283	19.1	20.6	26800	19.2	18.0	366147	19.3	21.0	41648	19.3	17.7	76746	19.4	19.7
472645	19.0	20.1	366434	19.1	19.7	181778	19.2	19.7	466125	19.3	21.6	410703	19.3	20.2	335097	19.4	20.7
428726	19.0	21.3	235090	19.1	19.4	440599	19.2	20.6	71397	19.3	18.7	222468	19.3	20.7	295500	19.4	20.6
334709	19.0	20.8	280346	19.1	20.0	233760	19.2	19.8	347613	19.3	19.8	322317	19.3	19.7	212734	19.4	19.3
306141	19.0	20.0	63370	19.1	19.3	291741	19.2	21.6	6627	19.3	16.7	440439	19.3	19.9	240345	19.4	18.4
284526	19.0	19.9	162580	19.1	19.5	122833	19.2	19.2	196456	19.3	19.6	466090	19.3	22.1	77552	19.4	19.7
318549	19.0	20.6	368032	19.1	20.1	42180	19.2	18.0	258664	19.3	20.6	26581	19.3	17.7	21271	19.4	18.7
287318	19.0	19.9	388737	19.1	20.2	41106	19.2	17.2	536171	19.3	21.6	393680	19.3	19.1	120609	19.4	19.2
208872	19.0	19.1	68098	19.1	18.9	123899	19.2	19.5	23572	19.3	18.4	376579	19.3	20.4	435823	19.4	19.8
100473	19.0	19.5	194878	19.1	20.6	291279	19.2	20.9	278278	19.3	20.2	141574	19.3	19.6	253063	19.4	19.0
137993	19.0	19.4	56289	19.1	18.4	368663	19.2	21.3	94603	19.3	18.9	444117	19.3	20.9	430220	19.4	19.4
302680	19.0	19.7	515423	19.1	22.1	42322	19.2	17.1	305568	19.3	19.6	294104	19.3	19.9	291718	19.4	20.9
68762	19.0	18.9	193664	19.1	18.6	4228	19.2	16.6	508819	19.3	21.8	236733	19.3	20.6	315121	19.4	20.1
511200	19.0	20.6	231223	19.1	18.8	340497	19.2	20.7	396985	19.3	21.0	233214	19.3	19.6	279743	19.4	21.0
361159	19.0	19.5	138003	19.1	19.0	237701	19.2	19.2	465093	19.3	20.9	183958	19.3	20.8	389983	19.4	20.6
289427	19.0	20.6	177627	19.1	20.4	95312	19.2	19.3	534236	19.3	19.6	454574	19.3	21.5	75998	19.4	18.3
250757	19.0	20.0	81118	19.1	19.5	403940	19.2	20.3	115723	19.3	18.6	484255	19.3	21.6	418070	19.4	19.6
502581	19.0	19.9	126278	19.1	19.0	5706	19.2	16.2	34753	19.3	19.3	540359	19.3	21.4	303179	19.4	19.9
196503	19.0	19.9	135881	19.1	18.6	537321	19.2	21.4	245727	19.3	19.5	444405	19.3	20.1	119041	19.4	19.5
472543	19.0	21.3	250332	19.1	19.4	10168	19.2	18.4	432834	19.3	21.0	180400	19.3	20.2	112027	19.4	19.5
399955	19.0	20.3	35386	19.1	17.4	193498	19.2	18.8	207973	19.3	19.1	517277	19.3	20.4	207892	19.4	19.6
477149	19.0	20.2	211053	19.1	18.5	455965	19.2	20.6	539485	19.3	20.8	196426	19.3	20.9	125565	19.4	18.6
225649	19.0	19.8	204578	19.1	20.0	485731	19.2	20.5	488890	19.3	20.4	285857	19.3	21.1	509093	19.4	19.8
128742	19.0	19.4	286572	19.1	20.3	382955	19.2	20.4	293159	19.3	20.3	313169	19.3	19.8	162487	19.4	19.1
465888	19.0	19.7	144833	19.1	20.2	524009	19.2	20.6	189557	19.3	19.2	416065	19.3	20.7	371981	19.4	19.8
452680	19.1	19.4	164746	19.1	19.3	253873	19.2	19.6	128883	19.3	19.2	198062	19.3	20.2	79858	19.4	18.0
144957	19.1	20.5	355054	19.1	20.8	512424	19.2	20.0	146945	19.3	20.5	152747	19.3	19.7	258862	19.4	19.8
91713	19.1	18.4	465215	19.1	18.8	342492	19.2	19.8	192221	19.3	19.4	130945	19.3	17.8	154604	19.4	19.9
198468	19.1	18.9	512774	19.1	20.2	390293	19.2	20.6	332850	19.3	21.0	369558	19.3	20.0	94419	19.4	19.1
399037	19.1	20.4	1199	19.1	14.5	244401	19.2	20.5	143881	19.3	19.9	243158	19.4	20.2	208722	19.4	19.7
490107	19.1	20.2	87214	19.1	18.0	112200	19.2	19.4	208634	19.3	20.2	468998	19.4	19.6	228010	19.4	20.2
496515	19.1	19.9	512663	19.1	20.3	514757	19.2	22.3	46259	19.3	18.2	145697	19.4	18.7	429646	19.4	21.0
469556	19.1	20.3	508155	19.1	21.0	61716	19.2	18.3	216785	19.3	19.6	323737	19.4	20.1	512532	19.4	20.8
66268	19.1	16.6	176472	19.1	19.6	21782	19.2	18.7	91608	19.3	18.6	72367	19.4	18.3	268267	19.4	19.9
218086	19.1	20.1	172948	19.1	20.1	523677	19.2	21.7	249592	19.3	20.0	291586	19.4	20.7	260278	19.4	18.2
250274	19.1	19.5	199247	19.1	20.9	263056	19.2	20.3	244805	19.3	20.1	430007	19.4	19.8	392637	19.4	20.5
509474	19.1	20.7	339158	19.1	20.4	205752	19.2	19.2	181004	19.3	20.3	14090	19.4	18.4	533516	19.4	20.2
116753	19.1	19.8	388886	19.1	19.4	440268	19.2	19.5	266006	19.3	19.9	520245	19.4	20.6	468958	19.4	21.2
158778	19.1	18.8	504917	19.1	21.4	63938	19.2	18.0	107529	19.3	20.1	478766	19.4	20.8	335121	19.4	19.6
539428	19.1	21.0	361499	19.1	20.8	15527	19.2	17.7	476913	19.3	20.4	249657	19.4	18.4	99450	19.4	19.3
445381	19.1	20.3	244947	19.2	18.2	412071	19.2	20.9	16586	19.3	19.1	345954	19.4	20.9	104175	19.4	19.1
316168	19.1	20.9	16773	19.2	15.6	525088	19.2	21.2	450030	19.3	20.8	170979	19.4	19.0	127380	19.4	20.1
261520	19.1	19.6	512460	19.2	20.1	92128	19.2	18.3	79228	19.3	17.7	62715	19.4	17.8	155868	19.4	19.5
229093	19.1	19.4	479598	19.2	21.1	261979	19.2	20.4	160395	19.3	19.6	294878	19.4	20.8	173263	19.4	18.0
106621	19.1	18.1	251851	19.2	20.7	248101	19.2	19.4	424834	19.3	20.9	2323	19.4	15.0	260375	19.4	19.4
41520	19.1	17.9	203370	19.2	18.9	508293	19.2	20.9	189234	19.3	19.9	225863	19.4	18.4	239826	19.4	18.3
24593	19.1	17.9	412035	19.2	21.6	331902	19.2	20.0	291822	19.3	20.7	389750	19.4	20.4	306916	19.4	20.1
402446	19.1	20.5	420584	19.2	21.2	22399	19.2	17.4	451607	19.3	20.8	254175	19.4	19.3	329762	19.4	20.8
504502	19.1	21.1	401698	19.2	21.4	508820	19.2	20.7	242848	19.3	19.5	478878	19.4	20.3	483113	19.4	20.2
321780	19.1	19.9	9784	19.2	17.0	172188	19.2	19.2	111949	19.3	19.2	375752	19.4	20.6	202816	19.4	20.5
65336	19.1	18.9	234335	19.2	20.9	6229	19.2	16.6	180411	19.3	19.5	68500	19.4	19.0	164838	19.4	19.7
531124	19.1	21.6	35488	19.2	18.4	126462	19.2	20.2	299903	19.3	20.2	12729	19.4	16.8	226881	19.4	19.7
542692	19.1	20.4	239871	19.2	19.8	12966	19.2	17.9	320501	19.3	19.2	357923	19.4	19.8	171443	19.4	19.8
522721	19.1	20.2	445841	19.2	19.7	536315	19.2	21.3	171353	19.3	19.5	171830	19.4	19.6	400853	19.4	19.6
118930	19.1	18.9	453492	19.2	20.7	251659	19.2	20.7	511124	19.3	18.8	256779	19.4	20.3	514792	19.4	21.6
162107	19.1	18.9	192343	19.2	19.6	511385	19.2	21.8	404827	19.3	21.1	430026	19.4	19.7	279419	19.4	19.8
108451	19.1	19.9	128875	19.2	20.0	159952	19.2	20.1	507243	19.3	20.8	48639	19.4	21.4	249318	19.4	19.5
268089	19.1	19.5	263457	19.2	20.8	255423	19.2	19.1	38499	19.3	19.0	250767	19.4	20.3	62539	19.4	18.7
531055	19.1	20.4	236585	19.2	21.0	421550	19.2	20.1	169920	19.3	19.9	300764	19.4	20.9	349240	19.4	20.6
132334	19.1	19.4	537659	19.2	21.6	18542	19.2	17.7	538515	19.3	21.1	66009	19.4	17.9	239828	19.4	20.2
443220	19.1	20.0	65082	19.2	18.5	500072											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
304476	19.5	20.8	103786	19.5	20.2	31386	19.6	17.8	538920	19.7	21.6	342400	19.7	20.5	3548	19.8	16.3
381151	19.5	18.9	336722	19.5	19.3	483174	19.6	19.8	440741	19.7	19.7	391973	19.7	21.1	435603	19.8	20.4
278027	19.5	19.6	38730	19.5	18.2	19203	19.6	18.2	505687	19.7	21.1	74698	19.7	18.7	215353	19.8	19.7
67795	19.5	18.2	344410	19.5	19.2	75506	19.6	18.5	521065	19.7	20.6	425524	19.7	19.5	360221	19.8	20.3
434739	19.5	21.1	476168	19.5	20.8	440389	19.6	21.0	424586	19.7	21.4	5109	19.7	16.7	205803	19.8	19.7
520199	19.5	21.4	281373	19.5	19.0	75715	19.6	18.4	496048	19.7	19.6	529761	19.7	20.7	503536	19.8	21.8
217344	19.5	19.7	465421	19.5	20.4	242368	19.6	20.7	508047	19.7	21.1	15545	19.7	18.1	330527	19.8	20.5
278504	19.5	19.3	448040	19.5	21.3	530951	19.6	20.2	355114	19.7	19.5	482822	19.7	20.8	99791	19.8	19.5
404548	19.5	21.3	200494	19.5	18.8	13109	19.6	17.5	360726	19.7	20.8	78270	19.7	18.8	140302	19.8	19.7
71593	19.5	18.3	407999	19.5	20.8	480992	19.6	21.5	147173	19.7	18.1	377690	19.7	20.2	501713	19.8	20.3
192201	19.5	20.4	23457	19.5	17.4	187790	19.6	19.0	178107	19.7	19.8	501911	19.7	20.5	480267	19.8	21.6
382184	19.5	20.5	235877	19.5	20.1	252952	19.6	17.5	28067	19.7	17.6	333495	19.8	18.4	449483	19.8	20.4
470649	19.5	20.9	296942	19.5	20.5	203921	19.6	19.4	410161	19.7	21.3	105423	19.8	18.9	144418	19.8	19.9
183847	19.5	19.5	522742	19.5	21.0	459971	19.6	22.9	116720	19.7	20.6	263623	19.8	21.0	181630	19.8	19.6
307337	19.5	18.8	202701	19.5	18.5	82144	19.6	18.5	233882	19.7	19.7	166648	19.8	19.6	42126	19.8	19.1
255404	19.5	19.6	436139	19.5	20.6	113335	19.6	19.8	474019	19.7	22.0	84613	19.8	18.2	323668	19.8	19.5
333673	19.5	20.5	390659	19.5	20.9	537135	19.6	20.3	370908	19.7	21.0	243456	19.8	19.7	443818	19.8	20.8
11118	19.5	17.6	349294	19.5	20.3	510707	19.6	20.8	429703	19.7	20.9	367781	19.8	19.8	451153	19.8	21.3
328157	19.5	21.0	441991	19.5	20.5	396347	19.6	20.7	344683	19.7	19.9	290113	19.8	20.6	260512	19.8	20.7
142042	19.5	18.3	292831	19.6	20.3	479862	19.6	19.9	20230	19.7	18.4	202746	19.8	19.7	393121	19.8	20.5
154534	19.5	20.3	45988	19.6	19.1	97501	19.6	18.4	533115	19.7	21.6	260417	19.8	19.1	498073	19.8	21.8
209880	19.5	20.4	311208	19.6	20.6	304009	19.6	19.7	75975	19.7	19.4	253345	19.8	20.8	191709	19.8	19.6
349179	19.5	19.8	112225	19.6	20.0	159165	19.6	19.4	255195	19.7	19.6	251891	19.8	19.4	380277	19.8	18.4
321610	19.5	19.5	123426	19.6	18.6	115301	19.6	19.0	181132	19.7	20.2	395053	19.8	20.9	472091	19.8	20.8
20277	19.5	18.0	73299	19.6	18.9	400220	19.6	21.0	33487	19.7	17.6	139034	19.8	19.7	276476	19.8	19.9
475439	19.5	20.9	163983	19.6	18.9	480213	19.6	21.8	84134	19.7	18.3	313369	19.8	20.5	454391	19.8	20.4
394917	19.5	20.0	438320	19.6	20.5	690	19.6	11.8	354757	19.7	20.6	371611	19.8	20.5	405816	19.8	20.6
28739	19.5	19.2	217750	19.6	19.6	250428	19.6	19.4	45784	19.7	17.8	314354	19.8	20.1	388672	19.8	20.2
114759	19.5	19.7	421974	19.6	21.5	145771	19.6	18.0	255268	19.7	18.5	169871	19.8	19.4	249405	19.8	20.7
278779	19.5	19.3	222927	19.6	20.1	96469	19.6	18.9	467777	19.7	20.5	73907	19.8	19.0	349971	19.8	20.0
301246	19.5	21.0	251583	19.6	20.8	284573	19.6	20.2	81726	19.7	18.3	531113	19.8	21.4	401611	19.8	20.1
15926	19.5	16.9	106249	19.6	18.8	5669	19.6	16.5	151370	19.7	19.6	295380	19.8	20.6	161283	19.8	18.9
402821	19.5	20.4	53537	19.6	18.0	127123	19.6	19.5	236023	19.7	20.8	37226	19.8	19.2	66616	19.8	17.7
70304	19.5	19.5	20848	19.6	18.1	239102	19.6	19.0	248062	19.7	20.0	260482	19.8	21.4	56730	19.8	18.0
171279	19.5	20.5	160737	19.6	18.2	286171	19.6	20.2	95612	19.7	19.6	73298	19.8	19.1	513374	19.8	21.4
324178	19.5	20.3	423795	19.6	20.9	483945	19.6	21.5	144458	19.7	20.4	323731	19.8	20.2	326258	19.8	19.8
106003	19.5	18.6	119955	19.6	19.1	38516	19.6	17.7	13495	19.7	16.4	351435	19.8	20.7	94128	19.8	18.5
316328	19.5	20.8	494367	19.6	20.9	369262	19.6	21.1	407160	19.7	19.9	41735	19.8	17.4	343484	19.8	20.1
285909	19.5	20.6	465630	19.6	21.4	68212	19.6	18.9	38699	19.7	18.9	186303	19.8	20.3	341109	19.8	20.9
324982	19.5	19.5	437061	19.6	20.8	89699	19.6	17.7	46171	19.7	18.6	273892	19.8	20.6	167319	19.8	19.4
122980	19.5	18.7	528964	19.6	21.4	12758	19.6	17.5	423975	19.7	20.3	127081	19.8	19.2	251524	19.8	19.7
422365	19.5	20.0	483668	19.6	23.3	387255	19.6	20.1	531012	19.7	21.1	435632	19.8	20.6	315315	19.8	19.4
8442	19.5	17.4	66332	19.6	18.6	318563	19.6	21.5	257739	19.7	19.0	304419	19.8	19.8	502763	19.8	20.0
456216	19.5	21.2	517977	19.6	20.5	213640	19.6	18.9	424552	19.7	21.0	114654	19.8	19.2	510337	19.8	20.9
315059	19.5	20.3	48157	19.6	18.4	513829	19.6	21.9	28226	19.7	17.7	157425	19.8	20.1	91967	19.8	18.5
159358	19.5	20.0	34211	19.6	17.5	146878	19.6	19.3	444410	19.7	19.8	160233	19.8	19.5	294003	19.8	20.2
353480	19.5	20.3	384707	19.6	19.6	377288	19.6	20.4	513872	19.7	21.2	181937	19.8	20.2	327094	19.8	19.4
145809	19.5	19.3	389123	19.6	20.5	528740	19.6	20.6	180821	19.7	19.8	218951	19.8	20.2	460402	19.8	20.8
308445	19.5	19.5	80696	19.6	19.3	39529	19.6	18.0	479688	19.7	20.7	237766	19.8	17.9	362267	19.8	20.1
26289	19.5	17.7	396189	19.6	20.6	42237	19.6	18.0	150077	19.7	19.4	319211	19.8	19.1	469618	19.8	21.5
315174	19.5	20.6	437794	19.6	20.8	295571	19.6	18.9	88739	19.7	19.2	242708	19.8	19.2	514042	19.9	21.6
289209	19.5	19.3	61860	19.6	19.5	511263	19.6	20.3	137518	19.7	20.1	204366	19.8	20.3	392956	19.9	20.2
85874	19.5	17.4	159925	19.6	18.9	537212	19.6	21.6	91175	19.7	19.6	449038	19.8	20.2	410674	19.9	20.9
526266	19.5	21.1	385830	19.6	20.6	10328	19.6	18.5	320006	19.7	20.4	136418	19.8	20.2	537642	19.9	20.4
238153	19.5	18.9	491994	19.6	21.3	21971	19.6	17.3	481328	19.7	19.8	166428	19.8	19.7	412766	19.9	20.8
408739	19.5	20.5	200027	19.6	19.9	254244	19.6	19.7	537569	19.7	21.0	182125	19.8	18.7	448992	19.9	20.8
313063	19.5	19.4	468781	19.6	19.9	154969	19.6	19.9	433293	19.7	20.9	166136	19.8	20.2	160705	19.9	17.6
95807	19.5	19.8	182884	19.6	18.5	540485	19.6	19.3	62263	19.7	17.2	49113	19.8	19.7	108968	19.9	19.3
129469	19.5	20.1	236490	19.6	19.8	104467	19.6	20.4	61026	19.7	18.6	121769	19.8	18.7	62376	19.9	18.5
143989	19.5	19.7	2638	19.6	14.8	325105	19.6	20.0	382177	19.7	19.3	48883	19.8	18.5	503651	19.9	21.2
312625	19.5	20.4	136035	19.6	18.5	68545	19.6	18.1	94327	19.7	18.0	44425	19.8	18.2	130148	19.9	19.3
355144	19.5	20.6	266999	19.6	18.9	102288	19.6	19.3	411649	19.7	19.7	65848	19.8	21.3	206695	19.9	19.9
12297	19.5	17.6	350913	19.6	19.3	20080	19.6	17.5	329039	19.7	19.6	378270	19.8	20.4	83595	19.9	19.3
480110	19.5	19.9	351181	19.6	20.4	387144	19.6	19.5	257078	19.7	19.6	529051	19.8	20.6	434072	19.9	19.6
178183	19.5	20.1	117146	19.6	17.2	170702	19.6	18.7	99434	19.7	19.5	516573	19.8	20.9	510747	19.9	20.0
291024	19.5	20.3	149785	19.6	19.4	58857	19.6	18.0	65788	19.7	19.4	420341	19.8	20.2	206012	19.9	19.8
452185	19.5	19.5	83402	19.6	18.7	57909	19.7	19.2	72585	19.7	19.1	137062	19.8	17.2	489949	19.9	20.9
254306	19.5	19.2	215354	19.6	20.0	13684	19.7	17.3	52093	19.7	18.9	164013	19.8	19.8	30246	19.9	17.5
163253	19.5	20.5	520216	19.6	21.5	295627	19.7	19.8	68								

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
333925	19.9	18.5	268931	19.9	19.8	75546	19.9	18.6	465853	20.1	23.0	243120	20.1	20.4	12054	20.2	18.4
276788	19.9	20.5	509732	19.9	19.6	521605	19.9	20.4	397848	20.1	20.3	3107	20.1	15.8	513199	20.2	20.3
1084	19.9	14.7	478738	19.9	20.5	46746	20.0	19.2	47711	20.1	17.0	71706	20.1	17.5	491584	20.2	20.0
159497	19.9	18.6	403553	19.9	20.4	276460	20.0	20.4	269780	20.1	19.9	192257	20.1	19.5	512583	20.2	20.9
229902	19.9	19.6	5712	19.9	16.4	24687	20.0	17.2	255673	20.1	18.9	235347	20.2	19.9	65340	20.2	18.7
20121	19.9	17.3	524329	19.9	19.9	310706	20.0	20.4	374389	20.1	21.1	517955	20.2	21.1	10284	20.2	17.3
35550	19.9	18.0	497927	19.9	20.3	350013	20.0	21.0	338011	20.1	20.7	74349	20.2	18.7	2460	20.2	14.9
485198	19.9	19.0	256961	19.9	19.3	349170	20.0	19.3	436875	20.1	20.2	514433	20.2	20.0	195493	20.2	20.6
176347	19.9	19.3	437441	19.9	20.5	147144	20.0	18.7	199051	20.1	20.2	8165	20.2	17.0	402421	20.2	21.0
312671	19.9	20.2	241818	19.9	18.4	23602	20.0	18.4	42050	20.1	19.2	531154	20.2	21.5	395638	20.2	20.8
451621	19.9	21.4	202692	19.9	21.1	477002	20.0	21.0	440958	20.1	20.3	396304	20.2	20.2	402443	20.2	20.0
529766	19.9	20.9	316971	19.9	20.2	240199	20.0	19.9	262730	20.1	20.3	104135	20.2	18.4	356920	20.3	20.8
349283	19.9	19.4	370914	19.9	21.6	40198	20.0	17.5	424537	20.1	20.9	27890	20.2	17.9	334427	20.3	20.4
395045	19.9	21.4	157337	19.9	20.2	323064	20.0	20.3	86439	20.1	18.5	311174	20.2	19.9	273816	20.3	20.5
253813	19.9	19.1	223553	19.9	21.0	247732	20.0	20.1	278652	20.1	19.6	14431	20.2	17.5	509896	20.3	21.3
19315	19.9	16.6	537691	19.9	20.7	400950	20.0	20.2	313012	20.1	19.9	440460	20.2	20.3	121420	20.3	19.0
322098	19.9	20.5	8454	19.9	17.5	325458	20.0	19.7	142323	20.1	20.2	426392	20.2	19.7	124125	20.3	19.0
223862	19.9	19.6	473290	19.9	20.7	315776	20.0	20.6	445404	20.1	20.2	445493	20.2	20.3	44846	20.3	18.8
217473	19.9	19.4	163707	19.9	20.3	365067	20.0	20.5	11142	20.1	18.2	64515	20.2	17.4	528013	20.3	21.7
187417	19.9	20.7	321739	19.9	19.8	296019	20.0	20.3	359965	20.1	20.4	171850	20.2	19.3	105550	20.3	18.6
244509	19.9	20.1	437732	19.9	19.4	172856	20.0	19.5	60008	20.1	18.1	109144	20.2	19.8	476695	20.3	21.1
233328	19.9	19.6	286589	19.9	20.5	503479	20.0	21.4	359975	20.1	20.2	169751	20.2	20.1	444115	20.3	20.3
428564	19.9	20.4	401446	19.9	20.4	99113	20.0	18.9	293821	20.1	20.5	325112	20.2	21.3	276828	20.3	18.1
314517	19.9	20.3	470724	19.9	21.1	234589	20.0	19.0	438927	20.1	21.0	410180	20.2	19.6	308988	20.3	20.4
320020	19.9	20.3	207722	19.9	19.6	454070	20.0	20.8	14292	20.1	18.7	428219	20.2	19.9	209315	20.3	19.6
313621	19.9	19.7	382959	19.9	19.5	268413	20.0	18.8	316162	20.1	19.8	208393	20.2	20.3	87033	20.3	19.1
477753	19.9	19.8	32973	19.9	17.9	164792	20.0	19.9	384511	20.1	20.3	126192	20.2	18.8	20682	20.3	16.2
203111	19.9	19.0	324794	19.9	19.8	105239	20.0	19.0	371507	20.1	20.7	319210	20.2	19.7	532133	20.3	22.1
173800	19.9	19.8	199907	19.9	19.9	513463	20.0	21.1	530551	20.1	20.7	367110	20.2	21.6	337321	20.3	18.8
366128	19.9	20.3	319383	19.9	20.8	326496	20.0	20.8	346546	20.1	20.6	193552	20.2	18.5	66310	20.3	19.4
390382	19.9	19.6	289379	19.9	20.4	514297	20.0	21.4	353116	20.1	20.1	129818	20.2	18.2	12584	20.3	17.3
81069	19.9	18.4	488845	19.9	21.1	399060	20.0	21.0	219036	20.1	19.9	116412	20.2	18.4	325468	20.3	21.6
364623	19.9	19.7	251325	19.9	19.6	275963	20.0	18.6	42549	20.1	18.0	278765	20.2	20.9	174571	20.3	19.2
453474	19.9	20.8	145377	19.9	19.5	387143	20.0	20.3	539865	20.1	18.9	132748	20.2	18.4	462527	20.3	21.2
208571	19.9	18.5	13650	19.9	18.3	64323	20.0	18.9	21817	20.1	17.7	445415	20.2	20.7	499668	20.3	20.3
365076	19.9	19.9	211330	19.9	18.8	324728	20.0	21.1	45490	20.1	17.9	175244	20.2	20.6	103913	20.3	19.5
338557	19.9	19.3	86627	19.9	19.0	144353	20.0	20.8	362602	20.1	19.9	340556	20.2	20.1	489048	20.3	21.1
364146	19.9	20.3	513304	19.9	21.0	408553	20.0	21.2	35274	20.1	18.3	165316	20.2	19.4	480741	20.3	20.0
123444	19.9	19.3	91471	19.9	18.4	255087	20.0	19.5	358976	20.1	20.3	210986	20.2	20.2	503333	20.3	21.5
262985	19.9	20.9	382099	19.9	20.8	278719	20.0	20.8	329744	20.1	21.4	232081	20.2	17.7	92301	20.3	19.5
77555	19.9	19.6	140773	19.9	19.9	175835	20.0	19.2	239952	20.1	20.0	42784	20.2	17.4	476151	20.3	20.4
388746	19.9	20.9	235147	19.9	18.7	362278	20.0	19.6	167167	20.1	18.8	502503	20.2	20.3	13383	20.3	17.9
380782	19.9	21.0	275570	19.9	20.8	80341	20.0	17.8	166070	20.1	19.9	505121	20.2	21.5	255819	20.3	19.9
140186	19.9	19.8	130519	19.9	18.8	3973	20.0	15.9	161489	20.1	19.7	358796	20.2	20.4	301580	20.3	19.8
515642	19.9	21.9	71156	19.9	18.3	499680	20.0	20.6	323509	20.1	19.9	518575	20.2	20.9	64557	20.3	18.9
91194	19.9	18.2	139987	19.9	19.0	465490	20.0	21.3	264769	20.1	20.0	268871	20.2	20.5	503957	20.3	20.0
149690	19.9	18.8	431126	19.9	20.8	68153	20.0	17.8	539590	20.1	20.4	494565	20.2	20.3	60579	20.3	18.5
139543	19.9	19.9	216023	19.9	19.9	131802	20.0	20.5	528661	20.1	19.8	68640	20.2	20.1	238550	20.3	18.6
461632	19.9	21.5	25551	19.9	17.8	479496	20.0	20.6	508865	20.1	21.2	519772	20.2	22.3	89469	20.3	18.3
205264	19.9	19.6	154246	19.9	20.1	216307	20.0	20.1	59633	20.1	17.7	221386	20.2	20.2	271842	20.3	20.4
446066	19.9	21.1	326262	19.9	20.9	26442	20.0	18.6	424539	20.1	20.3	363472	20.2	19.7	38146	20.3	17.9
524440	19.9	20.9	363285	19.9	20.1	328490	20.0	19.6	31755	20.1	17.9	107228	20.2	18.8	371870	20.3	20.6
359383	19.9	21.0	133525	19.9	18.9	308954	20.0	20.4	331624	20.1	20.0	530507	20.2	21.4	38258	20.3	19.0
340372	19.9	20.8	315343	19.9	20.0	470709	20.0	20.9	75761	20.1	17.8	333286	20.2	18.7	447758	20.3	19.7
249586	19.9	20.1	535626	19.9	22.0	532944	20.0	20.1	469685	20.1	18.8	291418	20.2	20.0	329981	20.3	20.0
205994	19.9	19.9	299707	19.9	19.8	65867	20.1	18.4	470387	20.1	20.7	162412	20.2	18.0	127233	20.3	19.8
318655	19.9	21.5	39198	19.9	18.7	289895	20.1	20.9	188797	20.1	18.1	534658	20.2	20.8	148117	20.3	19.7
234229	19.9	18.6	129793	19.9	20.2	528108	20.1	21.1	189166	20.1	19.5	221391	20.2	20.8	288782	20.3	19.7
365672	19.9	19.8	336224	19.9	19.9	175193	20.1	19.4	441977	20.1	20.5	79130	20.2	17.0	474356	20.3	20.7
402787	19.9	22.0	346489	19.9	20.3	105815	20.1	18.4	483280	20.1	20.8	449774	20.2	20.6	404366	20.3	21.6
145498	19.9	20.7	476617	19.9	20.9	123826	20.1	19.0	288508	20.1	19.8	315749	20.2	20.9	447040	20.3	19.6
267330	19.9	17.6	405436	19.9	20.9	207229	20.1	19.6	151274	20.1	19.6	219521	20.2	20.0	33556	20.3	17.2
429611	19.9	21.4	129299	19.9	19.4	280959	20.1	21.1	313987	20.1	20.1	429476	20.2	21.2	438917	20.3	20.2
444108	19.9	20.8	11998	19.9	17.8	57957	20.1	20.2	479046	20.1	20.0	167986	20.2	20.0	174981	20.3	20.3
385332	19.9	21.0	341835	19.9	21.3	264155	20.1	19.9	362358	20.1	20.1	261831	20.2	21.2	231290	20.3	20.1
386543	19.9	20.2	257370	19.9	19.9	320178	20.1	18.9	213350	20.1	20.1	349251	20.2	20.3	294784	20.3	20.0
310871	19.9	20.0	485869	19.9	21.6	433213	20.1	19.7	159158	20.1	20.1	437091	20.2	20.4	430338	20.3	19.1
162894	19.9	18.9	172469	19.9	18.0	191245	20.1	18.4	9480	20.1	16.8	257422	20.2	20.1	379621	20.3	19.6
445236	19.9	21.6	412896	19.9	21.1	31875	2										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
507436	20.3	20.5	447369	20.4	21.1	256164	20.4	20.2	527934	20.5	21.9	215636	20.6	18.9	513107	20.7	19.3
439526	20.3	19.5	196385	20.4	20.5	292124	20.4	20.6	97120	20.5	18.9	162479	20.6	18.5	180177	20.7	20.9
28725	20.3	18.2	223243	20.4	20.3	516960	20.5	21.0	503559	20.5	20.4	518203	20.6	20.9	508694	20.7	20.9
40618	20.3	19.1	204921	20.4	20.3	253045	20.5	19.0	356619	20.5	20.1	277652	20.6	20.5	243969	20.7	19.2
454018	20.3	21.1	515960	20.4	20.0	322547	20.5	20.7	317810	20.5	20.1	174633	20.6	19.2	232894	20.7	19.1
525535	20.3	21.6	297109	20.4	19.7	445439	20.5	20.5	119558	20.5	18.0	348319	20.6	20.3	76217	20.7	18.7
52318	20.3	18.9	281890	20.4	20.2	253341	20.5	20.2	58915	20.5	18.9	393797	20.6	20.8	4481	20.7	16.1
44536	20.3	17.8	37707	20.4	19.0	471848	20.5	20.3	1068	20.5	15.4	360	20.6	12.0	257517	20.7	19.6
343904	20.3	21.2	325446	20.4	19.5	283171	20.5	19.7	531024	20.5	20.3	313619	20.6	18.7	315075	20.7	20.6
415788	20.3	19.4	271849	20.4	19.3	319172	20.5	20.8	336887	20.5	20.3	296217	20.6	20.0	255391	20.7	19.8
443642	20.3	19.5	263059	20.4	19.8	131762	20.5	18.9	21356	20.5	17.9	268239	20.6	20.2	445248	20.7	20.3
481332	20.3	20.3	447269	20.4	19.9	132681	20.5	20.0	177713	20.5	20.5	438359	20.6	20.6	415287	20.7	21.0
321329	20.3	20.6	199613	20.4	19.1	511622	20.5	20.3	208877	20.5	19.3	288659	20.6	20.7	271865	20.7	20.1
137656	20.3	18.2	321611	20.4	19.5	447683	20.5	20.5	412182	20.5	21.2	58888	20.6	19.8	361990	20.7	21.2
515395	20.3	20.9	320222	20.4	20.4	131573	20.5	19.5	353360	20.5	20.7	421928	20.6	20.4	196534	20.7	18.3
96597	20.3	18.3	241245	20.4	19.9	206349	20.5	18.9	125156	20.5	19.2	433945	20.6	21.1	441807	20.7	20.5
101086	20.3	18.7	121899	20.4	19.0	87209	20.5	19.5	362571	20.6	20.6	106739	20.6	19.2	98764	20.7	17.4
501690	20.3	20.2	448660	20.4	20.7	474531	20.5	21.1	357730	20.6	19.6	4414	20.6	16.9	244382	20.7	19.8
208917	20.3	20.1	531081	20.4	20.8	239011	20.5	19.6	73915	20.6	19.2	472734	20.6	20.2	7176	20.7	15.9
11336	20.3	18.2	457404	20.4	19.8	86797	20.5	18.4	38647	20.6	17.4	450482	20.6	20.3	433186	20.7	21.5
116030	20.3	19.4	33137	20.4	18.5	448698	20.5	21.0	206306	20.6	19.0	408154	20.6	21.5	361923	20.7	20.3
172541	20.3	18.9	64607	20.4	19.4	50962	20.5	18.4	454000	20.6	20.5	87979	20.6	18.8	433038	20.7	21.1
341155	20.3	19.5	68085	20.4	18.7	419801	20.5	19.8	299152	20.6	20.4	306890	20.6	19.6	206185	20.7	20.0
18122	20.3	16.6	368945	20.4	19.9	216884	20.5	20.0	505796	20.6	20.5	344653	20.6	19.5	408048	20.7	20.5
368134	20.3	20.5	417503	20.4	19.9	194036	20.5	19.5	102739	20.6	18.9	133625	20.6	20.2	142332	20.7	19.7
39749	20.3	17.8	160029	20.4	20.1	236727	20.5	19.9	276008	20.6	19.4	118457	20.6	18.9	516085	20.7	21.1
159090	20.3	18.9	63942	20.4	18.6	275995	20.5	18.8	285129	20.6	20.2	95565	20.6	19.3	525346	20.7	21.0
220663	20.3	20.1	515214	20.4	20.0	213327	20.5	19.6	61683	20.6	18.7	214826	20.6	19.8	391592	20.7	20.1
108544	20.3	20.2	389362	20.4	20.9	74247	20.5	18.9	110914	20.6	17.5	429815	20.6	20.2	403168	20.7	21.6
418300	20.3	20.5	260397	20.4	19.2	496825	20.5	20.4	35621	20.6	18.1	217603	20.6	19.8	99512	20.7	20.3
447370	20.3	19.9	66173	20.4	18.3	167778	20.5	19.8	313983	20.6	20.7	508918	20.6	21.5	25944	20.7	17.8
295286	20.3	21.9	275994	20.4	19.6	305985	20.5	20.3	311570	20.6	20.6	201158	20.6	20.7	390334	20.7	21.1
380428	20.3	20.6	37000	20.4	18.1	224792	20.5	20.3	165253	20.6	20.6	36640	20.6	17.7	107862	20.7	19.2
364739	20.3	20.1	8821	20.4	16.8	134595	20.5	19.1	260610	20.6	20.1	14564	20.6	17.6	364987	20.7	20.3
501775	20.3	21.4	18682	20.4	17.6	413735	20.5	21.3	23936	20.6	17.8	224734	20.6	20.2	304349	20.7	20.8
427773	20.3	20.8	112295	20.4	19.8	276059	20.5	20.6	22249	20.6	17.3	3927	20.6	17.0	131846	20.7	18.9
492206	20.3	20.6	281872	20.4	19.7	248606	20.5	20.3	528929	20.6	21.4	536893	20.6	21.6	309118	20.7	20.4
536603	20.3	21.0	174852	20.4	19.9	129873	20.5	18.8	497893	20.6	21.4	37869	20.6	20.1	516932	20.7	20.6
431897	20.3	20.7	95956	20.4	19.8	275557	20.5	18.8	474267	20.6	20.8	314674	20.6	20.4	435064	20.7	19.7
191694	20.3	19.7	94617	20.4	18.7	96118	20.5	19.1	72534	20.6	18.8	384520	20.6	20.2	512432	20.7	20.5
109151	20.4	19.8	410417	20.4	19.0	468094	20.5	20.3	168903	20.6	19.0	342241	20.6	20.1	188374	20.7	20.1
24147	20.4	18.7	371919	20.4	20.4	497118	20.5	20.3	95148	20.6	19.1	60425	20.6	18.7	77419	20.7	18.9
189210	20.4	19.4	201833	20.4	18.6	490340	20.5	21.2	480854	20.6	22.9	303984	20.6	20.2	189316	20.7	20.5
407280	20.4	21.2	513231	20.4	19.8	106519	20.5	19.9	175066	20.6	20.3	345456	20.6	21.5	92368	20.7	19.4
314653	20.4	20.5	529666	20.4	21.9	285708	20.5	18.9	333470	20.6	20.5	474700	20.6	21.4	47669	20.7	18.3
320317	20.4	19.4	221449	20.4	19.4	462828	20.5	19.9	461446	20.6	21.2	315869	20.6	19.6	87769	20.7	19.8
390446	20.4	19.4	519835	20.4	21.4	311474	20.5	19.4	270458	20.6	20.0	337295	20.6	19.2	147784	20.7	20.9
67154	20.4	17.0	232972	20.4	20.2	345499	20.5	20.0	259403	20.6	19.5	260258	20.6	19.7	346513	20.7	20.7
438824	20.4	20.1	497904	20.4	19.8	134654	20.5	18.6	153212	20.6	19.2	208144	20.6	19.9	121461	20.7	18.9
133887	20.4	18.6	293501	20.4	20.1	295192	20.5	20.5	415059	20.6	20.0	396009	20.6	21.0	540933	20.7	20.8
225319	20.4	20.5	444417	20.4	20.4	144995	20.5	19.9	60122	20.6	18.9	484914	20.6	20.9	155176	20.7	20.6
387231	20.4	20.3	211496	20.4	20.3	451772	20.5	21.4	1850	20.6	16.1	394214	20.6	20.9	313917	20.7	19.7
340371	20.4	21.5	445473	20.4	20.3	185510	20.5	19.4	443460	20.6	20.2	64484	20.6	18.9	242523	20.7	19.9
389670	20.4	20.9	186978	20.4	20.6	157368	20.5	18.9	115165	20.6	19.1	457649	20.6	21.0	364072	20.7	21.1
457735	20.4	21.1	43158	20.4	16.7	297372	20.5	19.9	39778	20.6	18.5	399442	20.6	20.0	88450	20.7	18.0
96891	20.4	18.0	250753	20.4	19.8	309132	20.5	19.9	361974	20.6	20.2	138067	20.6	19.8	8317	20.7	18.1
376981	20.4	19.9	340407	20.4	20.4	250829	20.5	20.7	440634	20.6	19.4	178574	20.6	19.7	476260	20.7	20.4
151437	20.4	19.2	126943	20.4	19.9	268315	20.5	19.5	65959	20.6	19.8	373775	20.7	20.2	363539	20.7	21.0
370677	20.4	19.8	325124	20.4	20.5	539797	20.5	20.8	476306	20.6	19.6	391607	20.7	20.0	193564	20.7	19.0
248407	20.4	20.1	115087	20.4	18.9	516751	20.5	21.0	202236	20.6	18.3	107595	20.7	19.4	244895	20.7	20.0
88257	20.4	18.7	92324	20.4	20.0	435294	20.5	21.1	431861	20.6	21.4	446124	20.7	21.2	149109	20.7	20.1
42711	20.4	18.4	198447	20.4	18.7	288044	20.5	18.5	330764	20.6	20.4	360380	20.7	21.4	506235	20.7	19.8
330646	20.4	21.3	316978	20.4	20.5	58603	20.5	17.5	181276	20.6	19.8	56914	20.7	18.9	408715	20.7	21.1
464771	20.4	19.9	239285	20.4	19.2	399071	20.5	19.9	158139	20.6	19.6	31131	20.7	18.1	36153	20.7	18.8
477037	20.4	21.5	410731	20.4	19.8	231636	20.5	20.3	244808	20.6	20.1	123737	20.7	19.5	460027	20.7	20.8
400980	20.4	19.1	231285	20.4	20.4	278896	20.5	20.4	28160	20.6	18.2	28955	20.7	19.6	258803	20.7	20.9
452563	20.4	19.0	187639	20.4	21.2	321115	20.5	20.2	312515	20.6	21.2	453437	20.7	20.7	185781	20.7	20.6
218988	20.4	19.7	438986	20.4	19.7	415072	20.5	20.5	288289	20.6	20.6	211390	20.7	18.8	509872	20.7	20.0
132388	20.4	19.5	398168	20.4	20.8	39226	20.5										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
129148	20.7	19.9	148227	20.8	19.5	471276	20.9	21.3	447054	20.9	20.5	362875	21.0	20.0	435651	21.1	18.5
396857	20.7	21.1	366940	20.8	20.1	148560	20.9	19.4	264092	20.9	19.5	34000	21.0	18.0	331990	21.1	20.9
385239	20.7	19.1	400693	20.8	20.9	9742	20.9	17.3	499227	20.9	20.9	258853	21.0	19.8	68003	21.1	18.8
342135	20.7	19.5	156361	20.8	19.3	346773	20.9	20.1	372230	20.9	21.2	392529	21.0	20.0	494285	21.1	20.7
131182	20.7	19.0	37898	20.8	19.4	211165	20.9	20.5	374291	20.9	19.5	198452	21.0	18.1	359910	21.1	19.3
45291	20.8	17.4	86167	20.8	17.2	401658	20.9	20.5	394838	20.9	21.6	14432	21.0	16.8	147636	21.1	19.9
173640	20.8	19.8	479998	20.8	20.4	145306	20.9	19.8	81961	20.9	19.0	535915	21.0	20.6	10744	21.1	16.1
309117	20.8	19.7	266273	20.8	20.2	371585	20.9	21.1	535483	20.9	21.3	22023	21.0	16.7	445392	21.1	19.9
357514	20.8	20.4	236947	20.8	20.6	535299	20.9	19.6	479596	20.9	20.7	62573	21.0	18.9	327629	21.1	20.0
508544	20.8	19.8	298064	20.8	19.7	400479	20.9	21.9	368903	20.9	19.3	426711	21.0	20.5	316530	21.1	20.3
286226	20.8	20.5	340561	20.8	20.5	359586	20.9	20.3	313972	20.9	19.3	278557	21.0	20.3	233398	21.1	19.6
430626	20.8	20.5	55228	20.8	18.5	361070	20.9	20.2	521764	20.9	20.8	343356	21.0	20.5	423959	21.1	20.6
536141	20.8	20.7	451160	20.8	20.5	125514	20.9	17.4	299692	20.9	19.4	179759	21.0	18.6	90048	21.1	19.4
95316	20.8	19.5	264957	20.8	19.2	380585	20.9	19.0	221458	20.9	19.8	17891	21.0	19.1	496325	21.1	20.7
270346	20.8	19.0	36937	20.8	18.8	153272	20.9	20.2	474482	20.9	20.2	221789	21.0	21.1	406300	21.1	21.2
5477	20.8	15.7	391615	20.8	21.1	180440	20.9	19.7	476267	20.9	20.7	228114	21.0	19.5	416287	21.1	19.8
23998	20.8	18.3	180102	20.8	19.1	502291	20.9	20.5	485802	20.9	20.2	493553	21.0	20.8	256965	21.1	21.0
149543	20.8	20.6	114915	20.8	18.7	252831	20.9	20.3	441992	20.9	21.6	63325	21.0	19.7	478914	21.1	20.3
397406	20.8	20.7	228125	20.8	19.1	414066	20.9	19.6	87092	20.9	18.2	65232	21.0	19.1	243501	21.1	19.6
268482	20.8	20.7	433141	20.8	21.7	261996	20.9	19.0	289833	20.9	20.5	284533	21.0	21.0	255588	21.1	19.6
376912	20.8	19.2	218394	20.8	19.9	449047	20.9	21.0	536773	20.9	20.6	357857	21.1	20.7	276467	21.1	21.5
29211	20.8	17.3	114621	20.8	19.6	174827	20.9	19.7	448066	20.9	21.7	77556	21.1	19.0	61965	21.1	18.2
73020	20.8	19.1	533827	20.8	20.6	504724	20.9	20.1	366075	20.9	21.6	390980	21.1	19.9	516407	21.1	21.1
134267	20.8	19.3	216114	20.8	20.3	214013	20.9	20.4	1853	20.9	15.4	48310	21.1	18.4	366008	21.1	21.1
379355	20.8	19.8	396140	20.8	21.4	523206	20.9	21.1	242424	20.9	20.4	476294	21.1	19.5	437742	21.1	20.9
1396	20.8	15.4	63110	20.8	18.4	314414	20.9	19.6	513769	20.9	20.3	513014	21.1	20.5	444397	21.1	20.1
316428	20.8	20.4	421452	20.8	21.1	239163	20.9	20.0	487709	20.9	19.5	111150	21.1	19.8	156348	21.1	20.0
195170	20.8	20.4	498375	20.8	20.2	428073	20.9	21.0	500172	20.9	20.8	361966	21.1	20.4	237195	21.1	20.9
233911	20.8	21.0	103712	20.8	18.3	503589	20.9	21.1	261660	20.9	20.8	421112	21.1	20.3	213851	21.1	18.7
401683	20.8	21.2	7543	20.8	17.3	14791	20.9	18.1	297024	20.9	20.8	386430	21.1	20.9	11183	21.1	16.5
442450	20.8	21.4	69581	20.8	19.3	258831	20.9	20.3	434081	20.9	21.1	226399	21.1	19.2	242557	21.1	18.4
311564	20.8	20.9	171346	20.8	20.3	363704	20.9	19.9	226004	20.9	18.5	365723	21.1	20.4	118840	21.1	18.7
407822	20.8	20.6	467980	20.8	21.4	344761	20.9	19.6	167699	20.9	20.4	510557	21.1	19.2	260184	21.1	19.3
294943	20.8	21.0	321730	20.8	20.1	277089	20.9	21.0	151321	20.9	20.2	338849	21.1	19.7	228099	21.1	20.5
258897	20.8	19.8	347235	20.8	20.7	296917	20.9	20.2	64854	20.9	19.3	95586	21.1	19.9	123568	21.1	18.3
516489	20.8	19.9	172741	20.8	19.5	396844	20.9	21.2	275711	20.9	20.3	274745	21.1	20.9	220290	21.1	19.7
172283	20.8	18.6	154594	20.8	20.5	37513	20.9	19.2	342192	20.9	20.3	21223	21.1	18.3	220734	21.1	18.5
498616	20.8	20.8	467718	20.8	22.3	234674	20.9	20.4	44990	20.9	18.3	473104	21.1	20.9	252857	21.1	19.6
308061	20.8	20.6	169560	20.8	19.7	320021	20.9	21.2	66771	20.9	17.3	40937	21.1	18.5	385129	21.1	20.7
253337	20.8	20.6	301464	20.8	20.5	515202	20.9	21.0	128583	20.9	18.8	317523	21.1	20.3	147671	21.1	19.1
83519	20.8	19.6	282929	20.8	20.3	35724	20.9	17.7	497074	20.9	20.9	72851	21.1	18.2	56695	21.1	18.7
448598	20.8	21.2	143229	20.8	19.2	500177	20.9	21.7	225247	20.9	19.7	4345	21.1	16.6	19997	21.1	17.6
428253	20.8	20.5	139144	20.8	20.1	118047	20.9	18.0	227946	20.9	19.2	379919	21.1	18.4	31760	21.1	16.8
184966	20.8	19.6	444161	20.8	20.6	509908	20.9	21.2	418105	20.9	19.9	180395	21.1	20.0	220700	21.1	20.2
102951	20.8	19.5	168178	20.8	19.8	203059	20.9	20.3	113364	20.9	19.1	449950	21.1	20.7	3312	21.1	15.5
102597	20.8	19.3	437478	20.8	20.0	40279	20.9	17.7	429722	20.9	20.9	246281	21.1	20.3	209320	21.1	19.8
172709	20.8	19.7	26705	20.9	18.5	281941	20.9	20.1	189568	20.9	19.4	470728	21.1	20.0	403151	21.1	21.0
110242	20.8	19.7	534389	20.9	19.9	405456	20.9	19.8	377608	20.9	21.8	512173	21.1	20.3	390155	21.1	20.0
162416	20.8	25.5	122525	20.9	18.9	420789	20.9	21.0	469574	20.9	19.5	206533	21.1	20.0	365708	21.2	20.8
276500	20.8	18.9	239716	20.9	20.1	161234	20.9	18.8	248132	20.9	20.0	144372	21.1	19.0	191308	21.2	20.2
364205	20.8	21.7	87268	20.9	18.9	423696	20.9	20.1	365482	20.9	20.1	255150	21.1	20.7	359945	21.2	20.9
24269	20.8	18.2	230833	20.9	18.7	35706	20.9	18.2	73286	20.9	19.3	512630	21.1	20.9	304263	21.2	20.3
168839	20.8	19.2	323740	20.9	19.9	246144	20.9	20.3	392546	20.9	20.4	324953	21.1	20.8	225202	21.2	20.5
500994	20.8	20.7	32005	20.9	17.7	412566	20.9	20.7	346119	20.9	20.7	191808	21.1	18.7	19055	21.2	18.2
107731	20.8	19.9	75048	20.9	18.7	121330	20.9	18.6	540095	20.9	21.3	62093	21.1	19.2	104238	21.2	19.3
306986	20.8	19.3	141859	20.9	19.7	173531	20.9	19.0	300679	20.9	19.5	450731	21.1	21.2	139349	21.2	20.2
91973	20.8	18.5	205600	20.9	20.3	250682	20.9	20.1	443295	20.9	20.8	43424	21.1	19.3	265005	21.2	19.5
104022	20.8	20.3	498530	20.9	20.9	213466	20.9	20.7	464711	20.9	21.7	255111	21.1	20.2	480032	21.2	22.1
59329	20.8	17.8	170497	20.9	19.2	428243	20.9	20.4	470305	21.0	21.2	76408	21.1	17.9	285735	21.2	19.7
72735	20.8	19.6	155524	20.9	20.2	246496	20.9	20.9	419617	21.0	21.7	133980	21.1	19.0	286692	21.2	21.0
72634	20.8	18.5	518202	20.9	21.1	171916	20.9	19.6	48056	21.0	19.3	60663	21.1	18.7	445474	21.2	21.0
168747	20.8	19.2	80318	20.9	19.2	215102	20.9	20.0	441938	21.0	21.6	155294	21.1	19.2	91161	21.2	19.1
368152	20.8	20.8	448057	20.9	21.2	475386	20.9	21.0	502240	21.0	20.9	26553	21.1	18.9	358943	21.2	21.2
364132	20.8	19.9	322581	20.9	20.5	328968	20.9	19.6	272767	21.0	20.3	464847	21.1	22.3	189132	21.2	18.9
519009	20.8	21.2	219944	20.9	20.0	399219	20.9	21.0	356451	21.0	20.0	36739	21.1	18.1	105914	21.2	19.4
386946	20.8	21.1	257979	20.9	19.9	310532	20.9	20.0	234333	21.0	20.3	494173	21.1	21.1	515868	21.2	21.2
31902	20.8	18.4	315934	20.9	19.9	112955	20.9	19.8	129785	21.0	19.7	480800	21.1	21.2	163998	21.2	19.6
390780	20.8	19.9	127823	20.9	20.7	386424	20.9	19.5	368883	21.0	21.4	496266	21.1	21.4	71374	21.2	17.9
121747	20.8	18.9	67038	20.9	18.3	295854	2										



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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
455387	21.2	19.7	326684	21.2	19.4	254916	21.3	20.6	75549	21.4	18.8	63123	21.4	18.8	335781	21.5	21.7
539053	21.2	21.2	418010	21.2	19.8	341199	21.3	20.7	369721	21.4	20.4	123131	21.4	20.0	386451	21.5	21.4
369261	21.2	21.5	164344	21.2	19.4	485750	21.3	21.7	433951	21.4	20.1	226355	21.4	19.4	400280	21.5	20.0
279313	21.2	20.0	408252	21.2	21.4	479093	21.3	20.5	314055	21.4	19.8	413314	21.4	20.9	315180	21.5	21.0
432400	21.2	19.6	362481	21.2	21.1	316177	21.3	19.8	434765	21.4	21.2	295631	21.4	19.6	438924	21.5	20.9
515700	21.2	21.0	288399	21.2	21.1	463086	21.3	20.2	448650	21.4	20.1	476001	21.4	21.8	93764	21.5	19.4
365890	21.2	20.7	448514	21.2	19.8	261840	21.3	20.0	396163	21.4	20.7	180760	21.4	20.0	128475	21.5	19.9
392808	21.2	19.6	149148	21.2	20.2	493635	21.3	21.5	525486	21.4	20.6	173655	21.4	19.9	204823	21.5	19.1
350929	21.2	19.4	471277	21.2	21.6	289124	21.3	19.8	439349	21.4	19.9	238669	21.4	20.5	387001	21.5	19.6
250663	21.2	20.0	400931	21.2	20.3	537523	21.3	20.7	316151	21.4	20.9	322203	21.4	20.0	177350	21.5	18.8
72759	21.2	18.6	509521	21.2	21.3	378246	21.3	20.6	204240	21.4	20.3	445252	21.4	20.1	15651	21.5	18.2
21978	21.2	18.5	220901	21.2	19.8	338840	21.3	20.3	531452	21.4	20.9	38226	21.5	17.8	290488	21.5	19.2
149349	21.2	22.0	390792	21.2	21.1	145434	21.3	19.6	211178	21.4	20.6	427005	21.5	19.8	350894	21.5	20.4
144231	21.2	19.7	45829	21.2	19.7	224643	21.3	20.4	500819	21.4	21.6	147187	21.5	18.7	253055	21.5	19.2
409762	21.2	21.4	234124	21.2	20.6	133087	21.3	17.6	320475	21.4	19.9	192636	21.5	19.3	188802	21.5	20.1
538497	21.2	21.4	158405	21.2	18.4	536956	21.3	21.2	476198	21.4	19.6	160613	21.5	20.0	302214	21.5	20.3
358913	21.2	20.4	61133	21.2	18.3	444352	21.3	18.6	274599	21.4	20.6	155420	21.5	19.5	78257	21.5	18.3
54796	21.2	19.0	296283	21.2	21.3	98512	21.3	19.1	365350	21.4	20.9	73369	21.5	18.8	52008	21.5	19.1
357332	21.2	21.4	10332	21.2	17.4	256919	21.3	19.7	382906	21.4	19.9	258915	21.5	20.3	70148	21.5	18.1
515332	21.2	20.4	172292	21.2	19.4	484642	21.3	20.3	220293	21.4	19.0	275724	21.5	18.8	395232	21.5	19.3
362572	21.2	20.4	335814	21.2	19.9	13913	21.3	16.6	390338	21.4	20.9	40174	21.5	18.8	439530	21.5	20.0
538602	21.2	21.3	68051	21.3	17.8	480166	21.3	20.5	396978	21.4	19.8	365987	21.5	20.3	20143	21.5	16.9
287371	21.2	19.8	40096	21.3	18.7	522863	21.3	20.1	433157	21.4	21.1	261508	21.5	20.1	514769	21.5	20.8
209988	21.2	20.0	312732	21.3	20.1	518075	21.3	20.1	432744	21.4	20.8	90737	21.5	19.5	237064	21.5	19.9
10881	21.2	18.0	361585	21.3	19.8	285929	21.3	19.0	214925	21.4	19.4	480543	21.5	20.2	289582	21.5	20.0
472081	21.2	20.5	245203	21.3	18.8	471303	21.3	22.4	13341	21.4	17.3	420310	21.5	20.8	400227	21.5	21.3
534931	21.2	20.5	125535	21.3	19.7	347164	21.3	21.7	173300	21.4	19.7	48837	21.5	18.6	35126	21.5	18.8
91011	21.2	18.3	428326	21.3	20.7	70142	21.3	18.8	5326	21.4	16.7	498463	21.5	19.7	317353	21.5	21.5
362432	21.2	20.8	316527	21.3	19.2	512721	21.3	21.5	336253	21.4	19.5	350280	21.5	20.2	35191	21.5	17.8
504814	21.2	18.7	337981	21.3	20.9	445246	21.3	20.6	385844	21.4	20.3	99397	21.5	17.7	282101	21.5	19.9
172439	21.2	19.7	341138	21.3	20.1	403213	21.3	20.0	282325	21.4	19.5	340494	21.5	20.7	283116	21.5	19.2
63535	21.2	18.2	354209	21.3	22.3	481278	21.3	21.0	448651	21.4	20.5	17664	21.5	15.6	237026	21.5	19.1
387316	21.2	21.1	405410	21.3	20.6	378638	21.3	20.3	348587	21.4	19.9	501976	21.5	20.6	254324	21.5	20.4
196546	21.2	19.3	420623	21.3	21.0	529750	21.3	21.0	330611	21.4	20.6	392119	21.5	21.2	321342	21.5	20.3
450255	21.2	20.5	113852	21.3	20.0	407107	21.3	20.8	85186	21.4	17.7	418993	21.5	22.6	48723	21.5	18.5
418015	21.2	20.2	154238	21.3	19.5	180160	21.3	20.1	329784	21.4	20.5	138047	21.5	20.2	275685	21.5	19.1
59129	21.2	18.5	290804	21.3	19.8	204898	21.3	19.7	528116	21.4	21.6	431373	21.5	20.9	95868	21.5	19.9
40482	21.2	17.8	105958	21.3	18.9	506592	21.3	20.8	595039	21.4	21.5	539146	21.5	20.3	25616	21.5	17.1
241211	21.2	19.5	205194	21.3	20.1	355269	21.3	20.7	166537	21.4	19.7	19240	21.5	19.7	123519	21.5	18.3
381837	21.2	20.1	355683	21.3	20.3	317855	21.4	20.6	487696	21.4	20.4	269960	21.5	19.6	154954	21.5	19.5
213458	21.2	19.8	13782	21.3	18.3	344799	21.4	19.5	121799	21.4	18.6	437087	21.5	20.2	467783	21.5	20.5
97385	21.2	18.7	150958	21.3	19.7	328764	21.4	20.1	120855	21.4	18.6	53739	21.5	18.9	372393	21.5	21.7
212525	21.2	20.0	394875	21.3	19.9	98411	21.4	17.2	385612	21.4	20.5	118464	21.5	18.3	293383	21.5	20.6
522815	21.2	20.0	525392	21.3	21.5	206103	21.4	20.1	71535	21.4	19.4	123156	21.5	19.0	367587	21.5	20.3
89922	21.2	19.8	387912	21.3	19.0	401395	21.4	21.2	18865	21.4	17.0	240550	21.5	20.3	291310	21.5	19.9
113675	21.2	18.8	523738	21.3	22.0	107570	21.4	19.5	258972	21.4	19.1	307633	21.5	19.5	424603	21.5	21.4
483141	21.2	20.7	368933	21.3	19.7	119026	21.4	18.9	12688	21.4	17.9	99754	21.5	19.6	385833	21.5	20.6
537458	21.2	21.5	465606	21.3	21.5	206190	21.4	19.6	187084	21.4	18.6	320532	21.5	21.3	220864	21.5	19.5
213563	21.2	20.9	503517	21.3	20.4	299699	21.4	20.2	475561	21.4	21.0	472085	21.5	21.0	9688	21.5	16.4
145478	21.2	18.4	11304	21.3	17.0	395284	21.4	20.1	495617	21.4	20.4	514248	21.5	21.1	30241	21.5	18.2
284251	21.2	20.9	342627	21.3	20.1	41264	21.4	18.7	90323	21.4	19.9	229517	21.5	20.3	195113	21.5	19.6
76244	21.2	18.1	338681	21.3	20.2	435154	21.4	19.8	426966	21.4	20.6	65305	21.5	20.1	322209	21.5	19.4
484226	21.2	21.2	222171	21.3	20.0	311434	21.4	20.6	169542	21.4	19.7	54780	21.5	18.3	477575	21.5	21.2
481468	21.2	20.6	65331	21.3	18.7	288991	21.4	19.6	454970	21.4	19.5	414131	21.5	19.9	326375	21.5	20.8
356910	21.2	20.6	189569	21.3	18.8	404488	21.4	21.7	250292	21.4	20.7	173608	21.5	19.3	283279	21.5	20.3
485253	21.2	20.3	363663	21.3	21.0	480517	21.4	20.0	286783	21.4	20.2	57381	21.5	19.2	517430	21.5	20.5
291408	21.2	20.9	531106	21.3	20.9	520484	21.4	21.4	130992	21.4	19.2	424566	21.5	20.8	443121	21.5	19.6
218286	21.2	20.5	181978	21.3	19.2	118518	21.4	19.1	480281	21.4	21.1	235862	21.5	19.9	102904	21.5	16.7
315941	21.2	20.2	531771	21.3	21.1	229133	21.4	19.6	431826	21.4	20.6	389823	21.5	20.6	316061	21.5	21.4
287074	21.2	19.8	533868	21.3	22.1	331109	21.4	19.8	254122	21.4	20.2	284532	21.5	19.8	385803	21.5	20.7
314052	21.2	19.3	155122	21.3	19.5	108446	21.4	20.2	525798	21.4	21.2	114840	21.5	19.0	325478	21.5	19.3
78572	21.2	18.5	391769	21.3	20.3	494313	21.4	20.4	358474	21.4	20.4	474702	21.5	21.3	410656	21.5	19.2
318570	21.2	20.8	188087	21.3	18.8	397076	21.4	20.5	266973	21.4	19.4	365628	21.5	20.1	436800	21.5	20.5
358682	21.2	20.3	414447	21.3	20.2	91075	21.4	19.0	525273	21.4	19.9	180782	21.5	20.6	285330	21.5	21.5
380426	21.2	20.2	306153	21.3	21.0	482394	21.4	20.4	512177	21.4	20.3	322406	21.5	20.2	220979	21.5	19.0
336322	21.2	20.3	255546	21.3	21.1	447753	21.4	20.8	286051	21.4	19.9	399843	21.5	20.4	412078	21.5	21.7
507407	21.2	21.5	398999	21.3	19.7	384271	21.4	19.5	871	21.4	15.9	533739	21.5	21.8	168883	21.5	18.2
46965	21.2	17.2	424601	21.3	21.0	32177	21.4	17.9	68137	21.4	19.2	282752	21.5	20.6	296584	21.5	20.3
523208	21.2	20.3	498819	21.3	20.2	5											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
161239	21.6	19.9	76631	21.6	19.3	539626	21.7	21.1	11974	21.8	16.5	231534	21.8	19.6	167719	21.9	20.1
530434	21.6	21.4	363642	21.6	19.4	255777	21.7	21.1	315428	21.8	19.5	184584	21.8	20.5	45389	21.9	18.7
458148	21.6	21.2	218058	21.6	20.2	248983	21.7	19.5	69063	21.8	18.2	182807	21.8	19.3	84219	21.9	18.8
146861	21.6	20.0	325417	21.6	20.0	232796	21.7	20.4	14670	21.8	17.9	305306	21.8	20.5	348642	21.9	20.4
280304	21.6	20.8	115879	21.6	19.0	444264	21.7	21.3	313657	21.8	20.1	476223	21.8	20.7	131765	21.9	18.1
60745	21.6	17.9	517005	21.6	19.0	442116	21.7	20.4	175686	21.8	20.6	392638	21.8	21.1	297556	21.9	20.0
525413	21.6	22.3	178803	21.6	20.7	180518	21.7	20.3	385244	21.8	18.9	45025	21.8	17.5	163396	21.9	18.2
46412	21.6	19.0	485915	21.6	20.1	448391	21.7	20.2	46835	21.8	18.6	529991	21.8	20.9	50719	21.9	19.5
445483	21.6	20.4	91769	21.6	18.8	66507	21.7	18.2	301245	21.8	21.1	384721	21.8	20.1	125691	21.9	19.5
511410	21.6	22.2	457536	21.6	20.7	114694	21.7	18.6	481519	21.8	21.1	43049	21.8	18.9	483278	21.9	20.7
259915	21.6	21.2	539080	21.6	19.8	27892	21.7	17.7	457719	21.8	20.6	412179	21.8	21.1	315116	21.9	20.3
316322	21.6	20.4	103928	21.6	18.8	412503	21.7	20.2	123790	21.8	18.8	529989	21.8	19.5	117770	21.9	20.5
418194	21.6	20.2	288400	21.6	19.3	189043	21.7	19.3	287739	21.8	20.3	320994	21.9	21.0	206319	21.9	20.1
225214	21.6	19.9	72665	21.6	18.3	338701	21.7	19.3	110462	21.8	18.4	2988	21.9	16.1	371626	21.9	20.6
465310	21.6	20.2	328472	21.6	19.7	414067	21.7	20.6	328105	21.8	20.7	135926	21.9	18.9	317994	21.9	20.0
206930	21.6	19.6	204847	21.6	20.1	173607	21.7	20.0	260155	21.8	20.5	175522	21.9	20.0	317206	21.9	20.1
73054	21.6	17.9	246201	21.6	19.5	199675	21.7	20.7	282588	21.8	19.9	74229	21.9	19.1	287190	21.9	19.7
315960	21.6	20.5	508664	21.6	20.0	520547	21.7	21.5	536377	21.8	21.1	146849	21.9	19.2	483622	21.9	20.2
304505	21.6	19.8	123954	21.7	18.6	322699	21.7	19.4	239833	21.8	20.0	291689	21.9	20.7	10381	21.9	17.6
6545	21.6	16.9	91920	21.7	18.9	353253	21.7	19.2	385340	21.8	20.6	203178	21.9	20.0	257348	21.9	20.8
477870	21.6	20.4	120927	21.7	18.8	529736	21.7	20.9	515223	21.8	21.0	180672	21.9	20.3	426342	21.9	20.4
43265	21.6	19.3	43372	21.7	17.7	39413	21.7	18.7	209994	21.8	20.2	445386	21.9	20.5	342975	21.9	19.8
338564	21.6	20.4	184505	21.7	20.9	181689	21.7	19.8	509707	21.8	20.0	504471	21.9	21.4	478984	21.9	20.7
136132	21.6	19.8	231902	21.7	18.8	490608	21.7	20.7	37763	21.8	18.9	500175	21.9	21.3	476132	21.9	20.5
62074	21.6	17.9	126376	21.7	19.3	93795	21.7	18.4	154196	21.8	19.8	340223	21.9	20.6	166211	21.9	19.8
85123	21.6	18.2	435725	21.7	19.8	189622	21.7	20.6	539318	21.8	20.3	213374	21.9	20.2	243509	21.9	19.8
481280	21.6	20.5	42143	21.7	19.0	374337	21.7	19.4	485275	21.8	20.7	213577	21.9	20.8	221755	21.9	19.2
96448	21.6	19.5	394604	21.7	20.8	535636	21.7	20.1	186949	21.8	20.3	458881	21.9	20.0	454027	21.9	20.5
515404	21.6	21.7	289242	21.7	19.3	494703	21.7	18.5	72084	21.8	19.1	58833	21.9	18.1	351183	21.9	19.2
192015	21.6	20.8	48519	21.7	19.2	120532	21.7	19.5	132701	21.8	19.9	449740	21.9	20.3	24061	21.9	17.4
425985	21.6	21.4	330677	21.7	21.2	398305	21.7	20.8	401251	21.8	21.0	123525	21.9	19.6	365971	21.9	20.4
251865	21.6	18.5	145337	21.7	20.2	291084	21.7	20.6	217547	21.8	19.6	450346	21.9	20.5	4410	21.9	16.1
37547	21.6	19.2	386330	21.7	19.7	367508	21.7	21.0	456057	21.8	21.1	18822	21.9	18.5	431242	21.9	20.4
354275	21.6	20.0	530662	21.7	20.6	436189	21.7	19.3	282972	21.8	19.5	533952	21.9	19.8	288543	21.9	21.2
67199	21.6	17.8	154213	21.7	20.1	133351	21.7	19.7	12293	21.8	16.1	139789	21.9	19.5	49766	21.9	18.2
98603	21.6	18.9	318616	21.7	20.7	357979	21.7	21.1	25950	21.8	19.6	516095	21.9	20.8	105497	21.9	18.9
127075	21.6	20.5	220994	21.7	20.6	257455	21.7	19.2	244421	21.8	18.9	382933	21.9	20.4	10245	21.9	17.3
320609	21.6	21.2	480745	21.7	20.2	221668	21.7	19.8	236499	21.8	20.6	10944	21.9	17.1	111058	21.9	18.8
360270	21.6	19.1	530930	21.7	22.1	353012	21.7	20.8	2851	21.8	14.9	1096	21.9	14.0	408196	21.9	21.2
426100	21.6	19.6	452054	21.7	21.2	322211	21.7	19.6	47224	21.8	17.8	273963	21.9	19.1	282978	21.9	19.6
404937	21.6	20.8	135620	21.7	19.5	12607	21.7	18.5	152328	21.8	19.2	195228	21.9	20.1	178323	21.9	20.3
94201	21.6	18.7	402946	21.7	19.0	156438	21.7	20.1	431392	21.8	19.0	72288	21.9	18.6	399146	21.9	21.2
504736	21.6	20.6	145190	21.7	20.0	296544	21.7	19.3	396787	21.8	21.5	507711	21.9	20.7	134585	21.9	18.8
514333	21.6	19.5	145	21.7	11.5	412901	21.7	20.6	331050	21.8	19.9	472160	21.9	20.6	291614	21.9	21.7
517813	21.6	20.9	518447	21.7	21.0	477080	21.7	20.9	398293	21.8	19.6	198183	21.9	19.1	308437	21.9	20.5
293578	21.6	20.2	422607	21.7	20.2	464474	21.8	21.4	488481	21.8	20.6	81001	21.9	18.4	511507	21.9	21.6
363281	21.6	21.0	288412	21.7	20.5	483166	21.8	20.5	417988	21.8	21.0	234546	21.9	19.3	174592	21.9	20.4
95275	21.6	19.6	307365	21.7	20.3	456618	21.8	22.1	494554	21.8	20.2	83038	21.9	18.6	162485	21.9	19.6
402792	21.6	20.9	317990	21.7	20.6	11351	21.8	17.6	359368	21.8	20.4	314570	21.9	20.8	155809	21.9	18.1
486577	21.6	20.5	166089	21.7	19.7	218904	21.8	19.5	249357	21.8	19.7	93328	21.9	18.3	417465	21.9	19.7
273935	21.6	19.7	266647	21.7	20.0	77325	21.8	19.2	152537	21.8	19.9	511868	21.9	21.5	532639	21.9	20.8
518310	21.6	20.5	40863	21.7	18.9	60152	21.8	18.2	446891	21.8	21.4	215450	21.9	19.7	520200	21.9	20.7
505510	21.6	20.4	63245	21.7	19.0	233847	21.8	20.9	263829	21.8	20.5	254949	21.9	21.1	252822	21.9	20.4
364531	21.6	20.5	335093	21.7	20.5	112300	21.8	19.2	211127	21.8	19.4	540938	21.9	21.2	191045	21.9	20.0
79957	21.6	18.2	511286	21.7	21.1	487053	21.8	20.8	268035	21.8	19.9	168212	21.9	20.1	67784	21.9	18.1
134522	21.6	19.0	327774	21.7	21.0	36998	21.8	18.6	414459	21.8	20.7	149171	21.9	19.4	483255	21.9	20.1
329201	21.6	20.5	135659	21.7	19.8	459736	21.8	20.2	20410	21.8	18.0	323195	21.9	20.4	519896	21.9	20.2
131172	21.6	19.0	322614	21.7	21.1	139280	21.8	20.0	364116	21.8	20.2	74012	21.9	19.3	181943	21.9	19.9
368529	21.6	19.9	175140	21.7	20.4	479738	21.8	20.5	302149	21.8	19.7	437237	21.9	20.7	7382	21.9	16.4
92082	21.6	17.5	331486	21.7	18.0	229784	21.8	19.0	385262	21.8	19.0	59545	21.9	19.0	149554	21.9	19.5
158061	21.6	19.2	142139	21.7	20.0	323032	21.8	19.6	286993	21.8	21.1	458962	21.9	20.8	68870	21.9	18.4
115783	21.6	19.0	49572	21.7	18.1	69743	21.8	19.5	413159	21.8	20.4	135351	21.9	19.4	107621	21.9	19.4
329711	21.6	20.9	396348	21.7	20.7	130317	21.8	18.7	228636	21.8	19.8	257502	21.9	19.6	101937	21.9	19.4
302192	21.6	20.0	121815	21.7	19.1	98605	21.8	18.9	514862	21.8	21.9	373163	21.9	20.8	180784	21.9	19.8
94035	21.6	18.9	338505	21.7	20.5	112523	21.8	20.4	336630	21.8	19.7	319011	21.9	19.6	335619	21.9	19.4
234252	21.6	18.2	303325	21.7	21.2	247433	21.8	20.2	315952	21.8	20.3	60005	21.9	19.1	40197	21.9	17.6
182130	21.6	19.4	71088	21.7	18.5	291269	21.8	21.5	275116	21.8	19.9	159534	21.9	19.8	485201	21.9	20.2
14792	21.6	18.7	284653	21.7	19.4	79899	21.8	18.4	16587	21.8	16.1	132689	21.9	17.9	537205	21.9	21.5
448587	21.6	20.8	286732	21.7	20.8	451165	21.8										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
29156	21.9	17.5	233990	22.1	20.6	388580	22.1	20.2	249796	22.2	18.7	138697	22.3	17.7	460721	22.3	19.1
385021	21.9	20.3	169940	22.1	19.4	238290	22.1	19.4	457574	22.2	20.5	53532	22.3	18.0	293376	22.3	20.8
342102	21.9	19.4	50733	22.1	17.2	190555	22.1	18.1	527951	22.2	21.2	263743	22.3	21.3	475329	22.3	20.8
345856	21.9	20.0	138110	22.1	19.3	74899	22.1	17.3	127235	22.2	19.1	270371	22.3	19.3	536699	22.3	20.9
312957	21.9	21.2	195500	22.1	19.3	288372	22.1	19.9	312966	22.2	20.3	203002	22.3	18.2	394638	22.3	20.1
71201	21.9	18.8	509864	22.1	19.0	37593	22.1	17.9	71394	22.2	17.6	392978	22.3	20.4	261989	22.3	19.5
46831	21.9	18.6	396830	22.1	20.6	313003	22.1	20.1	11591	22.2	17.8	122895	22.3	18.1	218289	22.3	18.9
128186	21.9	19.9	255262	22.1	19.7	66979	22.1	18.3	313024	22.2	20.1	253572	22.3	19.4	236761	22.3	19.6
248636	21.9	21.3	383241	22.1	20.9	412430	22.1	21.3	439059	22.2	20.2	542845	22.3	20.7	76994	22.3	19.5
214398	21.9	20.6	26479	22.1	18.3	330567	22.1	21.0	500852	22.2	21.2	47448	22.3	17.9	281441	22.3	19.6
8791	21.9	16.6	62951	22.1	18.1	164504	22.1	19.9	359632	22.2	19.9	182745	22.3	19.9	413806	22.3	20.0
1651	21.9	14.8	342736	22.1	19.8	75958	22.1	18.6	397633	22.2	20.7	212411	22.3	20.0	310087	22.3	20.1
202874	21.9	19.9	112695	22.1	19.7	123049	22.1	18.0	385861	22.2	21.2	498469	22.3	19.5	54439	22.4	19.0
75424	21.9	18.6	201681	22.1	19.0	503949	22.1	20.6	185475	22.2	19.7	415028	22.3	20.7	409352	22.4	19.8
117159	21.9	18.7	378278	22.1	20.8	352905	22.1	20.4	144003	22.2	19.9	250980	22.3	20.9	201902	22.4	20.8
342231	21.9	20.0	238928	22.1	19.6	9578	22.1	17.1	4607	22.2	15.5	164231	22.3	19.5	513685	22.4	20.5
403925	21.9	20.4	228007	22.1	19.9	8632	22.1	18.4	403796	22.2	20.1	51563	22.3	19.1	405411	22.4	20.8
303916	21.9	20.4	477165	22.1	21.0	520431	22.1	21.3	188608	22.2	20.0	158962	22.3	19.5	207847	22.4	20.0
162396	21.9	19.6	163140	22.1	18.7	266512	22.1	19.5	171094	22.2	19.6	394081	22.3	19.6	281613	22.4	17.4
127033	21.9	19.4	265492	22.1	20.1	520494	22.1	20.2	236859	22.2	20.2	17964	22.3	15.7	517984	22.4	20.3
276992	21.9	18.6	228116	22.1	20.1	295617	22.1	18.5	55669	22.2	19.3	421294	22.3	19.7	16735	22.4	18.0
443621	21.9	20.4	503432	22.1	21.4	526396	22.1	21.0	98857	22.2	19.4	450117	22.3	20.4	239425	22.4	19.4
539195	21.9	22.1	39911	22.1	17.2	529755	22.1	21.2	262400	22.2	20.3	123834	22.3	19.4	306554	22.4	19.7
181451	21.9	20.0	127264	22.1	19.7	437759	22.1	20.6	250768	22.2	20.7	156605	22.3	19.9	183943	22.4	20.2
371969	21.9	20.1	438999	22.1	19.1	266080	22.1	19.1	94736	22.2	18.9	207819	22.3	20.0	515067	22.4	20.5
442143	21.9	20.3	359958	22.1	20.6	525164	22.1	20.2	274975	22.2	20.1	203726	22.3	19.0	214866	22.4	19.1
275980	21.9	19.6	346653	22.1	19.6	34108	22.1	17.4	511294	22.2	20.6	291122	22.3	19.0	115856	22.4	18.3
246935	21.9	19.5	537433	22.1	21.1	406251	22.1	20.5	540949	22.2	20.7	216294	22.3	20.5	408681	22.4	20.8
37706	21.9	17.9	407912	22.1	20.9	358782	22.1	20.5	44619	22.2	18.3	198333	22.3	19.4	445383	22.4	20.3
474200	21.9	20.7	501806	22.1	20.8	496867	22.1	22.0	129308	22.2	18.9	178331	22.3	19.7	479699	22.4	20.9
294640	21.9	20.6	263309	22.1	20.1	68885	22.1	17.5	21219	22.2	17.3	306394	22.3	20.4	26397	22.4	18.0
149173	22.0	20.2	277541	22.1	18.0	114802	22.1	19.1	440641	22.2	20.6	505753	22.3	20.3	102591	22.4	20.2
31619	22.0	17.8	334354	22.1	19.7	48222	22.1	18.5	200660	22.2	18.4	253448	22.3	19.6	35958	22.4	17.1
8228	22.0	15.3	412550	22.1	20.9	408207	22.2	22.0	400544	22.2	19.8	187462	22.3	18.9	443135	22.4	20.5
277691	22.0	20.7	355310	22.1	20.6	323627	22.2	19.3	255458	22.2	19.8	241374	22.3	19.7	403631	22.4	19.6
265328	22.0	19.8	276499	22.1	20.4	100096	22.2	19.6	319323	22.2	19.2	103202	22.3	20.3	288004	22.4	19.9
478970	22.0	20.7	135613	22.1	19.8	531732	22.2	20.5	126742	22.2	19.1	231631	22.3	19.4	360162	22.4	19.9
36507	22.0	18.9	424199	22.1	21.2	296382	22.2	20.3	476360	22.2	19.3	507377	22.3	21.7	38707	22.4	17.0
428301	22.0	21.1	487038	22.1	20.2	122196	22.2	19.8	287593	22.2	20.0	157307	22.3	19.3	53047	22.4	18.1
263191	22.0	20.2	289593	22.1	20.4	461448	22.2	21.6	487758	22.2	20.2	381836	22.3	19.7	53078	22.4	18.0
97402	22.0	18.8	130600	22.1	17.7	211916	22.2	19.0	446446	22.2	20.2	65862	22.3	19.5	366178	22.4	20.3
202565	22.0	20.4	326050	22.1	19.5	337971	22.2	20.6	509871	22.2	18.2	511162	22.3	19.1	20134	22.4	18.3
156906	22.0	19.6	433699	22.1	19.0	324969	22.2	20.9	66864	22.2	17.9	50389	22.3	18.3	119867	22.4	19.0
482177	22.0	19.3	124079	22.1	19.6	348484	22.2	20.3	297537	22.2	21.3	309743	22.3	19.7	170686	22.4	19.0
448080	22.0	21.1	23358	22.1	18.5	279680	22.2	20.3	413777	22.2	20.8	529731	22.3	21.5	511157	22.4	19.2
255619	22.0	19.5	120806	22.1	19.1	315392	22.2	21.1	114825	22.2	18.4	423971	22.3	21.0	102843	22.4	19.0
536632	22.0	20.4	216726	22.1	18.8	60905	22.2	18.7	77150	22.2	19.0	263442	22.3	20.1	362953	22.4	20.5
302176	22.0	19.1	482154	22.1	19.6	71600	22.2	18.2	433085	22.2	20.5	35334	22.3	18.2	263836	22.4	20.0
537129	22.0	21.0	515004	22.1	20.6	122414	22.2	18.9	480196	22.2	20.6	93407	22.3	18.7	254456	22.4	19.6
281670	22.0	20.5	521441	22.1	20.3	202484	22.2	19.7	475725	22.2	20.0	535252	22.3	21.4	312407	22.4	20.7
425653	22.0	20.4	56710	22.1	19.0	466193	22.2	20.7	363056	22.2	20.1	258989	22.3	19.6	166926	22.4	20.2
528888	22.0	21.4	357167	22.1	20.8	60260	22.2	18.4	321367	22.2	20.9	473066	22.3	19.7	450948	22.4	21.1
397712	22.0	20.5	220859	22.1	19.0	514966	22.2	20.4	163723	22.2	19.4	480499	22.3	21.5	277766	22.4	19.8
93119	22.0	19.4	311124	22.1	19.5	46243	22.2	18.2	427921	22.2	20.9	428338	22.3	21.0	395237	22.4	20.5
539250	22.0	21.1	355830	22.1	20.6	470835	22.2	20.4	400234	22.2	21.1	375221	22.3	20.7	505715	22.4	20.9
107349	22.0	19.2	431846	22.1	19.6	440456	22.2	20.2	476285	22.2	20.2	184209	22.3	19.1	414079	22.4	20.0
211578	22.0	20.3	477526	22.1	20.3	397021	22.2	21.0	193529	22.2	18.5	407094	22.3	20.9	310698	22.4	20.5
20879	22.0	18.4	60254	22.1	18.1	121266	22.2	19.5	163729	22.2	20.4	300843	22.3	19.6	184178	22.4	20.1
305598	22.0	20.4	228088	22.1	20.5	478729	22.2	19.9	311	22.2	13.8	233896	22.3	20.2	65939	22.4	19.1
289622	22.0	21.1	191692	22.1	20.2	145098	22.2	20.0	184962	22.2	19.5	433276	22.3	20.4	103751	22.4	19.9
320235	22.0	19.9	533552	22.1	21.3	470328	22.2	19.7	478645	22.2	20.4	94621	22.3	18.9	58910	22.4	19.8
458838	22.0	20.5	212317	22.1	19.8	100899	22.2	19.7	514198	22.2	21.1	134673	22.3	19.2	347156	22.4	20.2
199921	22.0	19.6	463129	22.1	20.9	476050	22.2	20.6	159122	22.2	19.3	106797	22.3	18.5	438288	22.4	21.5
412063	22.0	21.5	540111	22.1	20.8	465284	22.2	21.3	73239	22.2	19.2	315962	22.3	19.2	454949	22.4	20.1
493383	22.0	18.5	23979	22.1	16.5	346554	22.2	20.0	86060	22.2	18.7	370041	22.3	18.8	521418	22.4	20.6
159264	22.0	19.5	523106	22.1	20.9	63511	22.2	18.8	206730	22.2	19.6	59559	22.3	17.8	499592	22.4	19.6
16943	22.0	14.9	207528	22.1	20.6	89714	22.2	18.8	435838	22.2	20.0	115202	22.3	18.6	97188	22.4	18.7
74653	22.0	18.7	481724	22.1	20.7	50942	22.2	17.4	437211	22.3	20.8	62641	22.3	18.3	210328	22.4	20.2
479805	22.0	21.0	282231	22.1	20.3	34663	22.2</										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
505267	22.4	20.3	357961	22.5	20.3	522687	22.5	20.3	323068	22.6	19.5	265622	22.7	19.7	531000	22.7	21.5
112696	22.4	19.4	324932	22.5	19.0	312478	22.5	19.8	164230	22.6	19.9	18369	22.7	16.8	294625	22.7	21.0
63740	22.4	19.2	338508	22.5	21.2	477007	22.6	20.4	265084	22.6	19.4	439605	22.7	21.1	515991	22.7	20.4
95311	22.4	19.2	170154	22.5	19.7	49237	22.6	18.4	96456	22.6	19.1	122799	22.7	18.4	34645	22.7	18.3
133636	22.4	19.1	421867	22.5	20.7	312665	22.6	21.0	173068	22.6	19.1	296263	22.7	21.2	446247	22.7	20.4
440553	22.4	19.1	379153	22.5	20.3	260255	22.6	19.9	43608	22.6	16.5	411672	22.7	20.2	464761	22.7	18.8
373218	22.4	21.4	469531	22.5	20.1	509883	22.6	20.9	382920	22.6	19.6	55974	22.7	18.4	344541	22.8	19.6
149967	22.4	19.8	500768	22.5	21.8	277686	22.6	20.9	205616	22.6	19.9	184672	22.7	20.2	429455	22.8	20.5
166440	22.4	20.4	486637	22.5	20.3	154921	22.6	19.3	237834	22.6	21.1	404477	22.7	20.8	284272	22.8	20.7
72333	22.4	18.8	134892	22.5	19.0	388928	22.6	19.4	326942	22.6	21.2	79784	22.7	17.8	185782	22.8	18.6
260299	22.4	19.3	294607	22.5	20.1	379791	22.6	20.4	95558	22.6	19.5	48004	22.7	18.8	516967	22.8	21.1
84719	22.4	21.0	311933	22.5	20.5	261067	22.6	20.2	215489	22.6	20.8	221774	22.7	20.9	26690	22.8	18.5
3681	22.4	16.2	426620	22.5	20.2	271712	22.6	19.4	7995	22.6	17.3	295996	22.7	21.1	524854	22.8	20.2
259478	22.4	17.8	316877	22.5	18.8	59952	22.6	18.9	215022	22.6	19.8	275353	22.7	20.1	307004	22.8	19.8
154226	22.4	19.4	40749	22.5	17.3	158476	22.6	18.9	37202	22.6	17.0	313971	22.7	19.7	260164	22.8	19.6
261867	22.4	20.6	257801	22.5	20.0	470362	22.6	19.9	340369	22.6	20.1	211985	22.7	20.1	58733	22.8	17.9
364157	22.4	20.2	295681	22.5	20.6	439228	22.6	20.5	503880	22.6	23.4	352238	22.7	19.8	520105	22.8	20.6
496450	22.4	21.2	431820	22.5	19.3	320919	22.6	20.3	35258	22.6	18.7	175570	22.7	20.2	116909	22.8	19.0
469201	22.4	20.7	99107	22.5	19.5	355792	22.6	19.8	195431	22.6	19.9	121878	22.7	18.4	352956	22.8	19.7
316080	22.4	19.9	316973	22.5	20.7	514021	22.6	21.1	478680	22.6	20.0	221456	22.7	19.4	432733	22.8	21.0
444220	22.4	21.3	478545	22.5	20.6	444114	22.6	19.8	116498	22.6	18.7	41992	22.7	18.3	314326	22.8	19.9
99201	22.4	19.3	172121	22.5	19.3	104426	22.6	19.2	504041	22.6	20.1	308031	22.7	19.3	174753	22.8	19.2
355160	22.4	20.5	179434	22.5	19.9	129505	22.6	18.4	1459	22.6	13.8	365610	22.7	20.4	238554	22.8	18.4
176388	22.4	19.7	403988	22.5	20.7	484972	22.6	19.5	159526	22.6	19.5	316233	22.7	20.4	252156	22.8	19.7
36986	22.4	17.5	132360	22.5	20.3	271071	22.6	19.7	538956	22.6	21.8	480343	22.7	21.6	238209	22.8	18.6
61114	22.4	17.3	332324	22.5	20.4	222836	22.6	20.4	402766	22.6	20.3	437312	22.7	21.0	404358	22.8	22.3
451383	22.4	19.8	38475	22.5	18.1	183935	22.6	20.1	528286	22.6	21.3	242886	22.7	20.4	124731	22.8	19.8
36544	22.4	18.0	159947	22.5	18.6	520811	22.6	19.6	88333	22.6	17.6	420383	22.7	20.0	91762	22.8	18.7
543735	22.4	22.0	68059	22.5	19.0	336267	22.6	20.0	320563	22.6	20.2	367709	22.7	19.2	375715	22.8	20.5
147502	22.4	20.2	212605	22.5	19.5	23316	22.6	18.1	26083	22.6	17.9	207437	22.7	19.3	215816	22.8	19.6
115514	22.4	18.7	66085	22.5	17.9	173883	22.6	18.8	463101	22.6	19.1	514008	22.7	20.4	444968	22.8	21.5
479697	22.4	20.5	69950	22.5	17.5	65058	22.6	19.4	514353	22.6	20.5	70126	22.7	19.1	254523	22.8	19.9
480187	22.4	20.8	255224	22.5	19.5	230347	22.6	19.0	74925	22.6	17.6	429728	22.7	20.1	192337	22.8	19.4
308027	22.4	19.3	64701	22.5	16.8	39262	22.6	18.2	54110	22.6	18.7	161046	22.7	20.7	139246	22.8	19.6
314469	22.4	20.7	519803	22.5	22.1	466288	22.6	21.0	243155	22.6	20.2	213181	22.7	19.9	142763	22.8	19.6
191807	22.4	19.2	160417	22.5	19.1	347021	22.6	20.8	473219	22.6	20.8	314671	22.7	21.5	106441	22.8	19.0
131285	22.4	19.0	386838	22.5	20.9	525431	22.6	21.8	177316	22.6	18.5	316466	22.7	20.5	67568	22.8	18.7
355557	22.4	19.2	236409	22.5	19.9	441912	22.6	21.5	126575	22.6	20.0	178235	22.7	20.2	404026	22.8	20.5
107376	22.4	18.8	28482	22.5	19.4	167474	22.6	18.4	47697	22.6	18.6	334438	22.7	20.4	316170	22.8	19.8
306650	22.4	19.6	6351	22.5	16.9	96156	22.6	18.0	75329	22.6	17.4	361600	22.7	20.6	183803	22.8	19.8
262387	22.4	19.1	123491	22.5	19.0	56707	22.6	18.2	16191	22.6	17.5	461903	22.7	20.9	164439	22.8	19.5
357805	22.4	20.4	444318	22.5	20.2	380280	22.6	19.4	136172	22.6	20.0	1583	22.7	15.3	177578	22.8	19.9
183246	22.5	19.8	335452	22.5	19.1	515620	22.6	20.5	360976	22.6	20.7	457273	22.7	20.3	216299	22.8	20.0
4892	22.5	15.7	9558	22.5	16.7	355620	22.6	20.5	389154	22.7	20.6	7071	22.7	18.3	479130	22.8	19.7
512834	22.5	21.0	316520	22.5	20.0	386386	22.6	20.7	279740	22.7	20.6	143915	22.7	18.8	262879	22.8	20.9
250808	22.5	20.7	202650	22.5	19.4	319171	22.6	19.9	166900	22.7	18.8	84064	22.7	18.2	252763	22.8	20.1
246879	22.5	20.2	294151	22.5	20.9	401171	22.6	19.8	483371	22.7	19.8	172329	22.7	19.2	425988	22.8	20.2
153591	22.5	16.6	308009	22.5	19.7	514860	22.6	21.0	424029	22.7	20.8	382494	22.7	19.4	449447	22.8	20.4
346641	22.5	20.6	471665	22.5	20.0	59710	22.6	19.4	216579	22.7	20.1	434720	22.7	20.6	61723	22.8	19.4
504221	22.5	20.0	174196	22.5	19.6	142066	22.6	19.9	454823	22.7	20.0	11941	22.7	16.4	213549	22.8	20.3
259979	22.5	20.0	159198	22.5	19.4	1650	22.6	15.3	167775	22.7	19.0	303202	22.7	20.3	379213	22.8	20.0
124050	22.5	19.6	118976	22.5	19.2	328088	22.6	20.1	220894	22.7	18.7	173273	22.7	18.4	37270	22.8	18.8
469302	22.5	20.3	437413	22.5	20.4	48028	22.6	18.9	295553	22.7	20.4	124062	22.7	19.7	447706	22.8	21.4
19166	22.5	18.0	255479	22.5	19.9	360748	22.6	18.5	524667	22.7	20.7	333186	22.7	20.0	429699	22.8	20.2
321650	22.5	19.7	437178	22.5	20.2	418001	22.6	20.2	149096	22.7	19.4	83477	22.7	18.8	363631	22.8	19.6
50495	22.5	17.7	35974	22.5	17.6	335768	22.6	21.5	236991	22.7	19.3	132435	22.7	19.5	200041	22.8	18.6
149298	22.5	18.7	524469	22.5	21.6	313323	22.6	19.9	180783	22.7	20.5	440186	22.7	20.4	323050	22.8	20.9
388650	22.5	20.4	390184	22.5	20.6	508937	22.6	19.4	317480	22.7	21.3	295780	22.7	19.6	98317	22.8	17.9
153231	22.5	19.3	308314	22.5	19.7	340415	22.6	20.4	385574	22.7	19.7	254263	22.7	19.4	133200	22.8	19.2
222391	22.5	20.3	252780	22.5	19.3	424534	22.6	19.9	168085	22.7	20.0	87637	22.7	17.8	468786	22.8	20.5
445406	22.5	21.0	205683	22.5	19.3	104625	22.6	20.3	282394	22.7	19.4	521656	22.7	21.0	473102	22.8	20.7
306966	22.5	18.9	470674	22.5	20.4	137587	22.6	18.9	342993	22.7	19.4	128453	22.7	19.8	212397	22.8	19.9
333564	22.5	20.2	503439	22.5	21.2	202429	22.6	19.1	8352	22.7	17.1	170658	22.7	19.4	42225	22.8	18.9
75610	22.5	18.7	420481	22.5	20.5	185051	22.6	19.1	210362	22.7	19.8	29191	22.7	17.4	513308	22.8	21.7
455019	22.5	19.7	161640	22.5	20.4	480669	22.6	20.6	51754	22.7	18.8	338839	22.7	18.7	251946	22.8	18.5
133165	22.5	18.9	117588	22.5	19.5	343384	22.6	20.3	471227	22.7	21.0	212932	22.7	17.7	23327	22.8	17.8
164219	22.5	19.1	51699	22.5	19.1	353453	22.6	20.6	467432	22.7	19.6	346579	22.7	19.4	324772	22.8	21.0
42507	22.5	18.2	480316	22.5	20.4	322769	22.6	20.9	266209	22.7	19.6	122245	22.7	19.7	521150	22.8	20.5
82062	22.5	18.0	65612	22.5	19.4	89866	22.6										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
467953	22.8	21.1	188818	22.9	20.2	13554	22.9	18.0	408052	23.0	19.8	532715	23.1	19.4	443639	23.2	20.4
426633	22.8	19.3	405825	22.9	20.7	536969	22.9	21.2	18796	23.0	18.4	276081	23.1	20.2	201171	23.2	19.8
205029	22.8	20.0	144712	22.9	20.5	304489	22.9	20.4	33656	23.0	18.7	144924	23.1	19.9	246145	23.2	19.6
449903	22.8	21.8	443144	22.9	20.0	483941	22.9	19.6	358777	23.0	20.3	123703	23.1	19.3	289963	23.2	20.9
385173	22.8	20.0	468030	22.9	20.1	57588	22.9	18.3	168280	23.0	19.7	98360	23.1	17.5	317804	23.2	20.4
77565	22.8	19.0	65347	22.9	19.3	76885	22.9	19.4	486860	23.0	20.0	387772	23.1	20.4	327229	23.2	20.9
164518	22.8	20.5	523665	22.9	20.9	382825	22.9	22.1	106809	23.0	17.9	528099	23.1	20.2	242479	23.2	19.2
379323	22.8	19.4	326381	22.9	19.9	445790	22.9	20.0	304548	23.0	20.8	53499	23.1	17.8	338039	23.2	20.7
238446	22.8	19.6	469604	22.9	21.7	184738	22.9	19.9	110188	23.0	18.8	32138	23.1	16.3	262606	23.2	19.4
282292	22.8	20.0	337112	22.9	19.9	499154	22.9	20.5	39028	23.0	19.3	440885	23.1	20.4	166009	23.2	20.1
524037	22.8	19.5	3276	22.9	15.7	453	22.9	13.5	172897	23.0	20.0	373207	23.1	21.4	524800	23.2	19.1
218382	22.8	19.9	54876	22.9	17.7	477532	22.9	20.2	252808	23.0	21.1	152527	23.1	19.5	455032	23.2	21.3
533709	22.8	21.1	209539	22.9	19.9	390188	22.9	19.9	261686	23.0	18.8	282254	23.1	21.2	132939	23.2	19.3
335520	22.8	20.6	408381	22.9	21.3	144568	22.9	20.5	188812	23.1	19.6	416301	23.1	20.4	100737	23.2	18.8
518327	22.8	20.7	510364	22.9	20.7	510849	22.9	20.4	448407	23.1	19.8	520354	23.1	20.5	431476	23.2	21.6
8386	22.8	17.2	300692	22.9	20.5	46027	22.9	19.0	399655	23.1	19.3	281823	23.1	19.5	294862	23.2	20.9
151847	22.8	19.2	504013	22.9	20.7	400439	22.9	21.1	86528	23.1	19.1	88988	23.1	19.1	142455	23.2	19.1
65395	22.8	19.1	121277	22.9	19.0	392899	22.9	20.3	443083	23.1	20.6	214042	23.1	21.1	314490	23.2	20.2
528883	22.8	21.0	113843	22.9	19.2	293473	22.9	20.0	496482	23.1	18.8	211117	23.1	20.1	162106	23.2	18.5
242287	22.8	20.0	40512	22.9	18.1	245881	22.9	20.1	233308	23.1	19.2	137797	23.1	18.5	236421	23.2	21.0
540926	22.8	20.2	68057	22.9	19.5	360213	22.9	20.4	103400	23.1	17.8	13616	23.1	17.1	404029	23.2	20.8
517925	22.8	20.0	123356	22.9	18.3	222198	22.9	19.1	200634	23.1	19.3	401647	23.1	20.8	530133	23.2	20.7
323774	22.8	20.8	526370	22.9	22.0	113730	22.9	18.7	401223	23.1	20.8	294932	23.1	19.9	403728	23.2	20.6
540106	22.8	21.3	51437	22.9	18.7	229090	22.9	19.6	314559	23.1	20.3	134320	23.1	19.5	369732	23.2	20.7
218805	22.8	19.6	220261	22.9	18.6	255713	22.9	20.6	251800	23.1	19.0	66910	23.1	19.0	256995	23.2	20.1
211834	22.8	19.3	189559	22.9	18.9	41405	22.9	18.1	440624	23.1	19.6	250078	23.1	20.5	60362	23.2	18.2
117273	22.8	19.2	118439	22.9	20.5	280100	22.9	20.1	115773	23.1	19.1	77955	23.1	19.0	118993	23.2	19.4
219136	22.8	19.7	151411	22.9	19.9	308336	22.9	19.5	405445	23.1	19.5	25910	23.1	18.5	212859	23.2	18.7
62897	22.8	17.8	277545	22.9	20.3	437314	22.9	20.8	357974	23.1	19.9	328231	23.1	21.2	302278	23.2	19.3
185	22.8	11.5	36085	22.9	18.2	85655	22.9	18.1	457499	23.1	19.6	98827	23.1	20.1	381427	23.2	21.0
516457	22.8	22.5	365696	22.9	20.3	93164	22.9	18.8	311527	23.1	19.4	357513	23.1	20.2	425743	23.2	20.9
286829	22.8	20.1	172975	22.9	20.0	111684	22.9	19.0	88920	23.1	18.3	322768	23.1	19.7	449812	23.2	21.0
512457	22.8	20.2	441906	22.9	21.5	445842	22.9	20.1	289792	23.1	20.0	328256	23.1	20.3	94509	23.2	18.9
8230	22.8	18.6	433841	22.9	20.6	485986	22.9	20.1	177336	23.1	18.6	338492	23.1	22.1	28531	23.2	18.6
167283	22.8	19.1	520208	22.9	21.7	190054	22.9	18.3	328210	23.1	21.0	70270	23.1	16.7	509875	23.2	20.3
462818	22.8	19.6	518629	22.9	21.0	128871	22.9	18.3	498889	23.1	20.4	509375	23.1	21.5	13039	23.2	17.9
31994	22.8	18.3	222928	22.9	19.7	338035	22.9	20.5	296042	23.1	20.5	370680	23.1	20.7	367693	23.2	19.6
20130	22.8	17.8	515409	22.9	20.3	223867	22.9	19.7	325410	23.1	20.5	528000	23.1	22.4	282010	23.2	19.7
490713	22.8	21.3	248001	22.9	19.0	87180	22.9	17.2	428880	23.1	20.9	445523	23.1	20.5	399011	23.2	20.2
499052	22.8	22.0	438310	22.9	20.3	13337	22.9	17.2	501693	23.1	20.6	205995	23.1	19.6	387780	23.2	20.0
44400	22.8	18.7	120242	22.9	19.8	396060	23.0	20.5	323721	23.1	20.1	125032	23.1	18.2	293329	23.2	20.6
86213	22.8	18.3	23132	22.9	18.6	25439	23.0	18.6	14171	23.1	16.9	145324	23.1	19.1	9583	23.2	18.7
269070	22.9	19.7	398951	22.9	20.6	390916	23.0	20.2	202756	23.1	20.4	443731	23.1	21.4	315958	23.2	20.0
153486	22.9	18.9	107197	22.9	19.5	131034	23.0	18.6	60728	23.1	18.5	512897	23.1	20.6	89315	23.2	17.9
248544	22.9	19.0	360927	22.9	19.9	476090	23.0	19.6	376702	23.1	19.9	17328	23.1	18.1	64909	23.2	17.6
363988	22.9	20.5	355050	22.9	20.6	81571	23.0	17.8	43605	23.1	17.4	266555	23.1	20.4	537214	23.2	21.3
126853	22.9	19.2	203957	22.9	20.2	245343	23.0	20.1	494600	23.1	19.6	435821	23.1	20.2	439294	23.2	20.7
355027	22.9	21.1	477892	22.9	21.5	311459	23.0	19.8	454919	23.1	20.5	151378	23.1	19.6	361032	23.2	20.9
352504	22.9	20.4	476149	22.9	20.1	396969	23.0	20.0	503456	23.1	21.1	233614	23.1	20.5	340227	23.2	20.0
21291	22.9	18.3	260612	22.9	21.0	88757	23.0	18.6	342010	23.1	20.2	205626	23.1	18.4	405131	23.2	21.4
365443	22.9	20.2	213873	22.9	18.8	250792	23.0	19.3	220417	23.1	20.2	525400	23.1	21.5	450330	23.2	20.9
193315	22.9	19.5	8719	22.9	16.7	34588	23.0	17.8	105981	23.1	18.7	232965	23.1	20.0	10664	23.2	18.0
542514	22.9	21.7	294138	22.9	19.8	455000	23.0	20.9	206082	23.1	19.5	523017	23.1	20.7	531092	23.2	20.6
472921	22.9	20.9	478594	22.9	21.1	115503	23.0	19.3	506220	23.1	21.1	224688	23.1	19.5	128196	23.2	19.7
433954	22.9	20.1	205691	22.9	18.8	195541	23.0	20.2	414467	23.1	19.6	433235	23.1	20.9	58469	23.2	18.7
325083	22.9	20.5	280916	22.9	20.3	172299	23.0	19.1	323610	23.1	18.9	508008	23.1	21.0	499589	23.2	20.0
178366	22.9	19.3	243332	22.9	19.5	9684	23.0	16.7	427614	23.1	23.2	319480	23.1	20.6	388838	23.2	23.9
357902	22.9	21.1	264019	22.9	18.9	111808	23.0	17.4	306939	23.1	19.2	192523	23.1	19.0	131155	23.2	19.4
310439	22.9	20.2	262036	22.9	18.9	440577	23.0	19.3	93516	23.1	18.1	431418	23.2	21.0	243339	23.2	18.2
77731	22.9	18.0	379762	22.9	19.7	34406	23.0	18.6	174159	23.1	18.7	316478	23.2	19.7	414454	23.2	20.3
218526	22.9	19.6	249258	22.9	20.3	445797	23.0	20.2	36011	23.1	18.8	33275	23.2	16.1	218911	23.2	20.2
316976	22.9	20.8	409662	22.9	20.9	445409	23.0	19.8	129219	23.1	19.6	193466	23.2	18.4	82225	23.2	18.3
513880	22.9	20.8	34672	22.9	18.0	167479	23.0	18.9	302251	23.1	19.0	16097	23.2	18.3	250681	23.2	19.6
427902	22.9	19.9	532293	22.9	20.5	344796	23.0	19.4	430648	23.1	19.7	171536	23.2	17.7	471600	23.2	20.0
497626	22.9	23.2	364679	22.9	20.3	282782	23.0	19.4	434095	23.1	20.4	21095	23.2	18.4	50175	23.2	17.2
469976	22.9	21.1	141741	22.9	18.8	390544	23.0	20.5	322034	23.1	19.0	315210	23.2	20.4	500766	23.2	21.0
138182	22.9	19.9	521902	22.9	21.3	176161	23.0	20.1	171477	23.1	18.6	2828	23.2	14.9	89635	23.2	17.1
538692	22.9	20.7	137333	22.9	19.2	446170	23.0	20.1	255202	23.1	19.1	508894	23.2	20.1	273803	23.2	20.2
200209	22.9	18.8	360671	22.9	19.3	255345	23.0										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
9302	23.2	16.2	396046	23.3	20.2	435382	23.4	19.7	199852	23.5	20.5	196521	23.5	20.4	338806	23.6	19.9
199927	23.2	20.5	233811	23.3	20.3	429507	23.4	19.8	524938	23.5	21.0	299767	23.5	20.2	503845	23.6	20.3
157718	23.2	19.1	538976	23.3	21.5	364698	23.4	19.3	461972	23.5	21.1	472491	23.5	20.6	477160	23.6	19.5
109575	23.2	19.7	119902	23.3	17.6	46718	23.4	18.7	451761	23.5	21.0	38713	23.5	17.4	294332	23.6	19.8
39439	23.2	18.7	78273	23.3	18.4	412166	23.4	20.5	321657	23.5	19.8	421563	23.5	21.0	313980	23.6	20.2
276488	23.2	19.5	104605	23.3	19.3	196488	23.4	19.7	443604	23.5	19.7	435195	23.5	20.0	521611	23.6	20.4
274141	23.2	20.2	150741	23.3	18.6	23787	23.4	17.1	483243	23.5	19.8	39235	23.5	17.3	460201	23.6	21.0
263468	23.2	19.6	308030	23.3	20.6	510703	23.4	19.9	488311	23.5	20.4	299688	23.5	20.2	128809	23.6	19.2
6088	23.2	17.1	90713	23.3	17.7	412540	23.4	21.8	473	23.5	15.3	164874	23.5	19.9	176131	23.6	19.5
3303	23.2	15.8	448409	23.3	20.8	403042	23.4	20.4	316965	23.5	20.9	195445	23.5	19.4	519668	23.6	19.6
159683	23.2	18.3	4678	23.3	15.5	521737	23.4	20.5	89516	23.5	18.3	436591	23.5	20.6	499096	23.6	21.5
405119	23.2	21.7	379206	23.3	19.1	286802	23.4	20.7	462525	23.5	20.2	275506	23.5	19.9	265227	23.6	19.7
21774	23.2	18.0	403680	23.3	19.9	362274	23.4	20.4	315875	23.5	21.1	512264	23.5	21.3	115011	23.6	17.4
246510	23.2	20.9	198208	23.3	20.0	241264	23.4	19.8	57920	23.5	19.1	24509	23.5	19.6	38277	23.6	17.2
199791	23.3	19.4	436262	23.3	21.0	500855	23.4	20.5	278694	23.5	18.3	448684	23.5	20.4	80336	23.6	17.4
478897	23.3	20.0	388723	23.3	20.6	131698	23.4	18.8	415289	23.5	20.6	237703	23.5	18.8	106947	23.6	18.0
107268	23.3	20.2	350265	23.3	19.5	71548	23.4	18.3	100814	23.5	20.2	284299	23.6	20.3	13348	23.6	17.7
35569	23.3	17.9	251676	23.3	20.6	473025	23.4	20.0	204982	23.5	20.7	429099	23.6	21.1	195492	23.6	20.6
74721	23.3	17.1	472865	23.3	19.7	482127	23.4	19.0	139804	23.5	20.1	92594	23.6	19.0	154243	23.6	19.6
358993	23.3	21.1	396506	23.3	20.2	393573	23.4	20.8	154612	23.5	19.9	350132	23.6	21.6	13820	23.6	16.6
435798	23.3	21.1	345861	23.3	21.0	370672	23.4	19.1	281355	23.5	19.6	351170	23.6	20.9	349369	23.6	20.3
47453	23.3	18.2	9227	23.3	17.4	39786	23.4	19.1	423846	23.5	20.6	175987	23.6	19.1	180403	23.6	19.0
115863	23.3	19.1	135632	23.3	19.8	196966	23.4	18.1	161018	23.5	19.0	459574	23.6	20.5	233728	23.6	19.8
238636	23.3	20.2	490731	23.3	19.3	399412	23.4	19.7	509504	23.5	20.7	368885	23.6	20.7	235258	23.6	20.1
175343	23.3	20.0	441095	23.3	20.1	147777	23.4	19.0	338627	23.5	19.4	64536	23.6	18.8	504077	23.6	20.6
69488	23.3	17.3	72839	23.3	18.9	111841	23.4	19.7	298188	23.5	19.9	277542	23.6	20.0	386104	23.6	20.0
70077	23.3	19.3	282060	23.3	19.2	293438	23.4	20.2	281807	23.5	20.2	355121	23.6	20.4	333664	23.6	19.3
184207	23.3	20.0	303234	23.3	19.9	122274	23.4	19.6	142193	23.5	19.5	387464	23.6	18.8	398973	23.6	19.9
508269	23.3	20.3	256632	23.3	19.1	238518	23.4	20.2	19494	23.5	17.5	185468	23.6	19.3	22579	23.6	18.9
487153	23.3	20.6	267064	23.3	20.7	244935	23.4	19.0	218311	23.5	19.4	527050	23.6	20.9	263720	23.6	20.1
321056	23.3	19.5	298215	23.3	18.9	21235	23.4	17.1	219325	23.5	19.0	272241	23.6	19.6	183704	23.6	19.6
472209	23.3	20.8	349302	23.3	19.1	175638	23.4	19.6	437618	23.5	19.8	31237	23.6	18.2	92376	23.6	19.2
520534	23.3	21.6	36057	23.3	17.8	172112	23.4	19.5	181563	23.5	19.6	421540	23.6	20.0	126521	23.6	19.4
283673	23.3	20.9	296995	23.3	20.4	450199	23.4	21.1	407937	23.5	21.4	35661	23.6	18.5	401554	23.6	20.8
362314	23.3	21.1	405812	23.3	21.2	436789	23.4	20.0	245304	23.5	20.0	198607	23.6	18.9	70140	23.6	19.4
42820	23.3	16.8	461527	23.3	21.5	73110	23.4	20.1	465905	23.5	20.9	127495	23.6	19.1	478851	23.6	20.8
23069	23.3	18.3	234556	23.3	19.6	324974	23.4	21.0	2212	23.5	18.8	428676	23.6	20.3	92106	23.6	18.1
333845	23.3	20.2	307081	23.3	19.7	399160	23.4	20.2	263082	23.5	20.4	278329	23.6	19.8	326143	23.6	21.0
189555	23.3	19.1	346811	23.3	19.6	383298	23.4	20.1	398209	23.5	20.4	72803	23.6	18.6	41758	23.6	17.0
18362	23.3	17.8	407582	23.3	20.1	263213	23.4	18.9	58061	23.5	19.0	270476	23.6	20.4	128712	23.6	17.7
176660	23.3	19.9	123930	23.3	19.2	523561	23.4	19.1	520984	23.5	20.8	3104	23.6	14.9	15859	23.6	17.4
289159	23.3	18.9	520476	23.3	20.8	346451	23.4	21.1	435111	23.5	21.0	243894	23.6	19.4	88544	23.6	18.6
405857	23.3	20.9	77607	23.3	19.4	438800	23.4	19.4	24042	23.5	18.1	118271	23.6	19.6	337021	23.6	21.2
489987	23.3	21.0	2863	23.3	16.4	443306	23.4	21.3	452268	23.5	20.6	470842	23.6	20.2	333483	23.7	19.6
362297	23.3	20.0	341089	23.3	20.6	518315	23.4	20.0	374277	23.5	21.4	536176	23.6	20.2	39268	23.7	18.4
348383	23.3	21.2	235767	23.3	19.0	40190	23.4	18.3	533757	23.5	20.5	542501	23.6	20.3	373150	23.7	20.6
180941	23.3	19.2	75681	23.3	16.9	541094	23.4	19.8	100572	23.5	19.9	119047	23.6	19.3	174718	23.7	18.7
28772	23.3	18.3	360874	23.3	19.6	391648	23.4	20.8	534314	23.5	22.7	24920	23.6	16.9	276122	23.7	20.1
414091	23.3	19.8	483992	23.3	20.6	45270	23.4	17.5	188410	23.5	20.9	110338	23.6	18.6	5451	23.7	18.0
343404	23.3	21.3	16377	23.3	17.0	41915	23.4	17.8	73043	23.5	19.5	336301	23.6	20.9	73822	23.7	19.1
214262	23.3	20.8	479660	23.3	20.7	483309	23.4	20.5	71985	23.5	17.9	158081	23.6	18.1	167584	23.7	18.9
1516516	23.3	21.6	155742	23.4	19.9	174245	23.4	19.7	292864	23.5	20.4	354205	23.6	21.2	203692	23.7	19.0
482770	23.3	20.6	90377	23.4	20.6	313366	23.4	20.7	315871	23.5	21.2	470651	23.6	20.1	272672	23.7	20.5
445806	23.3	20.4	248577	23.4	20.4	239095	23.4	20.2	192220	23.5	19.9	202654	23.6	19.2	228615	23.7	19.5
510698	23.3	20.2	185981	23.4	19.9	62401	23.4	18.3	365591	23.5	20.8	186385	23.6	19.7	542325	23.7	20.5
22344	23.3	18.8	252832	23.4	19.4	91844	23.4	18.7	227507	23.5	19.8	510633	23.6	20.2	195585	23.7	19.4
127232	23.3	19.6	505825	23.4	20.2	480887	23.4	20.8	294165	23.5	20.5	43150	23.6	18.0	2287	23.7	15.6
216511	23.3	19.3	266278	23.4	19.3	20041	23.4	15.4	353661	23.5	19.6	214838	23.6	19.9	17999	23.7	18.6
382994	23.3	19.7	280056	23.4	19.8	221460	23.4	20.2	408937	23.5	20.5	476663	23.6	21.1	47557	23.7	17.7
176153	23.3	19.3	150704	23.4	20.1	168439	23.4	17.9	400195	23.5	19.8	82660	23.6	18.8	445429	23.7	19.8
394821	23.3	20.4	255094	23.4	19.2	255992	23.4	20.4	294806	23.5	19.6	94501	23.6	20.3	226377	23.7	20.0
7208	23.3	16.8	255333	23.4	20.7	490195	23.4	20.9	397030	23.5	19.5	88447	23.6	17.8	452701	23.7	20.7
103955	23.3	18.8	514052	23.4	20.8	5122	23.4	15.0	86356	23.5	18.0	270860	23.6	18.9	316962	23.7	20.3
461354	23.3	20.1	318204	23.4	20.0	11812	23.4	18.7	304351	23.5	20.2	439332	23.6	20.0	48105	23.7	18.5
53543	23.3	18.9	289002	23.4	20.1	508812	23.4	19.8	150612	23.5	18.4	159621	23.6	19.8	312635	23.7	20.7
289021	23.3	19.5	455502	23.4	20.8	36596	23.4	18.0	148388	23.5	19.8	176702	23.6	20.1	10483	23.7	15.9
393989	23.3	20.5	7858	23.4	16.1	224116	23.4	21.1	288801	23.5	20.4	404408	23.6	21.5	201082	23.7	20.8
349758	23.3	20.5	207443	23.4	19.8	240658	23.4	20.2	357431	23.5	19.3	210556	23.6	19.8	303152	23.7	20.0
261664	23.3	20.3	508014	23.4	21.7	170263	23.4	19.8	448977	2							

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
280069	23.7	20.1	202642	23.8	19.8	206094	23.8	19.7	157816	23.9	19.5	15094	23.9	18.1	530427	24.1	22.6
504449	23.7	20.1	210484	23.8	20.4	145534	23.8	19.6	501446	23.9	20.2	481019	23.9	20.6	338634	24.1	19.1
518215	23.7	20.5	527186	23.8	21.9	464984	23.8	19.3	204103	23.9	19.8	63350	23.9	18.8	131273	24.1	18.9
316163	23.7	20.7	181562	23.8	19.6	62940	23.8	18.7	50956	23.9	18.0	444358	23.9	20.2	20352	24.1	18.5
26396	23.7	18.4	500125	23.8	21.2	3930	23.8	17.5	512926	23.9	20.7	24820	23.9	17.2	221686	24.1	20.1
121345	23.7	19.1	283270	23.8	20.3	42764	23.8	17.4	326255	23.9	21.2	269421	23.9	20.6	418112	24.1	18.4
124132	23.7	19.6	507836	23.8	20.1	537696	23.8	20.9	523741	23.9	21.7	312634	23.9	20.4	542959	24.1	21.2
479621	23.7	20.7	283355	23.8	19.2	68992	23.8	17.7	250290	23.9	20.3	524097	23.9	19.5	392003	24.1	20.1
446563	23.7	20.8	443488	23.8	20.8	236550	23.8	20.3	338025	23.9	20.7	438196	23.9	20.2	315923	24.1	19.7
522664	23.7	21.2	493620	23.8	19.7	29212	23.8	18.3	507994	23.9	21.1	357783	23.9	20.4	490015	24.1	20.1
260357	23.7	20.0	33265	23.8	16.8	529215	23.8	21.5	36312	23.9	18.7	24656	23.9	17.2	316703	24.1	20.3
232518	23.7	19.2	119019	23.8	17.8	53618	23.8	19.0	455038	23.9	19.9	242433	23.9	21.0	401283	24.1	20.5
321844	23.7	19.9	391623	23.8	20.0	515403	23.8	21.4	243806	23.9	18.3	504964	23.9	20.3	211118	24.1	19.8
124020	23.7	19.5	44667	23.8	18.0	479743	23.8	21.6	384028	23.9	19.3	341035	23.9	21.0	443673	24.1	20.5
291023	23.7	20.3	142126	23.8	20.7	431914	23.8	21.1	275710	23.9	19.7	108700	23.9	18.6	404046	24.1	20.0
200323	23.7	20.0	264305	23.8	20.9	34423	23.8	18.1	347545	23.9	19.6	355058	23.9	20.3	111584	24.1	19.2
316173	23.7	19.7	182837	23.8	20.1	389726	23.8	19.9	303661	23.9	20.1	257428	23.9	20.7	282777	24.1	20.6
330341	23.7	18.2	458128	23.8	21.3	469576	23.8	19.3	371469	23.9	20.9	361500	23.9	21.2	527127	24.1	20.1
442314	23.7	20.8	254575	23.8	20.5	524452	23.8	21.9	511160	23.9	20.8	148127	23.9	19.2	192492	24.1	19.7
287701	23.7	19.8	187553	23.8	19.4	464708	23.8	21.2	511216	23.9	21.1	205309	23.9	20.0	36859	24.1	18.1
368908	23.7	20.8	537561	23.8	20.5	261770	23.8	19.9	507282	23.9	20.8	99360	23.9	18.7	338598	24.1	19.4
289821	23.7	20.5	77229	23.8	18.6	72357	23.8	19.1	164480	23.9	20.1	293838	23.9	19.9	443377	24.1	21.2
107495	23.7	19.9	9568	23.8	16.8	501723	23.8	19.8	94030	23.9	17.6	412033	23.9	20.7	470999	24.1	20.6
388972	23.7	21.1	316045	23.8	20.8	190018	23.8	19.3	257716	23.9	18.9	399679	23.9	20.3	178539	24.1	19.8
470654	23.7	20.5	518933	23.8	19.5	127775	23.8	18.5	28100	23.9	17.4	91058	23.9	18.5	135648	24.1	20.0
184322	23.7	19.7	221995	23.8	20.0	189831	23.9	19.5	290844	23.9	20.0	171181	23.9	19.9	730	24.1	17.0
142523	23.7	18.7	424654	23.8	20.6	215825	23.9	19.9	65329	23.9	19.0	269928	23.9	20.0	439760	24.1	20.3
480157	23.7	20.8	463421	23.8	21.2	172978	23.9	18.7	404882	23.9	21.3	382266	23.9	20.3	50288	24.1	18.6
289837	23.7	20.8	78331	23.8	18.1	383208	23.9	19.9	391804	23.9	20.9	113416	23.9	20.0	181554	24.1	19.5
82449	23.7	19.5	26112	23.8	18.0	276977	23.9	19.1	102361	23.9	19.7	225897	23.9	18.2	449627	24.1	19.8
534177	23.7	21.0	291014	23.8	19.6	515693	23.9	21.2	181929	23.9	19.9	294529	23.9	19.8	141003	24.1	19.2
204634	23.7	20.2	94248	23.8	19.3	167482	23.9	19.9	511994	23.9	19.9	251679	23.9	19.8	417461	24.1	21.1
50843	23.7	18.1	88259	23.8	17.0	216457	23.9	20.0	65995	23.9	18.7	410193	23.9	19.7	188181	24.1	20.2
255603	23.7	20.0	432870	23.8	19.6	113350	23.9	19.6	483629	23.9	19.9	7196	23.9	15.6	536203	24.1	21.2
510507	23.7	20.4	200105	23.8	20.0	160634	23.9	18.5	44553	23.9	16.0	321000	23.9	20.9	280907	24.1	20.7
248112	23.7	17.8	215461	23.8	20.2	477500	23.9	20.2	481287	23.9	20.3	260322	23.9	20.5	4137	24.1	16.1
175104	23.7	20.1	127969	23.8	19.8	230389	23.9	20.1	216270	23.9	20.6	470590	23.9	21.8	5459	24.1	16.9
483585	23.7	20.3	328960	23.8	19.9	499548	23.9	20.4	349426	23.9	20.6	504210	23.9	20.3	490199	24.1	20.9
254357	23.7	19.2	473774	23.8	21.5	10363	23.9	15.4	528201	23.9	21.8	42813	24.0	17.1	294705	24.1	20.8
430081	23.7	19.6	297195	23.8	20.1	227983	23.9	20.1	21892	23.9	18.4	7272	24.0	15.8	261554	24.1	20.3
470768	23.7	19.5	513825	23.8	22.6	136355	23.9	18.9	477939	23.9	20.6	74212	24.0	18.3	96957	24.1	18.4
314534	23.7	19.4	512176	23.8	20.2	400900	23.9	20.7	517690	23.9	20.7	91151	24.0	17.7	316879	24.1	18.0
261682	23.7	20.1	222872	23.8	20.3	357911	23.9	20.3	89721	23.9	18.4	76641	24.0	18.1	520542	24.1	21.2
351452	23.7	20.2	218975	23.8	19.9	412183	23.9	20.6	328729	23.9	19.7	63119	24.0	17.4	98609	24.1	19.1
415699	23.7	19.5	412831	23.8	22.0	511322	23.9	21.1	294918	23.9	20.4	21919	24.0	18.6	294446	24.1	19.6
162299	23.7	18.5	92640	23.8	16.7	409276	23.9	19.6	92003	23.9	18.7	2796	24.0	16.5	79609	24.1	17.4
539530	23.7	20.9	60067	23.8	19.3	65351	23.9	18.0	374453	23.9	19.9	240127	24.0	20.2	39577	24.1	20.3
40709	23.7	17.1	453451	23.8	20.5	267741	23.9	21.2	511888	23.9	19.0	21579	24.0	18.6	507404	24.1	21.6
91074	23.7	19.0	91952	23.8	18.7	408025	23.9	20.8	93429	23.9	19.4	214643	24.0	20.5	329251	24.1	20.5
416888	23.7	20.5	347856	23.8	19.5	146746	23.9	19.5	204934	23.9	19.3	34408	24.0	17.9	520541	24.1	20.6
81631	23.7	19.2	87671	23.8	17.2	101021	23.9	18.7	470707	23.9	21.2	263068	24.0	20.2	343280	24.1	20.3
219965	23.7	20.8	339475	23.8	19.8	449613	23.9	20.0	348738	23.9	21.1	100401	24.0	18.8	386421	24.1	20.5
183016	23.7	19.0	296146	23.8	19.3	360664	23.9	20.4	14620	23.9	17.7	445017	24.0	20.8	414049	24.1	20.7
497252	23.7	21.0	319105	23.8	19.9	284671	23.9	20.0	458154	23.9	21.0	36095	24.0	17.1	154225	24.1	20.0
19409	23.7	18.0	519517	23.8	20.8	28697	23.9	18.2	261366	23.9	21.0	537791	24.0	19.7	298526	24.1	20.2
362023	23.7	19.7	50621	23.8	18.5	536507	23.9	20.9	122672	23.9	18.7	360718	24.0	19.6	398268	24.1	21.3
177290	23.7	19.2	425581	23.8	20.3	409311	23.9	20.7	446738	23.9	21.7	32646	24.0	17.3	277563	24.1	20.2
414753	23.7	20.8	494450	23.8	20.5	318566	23.9	19.7	84057	23.9	18.3	72948	24.0	19.3	366218	24.1	21.0
465611	23.7	19.9	200644	23.8	18.5	216030	23.9	20.2	187921	23.9	19.6	513629	24.0	20.0	428283	24.1	20.8
440549	23.7	20.7	275435	23.8	20.1	465326	23.9	19.6	86586	23.9	18.7	251815	24.0	19.3	25667	24.1	18.7
18100	23.7	18.3	474713	23.8	20.6	515665	23.9	20.8	171797	23.9	19.8	342996	24.0	19.7	180468	24.1	20.5
392084	23.7	20.5	392518	23.8	20.8	406296	23.9	20.5	518313	23.9	20.9	482966	24.0	19.9	390947	24.1	20.8
16649	23.7	16.9	502759	23.8	20.2	192800	23.9	17.9	536136	23.9	21.0	516962	24.0	21.0	382560	24.1	19.4
328162	23.7	20.2	516128	23.8	20.8	339494	23.9	19.6	100134	23.9	19.7	421486	24.0	20.6	195414	24.1	20.7
530497	23.7	21.5	523756	23.8	22.1	260502	23.9	20.8	131614	23.9	18.1	252956	24.0	20.6	428241	24.1	20.4
361171	23.7	20.4	71091	23.8	18.3	483844	23.9	20.1	528135	23.9	21.5	198872	24.0	19.3	399062	24.1	19.4
234600	23.7	19.4	494897	23.8	19.7	447741	23.9	21.7	315167	23.9	20.2	417444	24.0	22.1	399695	24.1	19.5
243522	23.7	19.8	228008	23.8	19.9	227851	23.9	19.6	154094	23.9	20.1	25806	24.0	17.1	476233	24.1	19.9
365582	23.7	20.1	70752	23.8	17.4	516332	23.9	20									

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
331107	24.1	19.9	300618	24.2	20.7	26675	24.3	16.0	41353	24.3	18.5	135594	24.4	19.3	512034	24.5	20.6
521855	24.1	20.7	514736	24.2	20.9	396996	24.3	20.0	220369	24.3	20.3	362383	24.4	20.1	45001	24.5	18.6
379998	24.1	20.4	257084	24.2	20.0	479904	24.3	20.3	294393	24.3	19.8	74102	24.4	18.7	255397	24.5	19.2
417689	24.1	20.8	315144	24.2	19.9	268302	24.3	19.7	476084	24.3	19.5	491574	24.4	20.1	185322	24.5	19.8
487027	24.1	20.9	398910	24.2	20.4	146094	24.3	19.8	530206	24.3	19.7	93288	24.4	19.0	376423	24.5	21.2
443594	24.1	20.2	204053	24.2	18.5	467473	24.3	20.3	106717	24.3	18.7	267703	24.4	19.5	23963	24.5	18.1
324765	24.1	20.7	14535	24.2	17.6	237035	24.3	19.9	156374	24.3	19.4	49745	24.4	19.6	87310	24.5	18.1
364547	24.1	20.2	445001	24.2	20.7	386383	24.3	20.6	435213	24.3	19.6	365129	24.4	20.9	447210	24.5	20.1
226810	24.1	20.5	38558	24.2	18.2	107550	24.3	19.4	165614	24.3	19.7	448824	24.4	20.4	48885	24.5	19.0
205447	24.1	18.5	485358	24.2	20.6	402167	24.3	19.2	306937	24.3	19.5	254202	24.4	20.2	296518	24.5	20.2
19557	24.1	16.3	101064	24.2	18.3	95059	24.3	19.1	106264	24.3	18.4	399089	24.4	20.8	481225	24.5	19.6
244964	24.1	19.9	239200	24.2	20.5	228314	24.3	18.5	390361	24.3	20.2	431814	24.4	21.1	360727	24.5	20.4
428014	24.1	21.6	135593	24.2	19.4	105996	24.3	17.8	345886	24.3	19.8	252944	24.4	20.1	494358	24.5	20.1
251825	24.1	19.6	158142	24.2	19.7	102416	24.3	18.3	420321	24.3	21.2	527930	24.4	20.7	335818	24.5	19.9
380255	24.1	18.7	41879	24.2	17.6	152462	24.3	18.6	392817	24.3	20.3	208899	24.4	19.6	97789	24.5	17.4
333665	24.1	20.0	47452	24.2	18.4	14681	24.3	18.5	37298	24.4	18.7	314562	24.4	20.7	445519	24.5	19.8
136872	24.1	20.0	47398	24.2	17.7	268866	24.3	19.8	480150	24.4	21.7	402152	24.4	19.4	86706	24.5	19.6
137154	24.1	19.8	96897	24.2	19.6	479686	24.3	20.7	221461	24.4	20.3	422430	24.4	20.3	127016	24.5	19.9
280047	24.1	19.8	32588	24.2	19.4	97160	24.3	19.4	218798	24.4	19.1	167488	24.4	17.7	128907	24.5	19.2
311363	24.1	19.3	240685	24.2	20.9	487252	24.3	20.5	150033	24.4	19.5	380269	24.4	19.8	347803	24.5	20.3
142338	24.1	20.7	511202	24.2	19.2	353149	24.3	20.2	393670	24.4	20.3	395166	24.4	19.8	470659	24.5	21.3
201088	24.1	19.9	511691	24.2	19.1	254969	24.3	20.7	511973	24.4	20.0	72519	24.4	18.2	365412	24.5	19.9
447999	24.1	21.9	274459	24.2	20.8	352388	24.3	18.6	398692	24.4	19.8	436760	24.4	20.5	95605	24.5	19.5
353823	24.1	20.0	373233	24.2	21.0	394723	24.3	21.3	87247	24.4	18.8	140822	24.4	19.1	514534	24.5	20.2
384480	24.1	20.4	149843	24.2	18.9	436940	24.3	19.8	426167	24.4	20.5	67776	24.4	18.7	25200	24.5	18.2
72256	24.1	18.5	324430	24.2	19.8	87329	24.3	18.8	508639	24.4	20.1	164444	24.4	18.9	405019	24.5	22.0
448721	24.1	23.1	403424	24.2	21.3	382468	24.3	19.5	459645	24.4	21.0	506455	24.4	19.6	304000	24.5	19.1
416399	24.1	19.8	21799	24.2	17.8	522846	24.3	19.6	10941	24.4	17.8	526943	24.4	20.1	476912	24.5	20.0
420337	24.1	20.3	487147	24.2	19.6	187095	24.3	19.0	499505	24.4	20.2	334431	24.4	19.7	320141	24.5	19.5
532845	24.1	19.8	8502	24.2	16.7	210279	24.3	19.7	276006	24.4	20.0	325130	24.4	20.8	55449	24.5	18.4
19702	24.1	16.6	171282	24.2	19.0	387504	24.3	20.1	276000	24.4	19.0	255665	24.4	19.5	43168	24.5	18.1
10846	24.1	16.8	139342	24.2	19.4	311378	24.3	20.3	77116	24.4	20.0	448050	24.4	20.9	338811	24.5	19.4
247888	24.1	18.8	347822	24.2	21.2	372357	24.3	21.5	520092	24.4	20.4	129652	24.4	19.4	473344	24.5	20.4
121897	24.2	20.1	330860	24.2	19.1	537208	24.3	21.9	232797	24.4	19.4	353243	24.4	20.6	187254	24.5	19.6
263364	24.2	20.2	312433	24.2	19.9	123110	24.3	19.6	410353	24.4	19.3	124679	24.4	18.1	168812	24.5	19.6
187465	24.2	19.8	180789	24.2	19.6	61797	24.3	17.1	187853	24.4	18.6	110205	24.4	19.2	179749	24.5	19.6
523731	24.2	21.8	428611	24.2	21.1	281466	24.3	21.1	165222	24.4	20.0	833	24.4	15.0	402337	24.5	20.4
97359	24.2	18.7	444661	24.2	20.6	430448	24.3	19.9	439576	24.4	21.2	33839	24.4	18.3	157322	24.5	19.0
86892	24.2	18.1	407617	24.2	19.8	9553	24.3	15.8	119896	24.4	19.9	313277	24.4	19.5	474294	24.5	20.2
423166	24.2	20.0	428132	24.2	20.3	358415	24.3	20.2	30389	24.4	18.4	418096	24.4	19.4	412994	24.5	20.7
475985	24.2	20.5	2530	24.2	16.1	96180	24.3	19.7	161824	24.4	19.5	533788	24.4	19.7	539185	24.5	20.4
514635	24.2	20.3	86276	24.2	19.0	149104	24.3	19.9	449076	24.4	19.9	361484	24.4	21.4	148473	24.5	20.4
432898	24.2	21.7	143241	24.2	19.5	240123	24.3	19.8	268207	24.4	19.8	282373	24.4	19.2	358783	24.5	20.7
431118	24.2	20.7	296268	24.2	20.4	21583	24.3	17.7	361454	24.4	21.2	46303	24.4	17.8	402141	24.5	19.6
233866	24.2	20.2	250941	24.2	19.3	188519	24.3	19.5	323690	24.4	20.6	284534	24.4	20.3	103891	24.5	19.7
251405	24.2	19.2	50810	24.2	17.6	197920	24.3	20.2	321193	24.4	20.2	69472	24.4	17.4	123665	24.5	18.0
335116	24.2	18.4	323441	24.2	19.3	505743	24.3	20.8	186869	24.4	20.5	16161	24.4	17.4	127479	24.5	19.5
163051	24.2	20.4	133250	24.2	19.9	47876	24.3	17.3	235722	24.4	19.3	3446	24.4	15.7	292279	24.5	20.3
509574	24.2	21.6	371560	24.2	19.8	118213	24.3	19.0	462594	24.4	20.5	22673	24.4	17.3	317873	24.5	19.9
363047	24.2	20.3	368320	24.2	19.8	444228	24.3	20.3	113435	24.4	18.1	268322	24.4	20.1	399047	24.5	20.6
518297	24.2	20.5	103940	24.2	19.0	496009	24.3	19.6	315942	24.4	20.4	418275	24.5	19.9	62724	24.5	18.5
244853	24.2	18.9	393669	24.2	19.9	141699	24.3	20.3	55582	24.4	17.2	407732	24.5	20.0	407190	24.5	20.1
315384	24.2	18.9	245325	24.2	19.6	413001	24.3	19.3	513780	24.4	21.2	369819	24.5	20.9	519613	24.5	21.5
371928	24.2	21.0	23289	24.2	17.1	504050	24.3	20.1	345521	24.4	20.0	96946	24.5	19.2	262593	24.5	20.7
421839	24.2	20.6	100371	24.2	20.2	264037	24.3	19.5	158040	24.4	19.9	507145	24.5	19.5	440491	24.5	21.7
65787	24.2	19.0	235229	24.2	19.7	391108	24.3	21.3	133403	24.4	19.2	410775	24.5	20.7	159585	24.5	17.8
350942	24.2	18.5	477858	24.2	22.1	347837	24.3	19.3	340508	24.4	18.9	205482	24.5	19.4	526158	24.5	19.9
263719	24.2	19.6	74908	24.2	19.6	150005	24.3	20.3	381096	24.4	19.8	308957	24.5	20.7	307035	24.5	19.2
357890	24.2	21.3	79250	24.3	19.4	53870	24.3	17.2	65229	24.4	19.2	386742	24.5	20.9	479377	24.5	20.4
377638	24.2	20.8	211151	24.3	20.3	18629	24.3	18.2	129059	24.4	19.7	12137	24.5	17.9	412432	24.5	20.7
116609	24.2	19.7	254859	24.3	19.5	332178	24.3	20.1	445531	24.4	19.1	246796	24.5	19.5	300648	24.5	20.3
233423	24.2	20.4	5097	24.3	16.9	134612	24.3	19.4	186774	24.4	19.1	231814	24.5	21.5	436759	24.5	20.7
335138	24.2	18.6	371535	24.3	21.0	426498	24.3	19.7	181875	24.4	19.1	286896	24.5	19.8	443647	24.5	21.3
351565	24.2	20.5	59510	24.3	17.9	1833	24.3	15.6	289432	24.4	21.1	361901	24.5	20.8	82405	24.5	17.9
186283	24.2	20.1	37475	24.3	18.9	160856	24.3	19.0	91582	24.4	17.7	232861	24.5	18.7	219967	24.5	19.2
56718	24.2	18.5	437569	24.3	20.4	158136	24.3	19.3	31510	24.4	17.6	124071	24.5	19.3	470313	24.5	20.4
449365	24.2	21.7	176378	24.3	18.2	6887	24.3	15.0	255196	24.4	19.7	321964	24.5	19.4	477546	24.5	20.9
160700	24.2	18.6	536624	24.3	21.6	99108	24.3	18.3	421115	24.4	19.3	291444	24.5	20.8	257081	24.5	21.1
448632	24.2	19.2	365410	24.3	19.5												



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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
253570	24.5	19.6	255178	24.6	20.2	16567	24.7	18.0	221	24.7	12.0	167710	24.8	19.3	115925	24.9	20.0
168861	24.5	18.8	345839	24.6	21.4	415669	24.7	19.9	508478	24.7	21.2	317369	24.8	21.2	421831	24.9	21.3
80099	24.5	19.5	208846	24.6	19.6	163216	24.7	19.4	449770	24.7	20.8	156684	24.8	17.5	2388	24.9	16.9
42077	24.5	18.5	333420	24.6	20.6	321783	24.7	19.7	230003	24.7	19.2	320429	24.8	19.4	254410	24.9	19.4
526828	24.5	21.4	215398	24.6	20.3	282901	24.7	20.7	384908	24.7	20.4	58371	24.8	19.5	64014	24.9	18.7
177941	24.5	20.5	280935	24.6	21.4	188668	24.7	20.1	217974	24.7	18.4	436846	24.8	19.9	322993	24.9	19.7
87194	24.5	18.9	299654	24.6	21.5	246550	24.7	19.0	407959	24.7	21.3	498296	24.8	19.7	72563	24.9	18.8
307993	24.5	20.3	62479	24.6	17.7	196625	24.7	24.0	65157	24.7	19.5	178843	24.8	20.4	475962	24.9	21.4
537154	24.5	21.1	312487	24.6	20.0	316336	24.7	20.2	300649	24.7	20.7	213337	24.8	19.7	261079	24.9	19.2
170156	24.5	18.4	309565	24.6	19.8	288666	24.7	19.4	196345	24.7	18.9	245741	24.8	19.9	225500	24.9	18.6
472074	24.5	20.2	325005	24.6	20.5	42442	24.7	19.1	516071	24.7	20.6	116112	24.8	17.8	164552	24.9	20.6
43489	24.5	18.2	152801	24.6	19.1	313647	24.7	21.0	367469	24.8	21.1	91013	24.8	17.6	278510	24.9	20.7
516097	24.5	20.4	318201	24.6	20.7	441766	24.7	21.1	498765	24.8	20.3	531465	24.8	20.1	423434	24.9	20.9
404004	24.5	20.8	501020	24.6	19.7	293563	24.7	20.0	294303	24.8	19.4	435570	24.8	19.3	468070	24.9	21.4
268483	24.5	20.0	536964	24.6	21.6	48930	24.7	18.5	472072	24.8	19.9	523563	24.8	20.3	471314	24.9	21.2
161985	24.5	19.3	428130	24.6	19.7	345871	24.7	20.6	537252	24.8	21.1	169518	24.8	19.6	223433	24.9	19.9
445851	24.5	20.0	402181	24.6	20.1	516938	24.7	20.8	174841	24.8	19.7	97376	24.8	19.5	501666	24.9	20.6
250400	24.5	18.5	143962	24.6	18.6	440592	24.7	20.6	448084	24.8	21.4	14195	24.8	17.5	504910	24.9	20.3
60056	24.5	19.7	392536	24.6	20.9	465615	24.7	20.9	207390	24.8	18.5	290368	24.8	20.9	457111	24.9	21.9
404578	24.5	21.4	101490	24.6	17.8	96280	24.7	19.7	359365	24.8	20.8	355291	24.8	20.5	83001	24.9	18.2
87216	24.5	17.5	537177	24.6	21.1	264309	24.7	20.0	257682	24.8	19.7	41975	24.8	18.6	380259	24.9	19.4
455851	24.5	19.0	321939	24.6	19.8	45164	24.7	17.5	410185	24.8	19.1	371550	24.8	21.3	212097	24.9	20.5
386407	24.5	20.2	521035	24.6	19.7	369940	24.7	20.2	74021	24.8	19.8	516584	24.8	21.7	537202	24.9	20.8
241013	24.6	20.7	516009	24.6	21.2	302217	24.7	19.2	139222	24.8	19.2	153101	24.8	19.7	149180	24.9	19.9
33238	24.6	17.9	192621	24.6	18.8	344171	24.7	19.2	331491	24.8	19.7	301025	24.8	19.7	404582	24.9	21.1
779	24.6	11.4	124957	24.6	19.1	401233	24.7	20.4	20910	24.8	17.9	472878	24.8	20.7	166385	24.9	19.0
509467	24.6	20.7	514253	24.6	20.2	391271	24.7	20.8	516945	24.8	21.9	254197	24.8	19.8	267739	24.9	20.7
396873	24.6	19.4	448619	24.6	18.7	189149	24.7	19.6	34243	24.8	17.3	5504	24.8	16.2	39297	24.9	18.5
243322	24.6	19.9	104642	24.6	19.4	523231	24.7	20.4	291997	24.8	18.9	333600	24.8	20.9	259792	24.9	19.1
374786	24.6	19.7	465386	24.6	21.2	416537	24.7	20.0	22626	24.8	18.9	70796	24.8	18.6	407647	24.9	19.6
356440	24.6	20.5	360875	24.6	19.9	480724	24.7	20.0	481522	24.8	21.0	151348	24.8	21.0	241316	24.9	19.9
418918	24.6	20.3	400510	24.6	20.0	361962	24.7	20.9	420798	24.8	21.3	510055	24.8	21.8	119533	24.9	19.2
398618	24.6	18.0	204091	24.6	19.2	181055	24.7	19.3	119839	24.8	19.8	362548	24.8	19.9	316158	24.9	18.8
163189	24.6	19.3	337141	24.6	19.0	294341	24.7	20.0	504922	24.8	20.4	250851	24.8	20.0	353719	24.9	20.4
123061	24.6	18.4	441981	24.6	19.8	15176	24.7	18.0	472525	24.8	20.8	179787	24.8	18.2	317769	24.9	20.1
263593	24.6	20.8	482216	24.6	20.5	505136	24.7	20.9	516497	24.8	20.7	149119	24.8	20.1	258725	24.9	21.3
19278	24.6	17.0	9240	24.6	16.0	52343	24.7	16.9	512963	24.8	20.4	521215	24.8	20.5	71016	24.9	18.3
361448	24.6	20.6	512471	24.6	20.3	497681	24.7	20.8	537304	24.8	21.4	21154	24.8	17.1	146917	24.9	19.4
339214	24.6	20.2	444400	24.6	20.8	240639	24.7	20.6	450247	24.8	21.6	224737	24.8	19.5	173247	24.9	18.7
464758	24.6	19.9	195299	24.6	20.5	371592	24.7	20.0	301450	24.8	20.7	79174	24.8	19.4	477828	24.9	20.9
6659	24.6	15.5	127753	24.6	19.5	298229	24.7	20.4	275560	24.8	20.4	8426	24.8	16.9	58305	24.9	18.6
13305	24.6	18.2	497974	24.6	20.1	290827	24.7	20.8	477048	24.8	21.2	132670	24.8	19.0	11984	24.9	18.4
410693	24.6	21.1	513437	24.6	19.6	40696	24.7	18.0	428689	24.8	21.2	102494	24.8	17.7	50536	24.9	17.8
390160	24.6	20.0	387724	24.6	19.1	85729	24.7	18.7	380595	24.8	21.0	467262	24.8	21.2	63227	24.9	18.9
64972	24.6	19.2	59148	24.6	17.2	447732	24.7	21.6	91677	24.8	18.4	463501	24.8	20.8	293379	24.9	20.5
23150	24.6	17.7	454394	24.6	21.2	64935	24.7	18.8	361510	24.8	21.4	471023	24.8	20.6	404397	24.9	20.9
519453	24.6	21.3	506186	24.6	21.1	152742	24.7	17.6	253373	24.8	20.3	419641	24.8	20.8	104935	24.9	20.3
54710	24.6	19.4	364564	24.6	21.6	133598	24.7	18.5	328153	24.8	20.8	50572	24.8	17.4	440963	24.9	19.5
295261	24.6	20.3	525816	24.6	22.1	448661	24.7	19.8	448658	24.8	19.8	446165	24.8	21.3	464763	24.9	20.4
92390	24.6	18.9	162512	24.6	19.6	168885	24.7	18.9	356230	24.8	21.2	211773	24.8	19.8	136658	24.9	19.4
255591	24.6	18.6	384041	24.6	20.3	193616	24.7	19.5	517669	24.8	20.5	253484	24.8	18.6	402195	24.9	19.8
519530	24.6	21.4	514069	24.6	21.6	479969	24.7	21.0	318151	24.8	20.1	356661	24.8	20.0	16249	24.9	18.2
70970	24.6	17.3	144300	24.6	19.8	530982	24.7	20.6	516137	24.8	20.1	149036	24.8	19.9	453690	24.9	20.2
153388	24.6	19.5	77420	24.6	19.2	128785	24.7	18.6	81600	24.8	18.9	276481	24.8	20.7	285852	24.9	19.5
155171	24.6	19.9	157042	24.6	19.2	141912	24.7	19.4	231280	24.8	19.6	51221	24.8	18.5	236657	24.9	21.1
150282	24.6	19.1	114769	24.6	19.8	377644	24.7	20.2	153227	24.8	19.3	221342	24.8	19.9	368278	24.9	20.0
438152	24.6	19.3	416067	24.7	20.6	377310	24.7	20.1	164409	24.8	19.4	320217	24.8	20.3	447047	24.9	20.7
317743	24.6	20.2	506184	24.7	21.6	499560	24.7	19.7	236526	24.8	19.7	267731	24.8	20.8	94800	24.9	19.4
371520	24.6	19.1	316138	24.7	20.6	303229	24.7	19.5	321103	24.8	21.2	134219	24.8	18.9	399889	24.9	20.3
385334	24.6	20.5	250747	24.7	20.3	252747	24.7	19.8	93146	24.8	18.4	289746	24.8	20.2	7907	24.9	17.9
392224	24.6	20.1	224906	24.7	20.8	332331	24.7	18.8	4206	24.8	16.3	537253	24.8	21.5	51532	24.9	18.7
358816	24.6	20.1	460146	24.7	20.2	49506	24.7	18.4	387488	24.8	20.0	365226	24.8	21.2	3492	24.9	16.2
518865	24.6	21.0	254114	24.7	20.1	99744	24.7	19.1	128206	24.8	18.8	253034	24.8	18.9	121633	24.9	18.4
478893	24.6	20.2	296365	24.7	20.4	462169	24.7	21.3	483291	24.8	21.0	260489	24.9	19.9	114181	24.9	19.0
205725	24.6	18.4	5619	24.7	16.7	33309	24.7	18.1	89785	24.8	19.6	203948	24.9	17.6	137403	24.9	18.1
249791	24.6	18.9	446087	24.7	21.2	478969	24.7	20.3	531110	24.8	21.5	379941	24.9	20.2	182950	24.9	19.5
72598	24.6	18.7	362436	24.7	20.1	253788	24.7	20.0	315935	24.8	20.9	337126	24.9	20.8	218299	24.9	19.4
181803	24.6	18.7	79165	24.7	18.6	86683	24.7	18.7	399869	24.8	20.2	496565	24.9	18.2	64333	24.9	19.1
114737	24.6	19.4	145961	24.7	20.1	443070	24.7	2									

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
514681	24.9	20.6	185033	25.0	19.4	88242	25.1	18.7	451763	25.1	21.0	445444	25.2	19.9	141771	25.3	20.9
416405	24.9	18.8	523116	25.0	20.8	261816	25.1	19.6	476214	25.1	20.3	122765	25.2	18.5	536914	25.3	21.2
178715	24.9	19.4	426283	25.0	20.7	410717	25.1	19.6	157046	25.1	19.0	457551	25.2	20.4	480225	25.3	20.8
218390	24.9	19.0	314071	25.0	19.5	336416	25.1	19.8	304714	25.1	20.1	293294	25.2	20.7	8241	25.3	18.2
99457	24.9	19.7	386823	25.0	20.6	25267	25.1	18.0	356778	25.1	20.8	343852	25.2	21.3	473313	25.3	20.5
253725	24.9	19.5	540439	25.0	20.9	398106	25.1	19.8	186322	25.1	19.8	148703	25.2	20.1	257038	25.3	19.8
506989	24.9	19.5	89162	25.0	18.5	169835	25.1	19.9	439521	25.1	20.2	250330	25.2	18.6	119837	25.3	18.5
499616	24.9	19.2	213080	25.0	19.9	105556	25.1	19.2	412961	25.1	20.2	402384	25.2	19.8	68230	25.3	19.2
530003	24.9	19.7	507164	25.0	20.6	92204	25.1	19.7	152757	25.2	20.3	371418	25.2	19.9	316493	25.3	20.4
432757	24.9	20.7	408858	25.0	20.1	103989	25.1	18.7	49753	25.2	18.7	258512	25.2	19.5	195205	25.3	19.6
294470	24.9	20.0	307698	25.0	19.2	139711	25.1	18.7	95244	25.2	19.3	482805	25.2	18.9	327777	25.3	20.7
515980	24.9	21.2	511955	25.0	20.4	271820	25.1	19.4	425883	25.2	21.1	35393	25.2	17.2	288941	25.3	19.4
181830	24.9	19.6	521903	25.0	20.3	256792	25.1	20.5	271714	25.2	20.6	518834	25.2	20.3	39849	25.3	17.8
487087	24.9	20.7	151744	25.0	20.1	190119	25.1	23.4	337203	25.2	18.6	316164	25.2	20.9	380636	25.3	18.7
320538	24.9	19.4	209227	25.0	19.7	282276	25.1	19.0	500075	25.2	20.4	81159	25.2	18.3	429711	25.3	20.8
480512	24.9	20.7	362898	25.0	19.8	129813	25.1	19.9	342300	25.2	20.6	500902	25.2	20.9	500797	25.3	22.0
353900	24.9	19.8	244072	25.0	19.4	467726	25.1	22.0	218947	25.2	20.6	397440	25.2	21.1	342341	25.3	19.8
425937	24.9	19.5	272768	25.0	18.5	320416	25.1	19.2	134686	25.2	18.6	115022	25.2	18.2	201757	25.3	18.7
248600	24.9	20.6	218933	25.0	20.7	508136	25.1	21.1	215345	25.2	18.2	341495	25.2	20.1	11604	25.3	17.4
368198	24.9	19.6	264328	25.0	20.5	39662	25.1	18.3	60829	25.2	19.2	75547	25.2	18.3	414073	25.3	20.3
14755	24.9	18.5	164627	25.0	18.9	529674	25.1	21.6	424572	25.2	20.5	132979	25.2	19.7	126353	25.3	19.4
365316	24.9	21.0	290715	25.0	19.9	525583	25.1	21.8	15820	25.2	21.6	53092	25.2	17.2	136801	25.3	20.4
508780	24.9	21.0	134669	25.0	18.2	380819	25.1	19.0	120866	25.2	18.9	22034	25.2	17.4	364525	25.3	21.5
305565	24.9	19.8	169492	25.0	20.1	59981	25.1	17.7	305548	25.2	20.0	117250	25.2	18.9	491032	25.3	20.3
260658	24.9	20.9	278325	25.0	19.8	33136	25.1	18.5	204859	25.2	19.4	70798	25.2	18.8	195367	25.3	19.2
107808	24.9	18.6	214167	25.0	20.3	395696	25.1	19.8	325014	25.2	19.9	86894	25.2	17.3	400718	25.3	20.4
388881	24.9	19.2	315913	25.0	20.9	383223	25.1	19.1	98403	25.2	17.3	528145	25.2	21.4	276528	25.3	20.7
46611	24.9	17.6	226812	25.0	19.7	345943	25.1	20.5	235803	25.2	19.4	272610	25.2	19.0	443425	25.3	21.2
526438	24.9	21.2	516329	25.0	20.5	532007	25.1	21.5	397146	25.2	19.0	128917	25.2	19.4	123249	25.3	19.1
67553	24.9	19.9	531746	25.0	20.0	340316	25.1	20.3	128797	25.2	19.8	446235	25.2	20.4	101586	25.3	18.6
445448	24.9	19.7	530030	25.0	20.6	280046	25.1	19.6	273924	25.2	19.9	468056	25.2	22.0	99760	25.3	18.4
261381	24.9	20.4	177436	25.0	19.6	93291	25.1	19.4	8560	25.2	17.2	136134	25.2	19.4	525362	25.3	21.1
400927	24.9	20.0	57841	25.0	18.8	319872	25.1	20.7	362837	25.2	20.1	93086	25.2	18.1	930638	25.3	21.4
432825	24.9	21.5	476954	25.0	20.0	188426	25.1	18.5	223337	25.2	19.6	121372	25.2	20.0	446512	25.3	20.4
142105	24.9	19.4	512361	25.0	20.1	18224	25.1	18.9	410168	25.2	20.1	483359	25.2	20.4	288777	25.3	19.4
520409	24.9	20.4	52863	25.0	18.0	222518	25.1	19.9	364530	25.2	21.7	272915	25.2	20.5	249090	25.3	19.8
60648	24.9	18.8	127811	25.0	20.5	262496	25.1	19.1	433808	25.2	20.8	483918	25.2	21.5	117338	25.3	19.1
409339	24.9	20.2	26203	25.0	17.5	257315	25.1	19.5	403221	25.2	20.5	16885	25.2	17.0	288858	25.3	19.5
418239	24.9	20.4	429497	25.0	20.3	228111	25.1	20.3	520414	25.2	21.0	474119	25.2	20.3	480538	25.3	20.8
473081	24.9	21.0	67842	25.0	18.9	373186	25.1	20.9	438311	25.2	20.0	219285	25.3	19.8	479823	25.3	20.4
212977	24.9	20.2	349986	25.0	21.0	230320	25.1	18.8	42671	25.2	16.9	388653	25.3	20.9	392220	25.3	20.4
292047	24.9	20.9	237514	25.0	18.1	478957	25.1	20.8	455119	25.2	19.8	474103	25.3	21.3	183687	25.3	19.7
181927	24.9	19.7	188199	25.0	20.0	233433	25.1	20.1	178211	25.2	19.6	444396	25.3	20.7	205651	25.3	18.7
2837	24.9	15.5	325970	25.0	19.6	472391	25.1	21.2	91761	25.2	18.9	403747	25.3	20.2	451632	25.3	20.2
91625	24.9	19.4	398946	25.0	21.0	338044	25.1	20.5	536958	25.2	20.8	401256	25.3	20.5	296078	25.3	20.0
100113	24.9	19.7	232488	25.0	18.9	404287	25.1	21.9	365926	25.2	19.7	161813	25.3	19.7	12526	25.3	19.2
62382	24.9	18.4	124111	25.0	19.8	264398	25.1	19.7	136459	25.2	19.4	284258	25.3	21.1	287360	25.3	19.6
434342	24.9	20.0	75223	25.0	16.4	25448	25.1	18.8	98708	25.2	18.6	180689	25.3	19.8	27076	25.3	16.5
433661	24.9	21.0	301984	25.0	19.7	468865	25.1	20.4	315938	25.2	20.2	328138	25.3	19.6	91204	25.3	17.9
331365	24.9	20.2	347855	25.0	18.7	16820	25.1	17.3	96370	25.2	18.8	97171	25.3	18.8	261502	25.3	20.6
111695	24.9	19.4	445479	25.0	20.5	530472	25.1	21.9	506419	25.2	17.6	217650	25.3	19.0	73776	25.3	19.3
26341	24.9	17.8	422924	25.0	19.4	336337	25.1	20.8	35756	25.2	17.6	478482	25.3	20.7	97624	25.3	18.6
358166	24.9	21.1	222627	25.0	19.4	287301	25.1	19.4	406272	25.2	21.1	96536	25.3	20.5	397141	25.3	20.3
254546	24.9	19.4	377678	25.1	20.4	184954	25.1	19.3	100891	25.2	19.8	20363	25.3	18.5	348382	25.3	20.7
255613	24.9	19.7	334385	25.1	20.3	420453	25.1	20.0	166915	25.2	18.7	216530	25.3	19.7	509485	25.3	20.9
520478	24.9	20.9	31257	25.1	17.9	143248	25.1	18.3	103663	25.2	18.8	144614	25.3	19.5	450480	25.3	21.5
426652	24.9	20.6	444080	25.1	20.6	424633	25.1	21.0	168206	25.2	20.2	202482	25.3	19.3	189530	25.3	19.3
61780	24.9	18.2	74973	25.1	18.4	214250	25.1	20.1	328496	25.2	19.7	319117	25.3	17.8	358512	25.3	19.9
324922	24.9	20.0	154231	25.1	20.5	404789	25.1	21.6	355816	25.2	20.5	271867	25.3	20.5	501396	25.3	19.6
523310	24.9	19.7	14770	25.1	18.0	47559	25.1	18.4	254978	25.2	19.7	222636	25.3	19.3	287725	25.3	18.6
315949	24.9	19.9	172987	25.1	19.4	163332	25.1	20.7	187825	25.2	19.8	153088	25.3	18.6	57282	25.3	18.4
114567	24.9	18.7	370040	25.1	18.7	50324	25.1	18.0	513381	25.2	20.9	145409	25.3	19.7	374042	25.3	20.7
99032	24.9	19.8	170219	25.1	18.7	149537	25.1	19.9	13367	25.2	17.4	35802	25.3	18.0	135606	25.3	20.2
350881	24.9	20.8	296161	25.1	20.7	65997	25.1	18.3	346442	25.2	19.9	509782	25.3	20.4	292893	25.3	19.1
280343	24.9	19.6	296065	25.1	20.5	431134	25.1	20.5	161192	25.2	19.1	126506	25.3	18.9	162062	25.3	20.2
386409	24.9	19.0	93131	25.1	19.4	247442	25.1	19.7	50995	25.2	16.5	258854	25.3	20.3	125430	25.3	19.3
288707	24.9	20.8	71032	25.1	18.8	112344	25.1	19.0	243066	25.2	20.8	374017	25.3	19.8	471300	25.3	20.5
288462	24.9	21.0	304439	25.1	20.3	510310	25.1	20.3	449658	25.2	20.6	357315	25.3	20.9	273824	25.3	19.4
208325	24.9	19.7	199145	25.1	21.8	447712</											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
327233	25.4	21.3	402381	25.4	20.9	386302	25.5	19.0	164847	25.6	19.0	428688	25.6	20.6	63395	25.7	18.1
301379	25.4	20.3	228118	25.4	19.6	332570	25.5	20.2	123121	25.6	19.9	477014	25.6	20.4	165308	25.7	18.4
131649	25.4	19.1	275171	25.4	20.2	347846	25.5	20.4	162104	25.6	19.5	494760	25.6	20.1	187625	25.7	20.1
169862	25.4	18.5	361125	25.4	20.6	307997	25.5	18.7	101078	25.6	19.5	221450	25.6	20.3	253596	25.7	18.4
470618	25.4	19.6	254353	25.4	19.8	40134	25.5	18.4	228163	25.6	20.1	70195	25.6	17.3	196285	25.7	20.8
69947	25.4	18.8	177804	25.4	20.0	262202	25.5	19.6	254593	25.6	21.3	328228	25.6	21.1	64040	25.7	19.0
168075	25.4	19.5	444987	25.4	20.7	40746	25.5	18.2	99679	25.6	18.9	317460	25.6	19.9	533804	25.7	21.4
382471	25.4	18.6	280953	25.4	19.5	316174	25.5	19.8	365123	25.6	21.2	169866	25.6	19.6	62367	25.7	18.8
355132	25.4	20.3	308024	25.4	18.8	6258	25.5	16.2	7507	25.6	17.4	13842	25.6	16.2	505470	25.7	21.3
182062	25.4	20.2	90910	25.4	19.9	523081	25.5	20.0	285837	25.6	20.9	268016	25.6	20.2	304308	25.7	20.4
228015	25.4	20.3	214008	25.4	18.9	536209	25.5	21.1	400496	25.6	20.7	49122	25.6	17.5	27114	25.7	18.3
22082	25.4	16.6	51552	25.4	18.6	75003	25.5	18.6	185946	25.6	18.0	111367	25.6	19.0	207285	25.7	19.2
163406	25.4	17.8	320641	25.4	20.6	212429	25.5	20.2	516509	25.6	21.7	69504	25.6	18.9	5355	25.7	16.4
492289	25.4	20.0	234864	25.4	21.4	445249	25.5	21.4	168817	25.6	19.3	132628	25.6	19.0	389665	25.7	19.8
170680	25.4	19.0	91968	25.4	17.7	109562	25.5	18.4	509456	25.6	22.9	481188	25.6	21.0	356657	25.7	19.7
430624	25.4	21.4	368365	25.4	20.9	391877	25.5	20.7	318240	25.6	20.4	328928	25.6	19.7	477093	25.7	19.9
307040	25.4	18.2	399787	25.4	19.6	478759	25.5	20.2	195635	25.6	19.5	98636	25.7	18.5	6136	25.7	15.9
3425	25.4	14.9	21229	25.4	19.1	319404	25.5	19.5	58365	25.6	18.8	178807	25.7	20.4	192661	25.7	19.3
518669	25.4	21.0	87666	25.4	19.3	77059	25.5	19.0	438864	25.6	20.7	291830	25.7	20.0	515998	25.7	21.2
312606	25.4	20.1	141960	25.4	19.6	366221	25.5	19.8	508075	25.6	19.8	157027	25.7	19.9	424486	25.7	21.2
447127	25.4	19.5	399226	25.4	20.4	15902	25.5	17.2	508451	25.6	19.7	126107	25.7	18.7	439524	25.7	21.3
60731	25.4	18.2	421481	25.4	21.3	71808	25.5	18.2	291507	25.6	20.4	136305	25.7	19.1	187061	25.7	20.3
511217	25.4	18.7	445405	25.4	20.1	19144	25.5	15.1	85286	25.6	18.0	332719	25.7	20.4	262330	25.7	20.7
176158	25.4	19.7	58734	25.4	18.0	363382	25.5	20.0	144678	25.6	17.9	414273	25.7	20.1	503631	25.7	21.0
53546	25.4	18.3	176082	25.4	18.0	136243	25.5	19.0	402822	25.6	21.7	226436	25.7	20.7	244470	25.7	19.1
485273	25.4	20.7	229754	25.4	19.7	353716	25.5	20.6	107705	25.6	19.7	292222	25.7	20.1	87725	25.7	17.1
473028	25.4	19.4	118382	25.4	18.3	396158	25.5	20.8	283723	25.6	18.8	206587	25.7	19.1	420353	25.7	20.7
163862	25.4	19.7	254141	25.4	18.9	465591	25.5	20.1	293206	25.6	19.8	290761	25.7	20.8	126505	25.7	19.2
517936	25.4	19.8	426163	25.4	20.9	234288	25.5	18.7	141857	25.6	19.0	332504	25.7	21.2	48520	25.7	18.6
326029	25.4	20.8	22897	25.4	17.0	33317	25.5	17.6	254555	25.6	20.2	461192	25.7	19.8	418086	25.7	19.5
111536	25.4	19.2	496618	25.4	21.2	95475	25.5	19.4	2575	25.6	16.0	465074	25.7	20.3	282947	25.7	19.5
461672	25.4	21.7	91829	25.5	18.6	317742	25.5	19.9	119545	25.6	18.2	476217	25.7	20.4	255617	25.7	19.3
4214	25.4	15.3	297544	25.5	20.1	103086	25.5	17.4	494277	25.6	20.0	96125	25.7	19.7	136440	25.7	19.7
133483	25.4	19.5	126736	25.5	19.7	435668	25.5	20.9	166391	25.6	19.2	400713	25.7	20.9	211029	25.7	20.5
43214	25.4	18.7	116446	25.5	19.7	46037	25.5	19.0	140803	25.6	18.4	142457	25.7	17.8	107293	25.7	17.2
462827	25.4	20.2	284253	25.5	20.1	304425	25.5	19.9	419588	25.6	19.9	410701	25.7	19.8	416809	25.7	20.9
512733	25.4	20.5	147722	25.5	20.3	342608	25.5	19.3	521581	25.6	21.3	113510	25.7	18.5	230318	25.7	19.9
198034	25.4	20.5	515012	25.5	21.0	18501	25.5	17.6	218223	25.6	18.7	515069	25.7	20.2	317989	25.7	20.6
262171	25.4	20.2	255775	25.5	20.7	391295	25.5	20.2	146476	25.6	20.6	439004	25.7	20.3	180895	25.7	20.5
211066	25.4	20.0	68838	25.5	18.4	106908	25.5	19.7	8908	25.6	16.7	129341	25.7	18.7	200604	25.7	18.5
483299	25.4	20.6	129185	25.5	20.0	88370	25.5	19.0	174585	25.6	18.8	144923	25.7	19.5	267319	25.7	19.8
23595	25.4	18.4	335039	25.5	21.5	411640	25.5	20.5	256658	25.6	19.0	415292	25.7	20.3	533682	25.7	20.3
243775	25.4	20.5	477560	25.5	20.5	92609	25.5	17.1	11732	25.6	17.0	366488	25.7	21.5	312054	25.7	20.5
22500	25.4	18.3	380258	25.5	19.5	472153	25.5	19.7	480529	25.6	20.5	38811	25.7	18.3	367499	25.7	21.1
470364	25.4	18.9	430393	25.5	20.4	498525	25.5	21.0	542684	25.6	20.9	483847	25.7	19.2	381884	25.7	17.6
487966	25.4	20.2	399040	25.5	20.8	50531	25.5	18.6	507151	25.6	20.4	33405	25.7	17.5	59958	25.7	18.2
210221	25.4	18.9	433790	25.5	21.1	184620	25.5	19.3	152692	25.6	20.2	454246	25.7	21.2	139125	25.7	19.4
115182	25.4	19.6	246761	25.5	20.1	392216	25.5	20.2	296990	25.6	20.6	504760	25.7	19.9	41002	25.7	18.0
327775	25.4	20.0	65103	25.5	18.5	478018	25.5	20.8	481205	25.6	20.5	265313	25.7	18.8	185596	25.7	20.7
415303	25.4	20.4	427702	25.5	21.1	220653	25.5	19.5	402812	25.6	21.7	101857	25.7	20.1	475755	25.8	19.5
512422	25.4	20.0	531053	25.5	21.2	151502	25.5	20.0	312459	25.6	19.6	254928	25.7	20.6	62473	25.8	17.9
100029	25.4	18.6	119656	25.5	18.1	300844	25.5	19.8	413339	25.6	19.8	534573	25.7	20.1	273914	25.8	20.7
418190	25.4	19.8	129871	25.5	18.8	304424	25.5	19.4	134953	25.6	18.3	72599	25.7	19.4	97581	25.8	19.5
476338	25.4	20.4	237051	25.5	19.2	65031	25.5	19.6	325158	25.6	21.3	313300	25.7	20.6	151487	25.8	20.3
440285	25.4	19.6	24160	25.5	19.0	444700	25.5	20.5	258593	25.6	20.3	161933	25.7	20.5	200485	25.8	19.0
522817	25.4	21.3	35740	25.5	18.9	121398	25.5	19.8	204821	25.6	20.3	284262	25.7	20.5	451191	25.8	21.3
92778	25.4	18.1	410265	25.5	20.3	334372	25.5	19.6	454940	25.6	21.2	173248	25.7	19.3	97349	25.8	18.2
425669	25.4	19.4	35243	25.5	19.0	40707	25.5	17.2	115077	25.6	19.0	11107	25.7	16.5	13184	25.8	17.9
136918	25.4	19.6	442098	25.5	20.6	398839	25.5	20.1	476504	25.6	21.0	60936	25.7	17.5	342579	25.8	20.4
195024	25.4	19.8	105249	25.5	18.3	469594	25.5	21.1	183804	25.6	18.8	525300	25.7	20.2	472556	25.8	20.5
443151	25.4	19.9	527896	25.5	21.6	535132	25.5	20.6	418017	25.6	20.2	427968	25.7	20.8	513703	25.8	21.2
539384	25.4	20.4	449032	25.5	21.0	220671	25.5	18.9	269116	25.6	18.9	347852	25.7	20.5	247751	25.8	19.1
540311	25.4	20.1	336858	25.5	20.4	509733	25.5	20.7	102091	25.6	19.4	508064	25.7	20.6	245570	25.8	19.9
316816	25.4	20.1	479773	25.5	20.6	520407	25.5	21.2	150747	25.6	19.3	407889	25.7	20.6	378204	25.8	20.2
82829	25.4	19.6	218433	25.5	19.7	445347	25.5	20.6	89952	25.6	19.1	220958	25.7	21.1	1911	25.8	14.8
412706	25.4	19.8	203353	25.5	19.0	131682	25.5	19.6	284273	25.6	20.3	469633	25.7	21.3	367478	25.8	21.3
51401	25.4	19.3	476103	25.5	19.8	530785	25.6	19.9	107610	25.6	19.7	426344	25.7	20.7	44763	25.8	17.9
361929	25.4	20.5	100733	25.5	19.3	275496	25.6	20.5	47632	25.6	18.6	141021	25.7	19.1	81177	25.8	18.6
448382	25.4	20.8	337158	25.5	20.0	294062	25.6										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
341803	25.8	19.4	407108	25.9	20.6	418820	25.9	20.5	440309	26.0	20.6	217835	26.1	20.0	503715	26.2	20.8
86266	25.8	20.2	324828	25.9	20.1	324181	25.9	21.1	530677	26.0	20.8	218430	26.1	19.7	363460	26.2	19.6
473861	25.8	21.2	17049	25.9	17.7	388639	25.9	19.3	127229	26.0	19.2	241490	26.1	20.4	358809	26.2	19.7
437238	25.8	20.6	394484	25.9	19.4	204545	25.9	20.0	479184	26.0	20.6	247964	26.1	18.3	399388	26.2	20.5
349850	25.8	20.2	383979	25.9	20.8	91610	25.9	18.5	15738	26.0	17.4	165163	26.1	19.8	63207	26.2	18.3
223907	25.8	19.5	358930	25.9	20.7	496633	25.9	21.1	233038	26.0	20.1	507230	26.1	21.1	395597	26.2	21.0
112850	25.8	19.4	182917	25.9	20.1	362584	25.9	20.1	405132	26.0	22.1	134348	26.1	18.8	389522	26.2	21.9
321898	25.8	20.3	279063	25.9	19.5	285501	25.9	19.7	204187	26.0	19.4	290635	26.1	20.2	260194	26.2	19.3
506126	25.8	21.1	282774	25.9	19.3	41472	25.9	17.2	160611	26.0	20.0	212355	26.1	19.6	308714	26.2	20.0
244498	25.8	19.0	95934	25.9	20.3	154614	25.9	20.1	34290	26.0	17.2	352392	26.1	20.2	285828	26.2	19.8
170053	25.8	19.2	412506	25.9	20.4	519746	25.9	20.7	440496	26.0	20.2	513865	26.1	21.1	326135	26.2	19.7
506231	25.8	20.0	73097	25.9	19.1	7250	25.9	16.6	37958	26.0	18.0	104021	26.1	18.6	261771	26.2	20.0
257103	25.8	19.7	324848	25.9	20.3	149083	25.9	19.2	424175	26.0	21.5	78471	26.1	18.6	207447	26.2	20.3
508446	25.8	21.2	458151	25.9	21.3	132136	25.9	18.3	313595	26.0	18.7	296902	26.1	20.4	43643	26.2	19.1
432998	25.8	20.3	292778	25.9	19.7	10476	25.9	18.0	357924	26.0	20.5	403685	26.1	20.0	211093	26.2	20.0
445173	25.8	22.1	361533	25.9	19.4	446525	25.9	19.5	369689	26.0	21.1	469910	26.1	20.0	352206	26.2	20.0
233790	25.8	19.9	260076	25.9	20.5	540749	25.9	20.0	358797	26.0	20.7	504830	26.1	19.3	407700	26.2	20.4
488014	25.8	18.7	363962	25.9	20.3	537726	25.9	21.2	358838	26.0	20.5	207411	26.1	19.0	189812	26.2	18.5
523905	25.8	20.3	361978	25.9	20.9	12561	25.9	17.5	219503	26.0	19.8	250311	26.1	18.9	488662	26.2	20.4
278322	25.8	20.4	40112	25.9	18.8	412005	25.9	20.8	325048	26.0	20.8	19290	26.1	16.7	373950	26.2	18.7
388747	25.8	20.5	211857	25.9	19.7	543733	25.9	22.1	479823	26.0	20.3	208698	26.1	19.8	105580	26.2	19.1
480633	25.8	20.6	273813	25.9	21.4	174277	25.9	20.8	144757	26.1	18.8	37230	26.1	18.5	86497	26.2	20.2
507505	25.8	20.3	328921	25.9	19.1	9440	25.9	18.0	370301	26.1	19.7	98838	26.1	19.2	240797	26.2	20.7
97981	25.8	18.9	481730	25.9	21.0	249032	25.9	19.3	537595	26.1	21.4	36760	26.1	18.1	474227	26.2	19.4
483966	25.8	20.5	401071	25.9	20.9	22585	25.9	18.2	251905	26.1	19.6	261827	26.1	20.9	252112	26.2	19.0
22909	25.8	18.2	264064	25.9	20.8	246359	25.9	20.0	228565	26.1	19.1	139022	26.1	18.6	240854	26.2	19.9
260543	25.8	18.9	375710	25.9	20.7	232207	25.9	20.1	447372	26.1	20.6	295386	26.1	19.5	11571	26.2	17.0
451377	25.8	19.6	257674	25.9	19.6	13787	25.9	17.0	68611	26.1	19.1	238043	26.1	19.1	14743	26.2	17.4
226685	25.8	20.9	310640	25.9	20.4	24534	25.9	18.2	366038	26.1	19.7	154968	26.1	19.8	69980	26.2	17.2
347949	25.8	20.0	265365	25.9	16.8	246039	25.9	19.8	193845	26.1	19.4	400682	26.1	20.7	236485	26.2	20.6
205012	25.8	19.9	359939	25.9	20.0	440399	25.9	22.0	71592	26.1	17.7	255290	26.1	18.7	34141	26.2	18.7
516023	25.8	20.0	364609	25.9	21.2	349286	25.9	20.0	175640	26.1	18.6	42567	26.1	16.5	317849	26.2	19.3
332506	25.8	20.7	503616	25.9	20.9	238444	25.9	20.3	120341	26.1	19.6	478817	26.1	21.2	241407	26.2	18.9
115778	25.8	19.1	61346	25.9	17.3	207685	25.9	19.6	178881	26.1	20.1	63287	26.1	18.6	79474	26.2	19.0
331145	25.8	19.0	412781	25.9	20.7	296823	25.9	18.7	448644	26.1	20.6	476175	26.1	19.8	504840	26.2	19.8
68322	25.8	16.9	498316	25.9	19.7	301619	25.9	19.9	120796	26.1	18.1	265104	26.1	19.5	252903	26.2	20.0
37021	25.8	18.1	251375	25.9	20.0	426015	25.9	20.9	476098	26.1	18.5	360684	26.1	20.0	452074	26.2	21.2
2892	25.8	14.0	407099	25.9	20.8	278290	25.9	20.1	128240	26.1	19.4	66074	26.1	19.4	515874	26.2	20.2
451643	25.8	19.9	449462	25.9	20.8	462791	25.9	21.7	529616	26.1	21.3	443787	26.1	19.6	183150	26.2	19.3
420878	25.8	20.4	253197	25.9	18.9	537635	25.9	21.2	99411	26.1	19.2	530668	26.1	20.8	218959	26.2	19.4
16363	25.8	16.0	125792	25.9	19.4	393507	25.9	20.8	176128	26.1	20.4	376286	26.1	19.2	483514	26.2	19.7
97049	25.8	18.4	444345	25.9	20.7	87431	25.9	18.4	323007	26.1	19.1	503617	26.1	21.4	219975	26.2	20.0
415076	25.8	19.9	24497	25.9	18.2	539767	25.9	20.8	499117	26.1	21.6	516101	26.1	20.1	296138	26.2	20.7
436914	25.8	19.9	483924	25.9	20.7	296572	25.9	19.8	314528	26.1	19.9	380954	26.1	21.0	221495	26.2	19.9
543441	25.8	21.5	157885	25.9	20.5	8907	25.9	17.3	321572	26.1	20.2	162388	26.1	18.9	328593	26.2	19.8
128433	25.8	19.1	235275	25.9	19.8	254980	25.9	19.7	359353	26.1	21.4	392847	26.1	20.1	137059	26.2	17.5
42367	25.8	18.2	92608	25.9	17.3	322363	25.9	20.7	323043	26.1	19.7	220803	26.1	20.4	252801	26.2	19.5
284609	25.8	20.5	136669	25.9	19.4	471785	25.9	20.9	137582	26.1	19.7	515611	26.1	21.0	392802	26.2	20.2
279771	25.8	19.7	102644	25.9	18.6	264044	25.9	18.4	325897	26.1	20.5	236422	26.1	20.7	59954	26.2	18.8
443631	25.8	19.8	3687	25.9	14.9	448648	25.9	20.5	478248	26.1	20.6	433395	26.2	19.4	504700	26.2	20.7
365469	25.8	19.9	295161	25.9	21.5	403414	25.9	20.4	317874	26.1	20.5	512768	26.2	20.6	514039	26.2	21.2
245241	25.8	19.7	353732	25.9	20.4	212256	25.9	19.9	510754	26.1	20.4	265746	26.2	20.5	140732	26.2	19.5
53973	25.8	18.7	141835	25.9	20.6	350902	25.9	18.9	158721	26.1	20.8	233903	26.2	20.1	359007	26.2	20.0
483227	25.8	19.9	461179	25.9	18.9	174207	25.9	20.7	316455	26.1	19.9	73762	26.2	18.7	129116	26.2	19.6
194984	25.8	19.7	56170	25.9	18.4	312483	25.9	20.3	75467	26.1	17.6	94404	26.2	19.5	24272	26.2	16.3
407674	25.8	20.2	135029	25.9	18.7	88608	26.0	18.7	523264	26.1	20.1	100900	26.2	19.1	61006	26.2	19.7
526488	25.8	21.0	50041	25.9	18.0	261568	26.0	19.5	210873	26.1	19.5	175381	26.2	20.3	469877	26.2	20.2
420426	25.8	20.9	312497	25.9	19.9	317838	26.0	21.2	527853	26.1	21.0	482730	26.2	20.7	157878	26.2	20.8
449389	25.8	20.6	501774	25.9	20.4	540994	26.0	20.6	512194	26.1	20.1	37043	26.2	18.2	434774	26.2	20.7
24021	25.8	17.5	516074	25.9	20.6	144959	26.0	20.9	188572	26.1	19.5	43638	26.2	19.2	210089	26.2	20.1
167323	25.8	18.8	255838	25.9	21.0	315112	26.0	20.9	163252	26.1	20.4	446552	26.2	21.4	475421	26.2	21.1
70973	25.8	16.6	171568	25.9	19.7	416418	26.0	19.5	100748	26.1	20.4	509218	26.2	20.7	290811	26.2	19.8
180462	25.8	18.7	324464	25.9	20.1	479684	26.0	20.7	502828	26.1	21.3	320295	26.2	20.3	97365	26.2	19.1
367050	25.8	20.1	522875	25.9	19.7	425126	26.0	21.2	476624	26.1	20.2	403392	26.2	21.2	138205	26.2	17.7
327223	25.8	20.8	405767	25.9	20.7	8509	26.0	17.8	324128	26.1	19.4	26166	26.2	24.0	91751	26.2	19.0
75515	25.8	18.1	433992	25.9	23.8	156643	26.0	18.7	139778	26.1	19.3	224878	26.2	20.1	340066	26.2	20.6
359512	25.8	20.2	43730	25.9	19.0	446623	26.0	21.1	244322	26.1	20.0	20175	26.2	18.2	13989	26.2	16.4
515387	25.9	22.5	91082	25.9	18.2	415036	26.0	19.8	331377	26.1	21.1	63403	26.2	18.7	319745	26.2	19.0
282121	25.9	19.2	72667	25.9	18.3	228105	26										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
178853	26.3	19.6	296972	26.3	20.1	35967	26.4	17.9	293249	26.4	20.3	383966	26.5	20.4	440649	26.6	21.1
261842	26.3	21.0	34900	26.3	18.9	441761	26.4	21.5	478708	26.5	20.3	517452	26.5	20.8	171168	26.6	19.9
377591	26.3	20.8	133251	26.3	17.7	152334	26.4	19.0	321627	26.5	20.7	414356	26.5	20.7	288473	26.6	20.2
25575	26.3	17.6	347090	26.3	20.5	155873	26.4	20.5	105163	26.5	18.5	56989	26.5	19.3	465598	26.6	20.8
308653	26.3	19.1	61922	26.3	17.8	515083	26.4	21.2	465087	26.5	21.3	108454	26.5	19.3	65208	26.6	18.9
424038	26.3	19.9	518556	26.3	21.4	278759	26.4	20.6	265672	26.5	19.0	103930	26.5	18.9	310470	26.6	18.9
259612	26.3	20.5	218891	26.3	18.9	537639	26.4	20.7	420762	26.5	20.7	468168	26.5	20.8	537743	26.6	21.5
244313	26.3	19.6	228631	26.3	19.5	204619	26.4	19.3	453457	26.5	20.9	447427	26.5	19.7	62541	26.6	18.4
185960	26.3	20.5	510043	26.3	21.7	315849	26.4	19.7	470775	26.5	19.8	254358	26.5	19.7	67447	26.6	17.6
400456	26.3	21.1	56251	26.3	17.1	121478	26.4	17.9	350398	26.5	20.4	383964	26.5	20.7	255435	26.6	20.0
16854	26.3	17.9	433609	26.3	19.2	394577	26.4	19.9	171362	26.5	20.4	316702	26.5	19.3	392953	26.6	20.2
255461	26.3	20.5	506636	26.3	20.5	383198	26.4	19.2	133086	26.5	20.2	485204	26.5	19.8	379847	26.6	20.3
289494	26.3	21.0	180871	26.3	20.9	68248	26.4	18.7	398048	26.5	20.3	487885	26.5	19.3	322983	26.6	21.4
188163	26.3	19.5	368665	26.3	20.8	514038	26.4	20.8	393750	26.5	21.4	13237	26.5	18.6	438812	26.6	20.1
11228	26.3	16.6	309002	26.3	21.1	474260	26.4	20.0	7691	26.5	15.9	37091	26.5	18.0	49124	26.6	18.9
359881	26.3	20.4	229825	26.3	19.7	429466	26.4	20.6	474224	26.5	21.0	157603	26.5	20.1	106560	26.6	18.1
535931	26.3	22.0	92134	26.3	18.3	347804	26.4	20.4	526408	26.5	20.9	192020	26.5	19.8	433318	26.6	19.6
173565	26.3	19.1	539335	26.3	20.6	88256	26.4	18.9	477146	26.5	21.1	209957	26.5	19.3	134392	26.6	20.2
85664	26.3	18.2	41785	26.3	17.4	390900	26.4	19.5	33844	26.5	18.8	466355	26.5	21.4	121511	26.6	19.7
316142	26.3	20.9	273695	26.3	20.7	340513	26.4	18.6	221362	26.5	20.2	420894	26.5	21.3	520558	26.6	20.8
25980	26.3	16.1	307568	26.3	20.5	436143	26.4	20.6	149781	26.5	20.3	77320	26.5	20.2	252953	26.6	17.9
46828	26.3	17.9	171903	26.3	19.5	134087	26.4	18.9	85612	26.5	20.2	220973	26.5	20.5	87894	26.6	17.9
539306	26.3	21.4	70165	26.3	18.1	61715	26.4	18.6	450428	26.5	20.8	412900	26.5	20.6	83383	26.6	19.8
277602	26.3	20.0	181254	26.3	19.6	167174	26.4	21.0	416423	26.5	20.1	189233	26.6	20.6	341838	26.6	21.1
33790	26.3	18.3	417983	26.3	20.4	342793	26.4	20.0	283715	26.5	19.4	185773	26.6	18.6	355914	26.6	19.1
284611	26.3	19.1	183829	26.3	20.3	90874	26.4	17.6	168869	26.5	19.0	342472	26.6	20.9	115650	26.6	19.2
84157	26.3	19.0	336469	26.3	19.0	416031	26.4	21.4	221443	26.5	19.8	75800	26.6	18.1	514663	26.6	20.5
45961	26.3	18.9	66128	26.3	18.1	98220	26.4	18.6	24210	26.5	17.6	23384	26.6	18.1	262592	26.6	19.9
535618	26.3	20.9	336175	26.3	20.3	295234	26.4	20.6	147724	26.5	18.8	60441	26.6	19.0	355287	26.6	21.1
509902	26.3	19.7	208152	26.3	20.1	30059	26.4	19.1	237044	26.5	19.1	479962	26.6	20.7	320174	26.6	20.0
447390	26.3	20.2	65281	26.3	18.7	162867	26.4	20.0	498065	26.5	21.2	441778	26.6	20.7	98701	26.6	18.8
253505	26.3	19.5	473138	26.3	20.0	519737	26.4	20.9	75248	26.5	17.5	539092	26.6	21.6	182006	26.6	18.1
515227	26.3	20.9	412556	26.4	20.4	517951	26.4	20.1	401221	26.5	20.7	430815	26.6	20.4	373416	26.6	22.5
355623	26.3	20.8	190257	26.4	19.5	168200	26.4	19.6	255395	26.5	20.2	48007	26.6	18.0	198311	26.6	19.7
480614	26.3	21.3	96950	26.4	18.5	45010	26.4	18.7	225229	26.5	20.3	89820	26.6	17.6	376387	26.6	21.6
428260	26.3	20.6	364153	26.4	20.4	18832	26.4	19.1	248487	26.5	20.0	41275	26.6	19.1	173804	26.6	19.6
271067	26.3	21.7	487921	26.4	19.8	9495	26.4	16.2	105810	26.5	18.4	429494	26.6	20.2	247874	26.6	19.0
107104	26.3	17.9	261519	26.4	20.4	9749	26.4	17.8	14222	26.5	17.5	160891	26.6	19.4	403707	26.6	20.6
469596	26.3	21.9	59638	26.4	18.6	393866	26.4	21.0	244900	26.5	19.6	12198	26.6	15.2	341133	26.6	20.4
329890	26.3	20.2	472050	26.4	19.1	260629	26.4	20.6	6415	26.5	16.3	44428	26.6	18.4	53845	26.6	19.3
236831	26.3	20.8	317805	26.4	21.1	74101	26.4	18.6	38821	26.5	17.0	411742	26.6	20.7	292747	26.6	19.8
358857	26.3	20.8	392309	26.4	20.5	100879	26.4	20.3	168882	26.5	18.2	187030	26.6	19.6	283609	26.6	21.7
361915	26.3	20.9	479831	26.4	20.7	229562	26.4	18.5	321571	26.5	19.9	187882	26.6	19.4	170199	26.6	20.1
400637	26.3	21.0	112666	26.4	18.8	242581	26.4	20.5	333009	26.5	20.7	4292	26.6	15.7	41684	26.6	17.3
304521	26.3	19.5	301767	26.4	20.4	202416	26.4	19.6	67679	26.5	18.6	249182	26.6	20.2	261731	26.6	19.9
447044	26.3	20.0	105737	26.4	18.2	169731	26.4	18.2	447264	26.5	20.6	75930	26.6	18.3	331634	26.6	17.5
447536	26.3	20.3	510074	26.4	21.4	521218	26.4	20.9	46231	26.5	17.7	61452	26.6	18.6	72727	26.6	18.2
208109	26.3	20.4	9607	26.4	17.6	131480	26.4	19.3	5121	26.5	14.9	325186	26.6	21.1	360932	26.6	20.7
507454	26.3	19.6	472679	26.4	21.6	438166	26.4	20.6	304342	26.5	20.7	532867	26.6	20.0	153096	26.6	18.6
139190	26.3	17.8	414182	26.4	19.4	15456	26.4	18.0	525464	26.5	19.8	150631	26.6	19.7	307062	26.7	18.9
349800	26.3	20.2	438300	26.4	21.3	254205	26.4	20.2	343898	26.5	21.1	517525	26.6	20.9	117193	26.7	18.2
434346	26.3	19.9	401742	26.4	20.9	2028	26.4	18.0	111837	26.5	19.0	166527	26.6	19.3	292294	26.7	18.8
119797	26.3	19.5	38242	26.4	18.2	71425	26.4	18.2	410247	26.5	19.4	400699	26.6	20.5	211890	26.7	20.6
454339	26.3	20.6	486983	26.4	19.5	33963	26.4	17.7	284274	26.5	20.9	49857	26.6	18.1	349480	26.7	20.9
477888	26.3	21.6	80344	26.4	18.2	31341	26.4	17.8	436219	26.5	19.9	368156	26.6	19.6	171280	26.7	18.9
175229	26.3	19.7	399	26.4	13.7	156670	26.4	20.1	269310	26.5	20.6	237582	26.6	19.5	360884	26.7	20.1
220397	26.3	20.7	537244	26.4	20.3	311941	26.4	21.0	358829	26.5	20.8	358779	26.6	21.8	368653	26.7	20.6
261734	26.3	19.4	49114	26.4	17.5	290850	26.4	19.4	323352	26.5	21.2	399633	26.6	19.0	304379	26.7	20.8
288887	26.3	19.4	256687	26.4	18.9	446559	26.4	20.5	491662	26.5	20.1	66326	26.6	18.2	255317	26.7	19.3
176777	26.3	20.7	89056	26.4	18.9	293408	26.4	20.0	478692	26.5	21.3	75760	26.6	19.4	149413	26.7	18.4
7284	26.3	16.4	20012	26.4	17.6	449648	26.4	21.5	234011	26.5	20.2	239186	26.6	20.5	133318	26.7	20.2
528979	26.3	21.1	367226	26.4	21.1	321768	26.4	20.5	103361	26.5	18.2	528377	26.6	21.1	126661	26.7	19.1
499520	26.3	21.0	468038	26.4	20.2	476117	26.4	20.7	170890	26.5	19.6	20053	26.6	17.8	44962	26.7	17.6
154169	26.3	20.4	166750	26.4	19.7	479710	26.4	21.3	187884	26.5	19.2	94195	26.6	19.1	317970	26.7	19.7
275374	26.3	20.4	459666	26.4	21.5	137283	26.4	18.7	50129	26.5	18.7	342740	26.6	20.6	21437	26.7	17.3
499378	26.3	17.9	310658	26.4	20.8	402451	26.4	19.8	261558	26.5	19.6	396773	26.6	19.0	346030	26.7	19.8
68888	26.3	18.5	277800	26.4	20.7	17302	26.4	17.3	125923	26.5	19.1	95414	26.6	19.1	229423	26.7	18.8
48772	26.3	19.3	322652	26.4	21.0	230926	26.4	19.3	167411	26.5	19.3	387916	26.6	20.2	242539	26.7	18.7
355270	26.3	20.6	333367	26.4	19.5	175246	26.4	19.2	418221								

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
37637	26.7	18.3	82808	26.7	19.0	258833	26.8	20.5	186273	26.9	19.7	291170	26.9	20.8	359960	27.0	20.2
97360	26.7	18.4	328212	26.7	19.4	405708	26.8	20.5	480414	26.9	20.7	246555	26.9	19.6	380621	27.0	18.4
35954	26.7	18.1	483231	26.8	21.0	255659	26.8	21.1	41176	26.9	18.3	445394	26.9	21.2	315096	27.0	21.0
94400	26.7	20.4	219477	26.8	20.3	40619	26.8	18.8	347444	26.9	20.7	101867	26.9	19.4	346250	27.0	19.2
198249	26.7	19.7	325944	26.8	19.7	476213	26.8	20.7	215827	26.9	19.0	239554	26.9	19.9	132646	27.0	18.4
33785	26.7	17.3	153152	26.8	19.1	513355	26.8	20.1	67475	26.9	17.8	11634	26.9	16.9	384510	27.0	19.9
531223	26.7	20.5	365579	26.8	21.4	255168	26.8	20.4	156978	26.9	20.4	358505	26.9	20.1	176408	27.0	19.5
123021	26.7	19.1	100106	26.8	19.5	211382	26.8	20.1	45255	26.9	19.5	22858	26.9	18.4	449839	27.0	20.6
327204	26.7	21.5	362293	26.8	19.7	210538	26.8	20.4	454169	26.9	21.4	469687	26.9	19.8	208894	27.0	20.1
160932	26.7	18.4	525195	26.8	20.4	116604	26.8	19.4	198461	26.9	18.5	473373	26.9	21.2	95648	27.0	19.6
106778	26.7	18.7	364473	26.8	20.9	443648	26.8	20.3	485247	26.9	20.1	332177	26.9	19.2	504448	27.0	21.5
115969	26.7	19.1	191152	26.8	19.4	229816	26.8	20.5	375709	26.9	20.8	461867	26.9	21.0	211341	27.0	18.5
23033	26.7	18.3	140424	26.8	19.5	149113	26.8	19.8	170789	26.9	19.5	157920	26.9	18.5	429558	27.0	20.0
223434	26.7	19.7	39041	26.8	17.8	323686	26.8	18.4	335200	26.9	19.1	400230	26.9	20.2	515110	27.0	20.5
249472	26.7	20.2	509833	26.8	19.6	330645	26.8	20.8	524568	26.9	20.3	246134	26.9	20.1	116815	27.0	18.9
195568	26.7	18.9	235409	26.8	19.3	160569	26.8	17.4	112996	26.9	19.7	147583	26.9	19.8	299102	27.0	20.4
510577	26.7	20.6	34512	26.8	18.6	358388	26.8	20.8	26179	26.9	18.2	538758	26.9	20.8	397914	27.0	20.1
540620	26.7	20.5	299230	26.8	20.4	511462	26.8	21.0	232867	26.9	19.4	281249	26.9	20.2	255358	27.0	20.2
204537	26.7	19.7	77403	26.8	18.8	208859	26.8	19.6	72437	26.9	18.2	387973	26.9	20.8	127406	27.0	19.5
160723	26.7	18.0	220367	26.8	20.2	301743	26.8	20.1	329710	26.9	20.7	2681	26.9	15.3	418057	27.0	21.0
220861	26.7	19.3	492390	26.8	20.4	28953	26.8	18.1	166158	26.9	19.3	101034	26.9	19.6	136296	27.0	18.6
368174	26.7	19.7	250363	26.8	19.6	536869	26.8	20.6	349205	26.9	21.2	496974	26.9	20.9	356923	27.0	20.8
379242	26.7	21.2	394591	26.8	20.8	534879	26.8	21.7	87152	26.9	17.5	511247	26.9	20.7	42940	27.0	17.8
485901	26.7	21.6	402131	26.8	21.3	542626	26.8	21.2	70497	26.9	19.4	123026	26.9	18.4	533660	27.0	22.2
509801	26.7	20.3	470688	26.8	19.4	21124	26.8	17.8	246639	26.9	19.1	158221	26.9	20.0	236940	27.0	19.6
216130	26.7	20.2	515019	26.8	21.0	501786	26.8	20.6	209521	26.9	19.0	212541	26.9	20.3	307577	27.0	18.0
129771	26.7	19.3	302230	26.8	19.7	370863	26.8	21.4	58131	26.9	20.5	392093	26.9	20.5	38476	27.0	19.0
523903	26.7	22.4	87528	26.8	18.6	282385	26.8	19.9	273907	26.9	20.4	159513	26.9	18.1	361127	27.0	19.5
154976	26.7	19.5	157420	26.8	18.8	291695	26.8	21.0	401773	26.9	20.5	56322	26.9	18.8	521120	27.0	22.1
351897	26.7	20.6	232205	26.8	19.6	22978	26.8	15.8	46378	26.9	18.0	348070	26.9	19.0	532774	27.1	19.0
427282	26.7	19.2	311916	26.8	20.0	502167	26.8	20.1	401253	26.9	21.2	173746	26.9	19.4	208570	27.1	18.8
217226	26.7	18.4	315218	26.8	19.0	106477	26.8	18.6	158990	26.9	19.7	137876	26.9	18.4	480156	27.1	20.9
281219	26.7	20.0	117545	26.8	20.0	314169	26.8	20.6	25862	26.9	16.8	539838	26.9	20.7	425914	27.1	21.1
524004	26.7	20.5	380301	26.8	20.1	268309	26.8	20.0	438687	26.9	19.7	133646	26.9	19.0	400742	27.1	20.0
46067	26.7	18.8	401631	26.8	20.6	202507	26.8	20.3	63197	26.9	17.4	113658	26.9	18.2	322570	27.1	19.7
300758	26.7	20.3	304620	26.8	20.6	235168	26.9	19.3	209725	26.9	20.0	103904	26.9	19.9	476583	27.1	19.6
65213	26.7	18.7	141802	26.8	20.0	7804	26.9	17.5	39995	26.9	18.2	433201	26.9	20.6	466320	27.1	20.7
257424	26.7	20.9	430987	26.8	20.6	447135	26.9	19.1	132117	26.9	19.6	191237	26.9	18.8	258619	27.1	20.6
43844	26.7	18.5	1528	26.8	15.4	242897	26.9	19.8	307857	26.9	19.2	514964	26.9	20.4	414384	27.1	20.1
309086	26.7	19.3	161701	26.8	19.5	516082	26.9	20.4	356691	26.9	19.6	73321	26.9	19.3	157736	27.1	18.9
46800	26.7	16.0	207957	26.8	19.9	86178	26.9	19.2	186689	26.9	20.2	500869	26.9	21.2	390928	27.1	20.9
155886	26.7	19.4	188883	26.8	19.9	445533	26.9	19.1	4111	26.9	18.1	346767	26.9	20.4	531114	27.1	21.3
240614	26.7	18.9	319373	26.8	21.5	305177	26.9	20.6	228257	26.9	20.9	72749	26.9	18.8	256689	27.1	20.2
14062	26.7	17.7	167743	26.8	19.5	525056	26.9	22.7	35934	26.9	18.4	121809	26.9	18.5	331160	27.1	19.8
510841	26.7	22.3	206550	26.8	18.6	321077	26.9	19.0	250844	26.9	19.6	403942	26.9	20.3	39218	27.1	17.9
486670	26.7	20.4	260546	26.8	20.6	115010	26.9	17.7	114498	26.9	18.3	159700	26.9	20.6	32983	27.1	16.9
169758	26.7	19.8	149071	26.8	19.7	315661	26.9	20.2	345912	26.9	20.1	43543	26.9	18.7	439767	27.1	20.4
460007	26.7	20.5	33109	26.8	17.8	69461	26.9	18.5	436563	26.9	21.3	122955	26.9	19.0	238159	27.1	19.1
395283	26.7	20.0	359848	26.8	20.3	239813	26.9	19.9	20514	26.9	17.8	326384	26.9	20.9	435660	27.1	20.8
87682	26.7	20.4	75355	26.8	18.9	2255	26.9	15.5	263497	26.9	20.6	412593	26.9	21.1	224782	27.1	19.7
198957	26.7	19.5	423903	26.8	20.4	217371	26.9	19.1	212825	26.9	19.8	359830	26.9	20.0	423330	27.1	20.9
259388	26.7	20.8	192623	26.8	20.4	49197	26.9	19.0	481074	26.9	20.1	242555	26.9	19.6	255552	27.1	21.2
385320	26.7	20.1	259382	26.8	20.7	509154	26.9	19.8	37494	26.9	19.0	500789	26.9	20.7	173587	27.1	18.5
512956	26.7	20.4	96730	26.8	18.7	446496	26.9	21.5	293852	26.9	19.8	279429	26.9	20.3	72622	27.1	19.1
293646	26.7	20.2	31842	26.8	19.0	487803	26.9	20.1	75840	26.9	17.4	371590	26.9	20.4	509722	27.1	18.9
261619	26.7	19.6	444128	26.8	20.6	400864	26.9	20.6	388224	26.9	20.3	504207	26.9	20.2	391036	27.1	20.4
334337	26.7	19.7	195558	26.8	19.4	408703	26.9	20.1	392163	26.9	22.0	226506	26.9	19.6	109465	27.1	19.0
455310	26.7	21.6	385832	26.8	21.2	539758	26.9	21.4	383266	26.9	20.3	131044	26.9	18.5	435383	27.1	19.6
53425	26.7	16.9	169530	26.8	20.5	333148	26.9	20.2	536360	26.9	21.5	257188	27.0	19.6	118632	27.1	19.7
246907	26.7	20.5	311166	26.8	20.6	508421	26.9	20.8	119630	26.9	18.6	537724	27.0	20.6	389098	27.1	20.4
498477	26.7	19.8	435652	26.8	20.8	337178	26.9	18.2	317398	26.9	18.8	28158	27.0	16.8	418293	27.1	20.7
166450	26.7	18.4	510810	26.8	20.7	98027	26.9	18.5	301105	26.9	19.8	420374	27.0	20.8	22244	27.1	16.9
441744	26.7	20.6	458147	26.8	21.0	528248	26.9	21.4	321428	26.9	19.4	325084	27.0	21.0	21485	27.1	18.0
184263	26.7	20.9	45028	26.8	16.9	459516	26.9	20.7	126935	26.9	19.4	207735	27.0	20.1	387937	27.1	21.1
219919	26.7	19.7	471128	26.8	19.8	43199	26.9	17.4	267185	26.9	20.3	31643	27.0	17.6	329610	27.1	20.4
317836	26.7	19.9	414090	26.8	19.7	306405	26.9	19.4	208548	26.9	19.5	108284	27.0	19.2	280372	27.1	19.5
149402	26.7	18.4	415054	26.8	19.9	369953	26.9	20.5	533694	26.9	20.5	254173	27.0	20.9	362279	27.1	20.5
364076	26.7	20.5	103615	26.8	18.5	231854	26.9	19.6	467837	26.9	20.2	515377	27.0	21.2	189308	27.1	18.2
377620	26.7	19.5	163070	26.8	20.0	334005											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
471736	27.1	21.1	59196	27.2	20.2	418216	27.3	19.1	76987	27.3	18.4	497652	27.4	20.9	471059	27.5	20.1
260287	27.1	20.3	424340	27.2	19.8	499556	27.3	20.3	444235	27.3	20.7	159360	27.4	20.3	275691	27.5	19.3
284524	27.1	19.8	100535	27.2	19.2	366121	27.3	20.3	312006	27.3	20.7	141454	27.4	20.2	99036	27.5	19.3
522877	27.1	20.3	281504	27.2	19.3	299162	27.3	19.6	236878	27.3	19.3	204286	27.4	20.3	127478	27.5	18.8
363033	27.1	20.1	472489	27.2	21.1	202824	27.3	19.3	214561	27.3	19.0	36058	27.4	18.5	511196	27.5	19.9
108108	27.1	19.6	538642	27.2	21.0	9228	27.3	16.6	307032	27.3	19.4	297577	27.4	20.1	396	27.5	14.5
434707	27.1	21.2	455151	27.2	20.9	200183	27.3	18.6	193566	27.3	17.9	216421	27.4	19.4	505927	27.5	20.2
336889	27.1	20.7	505443	27.2	19.6	334958	27.3	20.4	533691	27.3	21.1	315882	27.4	20.8	353570	27.5	20.9
167503	27.1	19.6	158385	27.2	19.7	487255	27.3	20.7	539276	27.3	21.2	505386	27.4	20.7	215769	27.5	18.2
493593	27.1	20.8	505946	27.2	20.9	365822	27.3	20.0	294025	27.3	19.9	470342	27.4	20.1	56754	27.5	19.1
515915	27.1	20.0	473369	27.2	20.7	57681	27.3	18.7	336198	27.3	19.0	326212	27.4	20.6	260472	27.5	18.7
326664	27.1	20.5	355042	27.2	21.0	67600	27.3	18.8	107628	27.3	20.0	535167	27.4	22.4	92013	27.5	19.2
220992	27.1	19.5	443583	27.2	20.1	440620	27.3	19.1	62014	27.3	18.2	1140	27.4	13.0	280096	27.5	20.3
110208	27.1	19.2	304338	27.2	20.5	311372	27.3	20.1	263011	27.3	20.1	412356	27.4	20.2	466270	27.5	21.4
20361	27.1	18.1	359011	27.2	20.5	154606	27.3	18.9	537067	27.3	20.7	125742	27.4	19.5	466220	27.5	20.3
48366	27.1	17.5	43192	27.2	17.4	242033	27.3	20.4	176380	27.3	20.5	480272	27.4	20.1	161621	27.5	20.8
44189	27.1	18.5	11050	27.2	17.5	141255	27.3	19.8	535681	27.3	21.4	515428	27.4	21.8	309300	27.5	18.9
479141	27.1	19.9	207559	27.2	20.1	531100	27.3	21.6	512462	27.3	20.0	203695	27.4	19.9	390210	27.5	20.8
518208	27.1	19.9	386795	27.2	19.9	19375	27.3	18.1	93985	27.3	18.0	44131	27.4	17.8	387861	27.5	19.7
183521	27.1	19.8	154230	27.2	19.4	41530	27.3	16.7	95630	27.3	19.5	328970	27.4	19.4	503650	27.5	20.8
162146	27.1	17.2	262965	27.2	19.9	338636	27.3	20.3	514814	27.3	19.9	322	27.4	11.8	92149	27.5	18.6
525551	27.1	22.4	36300	27.2	18.7	286683	27.3	19.9	243893	27.3	18.5	99784	27.4	19.1	275802	27.5	20.5
442601	27.1	20.0	18803	27.2	17.8	383315	27.3	21.1	155898	27.3	19.6	39195	27.4	19.2	398250	27.5	21.2
442350	27.1	20.3	12650	27.2	18.9	209503	27.3	19.2	119000	27.3	18.0	444273	27.4	21.2	252100	27.5	19.2
294558	27.1	19.7	266277	27.2	20.3	290473	27.3	20.6	515426	27.3	21.7	537510	27.4	21.4	481946	27.5	20.4
504916	27.1	20.5	375714	27.2	19.8	201092	27.3	18.6	48750	27.3	17.8	97826	27.4	18.8	196180	27.5	18.0
299078	27.1	20.9	261986	27.2	18.7	313094	27.3	19.0	367899	27.3	19.5	361970	27.4	20.9	24336	27.5	16.9
319270	27.1	21.2	470799	27.2	19.7	204796	27.3	20.3	310685	27.3	20.5	38882	27.4	18.4	196416	27.5	20.2
422919	27.1	19.8	535693	27.2	22.0	16721	27.3	17.1	11297	27.3	17.0	118479	27.4	18.7	393626	27.5	20.6
252107	27.1	19.3	380543	27.2	19.9	146118	27.3	18.4	515648	27.3	21.3	216138	27.4	20.7	43320	27.5	18.1
391867	27.1	20.4	356197	27.2	21.1	43887	27.3	19.6	419569	27.3	19.9	439774	27.4	20.9	170600	27.5	18.7
413336	27.1	18.7	8370	27.2	17.8	158928	27.3	19.9	409328	27.3	19.5	263735	27.4	20.2	401802	27.5	20.0
51665	27.1	18.2	239728	27.2	19.7	511282	27.3	20.9	193533	27.4	18.1	228117	27.4	20.0	297280	27.5	20.9
522779	27.1	20.8	95434	27.2	19.4	290282	27.3	20.2	179399	27.4	19.1	284827	27.4	19.8	200219	27.5	19.0
295387	27.2	21.5	401619	27.2	20.8	528965	27.3	22.5	322169	27.4	20.4	260306	27.4	19.4	421521	27.5	19.7
206050	27.2	19.3	13795	27.2	18.5	358499	27.3	19.9	185840	27.4	17.9	428561	27.4	20.7	155699	27.5	18.8
158355	27.2	18.7	444335	27.2	20.1	82324	27.3	19.2	12658	27.4	17.8	534862	27.4	21.4	36836	27.5	18.4
376895	27.2	19.8	233633	27.2	19.9	477826	27.3	22.4	245149	27.4	19.2	338568	27.4	20.3	445268	27.5	20.6
282681	27.2	19.4	528333	27.2	20.4	207243	27.3	20.1	13753	27.4	17.7	155304	27.4	19.5	178669	27.5	19.8
522931	27.2	20.7	99622	27.2	18.4	530181	27.3	20.0	280938	27.4	21.2	520970	27.4	21.1	522906	27.5	21.0
119984	27.2	18.4	51537	27.2	21.1	87146	27.3	17.8	473082	27.4	20.4	536223	27.4	20.1	524838	27.5	20.0
35144	27.2	16.5	399707	27.2	20.9	19628	27.3	17.8	477551	27.4	21.6	238126	27.4	20.3	482641	27.5	20.7
258582	27.2	20.3	519597	27.2	21.5	364175	27.3	21.5	233600	27.4	19.9	395591	27.4	19.5	51514	27.5	19.2
471327	27.2	20.9	433071	27.2	21.0	301493	27.3	20.4	251670	27.4	19.8	340337	27.4	20.4	149068	27.5	19.2
307651	27.2	20.8	136683	27.2	21.0	127963	27.3	19.8	43611	27.4	19.5	334705	27.4	20.5	111961	27.5	19.8
218440	27.2	19.6	132470	27.2	18.6	129817	27.3	20.0	322751	27.4	20.0	168806	27.4	18.5	136694	27.5	21.1
442948	27.2	21.1	282407	27.2	20.0	183754	27.3	19.1	385134	27.4	19.9	101557	27.4	18.3	139266	27.5	19.8
426180	27.2	21.6	225222	27.2	19.8	300693	27.3	20.2	85569	27.4	19.2	411785	27.4	21.7	407833	27.5	21.3
402062	27.2	20.5	48698	27.2	18.3	284970	27.3	20.5	102408	27.4	19.7	384763	27.4	18.5	13326	27.5	17.6
418181	27.2	20.1	42848	27.2	17.8	433037	27.3	21.5	86996	27.4	19.0	393668	27.4	21.3	244873	27.5	19.3
336335	27.2	20.8	262825	27.2	20.5	203041	27.3	20.4	73396	27.4	19.9	478983	27.4	20.7	535955	27.5	21.6
445437	27.2	19.4	6487	27.2	17.8	141821	27.3	19.9	229574	27.4	19.5	94267	27.4	19.4	369593	27.5	19.4
86169	27.2	19.3	416690	27.2	19.6	45357	27.3	17.6	265717	27.4	21.1	398028	27.4	21.3	485890	27.5	21.4
416434	27.2	21.2	221337	27.2	20.5	359804	27.3	20.5	260276	27.4	18.4	387791	27.4	19.9	442109	27.5	20.6
447743	27.2	20.4	20075	27.2	18.0	357787	27.3	20.5	319016	27.4	19.7	92230	27.4	18.2	216171	27.5	20.1
127874	27.2	18.4	413353	27.2	19.8	97892	27.3	18.5	436588	27.4	19.3	474383	27.4	20.7	144182	27.5	19.1
25869	27.2	17.1	412606	27.2	20.2	262511	27.3	20.7	445356	27.4	21.0	487983	27.4	20.5	181832	27.5	18.7
123926	27.2	20.1	366483	27.2	20.7	254309	27.3	20.1	126538	27.4	19.3	344639	27.4	20.5	23839	27.5	17.8
450345	27.2	20.2	528967	27.2	20.2	49246	27.3	17.0	229369	27.4	19.7	252934	27.4	20.9	69291	27.5	17.5
461221	27.2	20.3	239979	27.2	19.8	96235	27.3	18.7	507701	27.4	20.6	320004	27.4	20.4	454322	27.5	21.7
298624	27.2	20.6	502165	27.2	20.7	368435	27.3	19.4	147504	27.4	19.7	431329	27.4	19.8	391540	27.5	20.4
104016	27.2	19.4	282122	27.2	19.7	191044	27.3	19.7	366083	27.4	20.6	51632	27.4	18.7	376386	27.5	21.3
13374	27.2	16.6	154608	27.2	18.9	539302	27.3	21.0	44259	27.4	18.2	79424	27.4	17.5	6811	27.5	17.7
163715	27.2	19.2	128165	27.2	18.9	358475	27.3	20.0	218600	27.4	20.1	24440	27.4	18.1	449424	27.5	20.7
514067	27.2	21.9	363288	27.2	20.9	112999	27.3	19.5	344913	27.4	21.6	96139	27.4	19.0	414419	27.5	21.0
470857	27.2	20.6	319938	27.2	20.6	330654	27.3	22.2	145246	27.4	19.8	206696	27.4	19.3	172696	27.5	20.2
184585	27.2	20.2	22961	27.2	18.0	217323	27.3	20.3	485787	27.4	20.9	95619	27.4	19.4	310295	27.5	20.0
316000	27.2	20.8	58876	27.2	19.0	442759	27.3	19.0	365958	27.4	20.7	40139	27.4	19.1	468625	27.5	21.3
359511	27.2	20.8	324846	27.2	19.4	400467	27.3										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
186359	27.5	20.2	260616	27.6	20.5	234770	27.6	20.7	138932	27.7	20.0	16997	27.8	18.1	521787	27.8	21.0
111865	27.5	19.0	203018	27.6	19.0	254455	27.6	20.4	357355	27.7	19.9	515071	27.8	21.1	392541	27.8	20.4
513513	27.5	21.5	201952	27.6	20.5	28940	27.6	18.9	536490	27.7	22.2	446489	27.8	20.5	41743	27.8	17.0
208171	27.5	18.9	66102	27.6	18.3	354500	27.6	20.9	87081	27.7	19.0	397274	27.8	20.3	324825	27.8	21.3
396812	27.5	20.2	362930	27.6	19.4	505432	27.6	21.2	34902	27.7	18.7	515022	27.8	20.8	180509	27.8	20.5
285369	27.5	20.0	130074	27.6	20.0	61939	27.6	17.8	438922	27.7	21.0	347461	27.8	19.9	243259	27.8	20.9
108286	27.5	19.3	39779	27.6	19.3	532851	27.6	20.2	515740	27.7	20.3	525428	27.8	20.6	452007	27.8	20.4
347955	27.5	19.2	181539	27.6	19.9	103449	27.6	17.6	323205	27.7	20.2	537575	27.8	21.5	218774	27.8	19.7
189073	27.5	20.0	409721	27.6	20.4	125658	27.6	19.2	161084	27.7	21.1	256016	27.8	20.0	76920	27.8	19.0
471086	27.5	20.3	401534	27.6	21.3	499587	27.6	19.8	48147	27.7	19.0	522757	27.8	20.8	49218	27.8	18.6
150502	27.5	18.6	516112	27.6	21.5	347862	27.6	19.8	205013	27.7	20.0	535396	27.8	21.7	480844	27.8	19.6
9638	27.5	18.5	433871	27.6	20.3	410095	27.6	21.1	142340	27.7	18.7	6392	27.8	16.4	363250	27.9	19.7
240959	27.5	20.4	456116	27.6	21.5	448399	27.6	20.5	181371	27.7	19.5	18853	27.8	17.4	26899	27.9	17.0
166351	27.5	19.2	465609	27.6	21.5	146139	27.6	18.6	301092	27.7	20.5	415281	27.8	21.8	117769	27.9	20.3
117687	27.5	20.2	131188	27.6	19.3	10340	27.6	17.3	91682	27.7	18.9	536821	27.8	21.2	242212	27.9	19.4
263339	27.5	20.1	525859	27.6	20.7	387335	27.6	19.8	98201	27.7	17.3	342227	27.8	19.6	287779	27.9	20.2
93160	27.5	19.3	420648	27.6	20.8	210335	27.6	19.9	26714	27.7	17.6	384957	27.8	20.5	407840	27.9	20.8
405415	27.5	19.3	174377	27.6	19.4	168821	27.6	19.0	240460	27.7	19.7	432108	27.8	20.2	158728	27.9	19.6
418167	27.5	19.3	164679	27.6	21.8	90207	27.6	17.3	270483	27.7	20.3	51270	27.8	19.4	452263	27.9	20.1
392431	27.5	21.1	27719	27.6	17.7	94235	27.6	19.2	216010	27.7	19.6	254273	27.8	19.7	144368	27.9	19.4
335591	27.5	19.5	126901	27.6	19.0	27548	27.6	18.2	27598	27.7	19.1	336318	27.8	19.8	77054	27.9	18.3
291001	27.5	20.8	192795	27.6	20.3	231304	27.6	18.7	107257	27.7	18.1	476669	27.8	20.6	482618	27.9	21.0
183507	27.5	20.1	97333	27.6	18.7	361912	27.6	19.8	297528	27.7	20.2	540259	27.8	19.8	34607	27.9	18.4
375168	27.5	21.4	273887	27.6	20.8	48348	27.6	17.4	284961	27.7	20.4	97066	27.8	18.4	158187	27.9	20.5
386188	27.5	20.8	59456	27.6	19.5	158089	27.6	19.5	440684	27.7	19.1	458272	27.8	20.1	447407	27.9	20.5
387967	27.5	20.9	121445	27.6	18.9	323247	27.7	19.1	512610	27.7	20.3	342547	27.8	19.4	511490	27.9	22.0
130510	27.5	18.7	537048	27.6	21.6	61565	27.7	18.7	117079	27.7	18.8	290338	27.8	20.6	187232	27.9	19.8
298253	27.5	19.5	447297	27.6	20.2	420832	27.7	21.1	540491	27.7	21.0	107442	27.8	20.2	4149	27.9	16.8
393773	27.5	21.4	123641	27.6	18.7	301976	27.7	20.9	380795	27.7	20.5	1093	27.8	13.8	444100	27.9	20.3
444078	27.5	20.2	178123	27.6	20.7	435143	27.7	21.0	500844	27.7	21.2	284390	27.8	20.6	197550	27.9	20.0
89692	27.5	18.5	1720	27.6	14.6	6144	27.7	19.2	273949	27.7	19.5	228110	27.8	20.4	511139	27.9	20.5
325509	27.5	19.7	94507	27.6	19.0	406283	27.7	21.9	284168	27.7	19.5	357156	27.8	20.7	329530	27.9	19.4
257948	27.5	17.7	420902	27.6	20.2	116060	27.7	19.0	382936	27.7	20.3	365493	27.8	20.6	278234	27.9	19.8
238655	27.5	19.6	157104	27.6	18.9	522782	27.7	20.0	447181	27.7	20.0	262576	27.8	19.0	177267	27.9	18.9
319348	27.5	20.2	159652	27.6	19.2	50635	27.7	18.1	248644	27.7	20.3	36458	27.8	17.5	337179	27.9	20.3
157063	27.5	19.2	502895	27.6	19.9	68239	27.7	19.2	362903	27.7	20.5	289702	27.8	19.7	314464	27.9	19.8
121818	27.5	19.4	499124	27.6	20.6	331333	27.7	19.8	359520	27.7	20.2	335841	27.8	19.3	136737	27.9	18.6
451148	27.5	20.7	437435	27.6	20.6	107653	27.7	19.1	332280	27.7	21.4	416795	27.8	20.5	261923	27.9	19.1
233525	27.5	20.3	119757	27.6	17.0	220529	27.7	20.3	418984	27.7	20.6	107281	27.8	19.9	256869	27.9	19.4
294326	27.5	20.1	476340	27.6	19.9	365946	27.7	20.2	314571	27.7	20.9	1	27.8	7.1	203229	27.9	19.3
276625	27.5	18.5	530	27.6	13.7	390638	27.7	21.5	428669	27.7	20.8	151438	27.8	19.9	147846	27.9	18.6
476195	27.5	19.5	142238	27.6	20.1	278293	27.7	20.7	246947	27.7	19.9	514439	27.8	20.8	34114	27.9	17.3
415275	27.5	21.0	24722	27.6	17.1	127635	27.7	19.6	291108	27.7	20.6	218491	27.8	19.7	401803	27.9	20.3
133969	27.5	19.0	513377	27.6	21.1	537124	27.7	20.7	521841	27.7	21.2	412133	27.8	20.7	510596	27.9	19.5
99277	27.5	18.3	365421	27.6	18.4	98296	27.7	18.6	20973	27.7	18.2	26867	27.8	18.5	364099	27.9	20.0
133531	27.5	20.0	447364	27.6	19.5	360883	27.7	20.7	497659	27.7	22.1	78079	27.8	19.3	251841	27.9	19.1
532759	27.5	20.6	344711	27.6	20.0	87469	27.7	18.7	13105	27.7	18.1	228006	27.8	19.5	514189	27.9	20.6
361568	27.5	20.4	12985	27.6	17.4	93456	27.7	18.6	523645	27.7	21.9	333640	27.8	21.2	433337	27.9	20.0
349835	27.5	20.0	99532	27.6	20.1	262527	27.7	20.0	44973	27.7	19.0	340264	27.8	20.0	255448	27.9	19.9
437147	27.5	20.0	408867	27.6	19.7	185030	27.7	18.9	401775	27.7	20.6	447126	27.8	20.1	459588	27.9	21.3
34262	27.5	18.7	214868	27.6	20.2	332502	27.7	20.4	520212	27.7	21.1	174726	27.8	19.1	262567	27.9	20.5
218885	27.6	19.1	20840	27.6	17.1	154947	27.7	19.8	62116	27.7	18.0	160843	27.8	19.5	501692	27.9	18.8
150640	27.6	19.6	349327	27.6	19.8	365308	27.7	20.5	47394	27.7	18.1	6773	27.8	17.6	351873	27.9	20.7
307554	27.6	20.4	360274	27.6	19.0	435097	27.7	20.0	26024	27.7	17.7	117673	27.8	19.5	411171	27.9	20.8
195300	27.6	20.4	174975	27.6	20.1	36472	27.7	17.8	374800	27.7	20.5	311615	27.8	19.8	112076	27.9	20.4
525900	27.6	21.5	180766	27.6	20.5	309705	27.7	19.4	193670	27.7	19.9	393199	27.8	20.4	158113	27.9	19.5
258888	27.6	20.6	11239	27.6	16.0	437521	27.7	20.3	392086	27.7	19.8	70727	27.8	18.9	115175	27.9	17.9
465845	27.6	19.6	16821	27.6	17.1	514854	27.7	20.9	64674	27.7	17.0	132916	27.8	19.7	353498	27.9	20.4
188161	27.6	20.3	355857	27.6	20.1	430963	27.7	19.7	261962	27.7	21.3	214815	27.8	20.6	433867	27.9	21.8
293552	27.6	19.5	199361	27.6	19.4	315205	27.7	20.5	373517	27.7	20.7	79518	27.8	17.9	140602	27.9	20.1
444283	27.6	20.9	123824	27.6	18.5	398673	27.7	20.3	156504	27.7	18.3	129021	27.8	18.7	191513	27.9	20.8
318974	27.6	20.1	155115	27.6	18.9	202702	27.7	18.5	340968	27.7	21.5	532454	27.8	21.2	189428	27.9	20.1
86054	27.6	18.7	319337	27.6	19.9	373220	27.7	21.5	21585	27.7	17.5	517997	27.8	20.9	321086	27.9	20.2
269848	27.6	18.9	243417	27.6	20.4	252901	27.7	20.7	166054	27.7	18.4	159357	27.8	19.8	99145	27.9	19.0
447338	27.6	21.2	175148	27.6	18.7	518498	27.7	20.9	343813	27.7	20.2	154922	27.8	19.5	512307	27.9	21.3
211396	27.6	19.8	479716	27.6	20.6	139305	27.7	19.4	243475	27.7	20.4	255482	27.8	19.4	139636	27.9	18.8
320170	27.6	20.8	74864	27.6	19.9	316256	27.7	20.0	432908	27.7	21.1	380805	27.8	20.9	506586	27.9	20.4
341034	27.6	20.7	393851	27.6	20.2	337316	27.7	19.1	87415	27.7	19.6	28162	27.8	17.5	145843	27.9	18.9
469334	27.6	19.9	69302	27.6	19.0	124140	27.7	18									



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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
245515	27.9	20.0	211052	28.0	19.0	295215	28.1	20.7	9685	28.1	18.0	496990	28.2	20.8	24413	28.3	17.4
150464	27.9	19.4	12569	28.0	17.0	349408	28.1	20.0	539370	28.2	20.7	514266	28.2	21.0	262571	28.3	19.8
506441	27.9	19.8	4863	28.0	16.3	470819	28.1	19.8	30018	28.2	19.2	57959	28.2	18.6	371574	28.3	20.0
211684	27.9	19.8	392613	28.0	19.7	332493	28.1	21.1	541053	28.2	20.3	50005	28.2	18.4	256482	28.3	20.8
171868	27.9	19.4	35912	28.0	18.8	346750	28.1	19.8	147538	28.2	20.2	399537	28.2	20.5	289252	28.3	19.2
25678	27.9	18.0	369677	28.0	20.2	451143	28.1	20.6	257436	28.2	19.4	416153	28.2	19.2	450125	28.3	20.5
221026	27.9	19.0	260042	28.0	20.1	21096	28.1	17.5	470697	28.2	21.1	189540	28.2	19.8	218590	28.3	19.9
360744	27.9	19.9	27021	28.0	18.2	128667	28.1	19.6	411004	28.2	20.6	176285	28.2	20.0	5131	28.3	18.4
157744	27.9	20.3	12368	28.0	18.4	293783	28.1	19.1	294266	28.2	20.5	500163	28.2	20.7	391598	28.3	19.7
132341	27.9	19.3	406297	28.0	21.6	166475	28.1	18.8	4481266	28.2	20.4	345869	28.2	20.0	346428	28.3	20.5
87115	27.9	18.0	425678	28.0	20.3	452318	28.1	20.5	440357	28.2	19.7	77498	28.2	18.2	397785	28.3	21.2
327190	27.9	20.9	247460	28.0	19.1	486611	28.1	20.6	339460	28.2	20.3	38575	28.2	17.7	263439	28.3	19.7
141958	27.9	20.1	514285	28.0	20.8	450557	28.1	21.0	73302	28.2	19.9	22771	28.2	19.0	285876	28.3	19.4
514073	27.9	21.2	129026	28.0	18.7	530083	28.1	20.8	519871	28.2	21.2	383603	28.2	20.5	97021	28.3	18.4
357946	27.9	20.3	539555	28.0	20.8	308665	28.1	19.9	475973	28.2	22.3	283699	28.2	20.5	173268	28.3	18.9
75618	27.9	18.4	195260	28.0	20.6	237126	28.1	18.8	41972	28.2	18.6	224766	28.2	20.2	220821	28.3	19.9
231942	27.9	20.2	503746	28.0	20.9	336136	28.1	21.1	190243	28.2	20.1	420470	28.2	20.6	342174	28.3	19.1
106564	27.9	18.1	393732	28.0	19.1	120824	28.1	20.5	399421	28.2	20.0	124153	28.2	19.6	533683	28.3	21.1
224260	27.9	20.4	218431	28.0	19.2	217009	28.1	18.9	333918	28.2	19.1	11694	28.2	17.2	368399	28.3	19.2
117449	27.9	18.9	368875	28.0	21.4	542709	28.1	20.6	33396	28.2	17.7	324301	28.2	21.0	304617	28.3	19.8
469214	27.9	21.6	43460	28.0	18.0	213438	28.1	18.9	46072	28.2	19.0	512226	28.2	20.7	218792	28.3	20.2
441286	27.9	20.5	274839	28.0	19.4	135958	28.1	19.3	397629	28.2	20.7	183018	28.2	18.4	509695	28.3	19.5
155896	27.9	19.7	537705	28.0	20.5	35653	28.1	17.7	304008	28.2	20.4	195296	28.2	19.9	523114	28.3	20.4
322702	27.9	20.5	123233	28.0	18.2	470625	28.1	21.2	430989	28.2	20.7	83320	28.2	19.8	448060	28.3	21.1
223551	27.9	21.0	482222	28.0	20.5	340549	28.1	20.3	445485	28.2	20.7	308722	28.2	20.0	10708	28.3	16.6
334808	27.9	19.8	501772	28.0	20.0	399597	28.1	20.1	290647	28.2	21.0	176130	28.2	19.9	417928	28.3	19.4
332907	27.9	20.7	322586	28.0	19.7	29030	28.1	17.2	472704	28.2	20.4	251926	28.2	19.3	377268	28.3	21.0
445814	27.9	20.0	90616	28.0	19.4	537487	28.1	21.1	370918	28.2	21.0	77089	28.2	19.7	215813	28.3	18.8
28037	27.9	17.7	325946	28.0	19.3	496862	28.1	20.8	67772	28.2	18.7	41804	28.2	18.0	38261	28.3	18.1
377041	27.9	19.7	139383	28.0	19.7	120223	28.1	18.9	261627	28.2	20.2	373588	28.2	20.7	515970	28.3	19.9
506593	27.9	20.9	296421	28.0	20.4	118458	28.1	19.7	104687	28.2	19.4	318619	28.2	20.5	225087	28.3	20.3
301469	27.9	20.3	259853	28.0	20.2	123136	28.1	19.4	25384	28.2	18.3	95032	28.2	17.1	104114	28.3	20.0
540999	27.9	21.0	183873	28.0	20.4	347091	28.1	20.9	470632	28.2	19.7	59608	28.2	18.5	308673	28.3	20.4
18388	27.9	17.7	183129	28.0	19.0	408155	28.1	20.7	97689	28.2	19.0	318600	28.2	20.9	348756	28.3	19.8
173226	27.9	18.1	253634	28.0	19.6	371890	28.1	20.0	335114	28.2	20.1	208616	28.2	20.3	210117	28.3	19.9
236614	27.9	20.3	141815	28.0	20.0	73614	28.1	18.4	68132	28.2	18.7	87219	28.2	18.5	41082	28.3	17.9
180166	27.9	19.4	534758	28.0	19.7	192180	28.1	19.4	414068	28.2	20.1	200663	28.2	18.8	106004	28.3	19.4
250826	27.9	19.3	342180	28.0	19.6	166568	28.1	19.2	211136	28.2	19.9	89309	28.2	18.2	85214	28.3	17.4
33920	27.9	18.3	231359	28.0	19.8	3251	28.1	16.5	533175	28.2	21.7	442086	28.2	19.5	234852	28.3	19.8
476158	27.9	20.0	530462	28.0	20.5	92095	28.1	18.6	499666	28.2	21.0	480407	28.2	21.1	521538	28.3	21.3
320058	27.9	21.0	319261	28.0	19.8	79185	28.1	19.9	499789	28.2	21.0	144308	28.2	18.8	68235	28.3	19.5
40822	27.9	18.5	471628	28.0	20.7	51404	28.1	19.3	195371	28.2	20.8	531682	28.2	22.7	422581	28.3	20.4
196996	27.9	18.8	66190	28.0	18.0	123704	28.1	18.7	254425	28.2	18.5	35735	28.2	18.3	377664	28.3	19.6
478694	27.9	20.7	299118	28.0	20.5	87293	28.1	19.3	238533	28.2	20.2	204280	28.2	19.5	261430	28.3	20.7
525606	27.9	21.0	216919	28.0	19.6	60349	28.1	18.4	18419	28.2	18.1	300711	28.2	20.0	158707	28.3	20.5
204073	27.9	19.1	19560	28.0	17.4	364956	28.1	21.3	328156	28.2	19.5	407508	28.2	20.4	486920	28.3	20.9
123862	27.9	19.0	222215	28.0	19.2	67662	28.1	19.4	485919	28.2	20.4	167707	28.2	20.2	454864	28.3	19.1
67710	27.9	19.4	477136	28.0	20.3	369890	28.1	20.7	357114	28.2	19.8	255387	28.3	20.1	285647	28.3	19.2
2585	27.9	14.0	199572	28.0	20.1	405487	28.1	20.0	521624	28.2	20.3	243407	28.3	20.6	23326	28.3	18.9
56365	27.9	19.0	324376	28.0	19.7	245502	28.1	19.5	370884	28.2	21.3	508958	28.3	20.5	471264	28.3	22.2
15216	27.9	19.7	422174	28.0	19.6	173653	28.1	19.4	122863	28.2	19.1	295558	28.3	20.8	7895	28.3	16.2
257228	27.9	20.9	541989	28.0	21.3	178333	28.1	19.6	85	28.2	11.3	515001	28.3	20.8	213571	28.3	20.8
497742	27.9	20.7	367604	28.0	20.6	468631	28.1	21.9	140330	28.2	19.0	219130	28.3	19.0	217831	28.3	20.6
114290	27.9	18.2	471629	28.0	20.2	430332	28.1	20.4	199094	28.2	19.8	253537	28.3	19.1	542217	28.3	20.6
21620	27.9	18.5	282770	28.0	20.8	210546	28.1	19.4	358895	28.2	21.0	254269	28.3	19.8	529502	28.3	22.0
250907	27.9	20.1	152474	28.0	18.9	102785	28.1	19.9	202783	28.2	19.2	289699	28.3	21.5	519262	28.3	20.4
147108	27.9	18.7	524947	28.0	19.7	512830	28.1	20.1	405015	28.2	19.8	113444	28.3	19.2	220481	28.3	20.7
408421	27.9	21.6	154179	28.0	19.2	114165	28.1	19.3	334818	28.2	20.6	136465	28.3	19.6	495081	28.3	21.9
287027	27.9	19.4	166283	28.0	19.8	451819	28.1	21.4	252165	28.2	17.8	292741	28.3	19.7	367493	28.3	20.8
91764	27.9	19.4	245573	28.0	20.5	488101	28.1	19.7	105946	28.2	18.1	503377	28.3	21.7	36126	28.3	18.5
497093	27.9	18.3	271315	28.0	20.6	71224	28.1	19.2	539818	28.2	21.1	309211	28.3	19.5	423040	28.3	19.3
65595	27.9	17.9	514472	28.0	21.1	537238	28.1	20.8	128756	28.2	20.0	26464	28.3	18.6	481334	28.3	21.4
302240	27.9	19.3	162101	28.0	19.2	108468	28.1	20.1	514864	28.2	21.5	253613	28.3	19.3	382312	28.3	19.5
539257	27.9	21.7	531706	28.1	21.0	519467	28.1	21.6	25780	28.2	17.0	319254	28.3	19.5	173854	28.3	20.1
442179	27.9	19.9	436463	28.1	20.8	535975	28.1	21.7	123750	28.2	19.0	523759	28.3	21.6	421125	28.3	20.7
421546	27.9	20.8	436274	28.1	21.2	271783	28.1	20.6	212363	28.2	21.1	408064	28.3	20.1	291572	28.3	19.9
38543	27.9	17.1	426389	28.1	20.8	406755	28.1	21.3	353722	28.2	20.4	480460	28.3	21.3	405730	28.3	19.1
433578	27.9	19.6	315083	28.1	20.5	73883	28.1	18.0	18600	28.2	16.9	436632	28.3	21.7	290687	28.3	19.6
354664	27.9	20.3	219271	28.1	20.1	481442	28.1										

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
190945	28.3	18.0	538445	28.4	21.3	465860	28.5	21.4	217353	28.5	21.4	163834	28.6	20.0	321591	28.7	19.3
128202	28.3	20.1	255232	28.4	18.9	198979	28.5	21.1	441878	28.5	22.1	79614	28.6	17.8	161305	28.7	19.3
430986	28.3	19.1	170592	28.4	19.5	434114	28.5	21.3	389489	28.5	20.9	235831	28.6	19.7	71189	28.7	18.1
41951	28.3	17.0	539534	28.4	21.9	86241	28.5	18.3	483005	28.5	19.9	144194	28.6	18.7	177730	28.7	19.7
249537	28.3	20.2	30201	28.4	19.3	379239	28.5	19.8	7213	28.5	17.9	500846	28.6	21.9	164631	28.7	20.7
297582	28.3	19.9	483899	28.4	21.5	18457	28.5	17.6	405398	28.5	21.1	171833	28.6	18.9	328159	28.7	20.8
448081	28.3	20.9	163193	28.4	21.1	84154	28.5	18.4	537443	28.5	21.2	523879	28.6	21.5	470661	28.7	20.3
191754	28.3	18.8	441727	28.4	21.9	351133	28.5	19.0	39007	28.5	18.7	165144	28.6	20.1	242237	28.7	19.1
85943	28.3	18.5	515373	28.4	21.9	255247	28.5	19.4	93274	28.5	19.1	177932	28.6	19.0	18215	28.7	18.7
431009	28.4	20.9	107071	28.4	18.2	50717	28.5	18.1	240814	28.5	19.7	472284	28.6	20.8	28572	28.7	18.7
526552	28.4	20.9	322759	28.4	20.7	190533	28.5	18.7	408583	28.6	20.5	229336	28.6	20.5	491752	28.7	20.8
509006	28.4	21.8	334024	28.4	18.4	394283	28.5	20.6	435680	28.6	21.0	444213	28.6	21.3	516838	28.7	20.5
178622	28.4	20.4	513002	28.4	19.5	210525	28.5	17.4	60222	28.6	18.5	100270	28.6	17.8	485988	28.7	19.9
221803	28.4	19.9	220706	28.4	19.7	221466	28.5	19.4	218090	28.6	19.7	281572	28.6	18.6	392094	28.7	21.0
436200	28.4	19.0	264955	28.4	18.8	32494	28.5	18.0	126660	28.6	20.2	21893	28.6	17.6	4543	28.7	16.4
43915	28.4	19.2	513577	28.4	20.3	424550	28.5	21.2	277589	28.6	19.6	144117	28.6	18.4	274322	28.7	21.2
480039	28.4	20.9	366467	28.4	21.2	166001	28.5	19.0	243504	28.6	19.3	32201	28.6	18.6	250336	28.7	19.5
483859	28.4	20.1	7791	28.4	16.8	330312	28.5	20.2	155999	28.6	19.5	237840	28.6	19.5	47417	28.7	17.8
236663	28.4	20.6	40574	28.4	18.6	38895	28.5	18.3	535868	28.6	21.6	432748	28.6	20.1	208754	28.7	19.4
136428	28.4	20.3	124090	28.4	19.8	240554	28.5	21.0	443097	28.6	20.7	210097	28.6	19.7	100811	28.7	19.6
256956	28.4	20.0	328700	28.4	20.5	539685	28.5	21.4	433117	28.6	21.4	142006	28.6	21.2	296224	28.7	19.8
251937	28.4	19.5	364124	28.4	20.4	438198	28.5	19.0	452760	28.6	20.2	10995	28.6	18.2	451132	28.7	20.5
416478	28.4	19.8	81352	28.4	18.7	36887	28.5	18.1	141775	28.6	18.9	1536	28.6	14.4	36346	28.7	16.3
121978	28.4	17.7	528211	28.4	22.3	480843	28.5	20.7	319982	28.6	20.6	25668	28.6	18.0	321113	28.7	20.8
26411	28.4	17.5	111634	28.4	19.3	95194	28.5	19.0	275665	28.6	20.7	221045	28.6	20.5	531434	28.7	21.1
485713	28.4	21.4	343431	28.4	20.8	510054	28.5	20.2	350111	28.6	20.9	160445	28.6	19.3	334433	28.7	19.9
164347	28.4	19.8	355262	28.4	20.4	65631	28.5	18.8	261795	28.6	19.8	367476	28.6	21.1	202583	28.7	20.4
25681	28.4	18.6	92974	28.4	18.7	224629	28.5	20.2	69988	28.6	24.2	404016	28.6	20.4	157023	28.7	20.6
291985	28.4	20.1	36900	28.4	17.9	199245	28.5	20.5	72849	28.6	18.9	297099	28.6	20.5	122408	28.7	18.8
48956	28.4	18.7	92087	28.4	18.8	254247	28.5	19.1	126371	28.6	19.5	408208	28.6	21.3	113129	28.7	19.3
50657	28.4	18.5	319958	28.4	21.3	526385	28.5	21.3	36240	28.6	18.6	513349	28.6	20.8	218088	28.7	20.0
235611	28.4	19.7	91938	28.4	18.3	72280	28.5	19.1	277035	28.6	20.2	395253	28.6	20.2	526184	28.7	20.3
314299	28.4	20.3	202720	28.4	20.2	246354	28.5	19.8	175799	28.6	18.4	164362	28.6	19.9	4511	28.7	16.3
88106	28.4	19.1	424564	28.4	21.1	56007	28.5	18.8	424443	28.6	19.7	85725	28.6	18.3	6635	28.7	16.0
8692	28.4	17.3	410702	28.4	20.7	43572	28.5	19.4	133184	28.6	19.4	161405	28.6	18.4	249365	28.7	20.2
160458	28.4	19.3	268283	28.4	19.5	260667	28.5	20.8	189068	28.6	18.5	150661	28.6	20.0	281101	28.7	18.5
42037	28.4	18.9	537142	28.4	21.6	35496	28.5	17.2	223973	28.6	19.5	33720	28.6	17.6	220962	28.7	20.5
344990	28.4	19.6	126314	28.4	19.3	136878	28.5	19.9	255161	28.6	20.1	8653	28.6	16.3	52324	28.7	18.5
243714	28.4	21.1	150336	28.4	19.8	249811	28.5	18.9	91412	28.6	17.8	259986	28.6	20.3	536703	28.7	21.8
286810	28.4	21.2	299217	28.4	20.3	383721	28.5	19.4	142740	28.6	19.0	264965	28.6	17.6	92279	28.7	17.9
410134	28.4	20.9	213226	28.4	18.7	150767	28.5	18.7	93649	28.6	19.0	96051	28.6	20.0	166405	28.7	20.5
19943	28.4	18.7	443471	28.4	20.4	478820	28.5	20.0	479878	28.6	21.1	32783	28.6	17.6	224096	28.7	20.7
40584	28.4	17.6	349250	28.4	20.8	213308	28.5	17.3	20218	28.6	19.1	117195	28.6	19.9	396279	28.7	20.8
214609	28.4	19.8	63305	28.4	19.4	402478	28.5	19.6	341167	28.6	19.9	326945	28.6	21.0	434107	28.7	21.0
520133	28.4	21.4	436876	28.4	20.4	260230	28.5	18.7	263500	28.6	19.9	364543	28.6	20.2	48798	28.7	18.5
537172	28.4	20.0	370922	28.4	21.0	300734	28.5	20.2	5611	28.6	16.1	221734	28.6	21.1	35981	28.7	18.2
45087	28.4	18.8	519520	28.4	21.0	26498	28.5	18.2	424264	28.6	19.5	512219	28.6	20.3	193490	28.7	18.7
155314	28.4	19.6	98788	28.4	17.9	193215	28.5	19.8	112304	28.6	19.2	190591	28.6	19.4	538845	28.7	21.9
474070	28.4	21.3	482448	28.4	20.9	162878	28.5	19.2	302202	28.6	19.4	56716	28.6	18.4	318569	28.7	21.5
469321	28.4	21.5	460150	28.5	20.2	50709	28.5	18.1	257784	28.6	19.6	40652	28.6	19.4	250057	28.7	20.3
63270	28.4	19.0	21341	28.5	17.5	326021	28.5	20.6	258503	28.6	20.5	456237	28.6	21.3	430182	28.7	21.1
327564	28.4	20.0	9370	28.5	18.0	158744	28.5	19.3	216656	28.6	19.4	496987	28.6	20.0	254996	28.7	20.1
80011	28.4	19.3	4048	28.5	15.7	499640	28.5	20.4	357102	28.6	19.1	530440	28.7	21.3	267749	28.7	19.9
60180	28.4	18.9	232238	28.5	21.1	514565	28.5	19.9	291052	28.6	20.6	510034	28.7	20.0	510711	28.7	20.1
274674	28.4	20.3	454401	28.5	20.2	343936	28.5	20.8	71255	28.6	17.9	398041	28.7	21.0	168678	28.8	20.6
482464	28.4	19.4	74808	28.5	18.3	105873	28.5	18.4	103652	28.6	19.4	276083	28.7	19.8	539724	28.8	21.4
165004	28.4	20.0	500079	28.5	19.7	261690	28.5	19.6	131096	28.6	18.1	261626	28.7	20.5	510584	28.8	21.3
314147	28.4	20.3	234316	28.5	18.5	392706	28.5	20.3	98634	28.6	18.6	318908	28.7	19.7	519558	28.8	20.1
57894	28.4	18.3	44111	28.5	19.9	535459	28.5	21.4	533530	28.6	21.3	282245	28.7	21.2	500159	28.8	20.4
103564	28.4	18.9	511361	28.5	21.4	359768	28.5	20.0	308003	28.6	19.3	283646	28.7	20.8	89554	28.8	17.9
315152	28.4	20.0	400695	28.5	20.9	433042	28.5	21.0	34041	28.6	17.2	384866	28.7	19.9	331169	28.8	19.7
536839	28.4	21.3	66624	28.5	19.2	127317	28.5	19.4	354334	28.6	20.2	115034	28.7	19.3	520492	28.8	20.9
159118	28.4	19.3	507237	28.5	20.8	477852	28.5	21.3	313314	28.6	20.1	324904	28.7	20.0	110589	28.8	18.6
176332	28.4	20.1	8987	28.5	18.0	465638	28.5	20.8	76537	28.6	19.6	37548	28.7	19.3	429513	28.8	20.6
22654	28.4	17.3	164999	28.5	19.1	451367	28.5	20.2	512980	28.6	20.0	269320	28.7	20.5	166339	28.8	18.8
115885	28.4	18.9	314117	28.5	19.4	192342	28.5	19.2	327676	28.6	18.5	266284	28.7	20.8	428756	28.8	20.7
386088	28.4	21.0	88376	28.5	19.3	407657	28.5	20.6	115938	28.6	19.6	191316	28.7	20.2	257788	28.8	17.4
307579	28.4	20.0	472144	28.5	19.9	430003	28.5	20.5	40346	28.6	18.8	36725	28.7	18.3	386449	28.8	19.8
211480	28.4	20.3	126088	28.5	19.0	315252	28.5	19.5	126805								

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
366016	28.8	20.7	113459	28.8	18.8	386458	28.9	21.5	392246	28.9	20.7	267005	29.1	19.0	494550	29.1	20.0
520243	28.8	20.7	332344	28.8	19.6	386826	28.9	21.2	17465	28.9	17.6	308039	29.1	19.8	104034	29.1	18.7
442180	28.8	19.8	484690	28.8	20.6	256829	28.9	19.4	291404	28.9	20.1	366657	29.1	19.9	144039	29.1	19.6
244402	28.8	19.4	90362	28.8	19.3	467983	28.9	20.4	512217	28.9	20.4	300742	29.1	20.0	168053	29.1	20.9
206096	28.8	20.3	451596	28.8	21.2	487191	28.9	21.1	293831	28.9	19.8	200248	29.1	18.0	118421	29.1	20.1
21185	28.8	18.5	107685	28.8	20.1	463551	28.9	20.7	472640	28.9	20.0	454505	29.1	21.0	210302	29.1	19.8
141464	28.8	19.2	321999	28.8	20.2	392588	28.9	20.5	62188	28.9	18.7	163887	29.1	18.3	400221	29.1	20.6
241018	28.8	19.8	38148	28.8	18.9	43513	28.9	17.6	415007	28.9	20.2	10313	29.1	16.6	17996	29.1	17.1
312007	28.8	19.9	223555	28.8	21.1	537100	28.9	20.2	420921	28.9	21.0	142197	29.1	19.9	40456	29.1	17.8
262178	28.8	19.3	101403	28.8	19.0	212562	28.9	20.5	252888	28.9	20.7	135889	29.1	20.1	36328	29.1	17.5
277817	28.8	20.3	254580	28.8	20.0	452290	28.9	20.4	308273	28.9	18.4	265959	29.1	18.7	208054	29.1	18.9
383280	28.8	20.8	535388	28.8	21.5	392514	28.9	20.7	350249	28.9	20.0	22193	29.1	18.6	344677	29.1	20.6
88915	28.8	19.4	329761	28.8	21.2	393677	28.9	19.2	261480	28.9	20.3	268258	29.1	19.6	171433	29.1	19.7
468047	28.8	21.0	521838	28.8	20.6	123027	28.9	18.3	311874	28.9	20.7	476602	29.1	20.2	18547	29.1	17.4
8850	28.8	17.0	529371	28.9	20.6	24238	28.9	17.7	72836	28.9	18.4	525449	29.1	20.6	18965	29.2	18.5
321120	28.8	20.4	46619	28.9	19.6	516671	28.9	19.8	24202	28.9	17.7	302144	29.1	20.7	289569	29.2	20.7
11454	28.8	16.7	276562	28.9	20.5	473345	28.9	20.6	381621	28.9	19.3	375754	29.1	20.1	422298	29.2	19.6
128630	28.8	19.1	41800	28.9	16.9	169799	28.9	17.5	251872	28.9	19.5	58595	29.1	19.0	17075	29.2	16.3
430109	28.8	20.6	195043	28.9	18.9	147156	28.9	18.4	513903	28.9	19.2	249091	29.1	19.0	157723	29.2	19.2
74353	28.8	17.3	170920	28.9	19.5	93530	28.9	18.3	26674	28.9	18.5	234707	29.1	19.5	243527	29.2	20.5
280163	28.8	19.9	162016	28.9	19.5	380845	28.9	20.4	514027	28.9	21.2	182978	29.1	20.9	214631	29.2	19.9
507258	28.8	21.1	37893	28.9	19.0	449053	28.9	20.4	40435	28.9	18.5	336169	29.1	21.8	242828	29.2	20.3
6838	28.8	15.1	511911	28.9	21.9	315005	28.9	19.7	179779	28.9	20.8	117166	29.1	18.3	470702	29.2	20.3
31878	28.8	17.6	81153	28.9	18.5	322149	28.9	20.8	48018	29.0	18.6	206006	29.1	19.4	186830	29.2	19.0
427	28.8	14.6	102318	28.9	18.0	442574	28.9	19.6	479734	29.0	20.9	305950	29.1	20.4	241735	29.2	18.6
189829	28.8	19.1	75497	28.9	17.6	452714	28.9	21.8	142076	29.0	19.7	264297	29.1	19.4	172336	29.2	19.0
327599	28.8	19.8	394190	28.9	20.1	329676	28.9	19.8	247368	29.0	19.7	527699	29.1	20.6	64911	29.2	19.2
94189	28.8	18.3	344491	28.9	20.9	219310	28.9	20.5	506954	29.0	20.8	512641	29.1	19.8	401633	29.2	20.9
314020	28.8	18.9	200113	28.9	20.4	1393	28.9	15.8	261820	29.0	20.3	478732	29.1	20.9	337150	29.2	20.6
70996	28.8	17.4	208666	28.9	18.8	248554	28.9	18.8	124489	29.0	18.8	257814	29.1	21.0	402434	29.2	20.9
537043	28.8	20.6	137036	28.9	18.2	285213	28.9	19.7	186381	29.0	20.1	268967	29.1	21.2	515345	29.2	20.3
477070	28.8	20.9	342674	28.9	19.5	124256	28.9	19.2	46249	29.0	19.7	209331	29.1	20.0	262973	29.2	20.2
77637	28.8	18.2	525631	28.9	20.6	33333	28.9	18.4	346260	29.0	20.8	171506	29.1	19.6	511932	29.2	21.6
184841	28.8	20.3	507416	28.9	21.6	499593	28.9	20.3	233773	29.0	20.4	112035	29.1	19.7	279667	29.2	21.6
352131	28.8	19.6	89210	28.9	19.4	540152	28.9	20.9	169678	29.0	18.6	102793	29.1	19.3	292004	29.2	20.1
156957	28.8	20.6	2371	28.9	15.6	190262	28.9	19.0	255107	29.0	19.3	254308	29.1	19.7	56108	29.2	17.9
18991	28.8	18.3	169503	28.9	19.5	37249	28.9	17.0	107023	29.0	18.5	52999	29.1	17.9	64569	29.2	18.0
65817	28.8	19.5	91341	28.9	20.1	408049	28.9	20.0	253859	29.0	20.1	536860	29.1	21.9	5923	29.2	16.8
276291	28.8	19.3	102206	28.9	18.7	213099	28.9	18.5	479631	29.0	20.8	178019	29.1	18.6	282750	29.2	20.7
77157	28.8	19.0	35075	28.9	17.4	51545	28.9	18.7	48906	29.0	18.8	92309	29.1	19.4	68920	29.2	18.8
215780	28.8	19.4	139734	28.9	18.4	122885	28.9	18.8	420373	29.0	21.1	199185	29.1	21.1	367134	29.2	19.2
312206	28.8	20.3	275718	28.9	19.1	73921	28.9	18.6	470897	29.0	20.0	431851	29.1	20.3	499539	29.2	20.2
424585	28.8	20.8	318515	28.9	19.9	202191	28.9	20.7	288041	29.0	19.7	376117	29.1	19.7	401940	29.2	21.0
31405	28.8	17.9	511280	28.9	20.0	113527	28.9	20.4	185474	29.0	20.1	68148	29.1	18.4	387800	29.2	20.2
475389	28.8	20.9	287705	28.9	19.6	159929	28.9	21.6	510763	29.0	20.3	364761	29.1	18.8	246157	29.2	19.3
518602	28.8	20.8	12621	28.9	18.0	95781	28.9	19.8	79066	29.0	18.8	250717	29.1	20.1	64529	29.2	19.1
22809	28.8	16.3	194925	28.9	19.6	37617	28.9	18.1	257021	29.0	20.5	14568	29.1	17.8	278957	29.2	20.6
292146	28.8	20.0	166024	28.9	19.7	480613	28.9	20.4	342056	29.0	19.7	423944	29.1	19.8	332184	29.2	19.9
67029	28.8	17.1	132547	28.9	19.2	117576	28.9	19.6	30784	29.0	16.3	449030	29.1	20.3	477573	29.2	21.0
435655	28.8	20.0	82838	28.9	20.3	7576	28.9	16.5	187910	29.0	19.0	23380	29.1	18.9	512365	29.2	20.5
184716	28.8	18.4	503451	28.9	21.0	315841	28.9	20.5	103511	29.0	19.7	71402	29.1	17.9	419717	29.2	19.7
480690	28.8	21.0	485895	28.9	19.7	92389	28.9	19.7	313147	29.0	20.1	238649	29.1	20.0	176498	29.2	19.7
72331	28.8	19.2	245558	28.9	19.2	178206	28.9	20.4	390089	29.0	19.8	319131	29.1	19.5	527077	29.2	21.3
342585	28.8	20.0	188760	28.9	19.6	457431	28.9	20.4	461686	29.0	21.3	215250	29.1	18.9	528861	29.2	20.8
439712	28.8	20.3	280122	28.9	19.4	236433	28.9	20.6	248108	29.0	20.1	149188	29.1	20.0	257507	29.2	19.1
216042	28.8	19.4	5336	28.9	17.1	48405	28.9	17.9	431366	29.0	20.9	113395	29.1	18.9	1289	29.2	14.7
180992	28.8	18.5	504697	28.9	20.9	431039	28.9	19.6	164004	29.0	19.7	395049	29.1	21.4	439513	29.2	21.0
325682	28.8	19.8	488105	28.9	21.1	365172	28.9	20.7	52541	29.0	19.1	116113	29.1	18.9	462698	29.2	19.8
353856	28.8	20.4	171459	28.9	19.5	350469	28.9	19.6	207861	29.0	19.9	537066	29.1	21.4	53863	29.2	18.2
475438	28.8	20.0	292331	28.9	20.8	507494	28.9	20.0	65228	29.0	19.0	485931	29.1	21.4	239791	29.2	20.5
348744	28.8	21.2	139282	28.9	20.6	338500	28.9	20.1	388691	29.0	20.3	190580	29.1	17.5	37268	29.2	18.2
294084	28.8	20.9	143863	28.9	19.1	428147	28.9	19.9	396965	29.0	21.3	488785	29.1	20.3	345935	29.2	20.6
393365	28.8	21.0	254355	28.9	19.0	384519	28.9	20.3	409652	29.0	20.5	236127	29.1	20.0	467944	29.2	20.5
51374	28.8	18.7	167958	28.9	19.4	391597	28.9	20.2	516383	29.0	20.3	253628	29.1	20.3	477928	29.2	21.8
367014	28.8	19.9	38479	28.9	18.2	258802	28.9	19.5	9443	29.0	17.6	388831	29.1	20.9	261302	29.2	20.5
291003	28.8	20.8	169809	28.9	19.6	207445	28.9	19.5	387942	29.0	20.4	367891	29.1	21.4	442573	29.2	19.9
429486	28.8	19.9	155266	28.9	19.3	477089	28.9	19.8	27636	29.0	18.4	188526	29.1	18.9	41427	29.2	19.0
386821	28.8	20.9	356296	28.9	21.7	416572	28.9	20.7	21169	29.0	19.8	41531	29.1	17.4	71777	29.2	18.6
284955	28.8	20.3	38246	28.9	18.7	443554	28.9	20.3	418								

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
239141	29.2	19.7	374822	29.3	20.8	41998	29.4	18.4	251488	29.4	19.9	347122	29.5	20.7	452521	29.6	19.6
125643	29.2	18.8	331376	29.3	20.0	40803	29.4	18.4	22712	29.4	17.5	65409	29.5	18.3	198349	29.6	19.6
187443	29.2	20.0	62398	29.3	17.9	45945	29.4	18.3	425868	29.4	21.1	332126	29.5	19.4	9692	29.6	18.7
36926	29.2	18.0	228264	29.3	19.7	434645	29.4	20.7	256845	29.4	20.3	216586	29.5	20.2	274160	29.6	20.2
5677	29.2	16.2	513869	29.3	20.8	216878	29.4	20.4	43735	29.4	17.1	160207	29.5	20.2	103588	29.6	18.8
465869	29.2	19.5	42197	29.3	18.7	321656	29.4	19.9	119963	29.4	18.8	396883	29.5	19.8	240027	29.6	18.9
537393	29.2	21.7	293033	29.3	20.9	21793	29.4	17.7	426209	29.4	21.3	445458	29.5	19.6	401624	29.6	21.6
169888	29.2	19.1	424635	29.3	21.7	347271	29.4	21.8	316705	29.4	20.0	444070	29.5	21.5	399029	29.6	20.9
123939	29.2	20.1	396979	29.3	21.0	519747	29.4	20.6	18263	29.4	18.2	62742	29.5	19.9	390091	29.6	20.1
383277	29.2	20.1	115027	29.3	18.9	19919	29.4	16.5	166262	29.4	20.0	17534	29.5	18.0	539237	29.6	20.5
469940	29.2	20.1	235911	29.3	20.8	263283	29.4	20.1	295369	29.4	21.3	159701	29.5	19.7	164114	29.6	18.4
225204	29.2	19.5	476737	29.3	21.3	125602	29.4	19.5	176055	29.4	19.9	460591	29.5	21.0	75170	29.6	18.6
469972	29.2	20.6	452730	29.3	20.1	315039	29.4	20.2	137698	29.4	18.6	530356	29.5	22.2	327045	29.6	19.3
85120	29.2	18.9	37998	29.3	19.7	320154	29.4	20.6	137903	29.4	19.2	240544	29.5	20.1	240183	29.6	20.6
512799	29.2	21.4	236540	29.3	20.4	359583	29.4	20.3	192196	29.4	20.1	260257	29.5	18.8	342756	29.6	19.8
236582	29.2	20.2	440223	29.3	20.7	1346	29.4	14.2	234918	29.4	19.9	516568	29.5	21.2	465908	29.6	20.7
333302	29.2	20.5	324240	29.3	20.0	404076	29.4	19.9	262099	29.4	20.9	536470	29.5	21.1	11820	29.6	18.4
462193	29.2	20.6	321303	29.3	19.6	137430	29.4	18.8	87339	29.4	19.9	62016	29.5	18.0	299855	29.6	20.7
207302	29.2	19.1	448423	29.3	20.7	170371	29.4	19.9	257152	29.4	21.0	115430	29.5	18.9	9167	29.6	17.4
482132	29.2	20.8	276014	29.3	17.9	446217	29.4	20.6	308331	29.4	19.6	344654	29.5	20.5	365262	29.6	19.5
512259	29.2	21.5	381615	29.3	19.3	347284	29.4	20.0	435874	29.4	20.2	477856	29.5	22.3	367897	29.6	20.2
316475	29.2	19.9	514030	29.3	20.7	229125	29.4	19.9	341268	29.4	20.5	46407	29.5	19.0	507134	29.6	20.1
285462	29.2	19.6	349137	29.3	21.3	199556	29.4	19.9	434772	29.4	21.8	460465	29.5	19.1	176118	29.6	20.2
87269	29.2	24.0	222917	29.3	20.1	123202	29.4	19.6	43252	29.4	18.5	52706	29.5	17.7	239351	29.6	20.0
480220	29.2	21.2	63953	29.3	18.6	126082	29.4	18.0	497597	29.4	21.8	420833	29.5	21.2	246760	29.6	20.6
366581	29.2	19.4	326818	29.3	19.6	308018	29.4	18.5	373016	29.4	19.7	84340	29.5	19.1	114170	29.6	19.5
287263	29.2	20.1	282962	29.3	20.4	286725	29.4	21.0	74026	29.4	19.4	344429	29.5	20.9	72348	29.6	19.2
431065	29.2	20.5	385472	29.3	19.6	534068	29.4	20.5	470438	29.4	20.4	85015	29.5	18.8	123044	29.6	19.2
90382	29.2	18.2	186957	29.3	19.6	161497	29.4	18.2	132619	29.4	18.9	511154	29.5	21.3	321493	29.6	20.1
136157	29.2	20.5	127648	29.3	18.7	106037	29.4	18.9	318486	29.4	20.8	199881	29.5	18.9	509683	29.6	20.1
396823	29.2	20.7	322237	29.3	20.7	283305	29.4	21.2	25191	29.4	17.9	223386	29.5	19.3	326645	29.6	19.5
169562	29.2	20.3	186499	29.3	19.4	367323	29.4	21.1	121798	29.4	19.3	158776	29.5	19.1	308328	29.6	20.5
264961	29.2	19.4	414105	29.3	20.2	6242	29.4	15.6	387298	29.4	20.3	509760	29.5	20.1	112529	29.6	18.8
23552	29.2	18.2	50294	29.3	18.5	366007	29.4	21.5	325591	29.4	20.3	429353	29.5	21.8	528151	29.6	21.5
348384	29.2	20.7	70867	29.3	18.4	507197	29.4	21.3	195158	29.4	20.3	92357	29.5	19.3	386475	29.6	20.9
198429	29.2	19.1	542583	29.3	20.7	97215	29.4	18.6	498417	29.4	19.7	521082	29.5	21.6	165648	29.6	19.2
472843	29.2	20.1	369039	29.3	20.0	244442	29.4	19.6	73361	29.4	19.6	524729	29.5	21.6	410165	29.6	21.1
483301	29.2	20.3	534525	29.3	20.7	68812	29.4	19.3	366022	29.4	19.9	376120	29.5	19.6	328188	29.6	20.4
472576	29.3	20.4	215459	29.3	19.6	43213	29.4	18.4	299116	29.4	21.0	45647	29.5	18.0	478379	29.6	19.4
150232	29.3	19.4	201131	29.3	21.1	128323	29.4	19.1	392988	29.4	20.2	387977	29.5	20.5	403393	29.6	20.7
157381	29.3	19.7	102212	29.3	18.7	112840	29.4	19.8	418949	29.4	20.3	309069	29.5	20.3	377648	29.6	19.5
151898	29.3	20.7	241425	29.3	20.1	530436	29.4	19.8	231877	29.5	18.9	11556	29.5	16.4	163256	29.6	19.3
259402	29.3	19.0	318358	29.3	19.1	387075	29.4	20.6	388998	29.5	20.5	328525	29.5	20.0	99148	29.6	18.6
338633	29.3	20.8	99134	29.3	20.0	374329	29.4	20.5	410938	29.5	20.3	184255	29.5	20.3	530149	29.6	20.7
283677	29.3	21.6	148081	29.3	18.5	516355	29.4	20.1	51628	29.5	18.2	6289	29.5	17.8	20942	29.6	18.2
56357	29.3	18.4	399039	29.3	20.9	363097	29.4	19.0	58039	29.5	19.4	98105	29.5	19.2	337013	29.6	19.1
118060	29.3	18.4	332074	29.3	18.4	478415	29.4	20.8	345881	29.5	18.6	63051	29.5	18.2	520536	29.6	20.7
309648	29.3	20.0	439160	29.3	20.8	473076	29.4	20.9	96642	29.5	19.2	364156	29.5	20.8	448403	29.6	19.8
273921	29.3	19.9	73482	29.3	19.8	161067	29.4	18.4	535283	29.5	20.7	88097	29.5	17.3	179837	29.6	19.5
224774	29.3	18.8	121846	29.3	19.2	173606	29.4	19.3	318942	29.5	20.2	275473	29.5	20.1	487296	29.6	20.3
444356	29.3	20.3	294366	29.3	20.0	201104	29.4	20.2	429523	29.5	20.6	540120	29.5	20.2	132188	29.6	20.1
418063	29.3	19.6	70410	29.3	17.1	39295	29.4	19.0	483877	29.5	19.8	511978	29.5	21.0	294448	29.6	19.1
90650	29.3	19.5	105592	29.3	19.3	67812	29.4	18.4	103508	29.5	19.7	303235	29.5	19.7	249634	29.6	19.3
537739	29.3	21.3	427688	29.3	21.0	321059	29.4	19.0	323098	29.5	20.4	341071	29.5	21.4	2306	29.6	16.0
252118	29.3	20.6	218594	29.3	19.3	531683	29.4	22.8	105248	29.5	17.9	221419	29.5	19.5	169965	29.6	18.9
302165	29.3	19.5	313328	29.3	20.8	255063	29.4	20.3	162078	29.5	18.8	167290	29.5	19.6	96086	29.6	19.4
514236	29.3	20.7	145052	29.3	19.8	533503	29.4	21.6	124515	29.5	18.0	70139	29.5	18.1	326364	29.6	17.2
383217	29.3	20.3	33945	29.3	19.1	107982	29.4	19.1	346666	29.5	19.4	100545	29.5	18.1	402513	29.6	20.3
172243	29.3	19.3	350571	29.3	18.8	155919	29.4	19.3	73260	29.5	19.9	485842	29.5	20.2	366113	29.6	20.8
386325	29.3	18.9	392998	29.3	19.8	349739	29.4	20.4	38368	29.5	18.1	65363	29.5	19.9	12348	29.6	18.9
542338	29.3	20.8	52645	29.3	19.1	358871	29.4	20.3	466506	29.5	20.3	369231	29.5	21.0	507193	29.6	21.2
30573	29.3	19.7	500144	29.3	20.9	79827	29.4	16.9	40230	29.5	19.2	264040	29.5	20.6	25692	29.6	18.1
165073	29.3	19.4	397062	29.3	19.9	68332	29.4	19.0	229822	29.5	20.0	139232	29.5	19.5	358970	29.6	20.2
234144	29.3	20.6	436977	29.3	21.6	474100	29.4	20.3	64905	29.5	19.4	364521	29.5	20.1	167327	29.6	18.9
291782	29.3	20.8	366339	29.3	20.5	173646	29.4	20.2	445856	29.5	20.4	378630	29.5	20.3	421414	29.6	19.4
540481	29.3	20.2	290428	29.3	21.3	378145	29.4	20.9	433858	29.5	20.3	473235	29.5	20.8	235756	29.6	20.1
372382	29.3	20.6	184777	29.3	20.3	404083	29.4	20.4	494314	29.5	20.7	287034	29.5	20.0	51474	29.6	19.0
74197	29.3	19.7	199442	29.4	19.8	387966	29.4	21.2	245744	29.5	20.3	289455	29.5	21.1	239197	29.6	19.8
2396	29.3	16.0	152103	29.4	19.6	7980	29.4	17									

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
72130	29.6	18.8	487975	29.7	20.3	404454	29.8	20.8	36387	29.8	16.7	335769	29.9	21.0	296353	29.9	20.5
210849	29.6	19.9	328999	29.7	20.3	473377	29.8	20.8	435277	29.8	20.9	440914	29.9	20.5	324743	29.9	20.1
239951	29.6	20.7	191222	29.7	20.3	1516	29.8	16.4	64878	29.8	18.6	302216	29.9	20.1	293021	29.9	20.2
442885	29.6	21.3	2125	29.7	15.7	240919	29.8	18.8	436532	29.8	21.4	155321	29.9	20.0	42833	29.9	17.0
475425	29.6	20.2	211913	29.7	19.6	125452	29.8	20.3	46161	29.8	18.4	369699	29.9	20.3	256783	29.9	20.3
157796	29.6	20.6	214059	29.7	20.1	471290	29.8	20.2	511657	29.8	21.2	316880	29.9	19.7	404400	29.9	21.4
424287	29.6	19.7	199098	29.7	20.3	444166	29.8	20.6	192997	29.8	19.5	277760	29.9	20.8	515662	29.9	21.4
530654	29.6	20.1	424218	29.7	21.6	251727	29.8	19.8	528757	29.8	21.7	217646	29.9	20.1	453697	29.9	20.3
268941	29.6	20.8	461827	29.7	20.7	108453	29.8	20.4	358397	29.8	19.9	402409	29.9	21.0	161551	29.9	18.3
88015	29.6	18.1	359344	29.7	20.9	181257	29.8	20.5	135031	29.8	19.4	295334	29.9	20.8	488765	29.9	20.2
321913	29.6	19.9	340037	29.7	19.9	452980	29.8	21.3	525393	29.8	21.8	325036	29.9	21.5	478235	29.9	21.5
494618	29.6	20.5	103853	29.7	18.6	440361	29.8	20.6	511264	29.8	21.6	42422	29.9	19.2	515217	29.9	20.6
209820	29.6	21.3	144230	29.7	19.9	223437	29.8	18.8	470734	29.8	20.4	521693	29.9	21.4	104475	29.9	20.9
474564	29.6	20.1	148295	29.7	20.5	440236	29.8	20.0	449425	29.8	20.6	201431	29.9	18.8	61499	29.9	19.0
223207	29.6	19.0	382165	29.7	19.7	292981	29.8	20.3	362483	29.8	20.9	364691	29.9	19.7	528234	29.9	21.4
187359	29.6	19.4	389277	29.7	19.4	332063	29.8	19.5	222921	29.8	20.0	35091	29.9	18.4	144348	29.9	20.0
217136	29.6	19.4	312790	29.7	20.0	400868	29.8	20.1	12294	29.8	18.3	75605	29.9	18.9	296125	29.9	20.2
327275	29.6	21.5	144375	29.7	20.4	221542	29.8	19.3	350529	29.8	19.7	405756	29.9	20.7	478596	29.9	21.9
164760	29.6	18.1	316118	29.7	20.8	282856	29.8	19.5	359000	29.9	20.5	464251	29.9	20.2	486666	29.9	20.9
224689	29.6	21.5	6541	29.7	16.9	192236	29.8	19.9	159248	29.9	20.6	185991	29.9	20.5	385849	29.9	21.1
333193	29.6	19.4	123786	29.7	20.0	529192	29.8	21.9	318542	29.9	20.9	191649	29.9	19.6	377090	29.9	19.6
308566	29.6	20.3	62710	29.7	19.3	240264	29.8	19.7	5178	29.9	15.8	389071	29.9	19.8	252795	29.9	19.6
235866	29.6	20.4	429907	29.7	21.3	186990	29.8	19.3	238249	29.9	19.0	30030	29.9	20.0	318620	30.0	21.1
445822	29.6	20.7	469485	29.7	19.4	461585	29.8	20.6	231627	29.9	19.0	155394	29.9	20.9	440008	30.0	21.9
315415	29.6	20.3	206546	29.7	19.4	257558	29.8	19.7	250692	29.9	19.4	20294	29.9	17.8	246820	30.0	19.7
19080	29.6	18.0	423507	29.7	21.6	391921	29.8	20.2	422854	29.9	20.9	283739	29.9	19.3	465043	30.0	20.6
165246	29.6	18.6	516357	29.7	19.9	252989	29.8	21.3	141570	29.9	21.3	187410	29.9	19.2	314075	30.0	20.2
126932	29.6	20.5	410216	29.7	20.2	16091	29.8	18.4	315765	29.9	20.6	62243	29.9	18.6	273780	30.0	20.5
154963	29.6	19.0	48553	29.7	18.7	290839	29.8	19.5	481233	29.9	20.3	71867	29.9	18.6	373231	30.0	20.3
164018	29.6	17.9	433237	29.7	20.5	360938	29.8	20.4	517896	29.9	20.9	513562	29.9	21.4	497379	30.0	20.1
474648	29.6	20.6	100512	29.7	20.0	435346	29.8	21.5	214392	29.9	20.5	425529	29.9	19.2	188928	30.0	20.9
382570	29.6	19.7	486682	29.7	20.1	442581	29.8	19.9	154961	29.9	19.9	51511	29.9	18.7	320163	30.0	21.4
514819	29.7	19.5	207184	29.7	21.2	439559	29.8	21.0	411941	29.9	20.1	390645	29.9	19.8	355869	30.0	20.6
211425	29.7	19.8	252692	29.7	20.2	37373	29.8	17.0	328443	29.9	20.2	320228	29.9	21.2	308656	30.0	20.6
289038	29.7	19.9	322436	29.7	20.1	513380	29.8	21.8	159277	29.9	19.2	391245	29.9	21.1	343401	30.0	20.3
229202	29.7	19.8	315980	29.7	20.5	280985	29.8	19.4	96647	29.9	19.6	41406	29.9	18.2	11237	30.0	16.9
530872	29.7	19.9	526572	29.7	21.0	208284	29.8	18.8	258760	29.9	21.0	247882	29.9	19.4	530447	30.0	21.2
182025	29.7	17.9	19744	29.7	17.7	482708	29.8	21.2	480030	29.9	21.0	296876	29.9	20.1	524848	30.0	21.3
100918	29.7	19.7	317534	29.7	19.9	118916	29.8	19.2	422908	29.9	20.1	330044	29.9	20.9	255025	30.0	20.3
193330	29.7	19.4	184353	29.7	20.0	167924	29.8	19.8	359961	29.9	20.4	324390	29.9	19.4	262910	30.0	20.2
438765	29.7	20.8	61976	29.7	19.6	478022	29.8	20.9	213128	29.9	19.9	36547	29.9	18.0	360681	30.0	21.0
789	29.7	15.5	444315	29.7	19.4	152105	29.8	19.7	166529	29.9	18.7	99581	29.9	20.0	533456	30.0	22.2
160402	29.7	18.9	529762	29.7	21.6	98931	29.8	20.1	96544	29.9	18.9	347060	29.9	20.6	180918	30.0	20.0
490760	29.7	21.1	351448	29.7	20.3	317442	29.8	20.0	485229	29.9	19.9	41959	29.9	18.3	373304	30.0	20.4
254427	29.7	19.4	480169	29.7	21.8	60246	29.8	18.9	57941	29.9	19.3	284034	29.9	19.1	339053	30.0	19.9
420854	29.7	21.0	301018	29.7	20.2	509843	29.8	20.6	35781	29.9	18.5	519280	29.9	21.5	164654	30.0	19.4
496555	29.7	19.6	295853	29.7	19.7	146100	29.8	18.0	253653	29.9	18.6	257178	29.9	19.8	9079	30.0	17.8
74007	29.7	19.7	527386	29.7	20.7	112721	29.8	18.4	34403	29.9	18.7	218240	29.9	19.2	449438	30.0	20.4
441974	29.7	20.7	512844	29.7	21.1	176216	29.8	18.8	222195	29.9	19.8	392417	29.9	20.5	85809	30.0	18.4
166753	29.7	18.2	524642	29.7	20.3	345240	29.8	21.0	431965	29.9	21.3	315037	29.9	20.3	11134	30.0	18.3
245400	29.7	20.9	117244	29.7	18.7	312552	29.8	20.3	242020	29.9	20.2	168784	29.9	17.0	22527	30.0	17.5
39575	29.7	18.3	91380	29.7	19.9	516964	29.8	21.4	342315	29.9	18.8	418917	29.9	21.0	147885	30.0	20.0
204478	29.7	18.8	66914	29.7	18.6	479010	29.8	20.5	20578	29.9	18.6	340970	29.9	21.2	380566	30.0	19.7
41908	29.7	17.9	203720	29.7	20.2	367721	29.8	20.8	106868	29.9	18.1	13758	29.9	17.6	416497	30.0	19.4
402489	29.7	19.7	311900	29.7	19.9	420782	29.8	20.3	115590	29.9	19.7	496443	29.9	21.0	29589	30.0	17.3
393231	29.7	20.0	442043	29.8	21.2	405661	29.8	20.1	58463	29.9	18.9	363480	29.9	21.2	57725	30.0	18.9
221428	29.7	18.8	188800	29.8	19.8	198168	29.8	20.1	299143	29.9	20.7	360914	29.9	19.8	251857	30.0	20.3
42168	29.7	18.7	428224	29.8	20.4	206773	29.8	19.7	149387	29.9	18.4	219307	29.9	20.5	532402	30.0	20.8
225084	29.7	18.7	418041	29.8	20.9	287667	29.8	20.8	494163	29.9	21.4	435354	29.9	20.4	530586	30.0	21.4
293734	29.7	19.8	28029	29.8	16.6	512709	29.8	20.5	159970	29.9	20.1	336165	29.9	19.7	321356	30.0	21.3
133369	29.7	18.8	341086	29.8	20.9	408481	29.8	19.8	209146	29.9	20.5	196482	29.9	20.3	176425	30.0	18.6
130415	29.7	17.0	288853	29.8	20.5	287053	29.8	21.1	117654	29.9	20.2	115441	29.9	18.5	481399	30.0	21.3
301327	29.7	19.8	177471	29.8	19.7	133915	29.8	18.0	342573	29.9	20.8	362282	29.9	20.9	380850	30.0	20.6
477933	29.7	21.4	178810	29.8	19.9	423969	29.8	20.8	297045	29.9	20.2	288202	29.9	19.4	260170	30.0	19.8
371905	29.7	20.8	280076	29.8	20.3	428239	29.8	20.3	34911	29.9	18.4	351278	29.9	20.6	446172	30.0	20.7
432715	29.7	20.9	311923	29.8	20.4	281391	29.8	20.1	527400	29.9	20.6	412755	29.9	20.8	234116	30.0	18.6
539001	29.7	21.7	489495	29.8	19.7	181227	29.8	20.4	515663	29.9	21.3	145100	29.9	19.9	397084	30.0	21.4
275695	29.7	19.9	383248	29.8	19.6	203684	29.8	19.2	478352	29.9	20.6	130109	29.9	18.9	75474	30.0	17.9
367701	29.7	19.9	399069	29.8	20.6												

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
60179	30.1	19.2	313302	30.1	19.5	379678	30.2	19.1	43045	30.3	18.6	492205	30.3	21.3	532751	30.4	19.3
203291	30.1	17.8	344720	30.1	20.6	466082	30.2	21.6	236654	30.3	20.6	432891	30.3	21.7	339357	30.4	19.5
221436	30.1	19.3	424553	30.1	20.7	215140	30.2	20.2	317738	30.3	20.0	497516	30.3	21.3	88808	30.4	19.8
495320	30.1	20.3	217661	30.1	19.5	173734	30.2	19.1	321613	30.3	20.6	147551	30.3	19.4	428780	30.4	21.3
164655	30.1	20.2	276010	30.1	18.2	261548	30.2	20.3	416701	30.3	20.2	533416	30.3	20.2	497557	30.4	21.4
260552	30.1	20.1	95411	30.1	19.5	155721	30.2	20.0	23903	30.3	18.3	332383	30.3	20.0	183994	30.4	19.4
540664	30.1	20.8	215080	30.1	21.0	109225	30.2	20.3	479816	30.3	21.7	196891	30.3	20.9	17203	30.4	18.2
315169	30.1	20.6	144989	30.1	19.6	177787	30.2	20.8	387603	30.3	21.1	479799	30.3	21.2	24370	30.4	17.8
86832	30.1	18.0	23048	30.1	18.1	427117	30.2	20.1	230905	30.3	20.2	101446	30.3	19.3	450256	30.4	21.5
186942	30.1	19.2	480357	30.1	21.6	36563	30.2	17.8	40126	30.3	19.0	74576	30.3	19.9	394211	30.4	20.1
412146	30.1	21.9	258772	30.1	20.1	460109	30.2	20.6	142794	30.3	19.5	226409	30.3	19.5	361520	30.4	20.9
83369	30.1	18.3	376384	30.1	21.3	7451	30.2	16.1	485774	30.3	21.2	303228	30.3	21.1	502485	30.4	19.3
6559	30.1	18.0	142787	30.1	18.5	295767	30.2	19.5	316207	30.3	19.6	86725	30.3	19.3	389981	30.4	19.5
520978	30.1	20.4	254016	30.1	19.9	236457	30.2	19.8	13088	30.3	17.4	218801	30.3	19.7	362560	30.4	20.3
252142	30.1	19.0	263765	30.1	20.5	84291	30.2	19.9	10845	30.3	17.1	425845	30.3	21.1	216137	30.4	19.3
58429	30.1	18.0	383945	30.1	19.7	437946	30.2	20.4	236782	30.3	19.8	128996	30.3	19.3	313318	30.4	20.1
276908	30.1	18.7	255815	30.1	19.9	405207	30.2	22.4	128682	30.3	19.3	177306	30.3	19.7	58287	30.4	17.3
325630	30.1	20.4	295583	30.1	20.5	20574	30.2	17.7	380638	30.3	17.9	517118	30.3	21.4	396958	30.4	21.0
34084	30.1	18.5	302154	30.1	19.7	418966	30.2	20.9	204630	30.3	19.7	236697	30.3	21.0	209234	30.4	19.6
464864	30.1	21.3	452664	30.1	20.7	512411	30.2	20.4	506789	30.3	20.6	469517	30.3	19.9	81408	30.4	18.8
317856	30.1	20.2	49732	30.1	19.4	523568	30.2	20.2	516961	30.3	20.6	21060	30.3	18.5	169003	30.4	19.3
366054	30.1	20.1	207403	30.1	19.6	359030	30.2	19.9	510720	30.3	20.3	340403	30.3	21.0	172120	30.4	20.0
415057	30.1	19.6	277573	30.1	21.1	297054	30.2	20.4	532401	30.3	21.0	440583	30.3	20.3	180103	30.4	20.4
347072	30.1	20.1	530428	30.1	20.9	325628	30.2	19.5	318632	30.3	20.7	314558	30.3	20.2	513110	30.4	19.9
208122	30.1	19.5	462563	30.1	21.9	422664	30.2	19.8	130017	30.3	19.5	244249	30.3	20.2	8030	30.4	16.7
281851	30.1	20.5	400930	30.1	19.9	315341	30.2	20.6	175606	30.3	20.6	252937	30.3	20.4	153308	30.4	20.1
440542	30.1	20.5	203030	30.1	20.0	232875	30.2	19.4	158459	30.3	19.9	402293	30.3	19.8	286169	30.4	18.9
40205	30.1	19.1	327074	30.1	19.3	150675	30.2	20.0	525814	30.3	21.5	293109	30.3	19.3	122252	30.4	19.2
529536	30.1	21.7	42007	30.1	18.6	262324	30.2	20.4	163987	30.3	19.6	234662	30.3	21.1	506572	30.4	20.5
280958	30.1	20.4	352181	30.1	20.0	296985	30.2	20.2	395907	30.3	20.3	187096	30.3	20.4	91940	30.4	18.1
126891	30.1	19.2	535632	30.1	20.3	536728	30.2	22.2	206374	30.3	19.2	541059	30.3	20.3	468494	30.4	21.9
127034	30.1	18.6	512067	30.1	19.9	23676	30.2	18.3	149224	30.3	19.1	19027	30.3	17.6	261235	30.4	20.9
424508	30.1	21.7	442005	30.1	20.0	389147	30.2	21.4	404015	30.3	20.2	424028	30.3	20.2	228121	30.4	20.6
343518	30.1	18.7	235340	30.1	19.8	441908	30.2	21.0	401625	30.3	20.9	449331	30.3	21.0	481271	30.4	20.1
90307	30.1	20.2	445436	30.1	20.5	282291	30.2	20.2	136812	30.3	20.8	76178	30.3	19.3	7807	30.4	18.0
399154	30.1	20.9	6294	30.1	17.3	537520	30.2	22.0	225449	30.3	19.7	149839	30.3	19.8	477904	30.4	21.5
213235	30.1	19.1	440915	30.1	19.7	446625	30.2	20.5	499583	30.3	20.4	21072	30.3	18.9	391582	30.4	20.3
407667	30.1	20.4	68546	30.1	19.3	529613	30.2	20.9	36033	30.3	19.3	198068	30.3	19.8	236051	30.4	20.7
258818	30.1	21.3	352589	30.1	20.4	161057	30.2	19.3	490369	30.3	19.3	206541	30.3	19.6	185364	30.4	20.1
278380	30.1	21.0	255207	30.1	20.2	48306	30.2	19.1	440579	30.3	20.7	455024	30.3	20.5	424436	30.4	20.2
287929	30.1	20.3	318510	30.1	20.3	281253	30.2	20.8	235586	30.3	20.7	342410	30.3	20.2	533427	30.4	22.7
464697	30.1	21.8	109860	30.1	19.6	243537	30.2	19.7	511107	30.3	20.0	107514	30.4	17.4	487944	30.4	19.9
524803	30.1	20.5	437808	30.1	20.4	511764	30.2	20.9	164896	30.3	19.9	338705	30.4	20.6	271064	30.4	20.1
198094	30.1	20.4	508121	30.1	20.9	210316	30.2	19.8	142021	30.3	19.3	454533	30.4	21.1	514834	30.4	21.4
162560	30.1	18.2	523259	30.1	20.7	434336	30.2	18.2	60170	30.3	18.4	408572	30.4	19.9	204576	30.4	19.8
68068	30.1	17.6	207862	30.1	19.9	345895	30.2	20.5	328477	30.3	22.0	141719	30.4	20.7	47160	30.4	19.0
324911	30.1	18.5	283652	30.1	21.6	136353	30.2	19.5	255602	30.3	19.4	223362	30.4	20.7	16341	30.4	18.3
426447	30.1	21.4	520355	30.1	21.1	535923	30.2	22.1	412567	30.3	21.2	40058	30.4	18.8	400752	30.4	21.5
449593	30.1	20.4	159668	30.2	19.9	488578	30.2	21.2	13568	30.3	16.6	277646	30.4	20.2	412297	30.4	19.9
480439	30.1	21.0	41136	30.2	19.7	540593	30.2	20.9	515937	30.3	19.8	502175	30.4	20.5	248020	30.4	20.1
65642	30.1	18.7	396368	30.2	20.4	212443	30.2	20.2	392970	30.3	20.4	360957	30.4	20.2	507146	30.4	21.0
62589	30.1	18.7	19594	30.2	18.2	302794	30.2	19.7	325052	30.3	20.7	45684	30.4	18.6	169734	30.4	19.5
539339	30.1	20.6	216566	30.2	19.1	295072	30.2	20.1	147775	30.3	19.5	451829	30.4	20.3	33685	30.4	18.0
423386	30.1	21.4	323720	30.2	21.7	470343	30.2	20.1	224265	30.3	19.3	158731	30.4	20.5	333980	30.4	21.3
278323	30.1	20.8	210995	30.2	18.6	34165	30.2	18.8	95592	30.3	19.3	302828	30.4	19.9	390879	30.4	19.2
308657	30.1	20.9	355248	30.2	20.0	418285	30.2	20.8	37779	30.3	19.3	243256	30.4	20.1	312093	30.4	19.8
476685	30.1	21.2	514050	30.2	21.3	26325	30.2	16.3	116340	30.3	19.5	284071	30.4	20.2	176683	30.4	20.2
315076	30.1	21.4	144990	30.2	20.9	57732	30.2	19.5	259808	30.3	20.3	344718	30.4	20.6	185511	30.4	18.9
46524	30.1	18.1	349733	30.2	20.4	530496	30.2	21.7	479776	30.3	20.7	520246	30.4	20.9	162390	30.4	18.4
94961	30.1	19.4	496868	30.2	22.1	512224	30.2	21.0	93010	30.3	18.7	21021	30.4	16.3	49055	30.4	19.3
322985	30.1	19.6	142055	30.2	19.9	408495	30.2	21.6	26810	30.3	18.0	38463	30.4	19.2	170004	30.4	20.2
455173	30.1	20.6	539142	30.2	21.1	527914	30.2	21.5	300731	30.3	20.2	403223	30.4	19.6	465375	30.4	21.0
523071	30.1	20.9	387976	30.2	21.1	476235	30.2	20.5	250334	30.3	18.4	166600	30.4	18.4	76085	30.4	19.3
511600	30.1	21.4	198541	30.2	19.1	374033	30.2	20.1	99343	30.3	19.1	103787	30.4	20.3	49684	30.4	18.8
253772	30.1	19.2	146931	30.2	19.6	317840	30.2	19.7	203961	30.3	20.2	294037	30.4	20.1	95228	30.4	18.2
451584	30.1	20.5	154208	30.2	19.0	230980	30.2	20.6	453442	30.3	21.7	265070	30.4	20.3	317332	30.4	20.4
310187	30.1	20.3	260557	30.2	20.9	4646	30.2	17.5	358715	30.3	20.5	193577	30.4	19.0	193603	30.4	17.4
253563	30.1	19.1	221514	30.2	19.6	115882	30.2	19.0	16595	30.3	16.3	354365	30.4	21.5	217363	30.4	19.9
71102	30.1	16.6	263410	30.2	20.4	507722											

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
346494	30.4	20.2	14884	30.5	17.1	47540	30.6	18.0	357546	30.7	20.5	306246	30.7	20.2	24723	30.8	19.4
99194	30.4	18.6	357451	30.5	19.6	395102	30.6	20.7	400983	30.7	19.6	423337	30.7	20.8	347842	30.8	20.4
137957	30.4	19.1	275326	30.5	20.7	86920	30.6	19.4	34558	30.7	18.9	393699	30.7	20.5	316474	30.8	20.1
224567	30.4	19.2	219662	30.5	18.2	328277	30.6	21.8	157437	30.7	19.3	516094	30.7	21.1	330437	30.8	20.7
86866	30.4	18.9	181908	30.5	18.7	384000	30.6	19.5	447395	30.7	20.7	313956	30.7	20.6	535457	30.8	21.0
542746	30.4	20.7	114864	30.5	19.0	477921	30.6	21.0	439896	30.7	20.9	490780	30.7	20.2	200149	30.8	19.5
539260	30.4	20.9	361951	30.5	20.6	446644	30.6	20.4	102377	30.7	19.8	213736	30.7	20.3	289297	30.8	20.2
55686	30.4	18.3	358812	30.5	20.9	221806	30.6	21.3	394226	30.7	20.8	41517	30.7	17.8	481990	30.8	20.4
121429	30.4	19.2	397499	30.5	19.7	440484	30.6	20.3	72476	30.7	19.4	497660	30.7	20.9	121208	30.8	19.7
290233	30.4	18.9	51160	30.5	17.7	271818	30.6	20.2	328177	30.7	21.6	28912	30.7	17.8	28989	30.8	17.3
164404	30.4	19.8	68841	30.5	19.1	241979	30.6	20.8	523070	30.7	20.3	172115	30.7	20.3	159116	30.8	19.2
367909	30.4	20.5	47208	30.5	19.2	46096	30.6	17.7	344638	30.7	21.4	407754	30.7	19.9	391774	30.8	20.2
84938	30.4	18.1	210216	30.5	19.0	182299	30.6	20.5	253767	30.7	19.8	321802	30.7	19.3	284126	30.8	20.1
126839	30.4	19.1	322588	30.5	19.9	53745	30.6	18.7	68511	30.7	19.2	518670	30.7	21.2	377675	30.8	20.7
359976	30.4	19.5	2834	30.5	14.7	198543	30.6	18.5	448386	30.7	22.2	367112	30.7	20.7	433113	30.8	21.1
209339	30.4	20.1	46827	30.5	17.5	293963	30.6	19.6	325950	30.7	20.6	486597	30.7	20.0	186804	30.8	20.0
291152	30.4	20.9	250675	30.5	20.7	19857	30.6	16.8	321642	30.7	20.6	182243	30.7	20.1	71784	30.8	18.2
316679	30.5	19.8	139324	30.5	19.9	485822	30.6	20.1	321603	30.7	20.5	433126	30.7	21.4	49421	30.8	17.9
9714	30.5	17.4	33467	30.5	18.9	342946	30.6	19.7	9220	30.7	17.0	404869	30.7	19.5	211718	30.8	19.8
320435	30.5	20.1	123994	30.5	18.8	209761	30.6	20.6	101970	30.7	18.1	6912	30.7	17.3	517880	30.8	21.1
365277	30.5	19.9	419622	30.5	21.2	365079	30.6	20.5	23877	30.7	18.5	95430	30.7	19.9	213542	30.8	20.1
159514	30.5	19.9	253765	30.5	19.4	79447	30.6	17.1	101207	30.7	18.9	382567	30.7	18.8	406821	30.8	20.6
294801	30.5	20.9	70954	30.5	19.3	509926	30.6	19.9	13713	30.7	17.6	64806	30.7	18.7	398042	30.8	19.6
95539	30.5	19.0	337977	30.5	20.5	409707	30.6	20.4	308889	30.7	20.5	170450	30.7	19.7	71247	30.8	19.0
443529	30.5	20.9	317771	30.5	19.7	39555	30.6	17.9	223320	30.7	20.2	230403	30.7	20.1	121914	30.8	18.5
383268	30.5	19.9	473217	30.5	21.2	2160	30.6	16.1	342292	30.7	20.9	354324	30.7	19.9	321908	30.8	19.8
438241	30.5	18.8	511314	30.5	21.7	273860	30.6	21.0	272865	30.7	20.0	68302	30.7	19.3	97839	30.8	19.8
390517	30.5	19.8	195602	30.5	20.4	321363	30.6	20.5	511126	30.7	20.0	61554	30.7	19.5	506302	30.8	21.3
286964	30.5	20.2	33730	30.5	18.4	508778	30.6	20.4	537184	30.7	21.8	364766	30.7	20.1	499501	30.8	20.4
478072	30.5	20.3	301173	30.5	20.1	349692	30.6	20.2	45803	30.7	18.9	312939	30.7	20.0	174763	30.8	19.6
20034	30.5	18.5	287239	30.5	19.2	314487	30.6	21.0	521	30.7	10.5	114690	30.7	19.5	133554	30.8	17.2
186327	30.5	20.2	448525	30.5	19.7	297356	30.6	20.1	526541	30.7	20.2	317957	30.7	19.7	520149	30.8	20.7
478870	30.5	20.3	315160	30.5	20.3	295885	30.6	19.8	429645	30.7	21.4	312736	30.7	20.0	165315	30.8	18.4
16968	30.5	16.8	527777	30.5	21.0	488986	30.6	20.8	295981	30.7	20.2	205099	30.8	18.4	195525	30.8	19.7
449764	30.5	20.4	140385	30.5	19.1	92218	30.6	18.2	195129	30.7	19.5	42154	30.8	18.9	482905	30.8	21.1
474376	30.5	21.6	166631	30.5	18.6	107418	30.6	20.3	506491	30.7	23.0	107770	30.8	19.8	240157	30.8	19.8
184920	30.5	19.2	528174	30.5	21.7	323318	30.6	20.2	270282	30.7	18.2	158730	30.8	19.4	93326	30.8	18.1
503358	30.5	21.5	311332	30.6	20.4	142392	30.6	19.6	510997	30.7	21.7	314555	30.8	21.1	260281	30.8	19.8
105729	30.5	18.9	327216	30.6	20.8	407858	30.6	20.9	199793	30.7	19.6	524926	30.8	20.8	253651	30.8	19.7
217733	30.5	18.6	162885	30.6	20.3	202705	30.6	19.6	113788	30.7	20.0	49740	30.8	19.5	123062	30.8	18.8
45910	30.5	21.1	165415	30.6	17.5	521242	30.6	21.5	485187	30.7	20.8	29992	30.8	18.8	515372	30.8	20.8
101049	30.5	19.8	424484	30.6	21.6	257995	30.6	19.8	164045	30.7	19.2	126979	30.8	19.3	315354	30.8	20.1
481307	30.5	20.9	542875	30.6	21.4	166489	30.6	19.5	479988	30.7	19.9	478073	30.8	20.8	117339	30.8	18.3
173174	30.5	20.3	509686	30.6	21.7	33958	30.6	17.5	496979	30.7	21.7	142370	30.8	20.9	1189	30.8	13.8
202485	30.5	20.5	74810	30.6	19.2	491627	30.6	21.0	212476	30.7	20.3	100786	30.8	19.3	149158	30.8	19.8
259193	30.5	18.7	428613	30.6	21.8	104822	30.6	19.6	263298	30.7	20.6	447379	30.8	19.3	19819	30.8	20.6
445402	30.5	21.1	329742	30.6	19.5	154929	30.6	19.8	479493	30.7	20.8	365306	30.8	21.4	257133	30.8	20.5
474157	30.5	19.6	510022	30.6	19.2	529786	30.6	20.7	38798	30.7	18.1	511597	30.8	20.1	480014	30.8	20.4
269402	30.5	20.1	83245	30.6	19.7	465837	30.6	20.4	73424	30.7	19.3	461845	30.8	20.8	93692	30.8	18.7
144269	30.5	20.0	464211	30.6	21.1	251363	30.6	20.2	22743	30.7	18.6	220837	30.8	19.1	487927	30.8	21.4
513786	30.5	19.5	133586	30.6	19.4	291930	30.6	21.0	205624	30.7	18.2	328273	30.8	20.8	102035	30.8	19.4
275686	30.5	19.8	332538	30.6	20.4	169918	30.6	20.4	289823	30.7	21.1	53004	30.8	19.3	73813	30.8	19.8
96804	30.5	18.7	271038	30.6	19.0	444259	30.6	20.7	318725	30.7	19.2	187690	30.8	20.9	516396	30.8	17.4
238182	30.5	19.2	121523	30.6	19.7	512703	30.6	19.9	445401	30.7	21.0	404438	30.8	21.8	271127	30.8	20.2
169465	30.5	19.2	511677	30.6	19.6	296142	30.6	20.6	78032	30.7	19.5	44422	30.8	17.4	506424	30.8	18.9
259626	30.5	19.5	362907	30.6	21.1	392712	30.6	19.8	359445	30.7	20.3	521222	30.8	20.9	48910	30.8	19.6
471655	30.5	19.6	19947	30.6	18.5	514339	30.6	19.6	19598	30.7	18.6	451779	30.8	20.2	8981	30.9	16.6
37764	30.5	18.3	56926	30.6	19.2	123915	30.6	19.4	320786	30.7	21.0	211562	30.8	19.6	102531	30.9	18.0
24265	30.5	17.5	325664	30.6	19.4	273593	30.6	20.6	35105	30.7	17.8	58386	30.8	18.3	34436	30.9	18.4
60301	30.5	18.4	275622	30.6	21.1	94106	30.6	18.2	539495	30.7	20.4	8577	30.8	16.8	98975	30.9	19.1
405476	30.5	19.4	74090	30.6	18.7	489580	30.6	19.6	520768	30.7	21.6	412064	30.8	21.1	542242	30.9	20.1
494718	30.5	19.7	193539	30.6	18.0	50822	30.6	18.8	328117	30.7	20.9	145736	30.8	18.9	75277	30.9	17.6
359497	30.5	19.9	397013	30.6	20.2	462605	30.6	21.6	123658	30.7	19.1	184872	30.8	20.7	488920	30.9	20.3
263587	30.5	21.3	276967	30.6	19.4	537322	30.6	21.0	290451	30.7	20.4	232227	30.8	20.9	342769	30.9	19.6
182214	30.5	19.7	37476	30.6	19.8	380781	30.6	21.1	266576	30.7	20.1	503365	30.8	20.8	170188	30.9	19.8
323555	30.5	19.6	301376	30.6	20.4	368313	30.6	21.6	805	30.7	15.0	512694	30.8	21.0	7574	30.9	15.8
510067	30.5	21.6	97315	30.6	18.7	17697	30.6	18.0	134615	30.7	19.3	86822	30.8	19.0	113045	30.9	19.4
534592	30.5	20.2	516031	30.6	20.8	155800	30.6	18.4	322389	30.7	20.3	157037	30.8	19.6	536757	30.9	22.0
507918	30.5	20.9	133649	30.6	19.5	371858	30.6	20.0	29511								

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

№	11	V	№	11	V	№	11	V	№	11	V	№	11	V	№	11	V
317291	30.9	20.7	291078	30.9	20.1	271638	30.9	20.0	289749	30.9	19.8	47295	30.9	17.9	166220	30.9	19.3
467411	30.9	21.2	49082	30.9	17.5	332684	30.9	19.5	177025	30.9	20.1	67074	30.9	18.4	522956	30.9	21.0
336399	30.9	19.2	368895	30.9	21.2	137633	30.9	18.6	129864	30.9	20.2	136838	30.9	19.3	93425	30.9	19.0
446968	30.9	20.9	243473	30.9	20.4	282873	30.9	19.6	236545	30.9	21.2	473160	30.9	20.8	285995	30.9	19.0
521885	30.9	21.4	24778	30.9	17.6	177012	30.9	20.1	467932	30.9	21.5	472550	30.9	21.4	147747	30.9	20.0
340273	30.9	21.3	255654	30.9	21.5	469955	30.9	20.5	22922	30.9	17.9	152832	30.9	19.4	462535	30.9	20.6
471698	30.9	21.2	317312	30.9	21.6	420817	30.9	20.3	367926	30.9	19.3	407145	30.9	21.0	185848	30.9	21.1
480099	30.9	20.9	2760	30.9	15.7	76214	30.9	20.3	412299	30.9	20.5	366565	30.9	21.3	166551	30.9	18.8
454060	30.9	20.5	222621	30.9	17.4	360992	30.9	20.6	107804	30.9	19.1	475969	30.9	21.9	433838	30.9	21.1
482451	30.9	20.4	381827	30.9	19.8	234403	30.9	20.2	76057	30.9	18.7	188357	30.9	19.1	468028	30.9	21.0
404436	30.9	20.8	251764	30.9	20.7	263717	30.9	20.8	400701	30.9	20.0	97307	30.9	18.3	137473	30.9	18.2
418008	30.9	20.2	260373	30.9	19.1	432340	30.9	19.6	346016	30.9	19.9	243905	30.9	19.6	123050	30.9	18.3
190624	30.9	18.7	404836	30.9	20.3	172460	30.9	19.1	58562	30.9	19.0	256615	30.9	20.8	10789	30.9	17.7
510691	30.9	20.7	254362	30.9	20.1	254402	30.9	20.3	307566	30.9	21.0	254566	30.9	19.5	451338	30.9	20.9
452657	30.9	20.2	345226	30.9	20.7	191306	30.9	19.7	335089	30.9	19.8	234085	30.9	19.4	49649	30.9	17.5
386283	30.9	19.9	476166	30.9	20.6	73140	30.9	19.0	426067	30.9	20.4	65097	30.9	19.1	402177	30.9	20.2
472170	30.9	20.8	136806	30.9	21.0	443613	30.9	20.5	257626	30.9	19.5	503262	30.9	21.6			
355727	30.9	21.5	474562	30.9	19.3	344675	30.9	20.1	410135	30.9	21.8	186833	30.9	19.7			
53708	30.9	19.2	316272	30.9	20.0	386109	30.9	20.8	338645	30.9	19.6	431881	30.9	21.1			
319338	30.9	20.6	73842	30.9	18.8	261802	30.9	20.4	525815	30.9	22.7	65115	30.9	19.3			
120892	30.9	19.1	108148	30.9	17.9	362928	30.9	20.5	195156	30.9	20.3	3663	30.9	18.0			
32851	30.9	18.3	321584	30.9	20.0	218534	30.9	19.7	144383	30.9	20.4	60162	30.9	18.9			
537605	30.9	20.9	320082	30.9	20.6	67690	30.9	17.2	185206	30.9	19.3	42604	30.9	16.7			
424026	30.9	19.8	60302	30.9	17.3	539515	30.9	20.7	307181	30.9	19.5	34013	30.9	17.4			
283858	30.9	19.3	95051	30.9	19.5	342618	30.9	20.3	20227	30.9	17.1	160524	30.9	19.6			