

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
530820	1.0	21.8	299701	1.1	20.5	299965	1.1	20.6	425960	1.2	21.5	457270	1.3	19.7	430695	1.4	20.4
173777	1.0	19.6	309101	1.1	20.5	442592	1.1	20.1	488384	1.2	21.2	314179	1.3	21.0	480708	1.4	20.0
525691	1.0	21.3	260221	1.1	18.9	347894	1.1	20.1	130926	1.2	17.8	504998	1.3	21.4	161409	1.4	18.2
185420	1.0	19.6	199327	1.1	19.7	37938	1.1	18.0	537669	1.2	20.9	236648	1.3	19.6	260133	1.4	19.7
336235	1.0	20.8	273893	1.1	20.1	27871	1.1	18.5	441376	1.2	20.7	344517	1.3	20.3	439176	1.4	20.3
316201	1.0	20.0	230342	1.1	18.0	99468	1.1	18.5	446436	1.2	21.8	294688	1.3	20.7	107896	1.4	19.2
214247	1.0	18.3	38056	1.1	17.4	318132	1.1	18.9	94763	1.2	19.0	395093	1.3	19.4	318173	1.4	19.1
206754	1.0	20.3	24993	1.1	18.1	155909	1.1	19.4	408135	1.2	21.1	354345	1.3	21.0	485181	1.4	19.2
422437	1.0	20.5	399034	1.1	20.5	438199	1.1	20.4	297230	1.2	19.3	78769	1.3	19.1	214849	1.4	20.3
374318	1.0	20.9	136981	1.1	18.7	258931	1.1	19.5	108009	1.2	19.3	34887	1.3	16.9	115245	1.4	18.8
52918	1.0	17.9	17628	1.1	18.1	157000	1.1	18.7	314167	1.2	21.6	76187	1.3	17.9	41066	1.4	17.9
68591	1.0	19.0	352773	1.1	18.7	261825	1.1	20.9	269409	1.2	20.6	116267	1.3	19.1	501076	1.4	19.4
433164	1.0	20.7	26437	1.1	16.9	14991	1.1	17.0	533311	1.2	21.6	434755	1.3	19.9	342883	1.4	20.4
137409	1.0	18.5	539629	1.1	20.6	11708	1.1	17.3	92784	1.2	17.4	528061	1.3	20.9	271785	1.4	19.7
447380	1.0	20.6	243648	1.1	18.1	444122	1.1	20.1	87924	1.2	17.4	158947	1.3	19.3	77022	1.4	19.4
136219	1.0	19.3	200720	1.1	20.5	356198	1.1	19.6	510604	1.2	20.3	127289	1.3	19.3	36753	1.4	17.9
177133	1.0	21.2	362403	1.1	20.3	329760	1.1	21.7	477016	1.2	21.0	520881	1.3	20.8	443080	1.4	21.2
245526	1.0	18.7	241388	1.1	19.4	383307	1.2	20.5	384915	1.2	20.0	89716	1.3	19.0	507835	1.4	21.7
78460	1.0	19.1	732	1.1	13.8	32963	1.2	18.6	60930	1.2	17.6	530843	1.3	20.8	537153	1.4	21.8
102134	1.0	18.6	2653	1.1	15.7	243713	1.2	20.5	458165	1.2	20.5	139470	1.3	18.5	447722	1.4	21.0
289800	1.0	19.9	117619	1.1	19.8	526177	1.2	20.7	186365	1.2	20.0	83330	1.3	19.2	137830	1.4	19.4
356746	1.0	21.5	499639	1.1	19.6	247365	1.2	18.8	193676	1.2	20.3	50311	1.3	18.3	201568	1.4	18.6
311455	1.0	19.7	509127	1.1	20.1	284628	1.2	20.5	531703	1.2	21.5	60718	1.3	19.7	166429	1.4	18.9
190995	1.0	20.1	477700	1.1	19.8	398254	1.2	20.3	130833	1.2	17.8	154498	1.3	20.1	191953	1.4	19.6
276943	1.0	19.0	516818	1.1	20.4	527277	1.2	19.9	191082	1.2	20.7	103231	1.3	19.6	321471	1.4	19.6
488402	1.0	20.5	311910	1.1	19.2	183768	1.2	19.9	510808	1.2	21.4	11697	1.3	17.6	499439	1.4	19.8
457715	1.0	21.0	301135	1.1	19.9	462257	1.2	20.7	159638	1.2	19.5	353685	1.3	20.0	66468	1.4	18.7
537117	1.0	21.6	9166	1.1	16.5	388701	1.2	20.8	400453	1.2	21.2	290707	1.3	20.4	436980	1.4	20.7
419604	1.0	20.2	208408	1.1	18.9	213221	1.2	18.5	399188	1.2	20.7	181523	1.3	20.6	285530	1.4	21.5
530051	1.0	20.6	350973	1.1	21.3	521365	1.2	20.6	510486	1.2	21.8	426375	1.3	20.7	320575	1.4	20.2
267354	1.0	19.7	466547	1.1	20.4	532849	1.2	21.3	211074	1.2	19.6	181085	1.3	18.8	91171	1.4	18.4
393690	1.0	19.2	400465	1.1	21.7	154533	1.2	19.6	58864	1.2	19.1	469192	1.3	21.0	351547	1.4	20.8
357137	1.0	21.6	432331	1.1	20.5	72180	1.2	19.5	505518	1.2	19.8	338760	1.3	17.7	213396	1.4	18.6
106290	1.0	17.0	94877	1.1	18.5	20078	1.2	17.9	356908	1.2	19.9	254581	1.3	21.3	94265	1.4	18.8
81985	1.0	18.2	317956	1.1	21.3	150256	1.2	17.9	352469	1.2	19.7	167849	1.3	20.2	87360	1.4	18.6
252827	1.0	19.9	97883	1.1	17.6	411661	1.2	20.2	125754	1.2	19.8	62646	1.3	18.1	320775	1.4	21.4
475717	1.0	20.9	513708	1.1	21.9	401456	1.2	20.6	4341	1.2	16.9	522790	1.3	21.6	67860	1.4	18.9
314093	1.0	19.7	418122	1.1	20.4	478170	1.2	19.5	260740	1.2	19.8	323622	1.3	20.0	496954	1.4	20.8
384032	1.0	21.5	98418	1.1	18.1	45755	1.2	17.8	65557	1.2	18.1	200123	1.3	19.5	161429	1.4	18.4
349916	1.0	20.0	76996	1.1	18.3	40471	1.2	16.4	288871	1.3	19.7	181159	1.3	21.0	255231	1.4	19.9
224443	1.0	19.1	461817	1.1	20.3	8776	1.2	17.3	383279	1.3	21.2	313167	1.3	21.5	443059	1.4	21.0
258741	1.0	20.7	250536	1.1	18.8	147413	1.2	20.1	412049	1.3	21.8	292381	1.3	20.8	437597	1.4	20.9
470793	1.0	20.9	85744	1.1	16.9	369510	1.2	20.2	442941	1.3	21.4	537539	1.3	20.4	419719	1.4	20.1
262366	1.0	19.9	206621	1.1	19.8	181103	1.2	19.4	224846	1.3	20.7	368660	1.3	21.5	9494	1.4	16.5
460320	1.0	20.4	32390	1.1	17.4	105753	1.2	19.6	107443	1.3	18.7	477739	1.3	20.2	536527	1.4	20.8
472812	1.0	20.9	379369	1.1	18.9	245150	1.2	19.2	309940	1.3	20.1	241722	1.3	18.9	60114	1.4	18.1
151350	1.0	19.4	7177	1.1	15.9	182960	1.2	20.4	325775	1.3	20.6	242719	1.3	18.8	405848	1.4	20.9
23383	1.0	18.6	510563	1.1	20.3	314494	1.2	19.9	309686	1.3	20.7	467059	1.3	21.4	225880	1.4	20.0
164050	1.0	19.6	168198	1.1	18.6	105877	1.2	18.8	34466	1.3	19.0	156485	1.3	20.4	128495	1.4	18.5
270535	1.0	18.9	67494	1.1	17.9	249096	1.2	19.5	25761	1.3	18.3	90800	1.3	19.8	32648	1.4	15.7
479160	1.0	21.1	26928	1.1	17.4	471706	1.2	20.7	150013	1.3	19.3	185547	1.3	20.0	499202	1.4	20.9
153240	1.0	19.6	67547	1.1	18.4	330274	1.2	20.6	91200	1.3	19.0	17661	1.3	17.2	273825	1.4	19.9
461376	1.0	21.6	131950	1.1	19.7	108026	1.2	19.6	471724	1.3	20.9	529600	1.3	20.0	295126	1.4	20.1
514401	1.0	21.2	289342	1.1	19.6	34439	1.2	17.3	537267	1.3	21.4	347328	1.3	20.1	379343	1.4	20.6
231301	1.0	20.1	12060	1.1	18.6	186883	1.2	17.4	56293	1.3	18.6	412852	1.3	19.5	475766	1.4	20.2
165190	1.0	19.1	327799	1.1	20.1	155691	1.2	16.1	300779	1.3	20.4	199949	1.3	18.9	418182	1.4	21.3
170899	1.0	19.7	248599	1.1	20.3	362901	1.2	20.3	68221	1.3	18.2	92191	1.3	17.8	473948	1.4	21.6
353895	1.0	20.3	504972	1.1	21.0	155814	1.2	17.8	510094	1.3	20.2	159611	1.3	19.9	121715	1.4	19.1
444653	1.0	21.0	98248	1.1	17.9	96770	1.2	16.8	23343	1.3	18.6	446004	1.3	20.6	130192	1.4	19.6
268106	1.0	20.2	107200	1.1	19.1	151477	1.2	19.9	305482	1.3	19.9	87411	1.3	17.9	214084	1.4	19.7
496845	1.0	19.7	99996	1.1	18.8	126711	1.2	19.9	417743	1.3	22.4	169601	1.3	20.1	382974	1.4	20.7
68312	1.0	19.1	392399	1.1	20.6	252846	1.2	19.1	507130	1.3	20.9	141452	1.3	20.1	446369	1.4	20.7
426277	1.0	20.2	79685	1.1	18.1	513818	1.2	21.5	262856	1.3	19.9	350275	1.3	19.1	528353	1.4	20.8
390991	1.0	20.3	321754	1.1	19.8	31531	1.2	18.5	522322	1.3	20.7	250097	1.4	20.3	507488	1.4	20.8
280354	1.0	19.5	415017	1.1	20.5	183516	1.2	19.0	95696	1.3	15.9	248615	1.4	18.8	162114	1.4	19.0
502556	1.0	20.1	529543	1.1	20.9	345503	1.2	20.1	11993	1.3	17.4	463098	1.4	21.1	278545	1.4	19.6
381582	1.0	19.3	534243	1.1	20.4	57738	1.2	18.1	451239	1.3	21.1	414163	1.4	20.8	240023	1.4	19.5
344166	1.0	18.8	457500	1.1	19.8	399901	1.2	21.1	310502	1.3	19.9	188671	1.4	21.2	232191	1.4	20.1
430428	1.1	19.5	68329	1.1	18.2	312791	1.2	20.6	524742	1.3	19.8	272789	1.4	19.9	319599	1.4	21.4
18690	1.1	17.9	204082	1.1	19.6	427882	1.2	21.1	315107	1.3	20.8	472788	1.4	21.0	393035	1.4	19.7
270207	1.1	20.0	61979	1.1	17.1	295240	1.2	18.6	283221	1.3	19.4	192542	1.4	18.8	52		

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
120844	1.4	19.6	499114	1.5	21.3	254579	1.6	20.4	184628	1.7	20.5	531935	1.7	20.9	506516	1.8	19.5
285097	1.4	19.7	244250	1.5	20.0	123572	1.6	18.3	182912	1.7	20.3	65150	1.7	19.5	277449	1.8	19.5
339418	1.4	20.4	161868	1.5	19.3	301614	1.6	20.8	178147	1.7	19.8	267317	1.7	19.1	457687	1.8	22.0
359	1.4	12.1	521492	1.5	21.3	500929	1.6	20.3	499036	1.7	21.7	526231	1.7	21.1	440552	1.8	20.2
459613	1.4	21.7	297600	1.5	20.0	180427	1.6	19.8	294724	1.7	21.6	382908	1.7	19.1	326195	1.8	20.9
473853	1.4	21.6	250535	1.5	18.6	290984	1.6	19.8	6101	1.7	16.8	37085	1.8	18.2	390304	1.8	19.8
514402	1.4	20.8	441026	1.5	20.5	528341	1.6	19.6	3408	1.7	14.8	395639	1.8	21.0	269015	1.8	21.0
20241	1.4	18.3	85656	1.5	17.4	321740	1.6	20.4	75912	1.7	19.6	224870	1.8	20.3	421987	1.8	20.8
868	1.4	13.3	478112	1.5	19.9	492290	1.6	21.2	430961	1.7	22.0	519697	1.8	21.4	82061	1.8	18.0
183065	1.4	19.7	11737	1.5	17.1	531987	1.6	22.2	519102	1.7	21.1	155775	1.8	18.8	432619	1.8	20.3
412068	1.4	20.9	4147	1.5	16.4	469107	1.6	18.7	350977	1.7	21.7	397086	1.8	20.2	142285	1.8	19.2
170433	1.4	19.4	304892	1.5	19.8	275216	1.6	19.6	34837	1.7	18.1	382905	1.8	19.4	478667	1.8	21.3
183551	1.4	19.5	177781	1.5	19.9	383289	1.6	20.5	67843	1.7	18.2	422893	1.8	19.4	360725	1.8	19.5
29204	1.4	18.4	307085	1.5	20.5	475515	1.6	20.7	186168	1.7	19.6	312061	1.8	19.9	507061	1.8	20.6
187608	1.4	19.4	454231	1.5	21.4	497247	1.6	21.0	150268	1.7	18.6	388895	1.8	18.7	158330	1.8	20.6
62310	1.4	18.2	151383	1.5	20.0	286428	1.6	19.9	432857	1.7	21.5	393168	1.8	20.1	416493	1.8	19.3
344497	1.5	19.7	90878	1.5	18.6	294852	1.6	19.9	478117	1.7	21.0	227483	1.8	20.5	217243	1.8	20.2
540836	1.5	20.7	127193	1.5	20.2	135847	1.6	18.9	393838	1.7	20.1	503785	1.8	21.0	476395	1.8	20.5
255123	1.5	20.1	40350	1.5	18.1	379641	1.6	20.8	368121	1.7	19.5	144719	1.8	19.1	12005	1.8	17.1
27111	1.5	15.4	85839	1.5	18.1	361113	1.6	20.7	294684	1.7	20.2	18075	1.8	18.1	184139	1.8	19.7
475571	1.5	20.8	427490	1.5	21.0	362705	1.6	20.2	530015	1.7	20.6	332043	1.8	19.7	211686	1.8	18.6
325877	1.5	20.0	111616	1.5	18.9	95321	1.6	19.1	247125	1.7	20.1	436762	1.8	20.2	195290	1.8	19.0
43597	1.5	18.3	22634	1.5	17.5	502388	1.6	20.3	346048	1.7	20.9	281966	1.8	21.1	280064	1.8	21.2
528565	1.5	21.0	533062	1.5	20.8	316321	1.6	20.9	377597	1.7	19.4	371620	1.8	19.8	396110	1.8	19.7
440632	1.5	20.5	127493	1.5	19.1	506354	1.6	19.4	170456	1.7	18.5	156379	1.8	19.4	28657	1.8	17.9
313986	1.5	20.0	377231	1.5	20.5	171765	1.6	18.9	266671	1.7	20.8	215019	1.8	20.0	529477	1.8	20.2
329176	1.5	20.4	302873	1.5	20.9	519308	1.6	20.1	409790	1.7	21.0	231429	1.8	20.8	131580	1.8	18.8
507349	1.5	21.3	211969	1.5	20.3	118426	1.6	18.8	416562	1.7	20.3	18790	1.8	17.6	309073	1.8	20.3
342824	1.5	20.4	93636	1.5	18.2	397106	1.6	21.3	504744	1.7	18.6	279343	1.8	20.2	230910	1.8	20.5
513119	1.5	19.4	433200	1.5	19.8	232737	1.6	18.7	463488	1.7	21.6	308606	1.8	21.3	530606	1.8	20.3
389110	1.5	21.0	54420	1.5	17.0	507045	1.6	20.8	222603	1.7	19.3	430970	1.8	20.2	313976	1.9	19.6
188556	1.5	19.6	149742	1.5	19.0	162676	1.6	18.9	286361	1.7	20.3	500744	1.8	21.3	247105	1.9	18.9
233810	1.5	19.6	277469	1.5	19.7	154547	1.6	20.3	179361	1.7	20.1	416471	1.8	19.3	21472	1.9	17.4
481153	1.5	20.6	215904	1.5	19.9	533040	1.6	21.3	303935	1.7	19.9	365198	1.8	20.0	420455	1.9	20.6
319698	1.5	20.7	72383	1.5	18.2	164739	1.6	18.6	246427	1.7	19.4	229531	1.8	19.7	468305	1.9	21.6
158400	1.5	19.9	95548	1.5	19.8	62755	1.6	18.1	17352	1.7	17.8	436224	1.8	21.7	201423	1.9	21.4
335582	1.5	19.9	479215	1.5	20.3	43689	1.6	18.9	251657	1.7	21.5	508817	1.8	21.0	336272	1.9	20.0
201802	1.5	20.0	43880	1.5	17.8	257680	1.6	19.9	318267	1.7	19.8	220355	1.8	20.7	8016	1.9	16.7
117468	1.5	19.5	93317	1.5	17.8	462586	1.6	21.1	395225	1.7	19.5	460602	1.8	20.2	253391	1.9	19.5
161272	1.5	19.1	244727	1.5	19.9	445796	1.6	20.9	276145	1.7	20.4	233718	1.8	19.3	26671	1.9	19.4
499286	1.5	19.1	17159	1.5	17.6	296858	1.6	19.6	103497	1.7	17.9	67315	1.8	19.2	43617	1.9	18.5
386746	1.5	21.3	291765	1.5	20.1	146957	1.6	19.5	53726	1.7	18.7	367733	1.8	20.0	478193	1.9	20.0
353342	1.5	20.4	476347	1.5	21.0	91888	1.6	18.7	509821	1.7	24.0	140817	1.8	19.4	19412	1.9	16.4
37419	1.5	18.5	455752	1.5	21.0	377870	1.6	20.8	152223	1.7	18.4	310644	1.8	20.2	353252	1.9	21.0
241016	1.5	19.7	288895	1.5	20.9	335565	1.6	20.7	400253	1.7	19.5	311199	1.8	20.8	127885	1.9	18.8
296130	1.5	21.2	74159	1.6	18.6	32924	1.6	17.6	533605	1.7	21.6	336302	1.8	20.0	442073	1.9	20.4
520503	1.5	21.3	220303	1.6	21.3	277204	1.6	20.2	457430	1.7	20.8	412066	1.8	20.5	431986	1.9	20.6
230933	1.5	20.6	174657	1.6	18.1	4831	1.6	17.4	149930	1.7	19.0	205715	1.8	19.9	238879	1.9	20.2
442104	1.5	20.6	111996	1.6	17.4	182759	1.6	20.7	459535	1.7	22.0	45580	1.8	18.6	359924	1.9	20.8
124797	1.5	18.6	432001	1.6	19.8	524042	1.6	20.7	432872	1.7	20.9	87909	1.8	18.0	417827	1.9	21.7
253861	1.5	20.1	362362	1.6	20.1	440295	1.6	19.3	85682	1.7	18.5	320628	1.8	20.5	258806	1.9	20.1
408099	1.5	21.2	513291	1.6	21.7	507000	1.6	20.4	238679	1.7	20.4	510201	1.8	21.1	431795	1.9	18.8
340440	1.5	20.6	204120	1.6	18.8	401860	1.6	19.3	328897	1.7	20.7	110247	1.8	19.0	277514	1.9	19.9
87445	1.5	19.3	308343	1.6	19.7	346690	1.6	21.0	536628	1.7	21.8	117219	1.8	18.6	243216	1.9	19.8
284269	1.5	19.3	286477	1.6	20.2	255894	1.6	19.8	21809	1.7	17.8	532070	1.8	22.1	380906	1.9	21.0
23908	1.5	17.5	160390	1.6	19.9	138125	1.6	18.4	186954	1.7	19.4	101894	1.8	18.2	247366	1.9	19.0
540221	1.5	21.5	332361	1.6	19.4	134223	1.6	18.8	138745	1.7	19.1	317895	1.8	19.6	185941	1.9	19.7
353131	1.5	20.4	444676	1.6	20.8	65360	1.6	17.1	210437	1.7	19.9	393812	1.8	20.4	400470	1.9	20.4
520158	1.5	21.7	478361	1.6	21.5	416823	1.6	20.5	353805	1.7	19.5	13574	1.8	16.7	540984	1.9	19.8
478040	1.5	21.1	313964	1.6	19.5	428236	1.6	21.0	198378	1.7	19.4	184323	1.8	21.0	173628	1.9	20.4
523572	1.5	21.0	338810	1.6	20.4	365634	1.6	20.9	63045	1.7	18.6	510484	1.8	21.5	296398	1.9	19.8
124274	1.5	19.1	508233	1.6	20.7	40265	1.6	17.6	87308	1.7	17.1	367145	1.8	19.3	404130	1.9	21.5
318406	1.5	20.2	378230	1.6	21.5	359502	1.6	19.6	496504	1.7	20.1	320541	1.8	20.2	264677	1.9	20.0
446492	1.5	21.7	459632	1.6	20.6	183836	1.6	20.4	406365	1.7	19.3	36162	1.8	18.4	43076	1.9	18.4
319125	1.5	19.9	164799	1.6	21.0	63038	1.7	18.4	358460	1.7	21.5	11376	1.8	18.4	23436	1.9	17.4
526311	1.5	21.9	184591	1.6	20.4	87165	1.7	17.9	216887	1.7	20.0	509741	1.8	20.8	137891	1.9	18.9
73809	1.5	17.7	513555	1.6	19.8	229924	1.7	19.9	365158	1.7	20.2	482106	1.8	20.3	393998	1.9	19.4
435779	1.5	20.8	358944	1.6	20.6	335833	1.7	20.2	211128	1.7	20.9	152445	1.8	19.9	281961	1.9	20.5
308049	1.5	20.7	237266	1.6	19.2	89433	1.7	17.7	133934	1.7	18.3	415267	1.8	23.0	155376	1.9	17.2
459628	1.5	21.0	239792	1.6	19.9	152525	1.7	19.9	162579	1.7	17.9	346453	1.8	19.4	222515	1.9	18.4
130442	1.5	17.9	522547	1.6	20.8	442546	1.7	20.8	191741	1.7	18.7	111700	1.8</				

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
398621	1.9	19.9	526914	1.9	19.7	144681	2.1	20.3	74028	2.1	18.9	43472	2.2	19.3	346818	2.3	21.0
47977	1.9	18.6	137131	1.9	19.4	470355	2.1	20.1	120737	2.1	18.3	5751	2.2	18.6	249485	2.3	19.6
153216	1.9	20.1	308525	1.9	20.9	148687	2.1	18.9	277375	2.1	19.3	87422	2.2	18.6	520120	2.3	21.0
427857	1.9	20.3	82409	1.9	18.5	539028	2.1	20.7	521400	2.1	21.0	427532	2.2	20.0	81685	2.3	19.2
269092	1.9	21.1	111542	1.9	19.6	330968	2.1	18.7	114629	2.1	19.3	5146	2.2	16.9	377909	2.3	21.2
17774	1.9	16.2	480518	1.9	21.1	3046	2.1	16.8	508452	2.1	20.1	338631	2.2	19.1	374388	2.3	19.2
139938	1.9	19.1	107358	1.9	19.4	251491	2.1	20.3	309812	2.1	20.0	314002	2.2	19.6	127363	2.3	18.6
502809	1.9	21.1	112713	1.9	18.6	156985	2.1	18.3	195135	2.1	20.4	166444	2.2	18.6	194448	2.3	20.0
540718	1.9	22.0	288084	1.9	19.7	430278	2.1	19.5	476012	2.1	19.3	245219	2.2	19.5	45460	2.3	17.1
425169	1.9	20.8	469860	1.9	20.7	21783	2.1	18.5	196346	2.1	18.9	74539	2.2	17.0	268041	2.3	18.8
105601	1.9	18.8	311454	1.9	20.3	225620	2.1	20.1	88475	2.1	18.0	49242	2.2	17.3	353178	2.3	20.8
107932	1.9	18.9	543942	1.9	20.0	171290	2.1	20.7	211987	2.2	20.2	294264	2.2	20.1	122796	2.3	19.3
167810	1.9	19.9	72652	1.9	19.2	431129	2.1	20.5	148680	2.2	19.6	496972	2.2	20.0	328154	2.3	21.7
312045	1.9	19.2	111612	1.9	20.1	8105	2.1	16.5	528129	2.2	21.6	159045	2.2	19.6	208334	2.3	19.7
134151	1.9	19.0	86046	1.9	17.1	248053	2.1	19.2	424172	2.2	20.6	302422	2.2	21.0	230351	2.3	18.4
499675	1.9	20.1	150655	1.9	19.8	376951	2.1	20.7	461665	2.2	21.1	73351	2.2	19.3	47386	2.3	17.8
519988	1.9	20.5	326905	1.9	19.8	211947	2.1	20.5	492537	2.2	20.7	77723	2.2	19.1	302859	2.3	19.9
393828	1.9	20.1	167302	1.9	19.7	207233	2.1	20.8	311905	2.2	21.1	92714	2.2	16.7	470533	2.3	20.3
42163	1.9	18.6	35240	2.0	19.3	83937	2.1	18.3	287611	2.2	20.0	334823	2.2	20.4	23053	2.3	18.0
344797	1.9	19.9	462073	2.0	20.2	480775	2.1	20.4	434701	2.2	21.3	154635	2.2	19.1	398067	2.3	19.6
488360	1.9	20.9	533024	2.0	21.5	302425	2.1	21.0	316432	2.2	20.4	319568	2.2	20.3	117745	2.3	18.8
303957	1.9	20.7	502402	2.0	20.5	442092	2.1	21.0	213042	2.2	20.6	397709	2.2	21.5	42450	2.3	18.0
295271	1.9	21.3	352668	2.0	20.3	537083	2.1	21.4	205838	2.2	20.3	374434	2.3	19.3	176434	2.3	19.1
319356	1.9	20.8	255723	2.0	19.2	445352	2.1	21.3	352005	2.2	20.5	532876	2.3	20.2	533957	2.3	21.2
524796	1.9	21.2	524967	2.0	20.0	425093	2.1	20.6	255297	2.2	20.2	509339	2.3	20.1	469957	2.3	21.6
503242	1.9	20.9	330492	2.0	20.5	254245	2.1	19.2	242252	2.2	19.0	490791	2.3	23.1	41192	2.3	19.3
74898	1.9	17.1	297654	2.0	19.1	432288	2.1	20.2	427654	2.2	19.5	212960	2.3	20.6	467617	2.3	22.1
107889	1.9	18.5	152861	2.0	19.7	367610	2.1	19.0	338807	2.2	19.2	366043	2.3	20.2	400866	2.3	19.8
17677	1.9	18.4	251514	2.0	20.0	334955	2.1	21.1	195171	2.2	19.1	231837	2.3	17.7	91811	2.3	17.9
100866	1.9	20.2	529647	2.0	20.9	255781	2.1	20.5	33115	2.2	18.0	527244	2.3	20.1	154472	2.3	19.8
255426	1.9	20.3	215888	2.0	18.8	419775	2.1	20.3	504566	2.2	20.1	339429	2.3	20.3	38952	2.3	19.0
276446	1.9	20.3	205908	2.0	19.9	174822	2.1	20.6	138877	2.2	21.6	239383	2.3	19.2	153880	2.3	19.0
265022	1.9	21.4	479995	2.0	20.4	386604	2.1	20.6	401858	2.2	18.1	42386	2.3	17.7	236626	2.3	20.8
188182	1.9	20.0	466096	2.0	22.2	334261	2.1	21.0	156506	2.2	19.4	225860	2.3	19.5	106022	2.3	19.3
531241	1.9	21.2	514520	2.0	20.3	164223	2.1	19.9	175688	2.2	19.9	71852	2.3	18.5	165456	2.3	19.1
10111	1.9	15.9	184904	2.0	20.0	218473	2.1	19.8	431437	2.2	19.9	539156	2.3	21.2	65110	2.3	18.9
190318	1.9	19.4	499281	2.0	18.3	249196	2.1	19.7	293059	2.2	20.4	325111	2.3	20.7	477204	2.3	19.7
39011	1.9	18.5	319869	2.0	20.4	420417	2.1	21.3	474765	2.2	18.9	294912	2.3	20.6	116878	2.3	19.9
392769	1.9	20.7	310661	2.0	20.8	391324	2.1	20.5	181920	2.2	19.9	205659	2.3	18.5	371599	2.3	20.0
196697	1.9	20.0	488302	2.0	20.8	248145	2.1	19.0	193725	2.2	19.9	438048	2.3	20.1	261087	2.3	20.2
477217	1.9	20.5	219744	2.0	18.3	91379	2.1	19.7	430507	2.2	20.2	521562	2.3	20.9	99132	2.3	20.0
199293	1.9	19.5	236739	2.0	19.7	23898	2.1	17.1	516963	2.2	21.1	338611	2.3	19.7	475918	2.3	19.9
478100	1.9	21.2	168361	2.0	19.6	91822	2.1	19.9	211087	2.2	21.2	99582	2.3	19.4	343447	2.3	20.4
21128	1.9	18.2	478030	2.0	21.0	332139	2.1	18.8	291256	2.2	20.8	87572	2.3	19.2	154516	2.3	19.8
155193	1.9	20.0	300002	2.0	20.1	321005	2.1	19.9	440543	2.2	20.4	322716	2.3	19.7	10605	2.3	16.9
144743	1.9	19.8	250554	2.0	19.9	28712	2.1	17.8	37299	2.2	18.6	370968	2.3	20.5	171481	2.3	20.3
539511	1.9	20.8	86900	2.0	18.8	235778	2.1	19.3	17288	2.2	16.0	536343	2.3	21.3	457749	2.3	21.0
419787	1.9	19.3	524032	2.0	21.0	237954	2.1	20.0	479395	2.2	21.1	75040	2.3	19.1	242302	2.3	19.1
105463	1.9	18.6	389215	2.0	20.8	292428	2.1	21.0	145022	2.2	19.4	326638	2.3	18.7	67422	2.3	17.6
420254	1.9	19.3	523639	2.0	21.5	84046	2.1	17.9	498579	2.2	19.9	17061	2.3	18.4	307092	2.3	18.6
250895	1.9	18.7	72493	2.0	18.7	242645	2.1	20.1	2780	2.2	16.8	528225	2.3	21.4	211197	2.3	20.1
5124	1.9	16.7	13934	2.0	15.1	132049	2.1	19.1	315306	2.2	19.9	424547	2.3	21.3	428523	2.3	20.5
452649	1.9	20.9	142164	2.0	19.3	108850	2.1	18.6	156299	2.2	19.0	123735	2.3	19.5	379499	2.3	19.1
343516	1.9	20.4	403284	2.0	20.4	307104	2.1	19.5	384512	2.2	19.7	236050	2.3	19.1	531339	2.3	20.1
166661	1.9	18.2	461873	2.0	20.9	260186	2.1	20.3	231935	2.2	20.2	281577	2.3	19.9	119004	2.3	18.1
51130	1.9	19.0	282948	2.0	19.4	22946	2.1	19.0	73240	2.2	19.4	32410	2.3	18.5	471783	2.3	19.8
314056	1.9	21.1	252928	2.0	20.0	20401	2.1	18.6	359871	2.2	21.4	352462	2.3	20.8	43177	2.3	18.7
517588	1.9	20.9	287649	2.0	20.5	262018	2.1	19.4	416430	2.2	19.5	313453	2.3	20.3	380046	2.3	20.1
13297	1.9	17.0	420562	2.0	20.8	100872	2.1	19.8	325079	2.2	21.6	511515	2.3	22.1	254615	2.4	19.6
165398	1.9	18.6	64269	2.0	19.5	297606	2.1	19.7	74487	2.2	17.7	312393	2.3	20.1	84935	2.4	18.7
462209	1.9	21.9	224519	2.0	18.9	457380	2.1	20.8	374328	2.2	20.1	120523	2.3	18.7	268330	2.4	20.5
317899	1.9	20.1	91951	2.0	19.1	14584	2.1	16.3	510948	2.2	21.1	220295	2.3	20.3	72596	2.4	16.7
35269	1.9	18.3	52847	2.0	17.2	125202	2.1	19.9	160548	2.2	19.3	474931	2.3	19.5	95363	2.4	18.2
56392	1.9	18.8	115649	2.0	19.3	482199	2.1	20.4	215853	2.2	20.3	248552	2.3	19.5	423931	2.4	20.0
458177	1.9	19.4	11584	2.0	17.8	205225	2.1	19.0	177085	2.2	19.0	182771	2.3	19.5	204570	2.4	19.6
226101	1.9	19.5	73928	2.0	19.5	514516	2.1	20.4	246501	2.2	19.2	322557	2.3	20.4	365160	2.4	21.0
95917	1.9	19.2	359760	2.0	19.0	27295	2.1	18.0	118043	2.2	19.0	78031	2.3	17.3	410262	2.4	20.2
398221	1.9	18.5	49682	2.0	18.9	251385	2.1	19.9	32252	2.2	17.4	504083	2.3	20.9	488361	2.4	20.9
401784	1.9	21.0	8641	2.0	17.9	351572	2.1	20.8	365059	2.2	21.3	99886	2.3	20.3	349819	2.4	20.5
149567	1.9	18.3	286754	2.0	20.8	511140	2.1	21.9	405807	2.2	20.7	526901	2.3	21.6	126834	2.4	19.9
403288	1.9	20.5	89396	2.0	19.4	278867	2.1	20.7	46334	2.2	17.2	206304	2.3	19.8	21579		

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
224407	2.4	18.9	216405	2.4	20.3	215893	2.5	20.2	123739	2.6	19.9	508674	2.7	19.7	315103	2.8	19.6
301877	2.4	20.6	512918	2.4	20.3	496859	2.5	20.6	61377	2.6	18.7	21231	2.7	17.4	539178	2.8	20.5
185603	2.4	19.6	358110	2.4	20.5	78651	2.5	18.7	374379	2.6	20.3	456275	2.7	21.2	44450	2.8	18.3
503624	2.4	21.5	453406	2.4	20.8	130379	2.5	18.4	482204	2.6	20.6	101794	2.7	18.3	526359	2.8	21.3
525643	2.4	20.3	464858	2.4	21.6	213567	2.5	18.1	214991	2.6	19.5	168794	2.7	19.2	323397	2.8	20.1
156468	2.4	18.9	507049	2.4	19.5	62510	2.5	18.5	235379	2.6	19.1	151721	2.7	20.2	444986	2.8	21.6
34811	2.4	18.2	54327	2.4	18.7	327846	2.5	19.0	401691	2.6	21.3	528224	2.7	22.1	299876	2.8	20.0
24080	2.4	18.9	442045	2.4	19.8	87790	2.5	18.0	70154	2.6	19.2	259648	2.7	20.5	539175	2.8	20.7
501205	2.4	20.1	272795	2.4	18.1	504794	2.5	21.2	336239	2.6	20.3	106922	2.7	19.8	191689	2.8	19.8
192035	2.4	20.2	149058	2.4	19.5	519083	2.5	20.1	389193	2.6	20.4	232563	2.7	19.7	294016	2.8	19.2
405785	2.4	20.7	266643	2.4	19.8	170440	2.5	19.7	81601	2.6	18.4	533532	2.7	20.6	199352	2.8	19.0
94344	2.4	17.2	381489	2.4	20.3	432408	2.5	20.8	268094	2.6	20.4	122206	2.7	17.7	239659	2.8	20.2
295587	2.4	19.9	322431	2.4	19.8	360732	2.5	20.9	162399	2.6	19.5	22404	2.7	18.8	188180	2.8	20.2
483608	2.4	19.4	280966	2.4	21.1	308134	2.5	19.7	119869	2.6	19.7	115873	2.7	19.4	347047	2.8	21.1
16740	2.4	17.6	85991	2.5	18.4	304696	2.5	20.0	246558	2.6	19.1	335816	2.7	21.2	477467	2.8	21.4
329632	2.4	19.1	193119	2.5	19.0	409817	2.5	20.3	389209	2.6	20.6	68853	2.7	19.8	402824	2.8	21.2
115692	2.4	19.0	261913	2.5	20.0	281350	2.5	20.8	523894	2.6	20.5	85161	2.7	18.0	424092	2.8	21.2
71140	2.4	17.7	127322	2.5	19.9	505524	2.5	20.4	49880	2.6	16.5	432015	2.7	20.2	393211	2.8	20.7
341164	2.4	18.9	367894	2.5	21.3	211161	2.5	19.6	375668	2.6	20.0	18714	2.7	18.6	111743	2.8	18.1
508407	2.4	20.5	225974	2.5	19.9	311353	2.5	19.3	132833	2.6	19.0	523179	2.7	20.4	235257	2.8	19.3
180083	2.4	20.4	514276	2.5	20.4	471768	2.5	19.4	273815	2.6	20.1	434763	2.7	20.7	82005	2.8	18.1
459253	2.4	20.6	22128	2.5	18.2	67965	2.6	18.3	327193	2.6	19.8	66871	2.7	17.9	227909	2.8	20.9
535541	2.4	22.1	295309	2.5	20.5	422446	2.6	19.8	259576	2.6	20.4	106850	2.7	19.8	326194	2.8	20.3
536722	2.4	20.9	19670	2.5	17.6	13166	2.6	15.9	235165	2.6	19.0	201834	2.7	19.0	368932	2.8	20.4
13763	2.4	18.4	345514	2.5	20.3	125034	2.6	17.8	68721	2.6	19.0	158965	2.7	19.8	533625	2.8	21.5
267176	2.4	17.8	144467	2.5	19.4	276893	2.6	19.6	537593	2.6	21.4	307058	2.7	19.9	149560	2.8	23.4
380143	2.4	21.2	300278	2.5	20.7	405447	2.6	19.5	233921	2.6	19.8	43514	2.7	18.7	302357	2.8	20.8
224382	2.4	20.1	509756	2.5	21.1	290644	2.6	20.1	189006	2.6	19.7	75718	2.7	19.1	478715	2.8	21.0
21148	2.4	18.4	64497	2.5	19.7	505493	2.6	19.9	250885	2.6	20.2	143483	2.7	19.8	196627	2.8	19.1
396645	2.4	20.5	112667	2.5	18.0	30558	2.6	16.5	315422	2.6	20.1	243005	2.7	19.7	192953	2.8	20.2
290074	2.4	19.5	375775	2.5	19.8	434077	2.6	20.8	508692	2.6	20.9	279593	2.7	21.2	440590	2.8	20.5
541037	2.4	19.9	262261	2.5	20.2	389965	2.6	20.7	37543	2.6	19.2	471129	2.7	21.2	158292	2.8	19.9
102270	2.4	20.0	270517	2.5	20.2	537258	2.6	22.0	257753	2.6	20.1	509827	2.7	21.0	47939	2.8	18.0
71838	2.4	19.0	430780	2.5	19.1	335597	2.6	19.7	237386	2.6	20.4	199767	2.7	19.4	539326	2.8	20.8
478065	2.4	20.3	342344	2.5	19.7	211134	2.6	19.4	45511	2.6	18.8	201747	2.7	19.6	425725	2.8	20.3
523794	2.4	21.7	151501	2.5	19.5	92126	2.6	17.8	228603	2.6	20.2	166530	2.7	19.2	482738	2.8	20.1
427958	2.4	21.1	17620	2.5	17.5	353170	2.6	20.5	14037	2.6	17.5	318348	2.7	19.5	438628	2.8	20.4
478122	2.4	20.1	50605	2.5	18.2	96441	2.6	18.9	418269	2.6	20.8	15850	2.7	18.3	491748	2.8	20.8
319194	2.4	19.7	385749	2.5	20.4	211004	2.6	19.7	24976	2.6	17.0	401703	2.7	20.7	365301	2.8	20.9
392169	2.4	21.0	329213	2.5	21.7	58651	2.6	18.4	188943	2.7	20.2	474089	2.7	20.9	147492	2.8	20.0
139235	2.4	19.4	500138	2.5	20.0	297627	2.6	19.5	414396	2.7	20.8	431304	2.7	19.7	248627	2.8	20.8
431834	2.4	19.6	479994	2.5	21.4	404917	2.6	19.6	475002	2.7	20.3	505621	2.7	20.2	137834	2.8	19.5
220732	2.4	19.1	12917	2.5	18.1	359841	2.6	20.8	254135	2.7	19.8	112759	2.7	19.4	55973	2.8	17.2
528728	2.4	22.1	374316	2.5	19.2	199667	2.6	19.9	214737	2.7	20.2	307440	2.7	19.4	99675	2.8	19.2
359585	2.4	20.7	437328	2.5	19.3	381163	2.6	18.3	333755	2.7	20.7	534602	2.7	20.0	142291	2.8	19.4
114949	2.4	18.2	255681	2.5	18.9	353205	2.6	20.9	502047	2.7	20.5	144873	2.7	19.2	456840	2.8	20.7
202648	2.4	19.7	511444	2.5	20.4	177262	2.6	20.3	506200	2.7	19.5	264169	2.7	20.6	346307	2.8	21.3
259367	2.4	20.7	501513	2.5	19.9	124837	2.6	18.8	436268	2.7	20.5	281445	2.7	20.4	286231	2.8	19.6
106688	2.4	17.6	318987	2.5	20.5	326129	2.6	20.6	293780	2.7	20.5	128551	2.7	19.5	42887	2.8	16.3
89020	2.4	19.2	514262	2.5	19.7	121764	2.6	20.4	2060	2.7	18.6	40686	2.7	17.9	149127	2.8	19.2
75226	2.4	18.4	421507	2.5	20.7	402425	2.6	21.4	498326	2.7	20.8	243523	2.7	20.6	207350	2.8	20.4
192405	2.4	20.3	106497	2.5	19.2	353336	2.6	20.8	383950	2.7	20.6	80239	2.7	19.4	102063	2.8	18.2
296297	2.4	20.6	307097	2.5	19.9	37549	2.6	19.0	234355	2.7	20.2	178311	2.7	20.2	417502	2.8	19.3
470307	2.4	21.6	429824	2.5	20.3	248676	2.6	21.3	353343	2.7	20.5	434391	2.7	21.5	416889	2.8	20.6
36042	2.4	18.7	537495	2.5	21.7	210533	2.6	20.6	341082	2.7	21.2	140666	2.8	18.8	5607	2.8	15.6
261339	2.4	20.1	38823	2.5	19.2	255876	2.6	20.6	294127	2.7	20.4	120306	2.8	18.8	447128	2.8	20.3
526243	2.4	21.5	266970	2.5	19.7	215834	2.6	19.7	381125	2.7	18.8	129241	2.8	19.2	412914	2.8	21.1
126701	2.4	19.3	341253	2.5	20.5	355796	2.6	19.2	354175	2.7	20.7	381895	2.8	19.9	533433	2.8	21.7
91164	2.4	18.5	365930	2.5	21.8	461454	2.6	20.6	353160	2.7	20.0	154694	2.8	19.9	528484	2.8	19.7
383167	2.4	20.2	39025	2.5	18.8	441430	2.6	20.9	412874	2.7	20.8	537585	2.8	21.2	415725	2.8	20.6
397635	2.4	20.8	426895	2.5	20.4	10070	2.6	17.5	156235	2.7	20.3	311125	2.8	19.4	442007	2.8	20.3
119916	2.4	19.5	243513	2.5	20.5	185458	2.6	20.0	398061	2.7	20.8	247782	2.8	19.3	536580	2.8	20.6
186575	2.4	17.9	39909	2.5	18.2	62607	2.6	19.1	385013	2.7	19.7	472718	2.8	20.1	317401	2.8	20.4
252002	2.4	19.8	185664	2.5	19.7	308071	2.6	19.3	93747	2.7	19.3	5465	2.8	16.4	70472	2.8	18.5
168886	2.4	19.9	92396	2.5	18.5	432924	2.6	19.6	521124	2.7	21.0	380868	2.8	18.3	31227	2.8	16.1
469439	2.4	21.8	288731	2.5	19.6	212789	2.6	19.6	407710	2.7	19.9	532614	2.8	20.7	409428	2.8	21.3
132948	2.4	19.4	55927	2.5	17.8	334421	2.6	20.5	373599	2.7	19.0	177884	2.8	20.2	188261	2.8	19.9
397705	2.4	22.1	537692	2.5	20.5	437491	2.6	20.3	362641	2.7	20.4	150115	2.8	19.1	69726	2.8	18.4
342555	2.4	19.9	482667	2.5	20.8	387501	2.6	20.4	537628	2.7	21.4	285450	2.8	19.2	350682	2.8	20.3
508950	2.4	19.3	95865	2.5	19.0	508156	2.6	20.8	191797	2.7	18.8	158471	2.8	20.1	370943	2.8	19.2
154683	2.4	19.7	9989	2.5	17.2	510083	2.6	21.0	481170	2.7	21.1	397743	2.8				

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
222564	2.8	20.1	398207	2.9	19.8	399134	3.0	20.3	436312	3.1	20.3	153181	3.1	18.8	15727	3.2	17.0
231461	2.8	18.9	8662	2.9	16.9	146862	3.0	19.5	160313	3.1	19.1	210566	3.1	18.8	94114	3.2	19.2
358406	2.8	21.1	352500	2.9	20.0	211108	3.0	20.0	56363	3.1	19.2	392201	3.2	20.6	360427	3.2	18.6
226361	2.8	19.5	242732	2.9	20.1	150322	3.0	20.2	497643	3.1	18.8	279465	3.2	19.7	189369	3.2	20.1
61182	2.8	16.7	19372	2.9	18.3	36440	3.0	18.6	512450	3.1	20.1	257772	3.2	21.1	116839	3.2	19.0
73269	2.8	19.7	112861	2.9	19.9	205737	3.0	20.9	306034	3.1	20.7	305412	3.2	20.0	456812	3.2	20.7
216473	2.8	18.7	397052	2.9	20.3	346410	3.0	18.8	410277	3.1	19.6	131686	3.2	19.3	311218	3.2	19.6
8664	2.8	17.1	56583	2.9	17.2	248706	3.0	18.0	361313	3.1	19.5	420473	3.2	20.3	211104	3.2	19.6
375879	2.9	20.5	44980	2.9	18.0	60217	3.0	18.2	167905	3.1	19.3	275220	3.2	20.5	397997	3.2	21.6
380886	2.9	20.3	399006	2.9	20.0	155340	3.0	18.9	533488	3.1	20.4	399671	3.2	19.0	255706	3.2	19.0
234629	2.9	20.2	504534	2.9	19.9	314112	3.0	20.3	436490	3.1	20.6	57701	3.2	19.2	479187	3.2	21.3
514454	2.9	20.7	519471	2.9	21.2	248090	3.0	19.3	255400	3.1	20.0	158485	3.2	19.6	326146	3.2	20.6
282677	2.9	19.4	289601	2.9	20.8	169106	3.0	19.3	341236	3.1	20.4	214102	3.2	19.2	4726	3.2	16.2
362521	2.9	21.3	255225	2.9	20.9	302229	3.0	18.7	111159	3.1	18.1	467391	3.2	19.8	362281	3.2	20.9
377625	2.9	21.1	189061	2.9	18.6	340502	3.0	20.5	276030	3.1	19.2	310409	3.2	19.9	117239	3.2	19.8
499060	2.9	21.7	506972	2.9	20.2	387385	3.0	20.7	504735	3.1	20.0	339403	3.2	20.5	49819	3.2	18.5
333437	2.9	19.0	256818	2.9	19.2	190274	3.0	18.6	72993	3.1	19.3	333940	3.2	19.8	227854	3.2	19.8
436955	2.9	20.9	16580	2.9	17.4	513041	3.0	19.5	349918	3.1	20.2	174613	3.2	17.7	358904	3.2	21.4
191	2.9	12.6	233397	2.9	20.9	425606	3.0	19.2	410243	3.1	20.3	533582	3.2	21.6	415172	3.2	20.9
543853	2.9	21.0	174685	2.9	19.2	133973	3.0	20.0	205828	3.1	19.4	211223	3.2	18.8	238720	3.2	20.0
80698	2.9	17.2	128385	2.9	18.9	508402	3.0	20.8	539743	3.1	20.9	31294	3.2	17.5	427193	3.2	19.6
142313	2.9	19.6	278359	2.9	20.4	293168	3.0	19.9	130483	3.1	18.3	66463	3.2	17.4	128098	3.2	19.1
238440	2.9	17.1	338712	2.9	18.6	278945	3.0	20.3	91847	3.1	18.3	143619	3.2	20.3	198418	3.2	18.5
433533	2.9	20.7	391358	2.9	20.6	445512	3.0	21.3	380318	3.1	21.1	242810	3.2	20.6	294805	3.2	19.2
443085	2.9	20.7	24514	2.9	19.0	38122	3.0	18.7	39126	3.1	18.0	47257	3.2	18.7	101260	3.2	18.5
483153	2.9	20.0	121047	2.9	18.9	311514	3.0	20.6	18764	3.1	17.7	107017	3.2	19.0	88493	3.2	17.8
467581	2.9	19.8	250915	2.9	19.1	338106	3.0	18.1	29628	3.1	16.4	117229	3.2	19.3	248435	3.2	19.5
309103	2.9	19.8	259809	2.9	21.0	533273	3.0	20.1	4172	3.1	17.4	281017	3.2	19.3	311215	3.2	19.6
50032	2.9	18.6	361891	2.9	20.8	254237	3.0	20.5	143456	3.1	19.0	124183	3.2	18.1	499875	3.2	19.9
413452	2.9	20.8	68105	2.9	18.0	269006	3.0	20.7	162406	3.1	19.0	523810	3.2	19.1	497255	3.2	21.1
182797	2.9	19.5	91101	2.9	17.7	510913	3.0	21.2	262213	3.1	20.7	296357	3.2	20.4	399951	3.2	20.7
293245	2.9	20.5	387396	2.9	20.4	303227	3.0	19.9	367501	3.1	20.7	300097	3.2	20.1	539112	3.2	21.5
427891	2.9	20.8	400750	2.9	20.1	116469	3.0	19.6	209936	3.1	18.1	63976	3.2	19.0	17070	3.2	18.6
479646	2.9	21.0	508999	2.9	21.7	131028	3.0	18.7	308586	3.1	20.4	72833	3.2	18.2	253147	3.2	20.1
258735	2.9	20.6	395228	2.9	18.0	311601	3.0	20.3	74733	3.1	17.6	77309	3.2	18.9	319690	3.3	20.1
119829	2.9	16.7	525332	2.9	21.0	181506	3.0	19.8	211387	3.1	19.8	508314	3.2	22.2	442117	3.3	19.8
183211	2.9	18.6	267211	2.9	18.8	503338	3.0	21.1	250518	3.1	19.1	297704	3.2	19.4	366500	3.3	19.8
75752	2.9	18.1	508041	2.9	20.1	151267	3.0	19.4	255462	3.1	19.8	90856	3.2	18.9	462610	3.3	21.0
498455	2.9	21.7	291962	2.9	20.3	258023	3.0	20.2	40586	3.1	17.8	353727	3.2	21.4	206639	3.3	19.0
504537	2.9	21.1	205968	2.9	20.8	201806	3.0	19.7	526074	3.1	21.7	397237	3.2	20.9	148859	3.3	20.1
133182	2.9	18.9	444977	2.9	22.2	249260	3.0	19.2	342496	3.1	19.8	387930	3.2	20.8	393710	3.3	19.9
511426	2.9	20.4	468338	2.9	19.6	355469	3.0	19.0	168001	3.1	19.4	331920	3.2	18.3	195339	3.3	19.7
478209	2.9	21.3	509550	2.9	21.9	1426	3.0	14.7	539367	3.1	20.1	330571	3.2	21.3	520953	3.3	20.4
429864	2.9	20.6	165256	2.9	19.2	142091	3.0	19.2	196901	3.1	18.9	255746	3.2	18.1	176476	3.3	20.4
346019	2.9	20.8	241731	2.9	19.0	309200	3.0	20.9	315337	3.1	19.7	431019	3.2	18.8	293805	3.3	19.8
328985	2.9	20.4	462571	2.9	20.9	54292	3.0	17.0	270495	3.1	19.7	124453	3.2	18.7	255600	3.3	18.2
494176	2.9	21.4	132813	2.9	18.9	516915	3.0	20.9	34586	3.1	18.4	395085	3.2	21.3	198943	3.3	19.5
263698	2.9	20.5	374970	2.9	19.7	479881	3.0	20.3	387239	3.1	20.4	437660	3.2	20.4	69695	3.3	17.1
524405	2.9	19.9	148335	2.9	18.9	478049	3.0	20.9	126530	3.1	18.8	503339	3.2	21.3	128973	3.3	19.2
442103	2.9	20.7	504933	2.9	20.6	4856	3.0	15.0	216637	3.1	20.3	306058	3.2	20.3	439847	3.3	19.5
305514	2.9	20.9	77153	2.9	19.7	379286	3.0	20.3	180888	3.1	20.0	49675	3.2	17.3	448707	3.3	21.6
63304	2.9	19.3	68087	2.9	17.0	478408	3.0	20.9	2408	3.1	15.5	401814	3.2	20.1	356886	3.3	19.7
473326	2.9	20.5	442553	2.9	20.3	523194	3.0	20.5	397414	3.1	21.2	380319	3.2	21.5	456082	3.3	20.7
224311	2.9	21.1	207638	2.9	20.1	497586	3.0	19.3	281505	3.1	19.7	502538	3.2	20.4	489623	3.3	20.2
429227	2.9	19.9	339416	2.9	20.5	384452	3.0	20.0	41218	3.1	18.3	35197	3.2	19.0	272760	3.3	20.0
156991	2.9	20.3	365476	2.9	19.4	17780	3.0	17.1	537160	3.1	20.6	146261	3.2	20.3	507408	3.3	19.9
117565	2.9	18.9	389301	2.9	20.6	153781	3.0	18.5	531937	3.1	21.8	375269	3.2	19.9	360379	3.3	20.0
60328	2.9	19.2	537074	2.9	20.6	255237	3.1	20.2	364563	3.1	20.6	365085	3.2	20.8	354368	3.3	20.8
285268	2.9	20.4	495126	2.9	21.2	480674	3.1	19.9	203253	3.1	18.2	93620	3.2	19.0	296222	3.3	20.3
355101	2.9	21.0	481161	2.9	20.7	171492	3.1	18.4	27514	3.1	17.7	304401	3.2	20.5	307154	3.3	20.4
244340	2.9	19.8	123378	2.9	20.4	431386	3.1	21.6	427514	3.1	21.3	305451	3.2	20.4	466916	3.3	21.0
379271	2.9	20.8	34626	2.9	18.1	420943	3.1	18.9	525987	3.1	19.8	409738	3.2	21.1	240398	3.3	19.6
49719	2.9	17.9	513816	2.9	21.8	43734	3.1	19.1	435272	3.1	20.0	162886	3.2	19.5	480026	3.3	22.2
20984	2.9	18.5	323376	2.9	19.6	137859	3.1	18.7	77811	3.1	19.1	258496	3.2	20.1	420014	3.3	21.1
513294	2.9	20.5	439779	2.9	22.1	39307	3.1	17.2	65090	3.1	18.9	333927	3.2	19.4	398286	3.3	20.4
507779	2.9	21.5	224488	2.9	17.4	74846	3.1	19.1	208450	3.1	19.4	468989	3.2	22.0	310373	3.3	18.7
320515	2.9	20.8	53691	2.9	17.9	390319	3.1	20.0	310484	3.1	19.7	244556	3.2	19.4	404174	3.3	20.5
512145	2.9	20.8	17284	2.9	15.6	37916	3.1	18.5	201628	3.1	19.6	154817	3.2	19.4	215864	3.3	19.7
92956	2.9	17.7	273897	2.9	19.5	49989	3.1	18.4	123032	3.1	18.3	255340	3.2	20.5	443271	3.3	20.2
396719	2.9	20.3	478843	2.9	21.0	355595	3.1	20.3	512071	3.1	19.9	106394	3.2	18.9	478344	3.3	20.3
227911	2.9	19.7	540797	2.9	20.3	307046	3.1	21.5	512921	3.1	19.8	400474	3.2				

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
399938	3.3	21.2	185608	3.4	20.7	503686	3.4	19.9	231370	3.5	21.0	312698	3.6	19.3	361506	3.7	20.4
531949	3.3	21.6	1276	3.4	15.8	358957	3.4	21.0	16566	3.5	17.8	360516	3.6	18.8	466134	3.7	21.7
144235	3.3	18.6	172591	3.4	20.3	62731	3.4	18.7	482171	3.5	20.0	492272	3.6	21.7	48086	3.7	19.4
244173	3.3	18.8	394003	3.4	20.2	428266	3.4	20.2	117106	3.5	19.4	107127	3.6	18.2	119491	3.7	18.9
48041	3.3	18.3	282938	3.4	18.9	162019	3.4	18.9	232515	3.5	18.9	320600	3.6	20.6	59539	3.7	19.4
68356	3.3	18.9	279228	3.4	20.0	319201	3.4	20.6	107229	3.5	19.6	516208	3.6	20.4	137405	3.7	18.6
52546	3.3	18.4	211195	3.4	20.0	58849	3.4	19.7	524370	3.5	20.7	506976	3.6	20.0	318581	3.7	20.2
82209	3.3	17.2	425693	3.4	19.3	112131	3.4	19.1	469691	3.5	20.8	363104	3.6	19.2	362407	3.7	20.3
140974	3.3	19.3	292908	3.4	20.2	285827	3.4	20.4	164227	3.5	19.9	349206	3.6	20.0	475073	3.7	20.3
411193	3.3	21.7	326937	3.4	20.8	123394	3.5	19.4	288825	3.5	19.3	501581	3.6	21.5	19246	3.7	17.9
176406	3.3	19.6	434350	3.4	18.5	377658	3.5	21.0	508025	3.5	20.2	185070	3.6	20.3	328265	3.7	19.6
154965	3.3	19.2	87850	3.4	16.9	441339	3.5	20.7	536481	3.5	21.3	208896	3.6	19.4	479802	3.7	20.2
43610	3.3	19.1	264089	3.4	19.9	476211	3.5	20.2	328293	3.5	19.9	222622	3.6	19.9	303233	3.7	20.0
322593	3.3	20.9	313078	3.4	18.8	17624	3.5	17.0	391679	3.5	20.8	320574	3.6	19.3	121984	3.7	19.2
241163	3.3	19.5	462558	3.4	20.9	431088	3.5	21.4	429709	3.5	21.0	506034	3.6	21.1	149155	3.7	18.9
479804	3.3	20.6	384437	3.4	20.4	312451	3.5	20.6	191057	3.5	19.1	375952	3.6	20.0	140179	3.7	19.3
326055	3.3	20.4	403815	3.4	20.7	216258	3.5	21.8	25091	3.5	17.5	198004	3.6	19.1	92165	3.7	18.0
390393	3.3	20.1	157673	3.4	18.4	253828	3.5	20.1	381815	3.5	20.0	357582	3.6	20.2	234157	3.7	19.8
309084	3.3	20.7	93266	3.4	17.5	50492	3.5	18.8	246981	3.5	18.7	523182	3.6	20.1	204239	3.7	17.6
317307	3.3	20.7	360968	3.4	20.5	29609	3.5	17.1	531052	3.6	20.5	39317	3.6	15.5	512129	3.7	20.4
195599	3.3	20.5	210860	3.4	19.5	52654	3.5	18.0	402432	3.6	20.8	522754	3.6	21.4	192519	3.7	18.7
109381	3.3	17.9	228663	3.4	19.3	106693	3.5	18.7	177302	3.6	18.2	312701	3.6	19.1	186320	3.7	19.8
250526	3.3	19.7	471734	3.4	19.6	472084	3.5	20.3	475185	3.6	20.8	153065	3.6	18.3	176162	3.7	19.7
80063	3.3	18.7	413279	3.4	20.3	157382	3.5	19.3	497406	3.6	20.0	160557	3.6	18.1	254403	3.7	19.6
121537	3.3	18.2	377381	3.4	19.6	320423	3.5	21.2	231859	3.6	17.9	71023	3.6	19.3	149683	3.7	19.5
90464	3.3	19.1	252843	3.4	20.6	107110	3.5	19.0	323606	3.6	20.1	201756	3.6	19.6	251929	3.7	18.5
102742	3.3	17.3	461652	3.4	21.9	326972	3.5	19.1	212867	3.6	19.5	440432	3.6	18.5	170620	3.7	18.7
476432	3.3	20.9	376891	3.4	21.0	137997	3.5	20.1	524592	3.6	20.7	521354	3.6	21.0	341169	3.7	20.2
250410	3.3	18.9	98410	3.4	18.7	41102	3.5	19.1	443623	3.6	20.0	162659	3.6	18.8	505833	3.7	21.1
52768	3.3	20.3	313610	3.4	18.0	254386	3.5	19.7	35690	3.6	18.1	95603	3.6	19.1	365144	3.7	20.3
56565	3.3	16.5	313604	3.4	18.2	241660	3.5	20.5	376638	3.6	19.3	355636	3.6	20.2	149544	3.7	19.0
364020	3.3	20.2	105907	3.4	18.9	143554	3.5	19.4	500100	3.6	21.3	212671	3.6	19.1	397385	3.7	20.9
388572	3.3	18.2	33993	3.4	16.7	70174	3.5	18.4	294530	3.6	19.8	151449	3.6	19.7	20255	3.7	22.5
154526	3.3	19.4	88069	3.4	18.1	122151	3.5	19.0	150536	3.6	19.0	230064	3.6	18.9	16065	3.7	18.3
225866	3.3	18.9	295584	3.4	20.4	479927	3.5	20.9	94364	3.6	18.8	41012	3.6	17.6	524281	3.7	20.1
267349	3.3	19.3	103515	3.4	19.3	499634	3.5	20.1	52739	3.6	19.0	374619	3.6	20.4	137269	3.7	18.5
329799	3.3	19.2	164516	3.4	19.9	327762	3.5	20.0	515091	3.6	20.3	466943	3.6	21.2	93869	3.7	18.3
528381	3.3	22.4	417601	3.4	20.1	326182	3.5	20.2	165224	3.6	19.1	510721	3.6	20.5	350978	3.7	19.8
255367	3.3	21.0	333493	3.4	19.3	500179	3.5	19.9	414154	3.6	20.6	100506	3.6	19.4	478628	3.7	20.9
69799	3.3	18.5	337009	3.4	18.5	174615	3.5	18.4	55985	3.6	18.1	481486	3.6	20.0	503278	3.7	20.8
503366	3.3	20.9	99092	3.4	18.9	53323	3.5	17.8	131734	3.6	18.5	496931	3.6	20.2	94557	3.7	18.6
18511	3.3	18.9	7744	3.4	17.2	165049	3.5	19.6	443045	3.6	20.3	475876	3.6	21.5	330359	3.7	20.5
345054	3.3	20.9	232855	3.4	19.5	119165	3.5	18.6	468266	3.6	19.2	153615	3.6	18.6	511279	3.7	20.8
92449	3.3	19.6	343844	3.4	19.3	482193	3.5	20.9	62200	3.6	18.8	191781	3.6	19.0	11022	3.7	16.5
352387	3.3	19.8	501679	3.4	19.7	393674	3.5	19.6	351551	3.6	19.9	307131	3.6	21.0	89363	3.7	18.8
127014	3.3	19.8	83397	3.4	18.9	440970	3.5	21.3	410205	3.6	19.2	260315	3.6	18.8	9544	3.7	17.5
392020	3.3	20.0	96183	3.4	16.6	180432	3.5	19.6	349281	3.6	20.4	38749	3.7	17.9	449471	3.7	20.6
433030	3.3	20.6	126878	3.4	19.7	500124	3.5	19.5	375192	3.6	21.1	93267	3.7	19.3	113724	3.7	17.5
202984	3.3	20.1	213788	3.4	19.2	265818	3.5	19.6	500130	3.6	20.6	423560	3.7	20.9	457660	3.7	21.7
437986	3.3	19.7	433146	3.4	19.9	25153	3.5	17.1	462214	3.6	19.9	127002	3.7	18.0	21186	3.7	17.0
419539	3.3	19.8	370112	3.4	17.6	228665	3.5	19.6	185427	3.6	19.4	478088	3.7	20.5	123527	3.7	19.3
93110	3.3	18.8	508394	3.4	20.5	498436	3.5	21.6	381902	3.6	20.4	31799	3.7	17.1	227862	3.7	19.9
419726	3.3	20.4	1551	3.4	14.8	187679	3.5	21.0	666	3.6	12.5	282120	3.7	18.9	354776	3.7	20.8
83039	3.3	18.2	150626	3.4	18.2	98519	3.5	19.1	317247	3.6	19.7	408162	3.7	21.1	185217	3.7	19.5
299757	3.3	20.0	162869	3.4	19.6	311539	3.5	20.0	358566	3.6	20.0	270717	3.7	20.3	398194	3.7	19.8
95217	3.3	19.3	510705	3.4	20.4	23747	3.5	16.9	296946	3.6	20.0	253497	3.7	19.2	96565	3.7	18.6
480324	3.3	19.8	394313	3.4	20.4	227914	3.5	20.4	272724	3.6	19.7	475506	3.7	20.7	308685	3.8	20.4
147046	3.3	18.6	381445	3.4	19.6	360674	3.5	19.6	415643	3.6	20.1	167693	3.7	17.7	474760	3.8	19.2
111787	3.3	20.0	432811	3.4	20.9	111065	3.5	17.9	364150	3.6	20.7	536539	3.7	20.1	206791	3.8	19.8
131121	3.3	19.4	92260	3.4	18.5	433693	3.5	20.9	427974	3.6	21.6	171759	3.7	20.1	391747	3.8	21.4
341834	3.3	20.3	329391	3.4	19.3	509879	3.5	20.4	245815	3.6	20.3	540801	3.7	20.2	455225	3.8	19.7
201163	3.3	20.6	62580	3.4	18.2	518489	3.5	21.5	423212	3.6	20.6	514498	3.7	21.0	250775	3.8	19.9
159082	3.3	19.6	392597	3.4	20.0	397047	3.5	20.0	475772	3.6	20.8	9371	3.7	17.0	103119	3.8	18.3
84081	3.3	18.8	478695	3.4	20.3	70447	3.5	17.0	503103	3.6	20.4	537031	3.7	21.5	490661	3.8	19.3
335545	3.3	20.5	70868	3.4	19.3	286613	3.5	20.9	479902	3.6	20.9	478886	3.7	20.7	229119	3.8	19.5
359560	3.3	20.2	180071	3.4	20.2	470821	3.5	20.3	15070	3.6	15.3	289710	3.7	20.3	175323	3.8	19.3
540809	3.3	19.6	533568	3.4	21.1	198319	3.5	19.8	529617	3.6	22.2	57855	3.7	18.9	83552	3.8	19.0
105779	3.3	17.7	156336	3.4	20.6	333569	3.5	19.1	11429	3.6	17.2	353283	3.7	20.4	170182	3.8	18.8
472739	3.3	21.0	167803	3.4	19.8	129062	3.5	18.3	463735	3.6	20.9	448511	3.7	19.7	232604	3.8	19.2
115663	3.3	18.7	132699	3.4	18.7	521541	3.5	20.4	248553	3.6	20.4	234539	3.7	19.5	437384	3.8	20.9
245324	3.4	19.6	43924	3.4	18.6	232939	3.5	20.5	183802	3.6	20.0	39394	3.7	18.6	5352		

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
43956	3.8	18.6	188002	3.8	19.3	55430	3.9	17.6	175317	4.0	20.6	334696	4.1	20.5	230080	4.2	18.8
170418	3.8	18.6	81931	3.8	18.4	383332	3.9	20.7	235841	4.0	20.0	363317	4.1	20.0	152842	4.2	19.7
533458	3.8	21.0	365834	3.8	20.5	250828	3.9	18.6	475228	4.0	20.3	295883	4.1	19.9	424598	4.2	20.0
392798	3.8	20.1	470322	3.8	20.7	509675	3.9	21.9	59843	4.0	18.5	377767	4.1	19.5	224942	4.2	20.7
252347	3.8	18.7	276118	3.8	20.5	307082	3.9	20.3	363263	4.0	21.3	442576	4.1	20.2	504499	4.2	20.2
187202	3.8	20.0	476240	3.8	21.1	193505	3.9	18.3	57823	4.0	18.8	420348	4.1	21.0	539772	4.2	19.8
333788	3.8	19.5	49678	3.8	17.1	407274	3.9	20.9	422253	4.0	20.4	276082	4.1	20.5	276905	4.2	18.6
535446	3.8	21.8	103133	3.8	18.8	452391	3.9	18.5	137172	4.0	19.9	186315	4.1	20.6	513684	4.2	21.0
323809	3.8	18.5	128906	3.8	18.9	450006	3.9	19.4	284109	4.0	19.9	326922	4.1	20.2	317450	4.2	20.5
333466	3.8	19.2	482781	3.8	21.2	107840	3.9	19.2	444982	4.0	20.7	38775	4.1	15.9	442830	4.2	21.5
437766	3.8	21.2	243642	3.8	17.6	477634	3.9	19.9	189342	4.0	20.3	125386	4.1	19.1	127334	4.2	19.1
136803	3.8	19.5	97388	3.9	19.1	311202	3.9	19.5	461828	4.0	19.7	386402	4.1	19.5	160907	4.2	20.0
56465	3.8	17.8	268973	3.9	20.4	241427	3.9	20.1	174666	4.0	18.7	89558	4.1	18.4	395278	4.2	19.7
88169	3.8	17.1	243650	3.9	19.0	370941	3.9	20.1	40191	4.0	17.6	238070	4.1	20.1	229745	4.2	20.6
36450	3.8	17.3	24890	3.9	18.6	503382	3.9	21.1	148404	4.0	19.0	44263	4.1	17.3	501126	4.2	20.5
384484	3.8	20.4	64708	3.9	18.8	526835	3.9	20.2	249440	4.0	19.7	410317	4.1	19.2	306049	4.2	20.8
457416	3.8	20.4	514443	3.9	20.0	267336	3.9	19.9	158569	4.0	19.5	303243	4.1	19.5	260975	4.2	19.5
245306	3.8	20.0	260138	3.9	19.3	34247	3.9	18.2	289872	4.0	19.7	310106	4.1	19.9	265023	4.2	19.2
297060	3.8	21.4	195219	3.9	20.1	39454	3.9	18.5	528104	4.0	21.7	296440	4.1	19.2	421275	4.2	19.9
158138	3.8	20.2	530873	3.9	20.4	103785	3.9	19.9	346419	4.0	19.7	496229	4.1	21.9	245594	4.2	19.1
146909	3.8	19.6	61379	3.9	17.2	68024	3.9	16.9	248151	4.0	19.7	261705	4.1	20.1	296405	4.2	20.5
519216	3.8	19.9	106094	3.9	18.9	209324	3.9	19.5	81212	4.0	18.4	199540	4.1	19.4	356828	4.2	19.7
242791	3.8	20.2	3037	3.9	15.5	280348	3.9	19.6	490691	4.0	19.4	110461	4.1	17.7	359514	4.2	19.7
172806	3.8	18.7	29355	3.9	17.5	433307	3.9	19.4	14285	4.0	17.3	356383	4.1	19.6	102674	4.2	18.4
277179	3.8	18.9	254127	3.9	19.1	300884	3.9	20.0	89262	4.0	17.1	41510	4.1	17.2	200529	4.2	19.1
33732	3.8	17.4	163029	3.9	20.5	113508	3.9	18.4	90747	4.0	19.3	384438	4.1	19.9	196919	4.2	19.6
437404	3.8	19.6	340562	3.9	19.2	418042	3.9	20.9	75824	4.0	18.9	314488	4.1	20.9	245847	4.2	19.8
512127	3.8	20.9	252728	3.9	20.2	245083	3.9	19.9	200070	4.0	20.2	254217	4.1	19.3	525937	4.2	20.8
49001	3.8	17.6	181664	3.9	19.1	333552	3.9	20.8	130875	4.0	18.6	94628	4.1	18.9	528097	4.2	21.8
50263	3.8	18.1	93867	3.9	17.7	278259	3.9	19.9	282579	4.0	19.1	226697	4.1	19.3	55537	4.2	18.9
300051	3.8	20.5	460728	3.9	20.1	192495	3.9	20.0	112609	4.0	18.5	310673	4.1	21.1	272791	4.2	21.1
275592	3.8	19.6	343980	3.9	19.8	35889	3.9	18.6	38594	4.0	18.9	417865	4.1	20.8	137868	4.2	19.5
123667	3.8	19.9	476959	3.9	20.2	360116	3.9	20.2	83603	4.0	19.3	433901	4.1	20.8	120673	4.2	18.1
246521	3.8	19.1	255760	3.9	19.5	338529	3.9	18.4	259660	4.0	19.5	258713	4.1	20.5	387984	4.2	20.0
311985	3.8	20.4	510734	3.9	20.0	281251	3.9	18.9	22768	4.0	18.3	307168	4.1	20.7	134916	4.2	19.3
500101	3.8	20.0	227919	3.9	20.7	228578	3.9	17.0	511319	4.0	21.0	513808	4.1	21.1	218399	4.2	20.1
443757	3.8	20.2	376517	3.9	19.8	159576	3.9	17.5	248660	4.0	19.4	156376	4.1	20.4	420212	4.2	20.6
259302	3.8	19.9	252978	3.9	19.6	123808	3.9	19.6	248541	4.0	19.5	471731	4.1	20.5	45880	4.2	18.3
295324	3.8	20.1	270529	3.9	19.8	89394	3.9	19.0	510278	4.0	21.1	68277	4.1	18.8	262297	4.2	20.2
462537	3.8	21.1	512875	3.9	21.0	336425	3.9	19.1	225789	4.0	20.0	271166	4.1	20.7	120657	4.2	19.7
294821	3.8	20.5	34232	3.9	18.0	312758	3.9	19.4	293325	4.0	20.6	62509	4.1	18.8	349838	4.2	20.3
344498	3.8	20.2	215867	3.9	19.4	262987	3.9	20.8	265008	4.0	19.5	119621	4.1	19.7	257235	4.2	19.5
121763	3.8	18.4	351566	3.9	20.9	449945	3.9	20.7	41973	4.0	18.6	314134	4.1	21.1	218889	4.2	19.6
467047	3.8	19.9	481723	3.9	21.1	523930	3.9	20.4	31460	4.0	16.0	252861	4.1	20.5	351497	4.2	19.4
540948	3.8	20.5	257327	3.9	19.8	353150	3.9	20.5	162609	4.0	17.3	522511	4.1	20.9	364149	4.2	19.8
425865	3.8	21.2	436571	3.9	20.6	367108	3.9	20.0	350983	4.0	22.0	95402	4.1	19.3	119138	4.2	18.6
309209	3.8	19.9	36037	3.9	18.9	18979	3.9	17.3	249529	4.0	19.5	505500	4.1	21.0	18937	4.2	18.2
57359	3.8	16.7	133732	3.9	18.9	206675	3.9	19.2	260292	4.1	19.7	25559	4.1	18.1	29321	4.2	18.3
207505	3.8	20.6	252972	3.9	19.4	309837	3.9	20.7	86928	4.1	18.2	211909	4.1	19.9	183798	4.2	19.2
107169	3.8	18.0	323100	3.9	20.2	503870	3.9	19.2	255508	4.1	19.7	340514	4.1	19.5	80005	4.2	19.5
357317	3.8	20.9	60175	3.9	18.4	328321	3.9	20.7	250623	4.1	20.2	261001	4.1	20.2	67968	4.2	18.0
516423	3.8	24.1	326939	3.9	20.6	101720	3.9	19.2	72293	4.1	19.4	206568	4.1	18.5	234427	4.2	17.6
237048	3.8	21.1	343231	3.9	20.3	168326	3.9	20.4	310105	4.1	20.8	355225	4.1	20.4	478175	4.2	20.2
204659	3.8	19.8	387152	3.9	20.4	423981	3.9	20.5	448578	4.1	20.0	519715	4.1	20.8	260298	4.2	19.3
300022	3.8	20.2	99042	3.9	18.9	434756	3.9	20.9	295569	4.1	20.1	195380	4.1	19.3	221764	4.2	20.0
255320	3.8	19.2	410427	3.9	20.7	231928	3.9	19.6	462465	4.1	20.9	237121	4.1	20.3	533650	4.2	21.0
34640	3.8	17.0	429151	3.9	20.6	134132	3.9	18.6	394038	4.1	19.6	537235	4.1	20.8	322497	4.2	20.4
436753	3.8	21.5	209966	3.9	20.5	366638	3.9	19.5	269019	4.1	19.9	151753	4.1	18.8	303753	4.2	20.3
435291	3.8	19.6	496985	3.9	19.7	63097	3.9	19.3	94718	4.1	17.6	274722	4.1	19.1	652	4.2	14.1
203712	3.8	19.7	280072	3.9	19.7	72823	3.9	18.4	532860	4.1	21.1	191125	4.1	19.9	165373	4.2	18.1
424457	3.8	21.9	392198	3.9	20.2	353731	3.9	18.8	534523	4.1	20.5	35635	4.1	19.0	537185	4.2	21.5
480551	3.8	20.6	318858	3.9	20.5	396994	3.9	19.4	443901	4.1	21.0	230378	4.1	20.0	216210	4.2	19.6
193569	3.8	19.0	177847	3.9	19.1	255370	3.9	18.9	474857	4.1	19.0	530358	4.1	21.2	146817	4.2	19.1
425954	3.8	21.0	256684	3.9	21.1	20256	3.9	19.5	312111	4.1	19.5	6946	4.1	15.2	177928	4.2	20.2
370061	3.8	23.0	340493	3.9	20.0	477330	3.9	20.0	504296	4.1	21.1	456021	4.1	19.5	103186	4.2	18.4
513551	3.8	20.2	305612	3.9	20.2	248307	3.9	20.0	86185	4.1	18.4	433620	4.1	20.6	379370	4.2	20.8
45053	3.8	17.6	193611	3.9	20.0	96790	3.9	18.3	325	4.1	12.6	18713	4.2	17.4	225854	4.2	19.3
436587	3.8	20.2	361503	3.9	20.5	414110	3.9	18.5	94758	4.1	17.3	20546	4.2	17.9	37131	4.2	17.6
239256	3.8	19.2	474781	3.9	19.7	180108	3.9	19.3	316226	4.1	18.9	323478	4.2	19.8	423549	4.2	20.3
6104	3.8	15.9	45893	3.9	16.3	115223	3.9	18.5	525444	4.1	20.6	230945	4.2	20.0	412235	4.2	21.1
481184	3.8	20.5	204233	3.9	20.3	469675	4.0	20.0	390477	4.1	19.8	1925					

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
152089	4.3	19.4	436245	4.3	20.2	429581	4.4	21.7	536786	4.5	21.9	247071	4.6	19.0	173594	4.6	19.8
521571	4.3	20.5	520030	4.3	20.3	176827	4.4	19.1	517702	4.5	20.3	38035	4.6	18.9	431975	4.6	20.7
56517	4.3	17.6	19360	4.3	19.1	85651	4.4	17.5	91253	4.5	18.2	64180	4.6	18.3	502301	4.6	19.7
505966	4.3	20.9	167738	4.3	18.8	463453	4.4	19.5	144107	4.5	19.4	71405	4.6	18.2	158946	4.6	18.2
426013	4.3	21.6	266541	4.3	20.7	74831	4.4	18.0	504707	4.5	19.5	172512	4.6	19.0	12646	4.6	16.7
197551	4.3	19.1	158396	4.3	20.1	254235	4.4	19.9	433608	4.5	20.0	182822	4.6	19.5	54453	4.6	17.4
530685	4.3	21.0	207987	4.3	19.8	112149	4.4	19.1	507673	4.5	19.6	171489	4.6	19.6	246092	4.6	19.7
73291	4.3	18.6	341176	4.3	18.9	390774	4.4	20.3	544324	4.5	20.9	210917	4.6	19.2	17842	4.6	17.9
363981	4.3	21.0	138192	4.3	18.8	440570	4.4	19.9	386757	4.5	20.1	470732	4.6	19.8	427980	4.7	22.1
520418	4.3	21.0	128927	4.3	18.0	404875	4.4	20.8	128698	4.5	19.1	7865	4.6	16.0	215791	4.7	19.2
66892	4.3	18.5	338191	4.4	20.4	62991	4.4	17.2	273742	4.5	19.7	31475	4.6	17.5	505974	4.7	21.1
166108	4.3	19.7	528452	4.4	20.7	314566	4.4	19.9	293788	4.5	19.4	347383	4.6	19.2	297609	4.7	19.5
183881	4.3	20.6	229631	4.4	19.6	493633	4.4	19.8	336150	4.5	19.0	157256	4.6	19.6	392007	4.7	20.1
181138	4.3	19.0	353718	4.4	20.9	398548	4.4	20.4	199857	4.5	19.3	288243	4.6	18.9	533367	4.7	20.2
193535	4.3	19.8	522901	4.4	20.2	397718	4.4	21.3	107230	4.5	20.4	7628	4.6	15.4	311484	4.7	20.3
201437	4.3	19.9	528473	4.4	20.4	345025	4.4	20.4	40	4.5	9.5	513548	4.6	20.1	257274	4.7	20.2
71121	4.3	17.8	158957	4.4	19.6	193620	4.4	19.5	415315	4.5	20.6	331327	4.6	19.8	186343	4.7	20.6
178237	4.3	19.6	43694	4.4	18.6	313791	4.4	19.3	365859	4.5	20.0	406328	4.6	20.7	519859	4.7	20.1
179445	4.3	19.8	352332	4.4	19.6	237419	4.4	19.3	542206	4.5	20.2	123715	4.6	19.3	510061	4.7	20.1
222597	4.3	17.5	442838	4.4	20.1	7860	4.4	16.0	169047	4.5	19.1	378257	4.6	17.8	422878	4.7	19.2
99213	4.3	20.0	38534	4.4	19.2	92224	4.4	18.9	291779	4.5	20.5	390997	4.6	18.3	66524	4.7	17.6
146874	4.3	19.7	160256	4.4	22.8	257179	4.4	20.1	110938	4.5	19.6	536232	4.6	20.2	420401	4.7	20.5
180791	4.3	18.7	376551	4.4	19.0	431389	4.4	20.3	58661	4.5	18.0	362618	4.6	19.6	479991	4.7	20.9
89347	4.3	18.5	24622	4.4	18.6	201560	4.4	19.0	410260	4.5	20.1	61329	4.6	18.4	292384	4.7	20.3
251335	4.3	20.1	342549	4.4	20.5	119724	4.5	18.7	195104	4.5	19.1	334423	4.6	19.6	480685	4.7	20.4
359529	4.3	20.8	380891	4.4	20.2	20115	4.5	15.9	146805	4.5	19.8	459142	4.6	20.6	198994	4.7	18.7
441973	4.3	19.3	168654	4.4	20.4	26645	4.5	17.3	470883	4.5	20.2	196215	4.6	19.8	484222	4.7	20.4
540369	4.3	20.1	385366	4.4	20.2	418179	4.5	20.7	2004	4.5	14.7	322428	4.6	20.5	136932	4.7	18.1
537021	4.3	20.9	352004	4.4	20.0	121697	4.5	18.9	358869	4.5	19.9	524131	4.6	19.6	365986	4.7	20.6
79520	4.3	17.3	99965	4.4	19.1	359695	4.5	19.2	192286	4.5	20.0	540126	4.6	21.4	444093	4.7	20.4
488458	4.3	20.3	292924	4.4	19.5	246544	4.5	19.9	183002	4.5	17.6	422972	4.6	21.9	425733	4.7	20.2
449444	4.3	20.1	536004	4.4	21.2	469231	4.5	20.6	454853	4.5	20.1	102695	4.6	17.2	410355	4.7	18.2
440965	4.3	21.2	35505	4.4	18.3	175106	4.5	19.9	427110	4.5	20.8	117678	4.6	19.1	399972	4.7	19.5
503828	4.3	20.4	457774	4.4	21.3	382981	4.5	19.7	292613	4.5	20.3	170884	4.6	19.1	20960	4.7	17.4
216856	4.3	20.8	9082	4.4	16.0	15043	4.5	17.2	530312	4.5	21.3	329540	4.6	18.7	376396	4.7	21.3
248098	4.3	19.3	304570	4.4	20.0	56855	4.5	18.5	31671	4.5	18.7	106565	4.6	19.7	495143	4.7	21.4
67533	4.3	18.2	379014	4.4	20.3	511488	4.5	21.6	95415	4.5	19.1	119512	4.6	19.7	147906	4.7	19.6
433552	4.3	19.5	395855	4.4	21.0	91472	4.5	18.9	504066	4.5	19.2	250919	4.6	20.3	368567	4.7	19.4
289090	4.3	20.1	149772	4.4	19.1	120993	4.5	19.4	306852	4.5	19.4	27807	4.6	17.1	25118	4.7	18.5
509351	4.3	22.0	393995	4.4	18.9	68299	4.5	16.0	472367	4.5	20.2	140053	4.6	19.6	177805	4.7	19.1
271626	4.3	19.7	358723	4.4	20.9	260644	4.5	20.1	60078	4.5	18.6	354708	4.6	20.0	48582	4.7	17.8
499822	4.3	21.3	539042	4.4	21.2	109943	4.5	18.7	247502	4.5	19.5	525911	4.6	20.8	261082	4.7	20.0
123844	4.3	18.9	248563	4.4	19.9	255252	4.5	20.2	437322	4.5	20.0	333638	4.6	19.6	512116	4.7	20.2
106473	4.3	18.5	172890	4.4	20.4	466195	4.5	20.8	374305	4.5	20.3	198064	4.6	18.2	530648	4.7	20.9
90353	4.3	19.3	475180	4.4	20.8	392686	4.5	19.9	165362	4.5	19.1	535212	4.6	20.7	475110	4.7	20.0
442584	4.3	19.5	202858	4.4	19.9	364148	4.5	21.4	302811	4.5	20.7	158733	4.6	19.3	21589	4.7	17.6
307311	4.3	18.9	61961	4.4	18.2	84099	4.5	17.4	466852	4.5	20.4	63132	4.6	19.1	259691	4.7	21.0
68738	4.3	19.3	262424	4.4	21.0	524016	4.5	20.1	71992	4.5	17.6	268343	4.6	20.1	56397	4.7	17.5
498514	4.3	21.6	307078	4.4	20.5	489029	4.5	19.7	176361	4.5	18.7	107051	4.6	19.9	83456	4.7	18.1
531974	4.3	20.5	35232	4.4	17.9	211089	4.5	19.4	64881	4.5	20.0	478168	4.6	20.1	532912	4.7	21.6
241538	4.3	20.0	358403	4.4	21.8	105856	4.5	17.7	415378	4.5	19.8	173185	4.6	20.2	482104	4.7	20.2
198292	4.3	18.9	410232	4.4	18.9	41058	4.5	17.7	180111	4.5	20.6	8759	4.6	16.1	356429	4.7	20.0
295678	4.3	18.5	229588	4.4	19.8	237323	4.5	19.8	198200	4.5	19.4	175118	4.6	17.7	338145	4.7	19.9
66993	4.3	18.3	352573	4.4	20.6	250803	4.5	19.4	53602	4.5	16.9	114715	4.6	19.7	497346	4.7	19.5
48237	4.3	17.5	40156	4.4	18.0	214549	4.5	20.3	419738	4.5	19.6	521537	4.6	20.8	114731	4.7	19.9
385045	4.3	20.8	74375	4.4	19.4	98723	4.5	19.4	199206	4.5	20.0	158096	4.6	19.3	503424	4.7	21.3
393562	4.3	20.5	534772	4.4	21.0	291722	4.5	20.2	450124	4.5	20.3	537706	4.6	19.3	240681	4.7	20.0
110060	4.3	17.0	63034	4.4	18.7	432402	4.5	19.5	539472	4.5	21.2	15693	4.6	16.8	470351	4.7	20.4
533419	4.3	21.3	478305	4.4	21.2	192361	4.5	19.5	89164	4.5	19.0	421840	4.6	20.9	533185	4.7	21.0
313081	4.3	18.6	531630	4.4	20.7	508294	4.5	21.4	342777	4.5	20.0	326119	4.6	20.0	464494	4.7	19.5
239353	4.3	20.0	310633	4.4	20.5	318276	4.5	19.7	247485	4.5	18.8	257395	4.6	19.7	540963	4.7	21.1
521471	4.3	20.4	203023	4.4	19.6	187280	4.5	20.6	221718	4.5	20.1	245292	4.6	18.8	373219	4.7	21.0
170905	4.3	19.3	127292	4.4	19.3	411850	4.5	20.1	231918	4.5	19.5	56118	4.6	18.9	106281	4.7	18.1
348461	4.3	23.1	346003	4.4	20.0	384943	4.5	20.1	399072	4.5	20.5	250333	4.6	20.2	17953	4.7	18.2
20799	4.3	18.0	270406	4.4	20.2	58359	4.5	19.1	21457	4.6	18.2	371931	4.6	19.9	365630	4.7	20.1
424160	4.3	20.3	533613	4.4	21.4	42001	4.5	17.9	45202	4.6	18.1	445022	4.6	20.5	376917	4.7	21.6
512112	4.3	20.5	422603	4.4	19.7	447309	4.5	20.5	124032	4.6	19.3	320632	4.6	19.8	439739	4.7	19.6
215330	4.3	19.8	408270	4.4	20.3	474893	4.5	20.3	388616	4.6	20.7	257953	4.6	18.8	357239	4.7	20.8
370678	4.3	18.3	58902	4.4	17.7	482755	4.5	21.6	172885	4.6	20.5	258911	4.6	19.4	522881	4.7	20.4
154261	4.3	18.2	244324	4.4	20.1	489937	4.5	19.5	343623	4.6	20.1	236747	4.6	20.3	94679	4.7	17.7
128516	4.3	19.3	27150	4.4	17.6	480737	4.5	20.2	314358	4.6	19.8	253907	4.6	19.9			

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
84919	4.7	19.2	182902	4.8	20.7	419682	4.9	19.7	321114	4.9	20.1	474039	5.0	20.1	207578	5.1	19.7
312401	4.7	21.2	50116	4.8	18.4	54061	4.9	19.1	248048	4.9	18.9	423276	5.0	20.3	374343	5.1	19.7
461684	4.7	20.7	422138	4.8	20.6	42403	4.9	18.9	172466	4.9	17.5	181534	5.0	20.3	275079	5.1	20.6
181107	4.7	19.8	422182	4.8	19.9	527377	4.9	20.7	530883	4.9	20.4	34623	5.0	18.4	9959	5.1	16.9
427368	4.7	19.3	435262	4.8	20.8	170317	4.9	19.0	61667	4.9	18.4	470315	5.0	22.4	177297	5.1	20.6
17009	4.7	17.2	508070	4.8	21.0	291521	4.9	20.7	5763	4.9	17.2	521747	5.0	20.3	72115	5.1	19.0
9523	4.7	18.0	446184	4.8	20.1	390854	4.9	19.1	389556	4.9	20.8	216117	5.0	19.4	501732	5.1	20.7
472905	4.7	20.8	391350	4.8	20.0	413019	4.9	19.4	341135	4.9	19.0	167897	5.0	20.1	241748	5.1	18.5
368120	4.7	20.1	20486	4.8	16.9	478262	4.9	20.8	401958	4.9	20.4	433605	5.0	21.0	119956	5.1	22.7
188517	4.7	17.9	428030	4.8	20.4	170348	4.9	18.9	396886	4.9	19.2	358443	5.0	20.3	398966	5.1	20.6
316828	4.7	20.1	20807	4.8	17.0	257560	4.9	19.9	93585	4.9	18.8	37164	5.0	17.5	333111	5.1	19.4
111397	4.7	19.2	434695	4.8	20.2	369730	4.9	21.0	72487	4.9	19.2	95920	5.0	18.3	156548	5.1	18.9
213825	4.7	17.2	24968	4.8	17.9	167821	4.9	20.4	439243	4.9	20.3	469578	5.0	19.7	311891	5.1	20.6
363519	4.7	18.8	303337	4.8	19.5	162571	4.9	19.1	417609	4.9	19.5	273022	5.0	20.1	309706	5.1	20.5
313091	4.7	19.2	358893	4.8	21.2	53362	4.9	17.0	34661	4.9	18.0	298824	5.0	19.5	65002	5.1	18.8
318777	4.7	20.2	193390	4.8	19.4	150263	4.9	18.9	254370	4.9	18.0	11284	5.0	19.2	466100	5.1	21.8
374986	4.7	18.0	58823	4.8	19.7	19388	4.9	16.4	108144	4.9	18.7	198201	5.0	19.8	189849	5.1	19.4
462611	4.7	20.7	387971	4.8	20.8	455265	4.9	17.7	512066	4.9	20.2	288043	5.0	19.6	1210	5.1	14.4
314121	4.7	21.4	234273	4.8	19.9	393081	4.9	20.4	232959	4.9	20.4	56748	5.1	17.7	220316	5.1	20.2
528257	4.7	20.4	208608	4.8	19.7	147332	4.9	19.6	99449	4.9	18.2	210961	5.1	19.6	29788	5.1	17.2
310904	4.7	18.9	421747	4.8	20.4	506635	4.9	19.1	150316	4.9	19.2	262455	5.1	20.8	165028	5.1	20.1
27672	4.7	17.8	279650	4.8	20.6	429825	4.9	19.8	416431	4.9	18.9	64938	5.1	19.3	527754	5.1	21.7
35036	4.8	19.0	352137	4.8	20.4	437543	4.9	20.0	355803	4.9	19.9	187540	5.1	20.3	59189	5.1	18.3
446715	4.8	20.1	235292	4.8	19.6	542716	4.9	21.3	138157	4.9	18.5	230375	5.1	20.3	209049	5.1	18.9
6087	4.8	17.4	344692	4.8	20.4	383987	4.9	20.0	284537	4.9	20.0	186979	5.1	18.4	293564	5.1	20.4
62405	4.8	18.3	127857	4.8	18.5	153125	4.9	18.0	466821	4.9	19.8	289628	5.1	20.9	519584	5.1	20.3
390436	4.8	20.4	417591	4.8	21.0	388611	4.9	19.5	395702	4.9	19.9	342805	5.1	19.8	361553	5.1	19.3
478324	4.8	21.2	358790	4.8	20.3	510612	4.9	20.6	190654	4.9	18.6	204565	5.1	19.8	504823	5.1	20.5
443798	4.8	20.8	396116	4.8	20.7	66825	4.9	19.5	533432	4.9	20.7	62733	5.1	18.9	415366	5.1	19.7
440993	4.8	20.9	418965	4.8	19.8	29889	4.9	17.9	367923	4.9	20.0	358454	5.1	19.3	104375	5.1	18.9
120567	4.8	19.9	136244	4.8	19.3	513719	4.9	20.1	247746	4.9	19.3	521539	5.1	20.9	22455	5.1	17.0
6702	4.8	16.7	444013	4.8	20.2	297800	4.9	19.8	45368	4.9	16.7	252185	5.1	20.1	209973	5.1	19.5
34659	4.8	18.7	306885	4.8	18.9	53966	4.9	17.4	118195	4.9	19.9	76104	5.1	18.0	310259	5.1	19.7
102026	4.8	17.8	314124	4.8	20.7	528164	4.9	21.8	527069	4.9	20.7	93557	5.1	19.2	258879	5.1	19.8
338090	4.8	20.1	460064	4.8	19.1	632	4.9	15.2	312917	4.9	20.1	319452	5.1	20.7	76453	5.1	18.6
386354	4.8	19.8	72112	4.8	20.2	146126	4.9	19.0	250608	4.9	20.5	172764	5.1	19.9	262370	5.1	19.2
207978	4.8	20.3	445407	4.8	20.2	72503	4.9	17.8	240204	4.9	19.6	199214	5.1	20.1	117149	5.1	17.5
332734	4.8	20.2	300856	4.8	19.7	492642	4.9	20.6	528010	4.9	21.5	508943	5.1	19.8	79682	5.1	18.1
241919	4.8	20.2	460143	4.8	19.4	359946	4.9	20.1	475584	4.9	20.0	538720	5.1	20.8	288713	5.1	18.7
281928	4.8	20.2	415359	4.8	20.3	158318	4.9	19.0	57661	4.9	18.1	187617	5.1	20.3	44588	5.1	18.0
499545	4.8	19.9	155339	4.8	19.6	253936	4.9	20.1	535341	4.9	20.4	209889	5.1	19.7	479982	5.1	21.0
442582	4.8	20.9	207922	4.8	20.0	383616	4.9	20.2	90814	4.9	19.3	135856	5.1	18.6	531985	5.2	21.6
269085	4.8	20.5	122707	4.8	18.2	168862	4.9	18.9	390467	4.9	20.6	525617	5.1	19.5	290497	5.2	20.0
475184	4.8	18.9	218789	4.8	19.6	258822	4.9	19.4	520038	4.9	20.6	355167	5.1	20.4	329113	5.2	20.6
244162	4.8	18.5	366520	4.8	21.1	295707	4.9	20.3	258620	4.9	20.5	470722	5.1	20.1	193243	5.2	18.2
114465	4.8	19.2	2957	4.9	14.9	531720	4.9	20.7	138874	4.9	18.7	64494	5.1	18.8	180544	5.2	20.8
521602	4.8	20.4	34870	4.9	18.8	412486	4.9	19.3	338202	4.9	19.7	384412	5.1	20.4	46712	5.2	17.2
87460	4.8	18.0	306074	4.9	20.1	314194	4.9	20.4	511435	4.9	21.4	519283	5.1	21.0	430771	5.2	19.4
72214	4.8	19.3	236160	4.9	19.5	476905	4.9	20.1	318546	4.9	21.0	437534	5.1	20.7	230035	5.2	18.7
290706	4.8	19.6	180776	4.9	20.0	501989	4.9	20.6	459637	5.0	21.7	538854	5.1	20.8	366819	5.2	20.8
62822	4.8	18.4	38546	4.9	18.1	152875	4.9	19.6	61298	5.0	17.2	334426	5.1	20.8	331909	5.2	19.3
293764	4.8	20.6	455658	4.9	21.4	16289	4.9	18.7	414070	5.0	19.9	65304	5.1	18.5	311522	5.2	19.9
425583	4.8	20.7	21885	4.9	18.0	105554	4.9	18.2	445372	5.0	20.3	414134	5.1	20.5	286450	5.2	20.6
440442	4.8	20.2	435238	4.9	19.3	24751	4.9	17.2	384062	5.0	20.6	401202	5.1	20.6	270381	5.2	20.5
93832	4.8	18.5	49748	4.9	17.6	290205	4.9	18.9	145015	5.0	19.8	250090	5.1	19.3	446495	5.2	21.2
31074	4.8	16.8	222562	4.9	19.3	244834	4.9	19.7	457578	5.0	20.3	225797	5.1	19.2	410697	5.2	20.3
55279	4.8	18.2	253815	4.9	18.7	66970	4.9	18.0	89536	5.0	18.3	202643	5.1	20.2	187313	5.2	20.4
250377	4.8	19.6	388034	4.9	19.0	3790	4.9	16.4	257261	5.0	20.4	465380	5.1	20.7	430543	5.2	21.4
137920	4.8	18.9	288035	4.9	20.1	416160	4.9	19.2	431021	5.0	21.8	254528	5.1	20.3	35026	5.2	18.7
343639	4.8	20.4	537526	4.9	20.3	198264	4.9	19.0	445844	5.0	20.6	443456	5.1	20.8	525167	5.2	20.4
269983	4.8	18.9	48478	4.9	16.2	519173	4.9	20.4	280120	5.0	20.9	71388	5.1	18.1	358458	5.2	20.0
475067	4.8	20.9	240178	4.9	19.5	394753	4.9	21.1	334745	5.0	18.2	232757	5.1	19.2	78290	5.2	18.1
503653	4.8	21.0	399070	4.9	20.6	307112	4.9	19.9	182853	5.0	19.8	42942	5.1	18.0	462587	5.2	20.4
129917	4.8	18.4	263780	4.9	19.0	39407	4.9	20.3	140000	5.0	19.1	508503	5.1	20.8	121289	5.2	18.0
203363	4.8	19.8	184034	4.9	20.8	114476	4.9	17.8	166525	5.0	19.9	529985	5.1	20.1	322394	5.2	19.8
365191	4.8	21.4	354895	4.9	20.4	398797	4.9	21.6	522337	5.0	21.1	508093	5.1	20.3	192866	5.2	18.8
36643	4.8	18.3	161614	4.9	19.9	397773	4.9	20.3	507791	5.0	21.6	150762	5.1	18.7	523103	5.2	20.4
18507	4.8	17.0	232113	4.9	18.7	20099	4.9	17.6	366216	5.0	20.0	63831	5.1	18.7	538151	5.2	21.2
467948	4.8	20.6	410339	4.9	20.9	414266	4.9	20.0	67934	5.0	18.7	467201	5.1	21.4	93320	5.2	18.7
8889	4.8	15.9	5360	4.9	16.2	151293	4.9	17.6	96440	5.0	19.0	308323	5.1	19.1	356416	5.2	20.7
294035	4.8	19.6	247171	4.9	19.6	43639	4.9	19.1	365065	5.0	21.4	234007	5.1	19.5	165332	5.2	

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
439502	5.2	20.9	66747	5.3	18.6	123014	5.3	18.5	513556	5.4	20.0	278465	5.5	18.5	529802	5.5	21.2
39839	5.2	19.9	2544	5.3	16.7	475659	5.3	20.0	200284	5.4	19.0	167156	5.5	19.2	140961	5.5	19.5
67802	5.2	18.8	342684	5.3	20.3	184232	5.3	19.3	70748	5.4	18.5	282281	5.5	20.4	33725	5.5	18.7
2500	5.2	15.7	16668	5.3	17.2	233871	5.3	19.4	243808	5.4	19.1	27270	5.5	17.8	15539	5.5	17.8
513372	5.2	21.6	254895	5.3	20.1	126531	5.3	19.3	196522	5.4	18.4	29552	5.5	17.1	310657	5.5	21.2
116358	5.2	19.0	347680	5.3	20.3	199447	5.3	19.2	237479	5.4	20.1	525576	5.5	21.3	87494	5.5	18.0
192829	5.2	19.8	277654	5.3	19.8	154181	5.3	19.5	521343	5.4	19.9	257501	5.5	20.4	333904	5.5	18.9
275563	5.2	18.8	305485	5.3	21.1	472446	5.3	20.3	295456	5.4	17.8	140503	5.5	19.3	360030	5.5	20.9
414798	5.2	19.9	536677	5.3	21.0	221928	5.4	19.6	139176	5.4	19.1	94287	5.5	19.3	281627	5.6	19.8
455990	5.2	19.2	199899	5.3	20.0	471405	5.4	20.5	259396	5.4	19.2	258472	5.5	19.9	429653	5.6	20.8
510715	5.2	20.5	390280	5.3	20.7	41015	5.4	18.5	341234	5.4	19.7	175069	5.5	19.9	22014	5.6	17.3
443495	5.2	21.4	491907	5.3	20.2	538484	5.4	21.1	199260	5.4	19.5	366551	5.5	20.3	112264	5.6	18.8
2684	5.2	16.0	537106	5.3	20.8	441431	5.4	20.9	297072	5.4	19.9	257147	5.5	20.9	136522	5.6	19.7
261348	5.2	19.8	200225	5.3	18.4	353192	5.4	20.1	117596	5.4	19.4	176001	5.5	18.7	55831	5.6	18.1
131225	5.2	19.0	503541	5.3	21.6	507124	5.4	20.4	224440	5.4	20.0	78904	5.5	18.4	180744	5.6	19.5
431060	5.2	20.4	293088	5.3	20.3	317877	5.4	19.1	380558	5.4	18.9	244704	5.5	19.0	428720	5.6	20.5
465405	5.2	20.9	351910	5.3	20.1	256644	5.4	20.4	320067	5.4	18.8	147220	5.5	19.9	316234	5.6	19.6
62753	5.2	18.1	454270	5.3	20.3	509046	5.4	20.9	513086	5.4	18.7	262711	5.5	19.5	100489	5.6	18.8
131128	5.2	19.4	433239	5.3	20.5	227393	5.4	20.5	352130	5.4	20.2	507500	5.5	20.4	536032	5.6	22.5
236824	5.2	20.2	341160	5.3	19.2	418977	5.4	20.5	210223	5.4	20.0	298787	5.5	19.6	396282	5.6	21.4
325421	5.2	19.4	235748	5.3	18.7	341185	5.4	17.7	477619	5.4	20.0	466136	5.5	21.9	203751	5.6	19.5
12565	5.2	17.7	26560	5.3	16.9	404723	5.4	20.0	159954	5.4	20.2	18687	5.5	17.8	442080	5.6	21.4
95244	5.2	18.8	22199	5.3	18.3	180515	5.4	19.3	307589	5.4	19.6	284606	5.5	19.6	502470	5.6	20.3
123891	5.2	19.3	5649	5.3	15.4	440964	5.4	20.2	361714	5.4	19.6	237680	5.5	18.7	497941	5.6	20.4
498658	5.2	20.0	172118	5.3	18.7	278889	5.4	18.2	539407	5.4	20.6	207912	5.5	19.8	230048	5.6	19.3
529764	5.2	21.2	60000	5.3	18.9	431426	5.4	20.8	246493	5.4	19.8	381942	5.5	18.9	412271	5.6	20.7
410183	5.2	20.1	6090	5.3	16.3	283275	5.4	19.0	194145	5.4	19.5	219624	5.5	19.4	240800	5.6	19.9
499444	5.2	19.7	46750	5.3	19.1	410803	5.4	20.2	322644	5.4	19.9	535964	5.5	20.9	530251	5.6	20.7
513214	5.2	21.0	162648	5.3	17.6	11327	5.4	16.1	309628	5.4	19.5	339426	5.5	19.9	186556	5.6	18.1
40829	5.2	19.4	416333	5.3	19.4	131687	5.4	19.6	115763	5.4	19.3	58860	5.5	18.5	467057	5.6	20.2
201580	5.2	19.4	485126	5.3	19.1	1948	5.4	16.8	336701	5.4	20.0	401214	5.5	19.7	359016	5.6	20.6
158377	5.2	20.3	269601	5.3	20.3	177313	5.4	19.2	262456	5.4	20.8	499693	5.5	20.3	344701	5.6	19.8
461800	5.2	20.7	19117	5.3	19.0	346115	5.4	20.2	486970	5.4	21.1	464003	5.5	19.4	469973	5.6	21.4
346657	5.2	20.2	537271	5.3	19.7	361154	5.4	20.3	312005	5.4	18.8	94444	5.5	18.4	28937	5.6	18.4
483381	5.2	20.1	473024	5.3	20.6	189147	5.4	20.6	231644	5.4	19.5	508201	5.5	21.5	105088	5.6	17.9
539785	5.2	19.8	12363	5.3	17.8	191145	5.4	19.4	117233	5.4	19.1	472907	5.5	20.4	267346	5.6	19.6
179412	5.2	19.7	395280	5.3	19.8	279447	5.4	19.8	77388	5.4	18.7	540488	5.5	19.9	410279	5.6	20.0
349340	5.2	20.5	312794	5.3	19.9	260101	5.4	20.2	311885	5.4	19.8	368440	5.5	19.8	394682	5.6	20.8
193032	5.2	19.8	471094	5.3	20.8	1830	5.4	15.0	195282	5.4	19.2	50043	5.5	17.9	225994	5.6	20.0
263512	5.2	20.8	52787	5.3	18.0	397741	5.4	19.7	134657	5.4	17.9	435641	5.5	20.5	306955	5.6	19.4
240699	5.2	20.3	503485	5.3	20.9	259074	5.4	18.9	277548	5.4	20.7	504722	5.5	21.0	111978	5.6	19.5
446599	5.2	21.2	32586	5.3	17.8	522376	5.4	21.4	77307	5.4	19.4	353890	5.5	20.1	320465	5.6	21.0
436311	5.2	21.2	470832	5.3	20.5	106369	5.4	19.3	61149	5.4	16.4	420519	5.5	21.5	104452	5.6	17.9
116756	5.2	19.2	248669	5.3	19.4	345984	5.4	19.9	247422	5.4	20.5	370937	5.5	20.2	487643	5.6	20.1
35900	5.2	19.1	150287	5.3	18.8	89174	5.4	18.5	62918	5.5	19.0	443018	5.5	20.4	331032	5.6	18.5
343915	5.2	20.6	257010	5.3	20.0	280629	5.4	19.6	520456	5.5	21.3	287555	5.5	21.3	509468	5.6	20.2
539540	5.2	18.8	505489	5.3	19.7	18451	5.4	18.3	332522	5.5	21.1	537815	5.5	20.8	470843	5.6	20.1
87512	5.2	19.0	368077	5.3	19.4	474307	5.4	20.7	245453	5.5	20.6	164342	5.5	23.3	515220	5.6	20.6
132373	5.2	18.5	315071	5.3	19.5	428286	5.4	20.9	287006	5.5	19.7	507912	5.5	20.4	534966	5.6	19.7
93544	5.2	18.3	471712	5.3	19.7	112016	5.4	18.9	444642	5.5	20.9	469233	5.5	20.6	3652	5.6	15.4
398511	5.2	20.8	120163	5.3	19.1	374342	5.4	20.2	342188	5.5	20.4	255172	5.5	19.2	518903	5.6	21.0
197822	5.2	19.8	400550	5.3	19.8	241450	5.4	20.6	142082	5.5	18.3	88665	5.5	17.1	343867	5.6	20.4
39458	5.2	18.5	440957	5.3	20.7	496469	5.4	20.7	112792	5.5	20.3	41840	5.5	19.0	167047	5.6	17.4
295594	5.2	19.0	311894	5.3	20.2	1181	5.4	14.0	242656	5.5	18.8	133966	5.5	20.5	72217	5.6	19.1
459006	5.2	21.2	59729	5.3	19.1	92759	5.4	19.0	316503	5.5	19.9	430990	5.5	19.1	459500	5.6	20.3
152286	5.2	18.8	529640	5.3	22.0	162303	5.4	19.2	6021	5.5	16.0	434396	5.5	20.4	471267	5.6	21.9
87556	5.2	18.0	32750	5.3	19.5	233448	5.4	20.1	102246	5.5	17.6	398076	5.5	21.1	46042	5.6	18.7
56398	5.2	19.2	285263	5.3	21.4	133222	5.4	18.1	481116	5.5	20.3	158429	5.5	19.1	524036	5.6	20.4
211216	5.2	19.6	124873	5.3	18.8	503664	5.4	20.8	532834	5.5	19.7	527571	5.5	20.1	119908	5.6	18.6
478006	5.2	19.9	188804	5.3	20.2	380823	5.4	21.2	513083	5.5	19.9	397759	5.5	21.0	483160	5.6	20.3
20057	5.2	17.1	206798	5.3	19.8	480647	5.4	20.0	515093	5.5	20.6	435764	5.5	21.3	69701	5.6	16.9
332711	5.2	20.6	245543	5.3	19.3	418151	5.4	19.8	316422	5.5	19.9	153697	5.5	19.6	55527	5.6	19.4
432615	5.2	21.0	12916	5.3	18.3	440535	5.4	19.9	69608	5.5	19.0	358387	5.5	21.5	121259	5.6	18.7
50361	5.2	18.5	442579	5.3	19.9	23588	5.4	16.5	107693	5.5	18.6	430972	5.5	20.0	213863	5.6	18.1
395844	5.2	19.7	139008	5.3	19.4	190640	5.4	17.1	121532	5.5	18.5	119183	5.5	18.0	508018	5.6	21.2
160178	5.2	19.3	39603	5.3	18.6	471117	5.4	21.4	155388	5.5	17.6	237583	5.5	18.5	288528	5.6	21.4
248153	5.3	20.1	509851	5.3	20.8	354921	5.4	20.3	9176	5.5	16.6	67348	5.5	18.4	504551	5.6	20.9
99741	5.3	19.8	360678	5.3	20.9	12547	5.4	17.3	532435	5.5	20.1	356433	5.5	20.7	232610	5.6	18.2
40761	5.3	17.3	315816	5.3	20.3	537442	5.4	20.7	304474	5.5	20.5	505529	5.5	21.2	284461	5.6	20.9
128707	5.3	18.7	413450	5.3	20.9	539034	5.4	20.4	360373	5.5	20.7	320530	5.5	20.2	122312	5.6	17.8
217231	5.3	17.2	420344	5.3	21.2	132062	5.4	19.4	42015	5.5	18.9	535508	5.5	21.7			

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
389942	5.6	19.4	5258	5.7	17.2	55570	5.8	18.4	77519	5.9	19.1	440931	5.9	20.1	65981	6.0	19.5
59871	5.6	18.0	37783	5.7	18.7	60906	5.8	17.4	494477	5.9	19.7	193848	5.9	18.9	457429	6.0	20.1
39534	5.6	16.1	299265	5.7	20.2	478298	5.8	21.1	255162	5.9	20.8	312703	5.9	20.2	510112	6.0	20.5
279041	5.6	20.1	39636	5.7	18.1	242590	5.8	21.2	73778	5.9	18.6	263097	5.9	19.7	442032	6.0	20.1
247525	5.6	19.5	503112	5.7	21.5	290270	5.8	19.2	255010	5.9	20.1	291754	5.9	20.2	462337	6.0	21.5
100205	5.6	19.7	195230	5.7	19.3	443008	5.8	21.3	523871	5.9	20.1	297594	5.9	19.8	31731	6.0	18.2
397179	5.6	19.5	97984	5.7	18.4	364164	5.8	20.6	242677	5.9	20.3	380859	5.9	20.1	380847	6.0	20.2
231258	5.6	20.0	254468	5.7	20.8	428837	5.8	20.1	99349	5.9	19.3	195099	5.9	20.3	537022	6.0	21.0
37661	5.6	18.2	377097	5.7	22.3	501764	5.8	18.7	533580	5.9	22.1	368078	5.9	19.6	394645	6.0	21.6
102373	5.6	18.1	76941	5.7	18.4	140349	5.8	18.3	524671	5.9	20.8	182798	5.9	21.3	473880	6.0	19.5
253420	5.6	18.0	288292	5.7	19.9	471127	5.8	20.9	117500	5.9	18.8	184432	5.9	20.7	98424	6.0	18.7
241144	5.6	19.6	290736	5.7	19.9	235796	5.8	19.9	124347	5.9	18.8	511473	5.9	21.2	529708	6.0	21.3
208667	5.6	19.5	276039	5.7	20.3	237940	5.8	19.8	295048	5.9	20.3	497187	5.9	19.4	409146	6.0	19.5
228624	5.6	19.7	504705	5.7	20.5	314383	5.8	20.7	401533	5.9	20.0	321220	5.9	19.8	507466	6.0	19.8
249215	5.6	19.9	347044	5.7	20.0	505538	5.8	19.9	386940	5.9	20.3	129683	5.9	18.3	253791	6.0	19.4
215002	5.6	20.0	457614	5.7	21.0	380881	5.8	20.6	112299	5.9	18.8	234351	5.9	19.6	261752	6.0	20.3
208049	5.6	18.8	255059	5.7	20.3	531836	5.8	22.3	95493	5.9	18.6	180785	5.9	19.7	490761	6.0	20.7
175885	5.6	19.0	254013	5.7	20.2	379486	5.8	19.8	121331	5.9	19.1	117203	5.9	19.3	389430	6.0	20.5
338774	5.6	19.9	195232	5.7	19.6	325852	5.8	20.9	51515	5.9	17.9	425694	5.9	19.2	210748	6.0	18.5
108017	5.6	19.7	122384	5.7	18.4	247787	5.8	18.5	63074	5.9	17.9	528817	5.9	21.3	356200	6.0	19.5
312228	5.6	20.9	471289	5.7	20.7	118937	5.8	19.5	54480	5.9	17.7	480623	5.9	20.5	474726	6.0	20.1
94590	5.6	18.8	32825	5.7	17.2	122601	5.8	17.6	374428	5.9	20.2	129594	5.9	17.8	511904	6.0	21.9
142988	5.6	19.2	145831	5.7	17.3	120433	5.8	18.6	254266	5.9	19.1	278284	5.9	20.7	276119	6.0	19.9
25906	5.6	17.7	393117	5.7	20.2	322315	5.8	20.4	214429	5.9	19.2	216428	5.9	19.9	522089	6.0	20.6
524393	5.6	21.1	340443	5.7	20.5	292302	5.8	21.0	350191	5.9	20.5	533414	5.9	21.3	398626	6.0	20.2
362843	5.6	20.3	366774	5.7	19.9	107219	5.8	20.1	257074	5.9	20.7	466579	5.9	20.0	385256	6.0	19.4
56774	5.6	17.4	190375	5.7	18.1	137576	5.8	18.8	389255	5.9	21.2	536448	5.9	21.2	435619	6.0	20.6
423493	5.6	20.5	6113	5.7	15.9	379859	5.8	19.9	4922	5.9	15.7	496703	5.9	21.7	187364	6.0	19.7
120819	5.6	19.9	11455	5.7	17.6	347505	5.8	20.8	138793	5.9	19.1	308178	5.9	19.6	376402	6.0	19.5
358997	5.7	17.3	177690	5.7	20.7	247722	5.8	20.0	77145	5.9	19.3	235705	5.9	19.9	401185	6.0	21.1
39678	5.7	18.7	87162	5.7	18.1	468015	5.8	20.8	132109	5.9	18.8	375665	5.9	21.5	461905	6.0	20.0
62381	5.7	18.3	377804	5.7	21.1	290932	5.8	20.7	180993	5.9	18.8	289274	5.9	19.5	470423	6.0	20.6
35657	5.7	18.6	286923	5.7	19.4	207255	5.8	20.0	360898	5.9	20.8	37904	5.9	18.3	321701	6.0	19.4
42128	5.7	16.9	472183	5.7	21.0	367505	5.8	20.3	179395	5.9	19.7	508055	5.9	20.4	56846	6.0	19.2
536805	5.7	20.6	413437	5.7	20.7	532789	5.8	21.9	39866	5.9	17.3	131868	5.9	19.3	533445	6.1	21.1
281528	5.7	18.7	370660	5.7	18.5	283890	5.8	19.1	87988	5.9	18.3	337980	5.9	20.5	255635	6.1	19.6
387384	5.7	20.0	213846	5.7	19.1	174649	5.8	18.6	123315	5.9	18.8	247891	5.9	18.9	51498	6.1	18.8
311441	5.7	20.1	302241	5.7	20.0	442124	5.8	20.3	430975	5.9	21.4	355622	5.9	20.2	225637	6.1	19.5
510500	5.7	20.4	436164	5.8	20.6	502340	5.8	20.0	318003	5.9	20.5	152218	5.9	19.0	376932	6.1	20.2
508438	5.7	20.0	155607	5.8	18.0	112353	5.8	19.5	260694	5.9	20.2	296114	5.9	20.2	154005	6.1	19.0
174507	5.7	20.9	301799	5.8	19.4	251573	5.8	19.3	154854	5.9	18.8	148899	5.9	18.8	343951	6.1	20.1
22879	5.7	18.4	333695	5.8	18.6	282274	5.8	19.2	161869	5.9	20.0	200643	5.9	18.2	35008	6.1	18.2
35746	5.7	17.1	316198	5.8	19.4	198242	5.8	19.8	500107	5.9	20.2	243031	5.9	21.6	63083	6.1	17.4
332323	5.7	19.6	171931	5.8	19.1	325854	5.8	20.4	533420	5.9	21.1	452130	5.9	20.6	390309	6.1	19.8
248447	5.7	19.2	362578	5.8	19.6	331727	5.8	19.7	440584	5.9	20.2	316246	5.9	19.9	469693	6.1	20.2
446884	5.7	20.5	156931	5.8	19.6	468037	5.8	20.7	538470	5.9	20.9	356887	5.9	20.1	285808	6.1	19.2
378266	5.7	21.4	78561	5.8	18.5	211037	5.8	18.9	291523	5.9	19.1	66733	5.9	18.6	311593	6.1	20.4
18736	5.7	20.1	52650	5.8	18.4	279444	5.8	19.9	344458	5.9	20.5	511503	5.9	22.4	177106	6.1	19.9
428105	5.7	20.1	414782	5.8	19.2	311369	5.8	20.6	42563	5.9	17.7	103273	5.9	19.8	440656	6.1	20.9
432274	5.7	20.9	201608	5.8	18.4	261885	5.8	21.1	191802	5.9	19.0	425158	5.9	20.4	373551	6.1	19.2
326179	5.7	20.4	408628	5.8	20.5	267065	5.8	20.1	482213	5.9	20.8	505933	5.9	21.2	181262	6.1	19.6
481079	5.7	20.1	453515	5.8	20.5	62776	5.8	18.8	514519	5.9	20.4	99715	5.9	19.6	41268	6.1	19.8
245090	5.7	19.0	195586	5.8	19.2	376915	5.8	19.7	204467	5.9	20.2	325405	5.9	19.3	247824	6.1	19.4
390832	5.7	20.7	314504	5.8	19.8	10252	5.8	16.8	9623	5.9	16.6	193604	5.9	20.1	159280	6.1	19.6
348192	5.7	18.8	190167	5.8	18.4	73134	5.8	18.9	153276	5.9	19.3	534020	5.9	19.9	482444	6.1	20.5
86307	5.7	18.7	499538	5.8	20.8	243243	5.8	19.8	386452	5.9	20.6	360132	5.9	21.2	356412	6.1	20.7
384694	5.7	19.8	80237	5.8	19.4	265326	5.8	19.9	160217	5.9	19.9	481960	5.9	19.1	287345	6.1	21.0
390471	5.7	19.8	42201	5.8	19.0	203748	5.8	19.3	294749	5.9	20.2	415143	5.9	20.1	434658	6.1	21.0
475579	5.7	20.2	113052	5.8	19.3	410204	5.8	20.7	309694	5.9	20.4	38342	5.9	18.2	120126	6.1	19.7
342702	5.7	20.5	72403	5.8	19.6	42668	5.8	18.0	23580	5.9	19.2	431803	5.9	19.8	399704	6.1	19.2
386425	5.7	19.7	508240	5.8	20.1	276886	5.8	19.1	242899	5.9	19.9	56016	5.9	17.4	117022	6.1	19.3
375992	5.7	19.4	481918	5.8	21.2	22413	5.8	18.5	252762	5.9	19.2	75324	6.0	18.6	357819	6.1	21.1
486680	5.7	19.5	392703	5.8	20.7	488729	5.8	19.4	176205	5.9	18.3	102733	6.0	19.6	481238	6.1	19.4
508548	5.7	19.9	357912	5.8	19.0	222619	5.8	17.9	257098	5.9	19.6	99115	6.0	19.0	40982	6.1	18.7
498003	5.7	20.8	6878	5.8	16.2	56950	5.8	16.5	72209	5.9	18.1	215892	6.0	20.3	216871	6.1	21.0
245787	5.7	19.5	167412	5.8	19.3	204410	5.8	19.4	479273	5.9	21.3	53167	6.0	16.9	313060	6.1	19.1
380082	5.7	19.3	504071	5.8	20.2	102461	5.9	17.8	368671	5.9	19.9	185005	6.0	18.9	389565	6.1	20.8
397413	5.7	19.8	37683	5.8	19.3	254034	5.9	20.6	227419	5.9	19.6	62105	6.0	17.5	455675	6.1	21.2
100374	5.7	19.4	507878	5.8	21.0	253454	5.9	18.8	404222	5.9	20.9	358353	6.0	20.7	284345	6.1	19.8
472575	5.7	19.2	539703	5.8	20.4	5158	5.9	16.1	179637	5.9	20.2	277498	6.0	19.9	356222	6.1	20.9
497909	5.7	20.5	123779	5.8	19.3	443582	5.9	21.1	300477	5.9	19.6	112337	6.0				

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
464821	6.1	19.2	53216	6.2	18.2	108515	6.2	19.5	126721	6.3	19.2	97797	6.4	17.2	70292	6.4	18.2
410213	6.1	20.6	186372	6.2	19.8	196450	6.2	20.1	504308	6.3	21.7	106152	6.4	18.3	90389	6.4	17.7
216717	6.1	20.7	257240	6.2	20.6	499540	6.2	20.5	343319	6.3	20.6	212451	6.4	20.0	508010	6.4	20.3
222661	6.1	19.4	286276	6.2	19.7	457668	6.2	21.1	248066	6.3	19.5	314097	6.4	20.9	393263	6.5	19.9
508564	6.1	19.9	234127	6.2	20.0	307119	6.3	20.4	942	6.3	14.7	192546	6.4	19.5	1484	6.5	15.8
17545	6.1	17.8	264465	6.2	20.8	516951	6.3	20.7	220585	6.3	20.0	214577	6.4	19.8	112462	6.5	19.3
514470	6.1	19.7	65960	6.2	19.4	540756	6.3	18.8	40627	6.3	17.9	388366	6.4	20.3	263154	6.5	19.1
346999	6.1	20.4	190659	6.2	17.7	471653	6.3	20.8	348515	6.3	19.7	457573	6.4	19.5	174017	6.5	19.9
437526	6.1	20.1	243140	6.2	20.0	468652	6.3	20.3	29325	6.3	18.0	467966	6.4	19.9	441009	6.5	21.1
438084	6.1	19.4	477658	6.2	19.6	379315	6.3	20.3	527253	6.3	20.8	470826	6.4	20.2	245554	6.5	20.2
117502	6.1	19.2	75542	6.2	19.1	272530	6.3	20.8	362371	6.3	19.9	49793	6.4	18.6	291354	6.5	20.4
534696	6.1	18.8	325407	6.2	19.7	428234	6.3	20.6	509777	6.3	19.5	467308	6.4	21.7	190092	6.5	17.5
258776	6.1	20.3	272611	6.2	20.8	474565	6.3	21.0	99535	6.3	19.5	66368	6.4	18.1	67977	6.5	16.1
94857	6.1	18.6	115812	6.2	19.1	443081	6.3	20.4	169898	6.3	20.0	395095	6.4	20.7	297313	6.5	19.1
336785	6.1	20.8	231266	6.2	19.1	91339	6.3	17.9	187671	6.3	20.8	119358	6.4	19.9	271675	6.5	19.7
448062	6.1	19.9	380622	6.2	19.4	124763	6.3	18.6	501329	6.3	21.2	134641	6.4	18.4	99003	6.5	18.0
532888	6.1	21.1	289590	6.2	20.0	178110	6.3	20.4	91397	6.3	19.5	106244	6.4	18.5	279662	6.5	19.9
507035	6.1	20.7	135126	6.2	18.7	447189	6.3	20.6	527043	6.3	20.1	365524	6.4	19.4	208555	6.5	18.5
60133	6.1	18.9	430548	6.2	21.2	471305	6.3	22.0	86110	6.3	18.4	415300	6.4	21.1	440359	6.5	19.9
123742	6.1	19.6	347898	6.2	20.4	173038	6.3	19.2	201944	6.3	19.7	162513	6.4	18.6	45187	6.5	18.3
228361	6.1	17.9	386113	6.2	19.3	16541	6.3	16.6	503572	6.3	21.1	504957	6.4	20.6	398225	6.5	20.4
455938	6.1	21.5	137466	6.2	18.6	459671	6.3	20.3	77409	6.3	17.8	80405	6.4	17.8	539015	6.5	20.3
400431	6.1	21.2	245305	6.2	19.6	290358	6.3	19.8	251459	6.3	20.3	5837	6.4	17.6	410292	6.5	21.2
431041	6.1	19.7	41009	6.2	19.0	233216	6.3	18.7	3874	6.3	16.4	431667	6.4	21.3	360901	6.5	20.4
240720	6.1	20.1	418121	6.2	20.9	86335	6.3	17.5	90596	6.3	18.7	320564	6.4	20.5	121586	6.5	19.8
72628	6.1	19.1	295503	6.2	20.5	510927	6.3	21.5	139860	6.3	18.7	241666	6.4	18.5	467631	6.5	18.6
491811	6.1	19.8	309183	6.2	19.2	536429	6.3	20.5	151315	6.3	20.2	88672	6.4	19.0	142296	6.5	19.4
300267	6.1	20.5	479304	6.2	20.0	336847	6.3	21.1	377680	6.3	19.5	465361	6.4	22.0	499699	6.5	20.7
418306	6.1	21.4	528849	6.2	20.2	37819	6.3	17.9	31296	6.3	16.4	242698	6.4	19.2	326968	6.5	20.3
129966	6.1	17.8	177529	6.2	17.1	425736	6.3	20.2	137836	6.3	18.8	33140	6.4	16.9	317853	6.5	19.3
159595	6.1	19.8	1508	6.2	14.8	296460	6.3	20.2	127308	6.3	20.5	62605	6.4	17.9	355807	6.5	19.9
44205	6.1	17.4	316688	6.2	21.7	262241	6.3	19.3	374989	6.3	20.4	40143	6.4	17.5	257191	6.5	20.1
293368	6.1	20.9	478221	6.2	20.5	250939	6.3	19.2	254383	6.3	20.0	379677	6.4	19.9	142333	6.5	19.2
250635	6.1	19.7	365428	6.2	20.2	480763	6.3	19.9	221780	6.3	20.0	264698	6.4	20.6	236658	6.5	19.3
183147	6.1	19.9	105565	6.2	17.2	6900	6.3	16.4	387514	6.3	18.7	27628	6.4	18.0	509667	6.5	20.8
169471	6.1	19.7	303881	6.2	20.4	185601	6.3	19.8	237100	6.4	19.7	25479	6.4	19.0	38500	6.5	19.0
233689	6.1	19.0	312413	6.2	20.9	510495	6.3	21.0	319400	6.4	19.3	128955	6.4	17.8	167812	6.5	19.4
207332	6.1	19.6	350353	6.2	19.9	497906	6.3	19.4	320859	6.4	20.2	95864	6.4	19.5	61751	6.5	18.8
431049	6.1	20.0	425589	6.2	19.9	470791	6.3	19.1	301042	6.4	20.9	160492	6.4	20.6	764	6.5	14.0
103112	6.1	19.3	359815	6.2	20.0	61428	6.3	18.5	165078	6.4	19.7	527154	6.4	19.2	121903	6.5	18.3
334871	6.1	19.1	242263	6.2	19.1	380909	6.3	20.4	236872	6.4	20.1	138815	6.4	20.4	204629	6.5	19.3
220378	6.1	19.6	153905	6.2	19.6	188167	6.3	20.2	316194	6.4	20.0	42264	6.4	16.0	212058	6.5	20.1
430994	6.1	20.5	445497	6.2	20.1	18666	6.3	15.6	212896	6.4	19.9	59419	6.4	19.0	112006	6.5	19.7
499720	6.1	20.1	358870	6.2	20.2	317474	6.3	19.5	339516	6.4	20.7	513804	6.4	21.4	473087	6.5	20.8
179507	6.1	19.8	154949	6.2	19.3	379907	6.3	20.6	188980	6.4	20.0	525655	6.4	20.5	142374	6.5	19.5
251894	6.1	19.9	182907	6.2	21.1	466092	6.3	21.3	92890	6.4	19.7	221758	6.4	20.1	540851	6.5	20.8
280924	6.1	20.9	510601	6.2	20.8	497165	6.3	19.4	64956	6.4	18.7	479886	6.4	21.1	510470	6.5	20.7
240129	6.1	18.1	507729	6.2	20.1	332903	6.3	19.7	192698	6.4	19.7	419672	6.4	20.3	46740	6.5	18.5
380892	6.1	21.1	166522	6.2	19.8	49789	6.3	18.2	75031	6.4	18.5	510640	6.4	20.1	224502	6.5	20.1
59671	6.1	16.6	52638	6.2	18.1	75627	6.3	17.7	154626	6.4	19.0	256824	6.4	20.3	285132	6.5	20.8
537547	6.1	20.4	204513	6.2	19.7	364129	6.3	20.9	9008	6.4	16.0	541676	6.4	20.7	543610	6.5	21.2
508153	6.1	21.1	517686	6.2	21.0	231292	6.3	20.0	542815	6.4	21.4	289203	6.4	19.3	266523	6.5	21.1
44731	6.1	16.7	286769	6.2	20.0	386787	6.3	20.5	471631	6.4	20.9	152364	6.4	19.0	437419	6.5	20.1
473305	6.1	19.4	131134	6.2	19.5	24216	6.3	17.5	163889	6.4	18.9	329293	6.4	17.9	216487	6.5	19.5
66482	6.1	17.4	104615	6.2	19.7	495362	6.3	20.4	481731	6.4	20.2	211500	6.4	18.7	331616	6.5	19.9
392903	6.1	20.7	111905	6.2	18.6	283675	6.3	19.8	296929	6.4	21.2	17944	6.4	18.3	434046	6.5	19.2
175264	6.1	20.5	80315	6.2	18.6	440396	6.3	20.0	75750	6.4	18.7	305525	6.4	20.8	245622	6.5	19.8
151842	6.1	19.7	258704	6.2	21.0	529792	6.3	21.0	454431	6.4	21.1	236389	6.4	20.3	393151	6.5	20.7
255495	6.1	19.8	432008	6.2	20.3	355607	6.3	20.1	513077	6.4	19.3	308078	6.4	19.6	229509	6.5	20.6
131023	6.1	18.8	237467	6.2	19.9	536026	6.3	20.9	349387	6.4	19.4	358948	6.4	21.5	360076	6.5	21.1
188944	6.1	19.8	63041	6.2	19.4	480975	6.3	19.8	25727	6.4	17.9	377810	6.4	20.4	158431	6.5	19.6
150606	6.1	20.4	437588	6.2	20.2	526004	6.3	20.5	389490	6.4	21.4	212396	6.4	19.2	48765	6.5	19.0
118813	6.1	19.2	480752	6.2	20.4	205652	6.3	18.9	358450	6.4	20.5	152116	6.4	19.9	274291	6.5	20.5
149061	6.1	19.9	131997	6.2	19.2	422708	6.3	19.5	285861	6.4	20.0	473855	6.4	21.3	83584	6.5	17.7
354870	6.1	20.4	98109	6.2	18.4	358305	6.3	19.7	43511	6.4	19.6	312289	6.4	20.2	4297	6.5	15.3
243872	6.1	18.3	431405	6.2	20.2	200253	6.3	19.9	457703	6.4	20.7	165334	6.4	19.5	497445	6.5	20.3
231573	6.1	19.7	385556	6.2	20.9	534479	6.3	20.5	111095	6.4	18.7	393967	6.4	20.1	537530	6.5	20.7
206665	6.2	19.1	509084	6.2	21.6	96319	6.3	20.3	4028	6.4	15.7	176050	6.4	19.8	418291	6.5	19.6
273668	6.2	20.5	24847	6.2	16.6	94330	6.3	19.2	528282	6.4	19.7	168499	6.4	17.9	215859	6.5	20.9
458976	6.2	20.7	54562	6.2	18.0	167809	6.3	19.4	237041	6.4	20.4	234354	6.4	21.0	384573	6.5	21.3
427519	6.2	21.3	166983	6.2	19.3	253739	6.3	18.9	25704	6.4	17.6	417949	6.4	20.4			

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
483681	6.5	20.6	270456	6.6	19.9	94317	6.7	19.0	372476	6.7	20.3	525404	6.8	19.4	67166	6.9	18.1
33740	6.5	16.7	482416	6.6	21.3	132771	6.7	19.5	105261	6.7	18.2	521303	6.8	21.0	243856	6.9	17.1
20300	6.5	17.2	478861	6.6	20.6	361151	6.7	20.9	539522	6.7	20.4	505843	6.8	20.7	396992	6.9	20.1
56339	6.5	17.0	188158	6.6	20.7	466162	6.7	20.4	459329	6.7	21.0	240551	6.8	19.1	500776	6.9	21.6
237478	6.5	19.8	483247	6.6	20.6	415035	6.7	19.9	69009	6.7	18.8	132057	6.8	19.2	521547	6.9	20.9
457590	6.5	21.7	2209	6.6	14.6	396221	6.7	20.4	357782	6.7	19.2	446190	6.8	21.0	539134	6.9	21.8
388684	6.5	20.5	22334	6.6	17.1	475873	6.7	20.2	204049	6.7	18.9	115095	6.8	18.8	22327	6.9	17.2
335799	6.5	19.5	189328	6.6	20.2	533633	6.7	21.7	112809	6.7	18.8	536971	6.8	21.6	282577	6.9	19.0
473222	6.5	21.0	126387	6.6	18.7	315329	6.7	20.3	68050	6.7	16.7	44459	6.8	17.4	214135	6.9	20.0
247421	6.5	19.8	393685	6.6	19.0	129713	6.7	19.3	112217	6.7	19.4	181746	6.8	19.0	144625	6.9	19.9
478397	6.5	21.1	126609	6.6	18.5	102612	6.7	17.7	429667	6.7	20.9	327733	6.8	19.4	290171	6.9	20.0
499854	6.5	21.5	186286	6.6	20.7	380900	6.7	20.4	310422	6.7	20.0	436258	6.8	21.0	523141	6.9	20.8
248451	6.5	19.4	66675	6.6	18.1	340329	6.7	20.1	486709	6.7	20.7	282268	6.8	20.6	395302	6.9	20.1
45284	6.5	18.4	349269	6.6	20.2	446103	6.7	21.0	342028	6.7	20.4	23996	6.8	17.6	343947	6.9	19.3
131703	6.5	19.3	83327	6.6	18.7	510937	6.7	20.9	242710	6.7	19.2	521283	6.8	21.6	68600	6.9	19.3
528176	6.5	21.4	510477	6.6	20.3	299803	6.7	20.2	242019	6.7	19.5	199751	6.8	19.6	152833	6.9	19.5
310480	6.5	18.8	22189	6.6	18.3	449880	6.7	21.2	512877	6.7	20.4	76596	6.8	18.6	344459	6.9	20.6
35592	6.5	16.9	478158	6.6	20.9	100197	6.7	19.9	402892	6.7	19.5	169865	6.8	19.7	5093	6.9	15.5
529859	6.5	20.5	285221	6.6	21.7	333419	6.7	20.2	512073	6.7	20.3	152755	6.8	19.9	188171	6.9	20.4
362881	6.5	20.3	444687	6.6	20.3	49380	6.7	17.9	89542	6.7	19.8	57687	6.8	18.4	217536	6.9	20.3
204306	6.5	19.7	221665	6.6	20.8	399635	6.7	19.4	16121	6.7	18.6	166491	6.8	19.7	442091	6.9	20.3
429095	6.5	20.8	159715	6.6	18.5	93716	6.7	19.1	192930	6.7	18.8	68261	6.8	19.0	392447	6.9	19.6
254005	6.5	21.0	202700	6.6	20.4	306905	6.7	19.8	138943	6.7	19.4	499691	6.8	21.3	269048	6.9	20.7
332114	6.5	20.0	16826	6.6	17.4	389225	6.7	20.4	282303	6.7	19.5	520211	6.8	20.8	209984	6.9	19.2
94449	6.5	17.5	96649	6.6	19.2	475568	6.7	21.0	87370	6.7	17.4	278710	6.8	20.3	475161	6.9	20.9
475827	6.5	21.7	162382	6.6	19.2	355554	6.7	21.1	68886	6.7	17.4	531927	6.8	20.8	482438	6.9	20.5
272524	6.5	21.3	22713	6.6	18.2	509622	6.7	21.6	325987	6.7	19.9	501104	6.8	19.5	122014	6.9	17.7
444724	6.5	20.9	352129	6.6	19.3	153778	6.7	18.3	121605	6.7	19.2	370682	6.8	20.7	304539	6.9	20.0
359604	6.5	20.6	199874	6.6	20.0	429161	6.7	20.1	98610	6.7	18.7	253079	6.8	18.5	359384	6.9	21.0
432357	6.5	20.3	461973	6.6	20.8	263414	6.7	20.0	500237	6.7	20.4	179304	6.8	19.8	312485	6.9	19.9
396558	6.5	18.8	20177	6.6	18.0	537222	6.7	20.9	33563	6.7	17.7	37668	6.8	18.1	255219	6.9	19.4
292419	6.5	20.4	328250	6.6	20.5	410304	6.7	20.0	516272	6.7	20.0	376162	6.8	20.7	248138	6.9	19.3
310498	6.5	18.8	22951	6.6	17.7	72342	6.7	18.4	306245	6.7	19.6	191304	6.8	19.5	329294	6.9	17.9
44845	6.5	18.9	70468	6.6	18.9	111995	6.7	18.6	512043	6.7	21.4	528985	6.8	21.1	404841	6.9	20.8
397679	6.5	21.8	44190	6.6	18.8	493615	6.7	20.3	506806	6.7	20.7	260771	6.8	20.0	210215	6.9	18.5
254578	6.5	20.4	248562	6.6	20.3	253917	6.7	20.3	87803	6.7	17.5	419725	6.8	20.8	89285	6.9	18.5
270226	6.5	19.0	287245	6.6	19.9	152085	6.7	19.6	258632	6.7	19.4	342896	6.8	20.7	91887	6.9	18.4
398267	6.5	20.3	80689	6.6	19.7	329785	6.7	19.5	499863	6.7	20.2	334694	6.8	21.2	22882	6.9	17.5
519428	6.5	20.8	508424	6.6	20.1	410246	6.7	19.6	504789	6.7	20.5	471775	6.8	20.8	122313	6.9	18.5
420849	6.5	19.6	33256	6.6	17.3	432488	6.7	20.9	58241	6.7	19.0	36426	6.8	18.0	2927	6.9	14.7
194973	6.5	19.5	100869	6.6	18.9	350613	6.7	20.0	353345	6.8	20.0	540305	6.8	20.6	366832	6.9	20.6
29949	6.5	17.2	533780	6.6	20.5	19109	6.7	19.6	392718	6.8	20.2	536227	6.8	21.0	520150	6.9	21.1
86242	6.5	18.4	256904	6.6	20.9	40213	6.7	18.0	477924	6.8	20.7	536949	6.8	21.4	106144	6.9	19.4
12387	6.6	16.6	161765	6.6	19.7	388731	6.7	20.9	530226	6.8	22.0	195609	6.8	19.5	37146	6.9	18.7
106102	6.6	19.2	331609	6.6	19.5	294178	6.7	20.7	357164	6.8	20.0	207683	6.8	19.9	213393	6.9	19.9
350117	6.6	20.7	366348	6.6	18.8	50158	6.7	17.5	525011	6.8	20.0	179848	6.8	19.2	482194	6.9	20.9
383633	6.6	20.7	356381	6.6	20.1	318735	6.7	19.6	519396	6.8	18.3	204531	6.8	19.4	312614	6.9	20.1
396654	6.6	20.5	482698	6.6	21.1	63236	6.7	19.5	349919	6.8	20.7	242226	6.8	19.0	356803	6.9	19.7
512359	6.6	19.9	245633	6.6	19.9	237155	6.7	19.2	33630	6.8	16.8	202704	6.8	19.7	479234	6.9	20.3
520570	6.6	21.2	321058	6.6	19.5	494415	6.7	20.4	8074	6.8	16.7	392645	6.8	20.2	512981	6.9	18.8
432818	6.6	19.8	211084	6.6	19.3	427745	6.7	20.6	284988	6.8	20.0	312365	6.8	20.3	438040	6.9	21.2
249232	6.6	18.8	277374	6.6	19.8	225629	6.7	20.5	507474	6.8	20.7	374358	6.8	20.5	462158	6.9	19.8
358986	6.6	19.2	332880	6.6	21.0	295828	6.7	20.6	504791	6.8	20.3	90783	6.8	18.9	97302	6.9	18.6
515956	6.6	21.1	383707	6.6	19.8	393106	6.7	20.7	128779	6.8	17.6	18317	6.8	17.2	368252	6.9	19.9
48905	6.6	16.9	156462	6.6	18.1	479095	6.7	20.8	432985	6.8	20.5	537571	6.8	20.3	104335	6.9	18.1
511920	6.6	20.3	78434	6.6	19.4	395267	6.7	20.3	133107	6.8	19.6	256709	6.8	20.1	413247	6.9	19.2
111913	6.6	18.6	32784	6.6	17.5	104020	6.7	19.9	289906	6.8	20.1	233178	6.8	20.7	166959	6.9	19.5
122399	6.6	17.8	190145	6.6	18.0	38314	6.7	17.7	393869	6.8	20.9	15281	6.8	16.9	222791	6.9	20.1
275211	6.6	19.0	48402	6.6	18.1	244301	6.7	19.4	518406	6.8	20.8	504053	6.8	21.4	459681	6.9	20.7
257411	6.6	19.4	70151	6.6	18.5	445277	6.7	19.2	376318	6.8	20.2	171077	6.8	20.0	265708	6.9	20.1
70863	6.6	18.4	207750	6.6	18.7	387782	6.7	18.9	313133	6.8	21.0	342487	6.9	20.1	399414	6.9	20.0
141443	6.6	19.8	235901	6.6	19.9	185759	6.7	19.9	269078	6.8	21.1	353588	6.9	19.7	497442	6.9	19.5
222585	6.6	20.4	521601	6.6	21.1	193727	6.7	20.1	35294	6.8	17.6	95373	6.9	18.9	121518	6.9	20.3
272769	6.6	19.3	478169	6.6	21.0	18123	6.7	17.6	338752	6.8	19.3	472762	6.9	21.5	159014	6.9	20.7
320415	6.6	18.3	143596	6.6	19.8	434102	6.7	20.8	341195	6.8	20.8	78040	6.9	19.4	249577	6.9	19.6
505455	6.6	20.3	94240	6.6	19.2	74489	6.7	18.0	310058	6.8	19.1	110519	6.9	17.0	366253	6.9	20.3
309824	6.6	21.4	449908	6.6	19.6	361019	6.7	20.7	183547	6.8	20.6	530509	6.9	22.5	299899	6.9	19.9
124439	6.6	18.2	33116	6.6	16.8	100656	6.7	19.2	303330	6.8	19.3	38863	6.9	17.7	160081	6.9	19.5
147407	6.6	19.5	277431	6.6	21.2	509770	6.7	19.7	45239	6.8	17.9	353469	6.9	20.6	59789	6.9	18.2
54468	6.6	18.6	354770	6.6	20.1	516069	6.7	19.9	248071	6.8	19.0	393794	6.9	19.2	151439	6.9	20.6
37215	6.6	18.4	440431	6.6	20.1	247953	6.7	20.2	146939	6.8	19.3	455303	6.9	21.4			

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
241180	6.9	18.5	220779	7.0	19.6	67969	7.1	18.0	512854	7.1	20.8	551	7.2	13.4	244789	7.3	18.9
357840	6.9	19.5	441975	7.0	20.6	427340	7.1	19.9	302035	7.1	19.5	287893	7.2	19.8	440202	7.3	20.1
241131	6.9	19.3	351273	7.0	20.7	458879	7.1	19.6	283236	7.1	20.0	380854	7.2	21.0	510833	7.3	21.5
184754	6.9	19.0	90835	7.0	18.6	127482	7.1	18.7	532080	7.1	21.0	248075	7.2	19.2	188541	7.3	18.9
309125	6.9	20.5	97913	7.0	18.3	151414	7.1	19.7	371873	7.1	21.4	93643	7.2	18.2	169603	7.3	19.4
35801	6.9	17.7	177994	7.0	18.5	207671	7.1	19.5	527168	7.1	19.4	333543	7.2	20.9	89382	7.3	18.4
359468	6.9	19.4	115434	7.0	19.1	286638	7.1	20.2	507627	7.1	21.0	457595	7.2	21.3	5256	7.3	14.7
314446	6.9	20.2	152847	7.0	19.4	368827	7.1	20.1	398630	7.1	19.5	314431	7.2	19.9	413033	7.3	19.4
276144	6.9	19.7	475548	7.0	21.0	314189	7.1	20.5	87248	7.2	16.8	480736	7.2	20.0	38552	7.3	18.1
456800	6.9	20.9	56185	7.0	17.9	22401	7.1	18.5	523537	7.2	20.3	257700	7.2	20.3	524227	7.3	20.4
286069	6.9	19.3	124838	7.0	19.3	307250	7.1	20.3	93219	7.2	19.1	346770	7.2	20.5	316271	7.3	20.0
307275	6.9	19.9	103377	7.0	19.3	502615	7.1	20.2	38085	7.2	19.0	358040	7.2	20.5	342504	7.3	20.5
540920	6.9	20.9	510905	7.0	21.2	137841	7.1	19.5	534569	7.2	20.0	474567	7.2	19.8	480706	7.3	20.6
39521	6.9	18.1	468633	7.0	18.9	357973	7.1	21.2	320490	7.2	18.6	115346	7.2	19.2	175225	7.3	19.3
435360	6.9	20.9	117457	7.0	19.7	238634	7.1	21.0	470402	7.2	20.1	479940	7.2	20.6	499736	7.3	20.3
73730	6.9	18.9	453319	7.0	21.9	151914	7.1	20.0	318478	7.2	20.1	394668	7.2	20.8	254171	7.3	18.4
207641	6.9	20.1	188150	7.0	20.3	67100	7.1	18.2	262355	7.2	19.8	258013	7.2	21.1	130435	7.3	17.2
414151	6.9	19.9	269093	7.0	20.5	15462	7.1	17.4	330680	7.2	20.5	396563	7.2	19.8	377814	7.3	20.6
189579	6.9	19.1	130506	7.0	17.8	509542	7.1	21.3	438210	7.2	20.1	74623	7.2	19.2	37427	7.3	16.5
390530	6.9	21.5	537219	7.0	20.7	302363	7.1	22.0	129035	7.2	19.0	423237	7.2	20.4	472673	7.3	20.1
358334	6.9	20.4	136802	7.0	19.7	296459	7.1	20.1	68522	7.2	18.8	508195	7.2	20.6	118894	7.3	19.2
392874	6.9	20.8	469997	7.0	20.5	160229	7.1	21.0	539378	7.2	20.9	363996	7.2	21.3	184936	7.3	20.1
183973	6.9	20.5	383327	7.0	21.4	169070	7.1	19.9	361020	7.2	21.0	429822	7.2	21.1	345020	7.3	20.4
28784	6.9	17.6	317437	7.0	20.1	501229	7.1	18.4	480406	7.2	20.2	258036	7.2	20.2	383932	7.3	19.9
35014	6.9	18.4	115644	7.0	19.4	260654	7.1	20.3	509404	7.2	21.5	333138	7.2	19.6	188560	7.3	19.8
73524	6.9	18.7	100185	7.0	20.9	385322	7.1	20.0	489781	7.2	21.6	163367	7.2	17.5	441338	7.3	21.0
510084	6.9	19.9	94250	7.0	19.1	322356	7.1	20.5	419627	7.2	20.1	475798	7.2	20.7	190426	7.3	19.3
367955	6.9	20.6	33154	7.0	17.7	531403	7.1	20.4	499302	7.2	19.8	480716	7.2	19.9	92127	7.3	18.7
308041	6.9	20.7	5714	7.0	15.2	249175	7.1	20.1	530856	7.2	20.2	311968	7.2	20.7	6874	7.3	15.4
5409	6.9	15.9	219525	7.0	18.3	396888	7.1	19.8	473026	7.2	20.6	248418	7.2	19.1	534705	7.3	19.9
282506	6.9	20.0	402483	7.0	19.5	512999	7.1	18.9	436023	7.2	20.5	316914	7.2	18.8	323719	7.3	20.7
444972	6.9	21.0	170270	7.0	18.7	355259	7.1	20.1	443655	7.2	20.0	238717	7.2	20.0	272740	7.3	20.5
273842	6.9	20.7	461620	7.0	21.7	357345	7.1	19.7	118831	7.2	19.0	245793	7.2	19.7	328628	7.3	20.3
312402	6.9	20.5	308179	7.0	19.4	159990	7.1	19.4	296672	7.2	19.6	28821	7.2	16.7	88048	7.3	19.0
302872	6.9	20.2	189321	7.0	20.2	83235	7.1	18.4	388669	7.2	20.5	342415	7.2	20.2	356895	7.3	19.8
88089	6.9	18.2	365068	7.0	21.5	191719	7.1	18.6	72637	7.2	18.5	237981	7.2	19.9	280896	7.3	21.2
86378	6.9	17.7	18529	7.0	17.8	499690	7.1	21.2	445800	7.2	20.8	119922	7.2	18.9	219621	7.3	19.1
69606	6.9	18.8	358954	7.0	20.5	279821	7.1	18.7	116508	7.2	20.6	534918	7.2	21.6	366705	7.3	20.1
356741	6.9	19.9	510643	7.0	19.4	368079	7.1	20.0	347063	7.2	20.7	271746	7.2	18.1	93030	7.3	18.9
115821	6.9	19.1	440799	7.0	20.6	120808	7.1	18.9	128028	7.2	19.4	275395	7.3	20.5	470337	7.3	20.5
131136	6.9	19.6	172296	7.0	18.9	136275	7.1	18.6	152101	7.2	19.5	89842	7.3	19.0	56221	7.3	18.3
107746	6.9	19.5	257431	7.0	20.1	128331	7.1	20.1	509626	7.2	21.5	358836	7.3	21.3	122669	7.3	18.8
438325	6.9	21.7	525476	7.0	21.2	472055	7.1	20.8	121530	7.2	19.3	390408	7.3	21.4	92006	7.3	19.8
244317	6.9	19.5	195593	7.0	19.8	480000	7.1	20.3	41656	7.2	19.0	508216	7.3	20.8	507530	7.3	20.7
77349	6.9	18.3	299453	7.0	19.6	160483	7.1	19.3	504304	7.2	21.8	86303	7.3	17.7	91673	7.3	18.4
356319	6.9	20.2	397717	7.0	21.6	393985	7.1	20.4	17078	7.2	17.0	237289	7.3	20.4	141086	7.3	18.5
490697	6.9	20.2	309697	7.0	20.5	529023	7.1	21.3	75381	7.2	18.6	312755	7.3	20.2	10576	7.3	17.0
109801	6.9	18.5	288391	7.0	21.0	432405	7.1	20.8	432655	7.2	21.6	259628	7.3	20.5	280844	7.3	20.5
250411	6.9	18.8	250070	7.0	19.9	66034	7.1	17.4	3949	7.2	16.1	247186	7.3	19.6	514422	7.3	21.0
234306	6.9	21.3	349394	7.0	19.6	87718	7.1	18.7	361513	7.2	20.8	369902	7.3	20.3	295856	7.3	21.0
124293	6.9	18.2	246247	7.0	19.2	300712	7.1	20.3	350053	7.2	20.6	491106	7.3	20.3	96656	7.3	19.6
384499	6.9	20.7	127092	7.0	19.3	251301	7.1	19.6	94839	7.2	18.3	302132	7.3	19.0	93447	7.3	19.0
536270	6.9	21.7	507058	7.0	20.2	247811	7.1	19.5	530948	7.2	20.0	225916	7.3	20.1	126940	7.3	19.7
331782	6.9	19.6	277644	7.1	20.2	366045	7.1	20.6	484565	7.2	21.2	156748	7.3	18.8	310508	7.3	19.2
482391	6.9	20.7	281563	7.1	19.9	83467	7.1	19.1	343901	7.2	19.0	10644	7.3	15.8	164585	7.3	19.6
63943	6.9	18.7	39280	7.1	18.7	250385	7.1	17.8	128731	7.2	17.5	130980	7.3	18.3	204451	7.3	19.3
447719	6.9	20.6	54689	7.1	18.5	16970	7.1	17.5	91131	7.2	17.9	203504	7.3	19.1	180496	7.3	20.5
175860	6.9	19.9	211835	7.1	19.7	285494	7.1	20.6	355244	7.2	20.8	193675	7.3	19.4	384691	7.3	20.8
369077	6.9	18.8	481171	7.1	21.5	388247	7.1	19.8	59421	7.2	19.5	87356	7.3	18.3	461378	7.3	21.4
20637	6.9	17.9	62431	7.1	18.8	221380	7.1	19.5	127939	7.2	20.5	508486	7.3	19.8	536384	7.3	19.5
198964	6.9	18.1	281564	7.1	19.4	535282	7.1	21.1	507016	7.2	18.8	1593	7.3	14.7	495090	7.3	19.2
539613	6.9	20.7	511204	7.1	20.0	156416	7.1	19.4	217741	7.2	18.6	533607	7.3	21.5	441008	7.3	20.5
532025	6.9	21.3	417968	7.1	19.6	158219	7.1	18.6	385458	7.2	23.3	91838	7.3	18.2	90808	7.3	19.1
99746	6.9	18.7	24377	7.1	17.2	316043	7.1	20.8	37552	7.2	18.0	376513	7.3	19.7	148401	7.3	18.7
385243	6.9	19.0	46018	7.1	18.6	22941	7.1	17.2	286552	7.2	19.2	303174	7.3	17.5	29514	7.3	18.7
242883	6.9	20.2	141121	7.1	19.4	53889	7.1	19.2	144707	7.2	19.5	390431	7.3	20.7	384576	7.3	21.1
421576	6.9	20.3	178154	7.1	19.7	522354	7.1	21.0	384772	7.2	19.0	338125	7.3	20.2	455296	7.3	21.3
161417	6.9	18.9	162679	7.1	19.1	382088	7.1	21.3	398265	7.2	21.2	361060	7.3	20.2	215789	7.3	19.8
299398	6.9	20.8	507163	7.1	20.0	504962	7.1	19.8	247466	7.2	20.4	314170	7.3	21.0	164094	7.3	19.7
126113	6.9	18.7	379612	7.1	20.1	208644	7.1	19.5	21954	7.2	18.4	118237	7.3	18.5	458723	7.3	22.4
463156	6.9	20.3	364265	7.1	19.8	305475	7.1	20.1	190658	7.2	19.0	208532	7.3	19.3	1439		

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
80539	7.3	17.5	297763	7.4	20.0	42638	7.5	17.6	512045	7.6	20.8	133670	7.6	19.4	154483	7.7	16.8
187130	7.3	19.3	204713	7.4	20.2	150255	7.5	18.7	103396	7.6	18.1	106428	7.6	19.1	301073	7.7	19.5
235870	7.3	19.7	448012	7.4	20.8	112115	7.5	19.9	190650	7.6	18.9	319551	7.6	21.1	47425	7.7	17.7
477697	7.3	20.8	458250	7.4	20.7	504591	7.5	20.4	156517	7.6	18.8	406276	7.6	20.9	225325	7.7	20.9
330363	7.4	21.0	125729	7.4	19.4	214782	7.5	19.7	472310	7.6	21.7	431406	7.6	20.4	117156	7.7	19.2
381855	7.4	21.0	461958	7.4	20.3	440610	7.5	20.3	270265	7.6	19.8	205777	7.6	20.3	510884	7.7	21.5
248149	7.4	20.1	258661	7.4	20.4	383954	7.5	20.2	524929	7.6	20.7	477742	7.6	20.2	486814	7.7	20.5
521594	7.4	20.8	363540	7.4	20.6	527741	7.5	19.9	380049	7.6	20.1	290878	7.6	21.2	134712	7.7	18.5
308736	7.4	20.7	469372	7.4	21.6	56900	7.5	18.4	521091	7.6	20.9	441356	7.6	20.9	236729	7.7	20.4
25549	7.4	18.5	11373	7.4	17.0	519043	7.5	20.4	168542	7.6	19.5	387969	7.6	20.6	365081	7.7	21.4
193459	7.4	19.5	499555	7.4	20.6	232611	7.5	19.9	48940	7.6	17.2	403259	7.6	19.9	305969	7.7	20.5
282646	7.4	18.6	347474	7.4	20.1	174851	7.5	20.1	502832	7.6	20.1	16068	7.6	18.3	121348	7.7	17.7
367931	7.4	20.8	520477	7.4	20.7	174652	7.5	18.3	88637	7.6	17.1	125421	7.6	18.9	321868	7.7	18.9
526863	7.4	21.0	289896	7.4	19.6	24076	7.5	17.0	446635	7.6	20.0	532599	7.6	20.9	130034	7.7	18.9
229735	7.4	20.1	512159	7.4	20.4	278285	7.5	20.5	501925	7.6	20.0	127394	7.6	20.0	325798	7.7	19.2
206473	7.4	19.4	528296	7.4	20.7	128693	7.5	19.0	150188	7.6	19.0	60129	7.6	18.7	426053	7.7	20.3
362778	7.4	20.7	90320	7.4	19.2	247409	7.5	19.7	1516314	7.6	21.2	537116	7.6	20.7	498109	7.7	20.1
161821	7.4	19.2	36273	7.4	18.3	106678	7.5	18.8	36232	7.6	18.0	293023	7.6	19.5	101434	7.7	18.9
499557	7.4	19.6	333289	7.4	18.7	428783	7.5	19.3	187889	7.6	18.9	503495	7.6	20.8	467089	7.7	20.9
150638	7.4	19.6	471257	7.4	20.2	419535	7.5	19.0	1848	7.6	14.9	238963	7.6	18.7	508197	7.7	20.0
335486	7.4	20.4	94428	7.4	16.9	511952	7.5	20.9	32330	7.6	17.9	471144	7.6	20.6	479510	7.7	20.9
507601	7.4	21.6	537513	7.4	20.7	302227	7.5	20.1	98202	7.6	17.7	160781	7.7	17.2	310015	7.7	19.4
41234	7.4	18.6	175200	7.4	18.6	505499	7.5	19.4	95046	7.6	19.3	238725	7.7	19.6	533581	7.7	21.3
154668	7.4	19.7	367936	7.4	21.0	248225	7.5	19.5	17188	7.6	22.2	154724	7.7	18.8	358344	7.7	19.1
505793	7.4	21.3	468009	7.4	20.9	49922	7.5	17.7	155701	7.6	18.4	215007	7.7	19.1	313594	7.7	18.4
254586	7.4	19.2	373384	7.4	19.5	183319	7.5	18.7	477729	7.6	20.8	11063	7.7	15.7	494418	7.7	20.8
360491	7.4	20.0	303705	7.4	19.7	193068	7.5	19.0	318602	7.6	19.6	94255	7.7	18.0	174608	7.7	18.1
445489	7.4	20.4	77942	7.4	18.5	507501	7.5	20.6	507770	7.6	20.4	131620	7.7	19.3	122971	7.7	18.3
520227	7.4	20.6	256476	7.4	20.7	262813	7.5	20.4	379283	7.6	20.3	490688	7.7	19.9	290204	7.7	20.2
304815	7.4	19.9	207947	7.4	19.4	237858	7.5	20.2	289889	7.6	18.9	376175	7.7	20.3	376175	7.7	21.4
350179	7.4	20.5	216039	7.4	19.7	806	7.5	15.1	440235	7.6	19.0	424099	7.7	21.0	5666	7.7	16.7
317466	7.4	19.9	498599	7.4	19.0	242721	7.5	19.7	503035	7.6	20.6	194134	7.7	19.1	178402	7.7	17.8
384913	7.4	20.0	152135	7.4	18.9	309908	7.5	20.8	347384	7.6	19.5	352103	7.7	21.5	414463	7.7	20.2
309674	7.4	21.3	325080	7.4	20.3	380570	7.5	19.0	126315	7.6	19.8	436150	7.7	21.4	219897	7.7	19.9
94727	7.4	19.3	336652	7.5	19.0	300766	7.5	19.9	167755	7.6	19.0	264234	7.7	18.9	459521	7.7	21.4
337177	7.4	20.5	268448	7.5	19.0	9863	7.5	17.5	87838	7.6	17.8	297553	7.7	19.3	335819	7.7	21.1
131313	7.4	19.6	277534	7.5	21.5	364198	7.5	19.4	443158	7.6	20.1	381996	7.7	20.6	361147	7.7	21.3
510900	7.4	20.4	254112	7.5	19.4	239946	7.5	20.2	17778	7.6	16.5	128277	7.7	19.4	144298	7.7	19.3
497664	7.4	20.0	504087	7.5	20.2	436276	7.5	20.2	60194	7.6	17.6	263839	7.7	19.4	122254	7.7	17.7
234305	7.4	20.9	191768	7.5	19.0	519501	7.5	21.3	304680	7.6	19.7	44286	7.7	18.1	305537	7.7	20.3
6990	7.4	17.5	422129	7.5	19.9	177911	7.5	19.2	359131	7.6	20.5	174768	7.7	20.0	498423	7.7	20.8
346015	7.4	19.9	360400	7.5	21.5	41067	7.5	18.3	165220	7.6	18.8	310076	7.7	20.2	88645	7.7	18.2
160225	7.4	19.9	504031	7.5	20.8	449431	7.5	21.1	345958	7.6	20.2	274097	7.7	19.8	273669	7.7	20.6
24191	7.4	18.0	41738	7.5	18.7	186350	7.5	19.5	297222	7.6	20.3	84879	7.7	19.3	53207	7.7	18.7
261233	7.4	20.7	346814	7.5	20.4	90311	7.5	18.8	72047	7.6	19.3	317702	7.7	18.9	311477	7.7	21.3
515972	7.4	19.2	249447	7.5	18.8	225944	7.5	19.9	437398	7.6	20.3	22239	7.7	18.2	261048	7.7	20.7
142054	7.4	19.3	28184	7.5	17.2	494287	7.5	21.2	360452	7.6	20.4	509543	7.7	21.7	362478	7.7	20.4
24543	7.4	16.9	79129	7.5	17.2	418200	7.5	20.1	41904	7.6	18.5	247853	7.7	18.2	95172	7.7	18.7
255499	7.4	20.1	347870	7.5	20.6	38181	7.5	18.9	457321	7.6	19.8	308933	7.7	22.6	352509	7.7	20.9
394741	7.4	21.5	69602	7.5	18.7	499212	7.5	19.7	225820	7.6	19.1	508050	7.7	19.7	149055	7.8	19.2
26244	7.4	17.7	26755	7.5	18.6	539709	7.5	21.1	510115	7.6	20.2	4095	7.7	15.7	502382	7.8	19.8
482949	7.4	20.2	38592	7.5	18.5	111736	7.5	19.6	171314	7.6	20.3	488350	7.7	19.0	496686	7.8	20.3
200779	7.4	18.4	259926	7.5	20.6	43528	7.5	18.7	81614	7.6	17.9	87369	7.7	17.7	485057	7.8	20.6
150553	7.4	19.8	307147	7.5	21.3	346471	7.5	19.5	521193	7.6	21.3	477218	7.7	21.1	5582	7.8	16.8
416231	7.4	21.5	236132	7.5	20.1	497730	7.5	20.6	254256	7.6	19.6	208635	7.7	20.3	499674	7.8	19.7
48355	7.4	19.2	440562	7.5	20.2	202080	7.5	18.4	492406	7.6	20.0	424843	7.7	21.1	118113	7.8	19.2
20701	7.4	17.9	511913	7.5	20.5	416606	7.5	19.5	463409	7.6	21.0	215928	7.7	20.5	171251	7.8	19.5
540927	7.4	21.4	357230	7.5	21.5	59990	7.5	18.3	512783	7.6	20.7	328100	7.7	20.5	186099	7.8	18.7
364180	7.4	20.4	62250	7.5	18.6	342660	7.5	19.0	68516	7.6	19.4	504350	7.7	21.3	69159	7.8	19.6
1595	7.4	15.1	98357	7.5	18.6	313640	7.5	18.4	529328	7.6	21.7	360040	7.7	19.6	325990	7.8	19.6
294021	7.4	19.6	244149	7.5	19.5	136886	7.5	20.3	195027	7.6	20.1	40276	7.7	17.2	190267	7.8	20.0
203385	7.4	19.3	411846	7.5	20.4	191114	7.5	19.2	313050	7.6	18.8	21338	7.7	16.6	444650	7.8	21.4
336207	7.4	20.7	464673	7.5	19.6	42850	7.5	16.6	431381	7.6	20.9	208592	7.7	20.0	311139	7.8	20.2
35935	7.4	19.0	49921	7.5	16.9	67103	7.5	18.0	447321	7.6	20.9	503047	7.7	19.5	526377	7.8	20.2
287848	7.4	19.5	9236	7.5	18.6	385531	7.5	19.4	44382	7.6	17.1	431420	7.7	20.2	502747	7.8	19.7
474221	7.4	21.1	379921	7.5	19.1	151408	7.5	19.6	530922	7.6	21.1	18365	7.7	16.5	191796	7.8	19.5
395099	7.4	19.1	310456	7.5	19.9	377831	7.5	20.3	7812	7.6	16.0	478595	7.7	20.9	234715	7.8	20.1
241764	7.4	21.2	260845	7.5	19.9	343354	7.5	20.4	314021	7.6	20.1	1008	7.7	14.5	339330	7.8	20.0
397082	7.4	19.4	4591	7.5	15.5	386468	7.5	20.5	8123	7.6	17.4	529486	7.7	20.3	19548	7.8	16.5
145426	7.4	17.5	299677	7.5	19.0	164540	7.5	19.7	469236	7.6	21.1	365523	7.7	20.9	520034	7.8	19.1
242168	7.4	20.0	416311	7.5	18.6	243118	7.5	20.0	421623	7.6	19.8	112562	7.7	18.7	289		

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
268116	7.8	19.9	504032	7.9	20.1	221628	7.9	20.0	252988	7.9	19.3	256814	8.1	20.3	95801	8.1	19.6
64184	7.8	19.0	439003	7.9	21.0	308670	7.9	19.6	38521	7.9	18.5	90690	8.1	18.3	380806	8.1	21.6
239478	7.8	19.8	322551	7.9	20.3	472850	7.9	22.0	521428	7.9	20.1	354212	8.1	21.3	383294	8.1	19.6
464457	7.8	21.1	131705	7.9	18.1	325945	7.9	20.0	146688	7.9	17.3	491282	8.1	21.0	512285	8.1	21.8
457594	7.8	20.4	112293	7.9	19.2	175112	7.9	19.4	256931	7.9	19.9	298678	8.1	19.9	374036	8.1	19.8
467081	7.8	20.9	648	7.9	14.2	503036	7.9	20.7	248143	7.9	19.5	348567	8.1	20.1	255127	8.1	20.5
483361	7.8	20.1	346692	7.9	20.6	131625	7.9	18.3	410805	7.9	22.2	473039	8.1	20.8	19725	8.1	17.5
356243	7.8	20.1	242246	7.9	19.2	508490	7.9	20.7	437424	7.9	20.0	333161	8.1	21.4	36571	8.1	17.8
33478	7.8	18.5	480652	7.9	20.4	529699	7.9	20.5	355210	7.9	20.8	314454	8.1	20.1	323401	8.1	21.6
247727	7.8	19.5	200076	7.9	18.6	536963	7.9	20.4	480802	7.9	20.9	47395	8.1	17.5	16221	8.1	17.9
56740	7.8	18.2	478797	7.9	20.3	532062	7.9	20.9	39922	7.9	16.5	18564	8.1	18.6	6178	8.2	21.9
118397	7.8	19.7	49452	7.9	18.3	91005	7.9	19.0	165008	8.0	20.8	32809	8.1	18.1	9454	8.2	17.4
505139	7.8	20.9	538855	7.9	20.3	386387	7.9	21.4	380173	8.0	18.8	353244	8.1	20.8	534206	8.2	20.6
271716	7.8	19.6	537653	7.9	19.9	192322	7.9	20.1	51068	8.0	18.6	472783	8.1	20.1	28747	8.2	19.0
533037	7.8	21.5	140449	7.9	19.2	438973	7.9	19.5	202629	8.0	19.5	8996	8.1	19.0	432879	8.2	21.4
35035	7.8	18.2	483152	7.9	20.2	33906	7.9	16.2	61277	8.0	18.2	368383	8.1	19.6	514287	8.2	20.6
141207	7.8	19.9	189042	7.9	19.6	443565	7.9	20.3	416828	8.0	20.4	508145	8.1	21.2	521687	8.2	21.3
297082	7.8	19.2	138618	7.9	18.9	390194	7.9	20.6	17458	8.0	17.6	24988	8.1	17.6	68787	8.2	17.3
80026	7.8	17.5	519169	7.9	20.4	338530	7.9	20.2	183289	8.0	21.0	44492	8.1	18.5	481091	8.2	21.0
219890	7.8	19.5	91879	7.9	19.1	322535	7.9	20.9	1713	8.0	15.0	507419	8.1	20.6	418102	8.2	19.2
295115	7.8	19.6	244294	7.9	19.3	515109	7.9	20.9	234161	8.0	20.1	97411	8.1	17.7	309707	8.2	19.1
319772	7.8	20.9	107670	7.9	18.8	542546	7.9	21.3	203561	8.0	20.8	177359	8.1	19.3	198182	8.2	19.5
275304	7.8	20.3	185021	7.9	18.6	529447	7.9	22.4	360178	8.0	21.0	179531	8.1	19.2	158435	8.2	19.7
93241	7.8	18.5	506921	7.9	18.9	422968	7.9	20.5	468623	8.0	19.7	383317	8.1	20.3	356218	8.2	21.0
86368	7.8	19.4	480673	7.9	19.6	225790	7.9	18.7	237943	8.0	20.0	93314	8.1	17.5	4113	8.2	16.7
60202	7.8	17.8	3922	7.9	16.0	328322	7.9	19.5	474182	8.0	20.8	120413	8.1	18.6	316413	8.2	20.8
360072	7.8	20.1	358890	7.9	20.1	394756	7.9	20.9	512554	8.0	20.0	437769	8.1	20.7	466129	8.2	21.6
356753	7.8	20.4	423693	7.9	20.8	358103	7.9	20.6	132674	8.0	19.2	502233	8.1	19.9	171086	8.2	19.5
291868	7.8	19.1	206946	7.9	18.3	113122	7.9	18.4	150650	8.0	20.6	62544	8.1	19.0	402769	8.2	20.1
408815	7.8	19.8	428884	7.9	19.7	136257	7.9	19.9	4057	8.0	16.8	505475	8.1	20.2	527856	8.2	21.3
243188	7.8	19.7	86165	7.9	18.8	296244	7.9	18.6	141	8.0	11.1	222756	8.1	17.8	147678	8.2	18.3
37086	7.8	17.9	430536	7.9	21.2	26109	7.9	18.3	83809	8.0	19.7	531594	8.1	20.5	48525	8.2	17.9
66782	7.8	19.0	522017	7.9	21.1	74410	7.9	17.9	150551	8.0	19.2	225929	8.1	20.2	482404	8.2	21.6
458842	7.8	19.6	385594	7.9	20.0	438189	7.9	20.0	280606	8.0	18.5	501322	8.1	19.6	308996	8.2	20.3
128350	7.8	18.9	499839	7.9	20.4	235149	7.9	19.4	215098	8.0	18.9	56786	8.1	19.0	504954	8.2	20.7
513082	7.8	19.9	297625	7.9	19.7	464855	7.9	21.1	436190	8.0	21.2	501087	8.1	20.4	191041	8.2	19.8
371552	7.8	20.7	376904	7.9	19.3	539342	7.9	21.0	360159	8.0	20.3	293459	8.1	19.4	468385	8.2	22.1
27279	7.8	19.2	153044	7.9	18.5	361887	7.9	20.2	93185	8.0	18.9	535671	8.1	20.4	34682	8.2	17.3
292427	7.8	20.4	243704	7.9	20.1	519314	7.9	21.3	184810	8.0	20.6	169864	8.1	19.2	258689	8.2	20.9
295530	7.8	20.6	103006	7.9	17.9	208974	7.9	19.9	334753	8.0	18.4	233762	8.1	19.0	356217	8.2	20.0
392797	7.8	20.4	497865	7.9	20.7	7883	7.9	16.6	184855	8.0	20.2	526189	8.1	21.0	264422	8.2	19.2
475613	7.8	20.5	119937	7.9	19.6	395401	7.9	20.5	305765	8.0	21.0	11014	8.1	15.7	192609	8.2	19.5
365827	7.8	20.7	213207	7.9	18.8	165536	7.9	18.0	497816	8.0	20.4	464816	8.1	19.6	316626	8.2	20.5
335822	7.8	19.7	257202	7.9	20.0	240427	7.9	19.9	141017	8.0	19.4	32585	8.1	17.5	127066	8.2	19.7
488579	7.8	20.9	512916	7.9	20.7	392206	7.9	20.7	202797	8.0	19.2	69446	8.1	18.3	146960	8.2	19.5
540893	7.8	21.5	171760	7.9	19.9	120081	7.9	19.8	91964	8.0	19.3	383236	8.1	19.9	356211	8.2	20.6
24295	7.8	18.0	483176	7.9	20.0	521641	7.9	20.7	438974	8.0	19.4	79314	8.1	19.3	440225	8.2	19.6
163985	7.8	18.9	350805	7.9	20.4	532020	7.9	20.7	3461	8.0	15.5	409086	8.1	20.9	401335	8.2	20.7
441436	7.8	21.5	64872	7.9	18.6	306240	7.9	19.2	358020	8.0	19.8	419600	8.1	19.3	126633	8.2	19.0
391509	7.8	20.4	126603	7.9	19.5	534054	7.9	19.6	495321	8.0	20.7	317988	8.1	20.8	529676	8.2	20.5
10414	7.8	17.6	240321	7.9	19.2	405104	7.9	19.8	437407	8.0	19.5	115448	8.1	19.1	129256	8.2	19.3
106195	7.8	18.9	279303	7.9	20.0	133699	7.9	19.0	145304	8.0	19.0	178477	8.1	18.4	403134	8.2	20.5
201799	7.8	18.9	195622	7.9	19.4	319179	7.9	19.8	539484	8.0	20.2	309604	8.1	21.1	480426	8.2	21.3
443557	7.8	20.6	128008	7.9	18.7	242898	7.9	20.0	5617	8.0	17.2	360079	8.1	20.7	177385	8.2	19.7
471739	7.8	20.5	439742	7.9	19.1	477663	7.9	20.7	389797	8.0	21.1	366320	8.1	20.2	503790	8.2	19.4
255437	7.8	19.7	197614	7.9	18.6	207661	7.9	18.3	503964	8.0	19.5	418099	8.1	19.1	460789	8.2	20.7
283910	7.8	20.3	29517	7.9	17.5	256317	7.9	20.1	287279	8.0	18.8	236162	8.1	20.9	393574	8.2	20.2
432387	7.8	20.0	435783	7.9	20.7	105870	7.9	18.7	278819	8.0	18.9	511866	8.1	21.1	543034	8.2	19.6
75688	7.8	18.6	191791	7.9	18.9	32934	7.9	18.6	115075	8.0	19.2	289790	8.1	19.9	523850	8.2	20.2
336157	7.8	20.3	121690	7.9	19.5	401642	7.9	20.7	260931	8.0	19.6	73343	8.1	18.0	414150	8.2	19.4
192156	7.8	18.8	394647	7.9	21.5	439717	7.9	21.0	238680	8.0	20.1	398937	8.1	20.7	63108	8.2	18.0
21968	7.8	17.8	493684	7.9	20.2	204956	7.9	19.5	307336	8.1	19.0	435809	8.1	20.8	311444	8.2	20.3
94058	7.8	18.5	64551	7.9	18.9	462529	7.9	21.2	445428	8.1	19.7	256780	8.1	20.0	98516	8.2	19.3
91065	7.8	18.0	127143	7.9	19.1	373541	7.9	19.2	277496	8.1	18.3	200298	8.1	19.7	146937	8.2	19.8
253343	7.8	20.1	228616	7.9	20.0	136682	7.9	19.8	387452	8.1	19.8	523149	8.1	20.5	357831	8.2	19.8
45856	7.8	17.2	108143	7.9	19.5	266915	7.9	19.3	382979	8.1	21.9	506999	8.1	20.0	173841	8.2	18.6
372682	7.8	19.8	414415	7.9	21.3	180458	7.9	19.5	68479	8.1	18.0	347820	8.1	18.6	200317	8.2	20.0
488679	7.8	19.7	86821	7.9	18.4	210879	7.9	19.6	99903	8.1	19.4	318351	8.1	19.3	506807	8.2	21.2
342416	7.8	20.6	302291	7.9	18.8	121608	7.9	17.9	397184	8.1	18.9	320357	8.1	20.3	139105	8.2	19.6
64821	7.8	17.7	432724	7.9	21.3	66566	7.9	17.3	158419	8.1	19.8	533612	8.1	21.2	471703	8.2	20.5
389572	7.8	21.1	396286	7.9	20.9	32266	7.9	18.1	127847	8.1	19.8	517707	8.1	21.6	3498		

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
115643	8.2	19.4	266779	8.3	19.9	296711	8.4	19.9	538010	8.4	21.3	334791	8.5	19.2	393829	8.6	20.8
39353	8.2	19.2	310104	8.3	20.2	102688	8.4	18.6	38062	8.4	17.3	314017	8.5	19.7	386501	8.6	20.6
234347	8.2	20.7	349843	8.3	20.7	498523	8.4	21.2	286760	8.4	20.7	500227	8.5	21.1	84415	8.6	19.0
40787	8.2	17.9	286434	8.3	20.6	133874	8.4	18.6	198815	8.4	19.7	458795	8.5	21.2	351589	8.6	19.1
102158	8.2	18.1	446680	8.3	20.4	120202	8.4	18.3	403338	8.4	20.0	201536	8.5	18.5	326919	8.6	20.3
86186	8.2	18.6	34494	8.3	18.2	207956	8.4	18.5	414469	8.4	20.5	100193	8.5	19.5	9660	8.6	17.9
486959	8.2	21.2	63005	8.3	18.7	31547	8.4	17.6	479758	8.4	20.8	399158	8.5	20.2	257386	8.6	19.8
503087	8.2	21.1	494744	8.3	21.1	398749	8.4	20.4	315062	8.4	21.1	542743	8.5	20.4	501592	8.6	19.4
389227	8.2	21.0	290045	8.3	19.9	536313	8.4	21.6	449676	8.4	20.5	287850	8.5	19.9	32958	8.6	17.8
13343	8.2	17.6	231448	8.3	20.3	224328	8.4	19.4	113036	8.4	18.9	313303	8.5	20.3	93361	8.6	18.0
454348	8.2	20.9	149134	8.3	20.3	153728	8.4	19.4	417467	8.4	19.9	63684	8.5	18.4	44074	8.6	18.8
262575	8.2	19.8	181507	8.3	19.4	410197	8.4	19.5	426073	8.5	20.5	415099	8.5	20.9	525081	8.6	19.5
91195	8.2	18.5	350283	8.3	19.9	57557	8.4	18.0	396693	8.5	19.7	489612	8.5	19.7	483339	8.6	20.1
193387	8.2	18.7	205667	8.3	19.0	93223	8.4	18.3	515683	8.5	21.1	98628	8.5	19.1	302829	8.6	20.5
176486	8.2	19.9	439577	8.3	19.6	269789	8.4	18.8	504105	8.5	21.1	188184	8.5	20.2	380583	8.6	18.8
244278	8.2	19.0	533430	8.3	21.9	178804	8.4	20.4	176465	8.5	19.3	117505	8.5	19.0	503217	8.6	21.5
195298	8.2	20.2	282053	8.3	18.7	50571	8.4	18.0	31581	8.5	17.3	428766	8.5	19.1	311418	8.6	19.3
21732	8.2	17.8	396089	8.3	19.1	326953	8.4	20.0	91396	8.5	18.9	73115	8.5	18.9	268999	8.6	20.3
203516	8.2	19.6	250553	8.3	19.0	123323	8.4	19.7	526024	8.5	20.5	170252	8.5	19.1	306177	8.6	20.0
527292	8.2	20.6	529850	8.3	19.9	125378	8.4	19.0	294533	8.5	20.0	254239	8.5	19.5	33546	8.6	16.9
247161	8.2	20.2	420814	8.3	20.5	502472	8.4	21.4	69270	8.5	16.9	164539	8.5	20.1	531169	8.6	22.2
507719	8.2	20.3	428890	8.3	19.9	530786	8.4	21.3	219698	8.5	18.8	179489	8.5	19.7	251884	8.6	19.6
24508	8.2	18.8	442892	8.3	21.0	542520	8.4	21.0	94200	8.5	18.1	476540	8.5	20.8	382167	8.6	19.9
297219	8.2	19.9	139119	8.3	19.9	16102	8.4	18.8	468761	8.5	21.1	456195	8.5	21.8	302263	8.6	20.2
365070	8.2	21.3	301426	8.3	19.9	294657	8.4	20.8	226828	8.5	19.0	498504	8.5	20.4	242551	8.6	20.3
94540	8.2	19.1	511828	8.3	20.3	225217	8.4	19.8	34014	8.5	18.1	475855	8.5	20.5	170999	8.6	19.6
294865	8.2	20.4	23100	8.3	16.0	336251	8.4	19.8	195420	8.5	20.0	459089	8.5	21.0	186852	8.6	19.7
9222	8.2	17.7	535848	8.3	22.6	520937	8.4	20.9	246863	8.5	18.6	276079	8.5	21.4	204057	8.6	19.3
446213	8.2	21.2	346567	8.3	19.4	134644	8.4	17.2	448555	8.5	20.9	440529	8.5	19.8	151356	8.6	19.9
19100	8.2	18.4	67981	8.3	17.3	389538	8.4	21.1	138100	8.5	19.0	420291	8.5	19.9	420291	8.6	20.1
273650	8.2	20.0	401325	8.3	20.3	79874	8.4	19.2	397055	8.5	19.2	338743	8.5	19.5	263792	8.6	19.6
410727	8.2	21.2	205045	8.3	19.2	520308	8.4	20.2	462574	8.5	21.1	165221	8.5	18.0	72964	8.6	18.7
439193	8.2	20.1	341051	8.3	19.5	500270	8.4	20.5	439196	8.5	20.3	540872	8.5	20.9	103146	8.6	19.5
314171	8.2	20.2	398562	8.3	20.9	300773	8.4	20.6	372111	8.5	19.7	142317	8.5	19.8	101283	8.6	18.2
429113	8.2	20.0	204730	8.3	20.5	220677	8.4	19.0	294794	8.5	19.9	1404	8.5	15.9	272110	8.6	20.7
127807	8.2	19.4	219834	8.3	19.8	535685	8.4	21.2	163080	8.5	19.7	386814	8.5	20.5	127799	8.6	19.4
42622	8.2	19.0	219282	8.3	20.7	204492	8.4	21.0	97362	8.5	18.6	311927	8.5	21.5	393709	8.6	20.5
263915	8.2	19.7	268987	8.3	20.7	21177	8.4	18.6	302237	8.5	19.7	144020	8.5	19.4	353331	8.6	20.3
274157	8.2	20.0	382239	8.3	20.1	512793	8.4	20.9	459568	8.5	21.7	9817	8.5	18.4	480206	8.6	20.9
430673	8.2	20.6	497236	8.3	22.4	365446	8.4	18.7	467213	8.5	21.0	533537	8.5	21.4	192641	8.6	18.7
397745	8.3	21.0	233712	8.3	20.2	522730	8.4	21.2	254335	8.5	18.6	161983	8.5	19.4	321357	8.6	19.5
496484	8.3	20.5	441956	8.3	19.6	494487	8.4	20.0	316209	8.5	19.9	353350	8.5	20.7	148668	8.6	18.1
21011	8.3	16.6	501105	8.3	23.0	134624	8.4	18.2	532877	8.5	21.0	312787	8.5	19.9	147497	8.6	20.1
152134	8.3	19.3	242154	8.3	20.3	352290	8.4	20.1	23337	8.5	18.3	216325	8.6	20.2	383270	8.6	20.8
79068	8.3	18.4	511272	8.3	21.0	393051	8.4	19.7	314552	8.5	20.1	524733	8.6	19.9	535953	8.6	20.9
480092	8.3	20.9	33058	8.3	19.0	207192	8.4	19.6	293925	8.5	20.0	451315	8.6	20.4	42175	8.6	19.3
258642	8.3	19.9	368102	8.3	21.1	400901	8.4	19.9	230278	8.5	20.7	354799	8.6	21.7	472758	8.6	20.3
110970	8.3	19.7	23579	8.3	19.7	256442	8.4	19.9	92695	8.5	18.8	303366	8.6	19.5	372668	8.6	20.6
543277	8.3	20.9	3797	8.3	17.1	68610	8.4	18.6	395258	8.5	19.2	489969	8.6	20.8	68576	8.6	19.0
418148	8.3	20.9	5489	8.3	14.3	68716	8.4	19.2	343476	8.5	20.0	339424	8.6	21.3	74168	8.6	18.6
297116	8.3	19.0	311393	8.3	19.6	374447	8.4	18.7	270349	8.5	18.9	16412	8.6	17.1	61033	8.6	17.6
32218	8.3	17.4	462335	8.3	20.8	183970	8.4	19.4	443040	8.5	20.6	333655	8.6	19.3	235843	8.6	19.8
74999	8.3	18.2	539438	8.3	20.2	436187	8.4	19.1	146548	8.5	17.6	156589	8.6	19.6	62251	8.6	18.3
31005	8.3	16.9	479220	8.3	20.2	342222	8.4	20.7	363725	8.5	19.7	281271	8.6	20.0	194132	8.6	20.0
39014	8.3	18.4	43935	8.3	17.8	179405	8.4	19.5	534258	8.5	19.9	312425	8.6	19.9	477975	8.6	20.8
512689	8.3	20.2	74860	8.3	18.2	2612	8.4	15.8	22750	8.5	17.9	497588	8.6	20.9	499123	8.6	21.0
190673	8.3	18.8	301620	8.3	21.5	341101	8.4	20.0	531919	8.5	21.1	404837	8.6	19.9	401373	8.6	20.5
478837	8.3	20.9	505782	8.3	20.8	507271	8.4	20.9	464724	8.5	19.6	513570	8.6	19.5	147853	8.6	19.1
522958	8.3	21.1	99095	8.3	18.5	72147	8.4	17.6	426766	8.5	20.3	93904	8.6	18.8	470757	8.6	20.7
502043	8.3	21.1	319687	8.3	20.1	143047	8.4	19.8	13323	8.5	17.6	240956	8.6	21.5	27777	8.6	18.6
411720	8.3	20.5	457612	8.3	20.5	255453	8.4	20.9	357197	8.5	20.5	510454	8.6	22.4	63153	8.6	17.6
58784	8.3	18.1	181461	8.3	19.7	500103	8.4	20.5	83126	8.5	18.7	354766	8.6	19.2	268084	8.6	19.8
445416	8.3	20.9	100847	8.3	20.0	457643	8.4	20.7	443534	8.5	21.3	182868	8.6	19.8	186636	8.6	19.2
251432	8.3	19.9	353273	8.3	21.2	54589	8.4	18.8	414429	8.5	19.3	64255	8.6	19.6	395950	8.6	20.9
126415	8.3	17.7	16132	8.3	17.7	497663	8.4	20.6	499646	8.5	20.5	26807	8.6	17.2	528077	8.6	21.4
125211	8.3	18.9	86553	8.3	17.6	180362	8.4	18.6	417519	8.5	20.5	279356	8.6	19.5	50010	8.6	18.7
449067	8.3	20.5	215449	8.3	18.7	456108	8.4	21.5	38924	8.5	18.3	119845	8.6	19.8	150592	8.6	19.3
288037	8.3	18.6	519201	8.3	21.0	393177	8.4	21.6	4043	8.5	16.6	414106	8.6	20.3	530308	8.6	21.7
529625	8.3	21.1	215824	8.3	19.7	292664	8.4	20.1	441398	8.5	20.6	146921	8.6	19.7	395256	8.6	21.2
89428	8.3	17.7	490625	8.3	18.0	286596	8.4	19.1	4890	8.5	15.9	543883	8.6	20.5	91293	8.6	17.3
438512	8.3	21.4	186357	8.3	19.4	446437	8.4	21.3	166036	8.5	19.8	195184	8.6	18.9	13350		

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
482123	8.7	20.0	208529	8.7	19.7	335796	8.8	20.2	472705	8.9	20.3	468469	8.9	19.3	360184	9.0	20.4
395230	8.7	20.6	235304	8.7	19.1	393801	8.8	20.6	428045	8.9	20.8	248622	8.9	19.8	243684	9.0	19.5
363048	8.7	18.9	444354	8.7	19.9	528640	8.8	20.9	345894	8.9	20.4	281651	8.9	19.8	269948	9.0	19.3
320616	8.7	20.9	164548	8.7	20.1	259900	8.8	21.3	393108	8.9	20.6	507364	8.9	21.0	441426	9.0	19.9
478281	8.7	20.5	467606	8.7	20.2	63093	8.8	18.8	424814	8.9	20.7	316609	8.9	18.9	53277	9.0	16.8
210751	8.7	18.1	448053	8.7	20.5	404489	8.8	20.6	141475	8.9	19.0	39914	8.9	17.8	312562	9.0	20.7
102410	8.7	19.1	250947	8.7	18.6	427286	8.8	20.2	245198	8.9	19.9	285638	8.9	20.2	206522	9.0	19.1
191088	8.7	19.4	512170	8.7	20.8	396663	8.8	19.2	404728	8.9	20.6	460053	8.9	19.6	316267	9.0	19.9
461442	8.7	21.9	244323	8.7	20.7	261930	8.8	19.2	418053	8.9	19.4	68328	8.9	17.3	249675	9.0	18.6
58122	8.7	19.4	352958	8.7	21.1	168175	8.8	19.4	89784	8.9	18.0	481180	8.9	20.7	389093	9.0	21.1
95906	8.7	19.0	35282	8.7	16.9	103866	8.8	19.5	471651	8.9	20.5	255513	8.9	19.8	325066	9.0	20.0
81166	8.7	18.4	97392	8.7	17.5	97446	8.8	18.7	148682	8.9	19.3	429606	8.9	21.0	256427	9.0	20.2
468574	8.7	19.8	214253	8.7	20.3	345927	8.8	19.1	152062	8.9	20.2	452637	8.9	21.2	206971	9.0	19.0
287838	8.7	19.3	170417	8.7	18.2	135484	8.8	19.5	357198	8.9	21.4	61177	8.9	17.7	198028	9.0	20.1
62176	8.7	18.1	130114	8.7	18.6	254350	8.8	20.1	386296	8.9	18.9	154704	8.9	18.8	203511	9.0	20.6
385002	8.7	20.6	416427	8.7	19.4	247719	8.8	19.1	434692	8.9	20.5	296691	8.9	20.2	428211	9.0	20.7
459538	8.7	21.3	375281	8.7	20.4	291755	8.8	19.7	288453	8.9	21.3	23369	8.9	16.4	537086	9.0	21.4
195337	8.7	19.3	338697	8.7	19.5	383910	8.8	19.9	423980	8.9	20.2	308674	8.9	20.0	15569	9.0	16.8
20299	8.7	18.4	34593	8.7	17.3	227355	8.8	19.4	248642	8.9	19.8	213239	8.9	19.3	466963	9.0	19.9
300709	8.7	20.5	44193	8.7	18.8	27134	8.8	17.6	299445	8.9	19.2	136775	8.9	20.4	386992	9.0	19.8
195313	8.7	20.9	470396	8.7	20.3	398619	8.8	19.8	190603	8.9	18.9	354711	8.9	20.2	246952	9.0	18.4
399264	8.7	21.3	316066	8.7	20.9	26803	8.8	18.9	377290	8.9	20.1	189144	8.9	20.4	31215	9.0	18.2
4098	8.7	17.5	143853	8.7	19.4	522966	8.8	20.7	290522	8.9	19.4	127937	8.9	19.2	392036	9.1	20.6
208607	8.7	20.4	328342	8.7	19.4	299680	8.8	20.5	384956	8.9	20.6	357558	8.9	20.1	482119	9.1	20.5
405444	8.7	20.2	350036	8.7	21.2	408277	8.8	20.5	39269	8.9	18.5	49283	8.9	18.1	235044	9.1	19.0
516831	8.7	20.4	93570	8.7	18.8	154574	8.8	19.7	489492	8.9	21.0	130866	8.9	18.7	44860	9.1	18.4
509489	8.7	21.0	16182	8.7	14.8	6480	8.8	15.9	297155	8.9	19.9	105925	8.9	18.4	513284	9.1	21.0
310679	8.7	18.9	345517	8.7	20.8	42167	8.8	19.3	218834	8.9	20.0	321358	8.9	21.3	87591	9.1	18.2
89895	8.7	19.0	423798	8.7	20.6	187693	8.8	20.0	374430	8.9	20.2	420753	8.9	20.2	338771	9.1	19.5
514513	8.7	20.7	122047	8.7	19.4	203349	8.8	19.8	111770	8.9	19.7	308050	8.9	20.7	255657	9.1	20.1
509620	8.7	21.0	272956	8.7	19.8	373539	8.8	19.5	152362	8.9	19.1	127267	8.9	19.8	95497	9.1	19.1
35803	8.7	18.7	143899	8.7	19.8	476380	8.8	21.1	510872	8.9	20.7	491084	8.9	20.8	180870	9.1	19.1
56005	8.7	17.7	153245	8.7	19.4	472547	8.8	19.4	505864	8.9	20.9	182167	8.9	19.5	234277	9.1	19.7
214218	8.7	19.4	510471	8.7	21.0	504312	8.8	20.2	183837	8.9	20.3	73001	8.9	19.4	379645	9.1	21.0
516688	8.7	21.0	217351	8.7	19.0	499655	8.8	20.4	152708	8.9	18.7	424430	8.9	20.5	415091	9.1	21.0
366526	8.7	20.0	237318	8.7	20.5	134702	8.8	18.1	452577	8.9	19.1	31807	8.9	18.6	22942	9.1	18.0
359714	8.7	19.7	258954	8.7	19.2	138098	8.8	19.1	71817	8.9	18.3	542446	8.9	19.1	355563	9.1	20.3
201589	8.7	19.1	165277	8.7	18.7	422558	8.8	19.1	71168	8.9	18.3	52741	8.9	18.4	435567	9.1	20.5
42547	8.7	19.2	193626	8.7	19.0	532105	8.8	22.5	89948	8.9	18.3	513140	8.9	21.5	242180	9.1	19.8
134865	8.7	18.4	199371	8.7	19.9	302333	8.8	20.6	384099	8.9	20.6	347135	8.9	20.2	228013	9.1	19.1
128980	8.7	19.1	526850	8.7	21.7	420836	8.8	20.7	827271	8.9	21.1	276834	8.9	19.8	474046	9.1	21.6
428270	8.7	21.4	277822	8.7	20.0	19786	8.8	18.0	365492	8.9	18.8	502819	8.9	20.8	531350	9.1	20.4
45849	8.7	18.5	176328	8.7	19.8	389139	8.8	20.4	277605	8.9	19.7	418155	8.9	21.7	43130	9.1	18.5
270966	8.7	19.4	39924	8.7	17.2	261376	8.8	18.9	353631	8.9	20.6	98517	8.9	18.2	202829	9.1	18.7
400906	8.7	20.4	54066	8.8	18.8	91990	8.8	19.1	154137	8.9	19.5	28259	8.9	18.5	537631	9.1	20.4
196191	8.7	19.2	91185	8.8	17.9	431340	8.8	20.3	481115	8.9	20.8	16060	8.9	18.0	94281	9.1	18.4
169614	8.7	19.5	32660	8.8	18.7	494961	8.8	20.9	499935	8.9	20.7	325027	8.9	21.1	92160	9.1	19.4
206329	8.7	18.4	442066	8.8	20.3	376361	8.8	20.3	390308	8.9	20.4	428804	8.9	20.7	62932	9.1	18.9
528437	8.7	20.0	343386	8.8	21.5	185727	8.8	18.6	175887	8.9	19.2	475824	8.9	19.5	88007	9.1	18.1
349355	8.7	19.7	74018	8.8	19.2	107398	8.8	19.4	494236	8.9	21.0	85002	8.9	19.1	207501	9.1	19.8
230274	8.7	19.1	184245	8.8	19.0	464707	8.8	19.4	91703	8.9	18.9	507026	8.9	21.0	361944	9.1	20.6
57869	8.7	19.5	332121	8.8	20.1	251495	8.8	19.6	302284	8.9	20.3	7280	8.9	16.4	25181	9.1	17.9
222831	8.7	19.4	471909	8.8	20.4	217854	8.8	17.4	315157	8.9	21.1	156338	8.9	20.2	71641	9.1	17.4
308500	8.7	20.0	236777	8.8	19.0	279705	8.8	19.9	142012	8.9	19.2	295064	8.9	18.1	162834	9.1	19.8
54484	8.7	19.9	176171	8.8	19.0	318311	8.8	19.8	106285	8.9	18.5	377729	8.9	20.7	284971	9.1	20.2
256830	8.7	19.9	286020	8.8	19.9	301607	8.8	19.7	44939	8.9	18.7	131538	8.9	18.2	313380	9.1	20.1
499445	8.7	20.9	504313	8.8	19.9	392512	8.8	20.3	196227	8.9	19.3	524183	9.0	21.4	268976	9.1	18.1
283089	8.7	19.9	433156	8.8	20.2	37666	8.8	18.1	511822	8.9	19.9	534644	9.0	20.8	308497	9.1	21.1
98581	8.7	17.8	537049	8.8	21.8	207936	8.8	19.1	12806	8.9	16.7	497336	9.0	20.9	219144	9.1	19.6
520312	8.7	20.0	132639	8.8	18.8	49962	8.8	18.4	89942	8.9	17.7	203032	9.0	20.2	91942	9.1	18.7
24185	8.7	17.4	26987	8.8	17.8	195053	8.8	19.8	391667	8.9	21.1	115228	9.0	19.3	233673	9.1	20.4
319374	8.7	19.8	387223	8.8	20.1	540122	8.8	19.7	95333	8.9	19.0	217219	9.0	18.2	20139	9.1	16.6
153876	8.7	19.7	175462	8.8	18.5	295138	8.8	21.0	126271	8.9	19.7	471338	9.0	20.4	120040	9.1	20.1
533248	8.7	20.1	249240	8.8	20.2	387051	8.8	20.0	12001	8.9	17.5	161555	9.0	19.7	340313	9.1	20.7
320325	8.7	19.7	75513	8.8	19.2	153238	8.9	19.1	259613	8.9	20.0	208041	9.0	18.4	13670	9.1	17.6
116028	8.7	19.3	502258	8.8	20.5	415440	8.9	20.6	382562	8.9	20.3	393472	9.0	20.1	502896	9.1	21.0
416846	8.7	20.5	514256	8.8	20.4	272579	8.9	20.9	332855	8.9	20.3	182747	9.0	20.1	424703	9.1	20.8
387103	8.7	20.4	18440	8.8	18.3	19276	8.9	18.0	420511	8.9	20.9	498461	9.0	21.8	509227	9.1	20.7
440470	8.7	19.7	441418	8.8	20.4	200109	8.9	19.9	504969	8.9	21.5	65099	9.0	18.5	147185	9.1	18.2
129758	8.7	18.9	529787	8.8	20.8	58189	8.9	18.7	333859	8.9	20.5	468651	9.0	20.2	103679	9.1	19.7
115675	8.7	18.3	417841	8.8	19.6	100522	8.9	19.1	389196	8.9	20.8	343454	9.0	20.0			

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
93426	9.1	19.7	205197	9.2	20.1	247128	9.2	18.7	175421	9.3	20.0	439680	9.4	20.4	517971	9.5	20.7
38121	9.1	16.7	57886	9.2	18.9	475212	9.2	19.6	250710	9.3	19.1	479980	9.4	20.6	3126	9.5	15.8
289186	9.1	19.2	429837	9.2	20.9	357504	9.2	18.7	239541	9.3	18.6	418157	9.4	21.0	313069	9.5	18.8
263322	9.1	20.7	165626	9.2	19.0	215690	9.2	18.8	305353	9.3	20.5	379728	9.4	20.5	298331	9.5	20.0
505932	9.1	19.5	352522	9.2	21.6	127866	9.2	19.5	225831	9.3	19.2	123100	9.4	19.2	541798	9.5	20.6
425679	9.1	21.5	498529	9.2	19.1	320144	9.3	19.4	123307	9.3	19.1	299773	9.4	19.4	360103	9.5	20.1
496138	9.1	19.7	205728	9.2	20.1	280998	9.3	21.2	422928	9.3	19.4	477755	9.4	20.7	469250	9.5	19.8
457693	9.1	21.3	308081	9.2	19.2	217477	9.3	19.7	310701	9.3	20.7	20735	9.4	17.0	279172	9.5	19.4
393097	9.1	20.4	103870	9.2	18.8	115269	9.3	19.3	155185	9.3	19.7	313111	9.4	20.2	510914	9.5	21.2
47370	9.1	17.5	393561	9.2	20.6	35626	9.3	18.7	328098	9.3	20.8	382950	9.4	18.7	537182	9.5	21.3
343402	9.1	20.3	512135	9.2	20.7	61676	9.3	17.4	446237	9.3	21.4	193019	9.4	19.9	132686	9.5	19.0
402752	9.1	22.1	89500	9.2	18.3	333851	9.3	20.9	336833	9.3	19.6	531047	9.4	21.8	478331	9.5	20.4
102594	9.1	19.0	71940	9.2	19.3	111213	9.3	18.4	107178	9.3	18.7	205642	9.4	17.9	304662	9.5	18.9
169854	9.1	18.5	24110	9.2	17.5	360990	9.3	21.3	508009	9.3	20.6	496150	9.4	20.3	111506	9.5	20.3
357154	9.1	20.3	356295	9.2	20.8	388727	9.3	20.7	87537	9.3	17.8	192804	9.4	19.1	182961	9.5	19.9
533451	9.1	20.9	208833	9.2	19.1	234399	9.3	19.9	525961	9.3	20.7	302225	9.4	20.7	424080	9.5	20.0
124106	9.1	20.1	381152	9.2	20.1	259958	9.3	20.2	286786	9.3	21.1	183323	9.4	19.1	500890	9.5	21.5
156575	9.1	20.3	61258	9.2	17.8	191702	9.3	18.6	334406	9.3	19.8	479379	9.4	20.7	353836	9.5	20.4
509374	9.1	21.4	314531	9.2	21.0	173581	9.3	19.2	189240	9.3	19.6	472096	9.4	20.2	505516	9.5	19.6
540780	9.1	21.3	161876	9.2	19.6	498862	9.3	21.4	501560	9.3	18.9	512870	9.4	20.3	289158	9.5	19.1
505881	9.1	20.7	493511	9.2	20.3	130895	9.3	17.4	112395	9.3	18.2	7193	9.4	16.5	341198	9.5	20.1
482750	9.1	21.2	288803	9.2	20.1	312668	9.3	19.5	25485	9.3	18.8	198014	9.4	20.1	410287	9.5	19.7
420423	9.1	21.8	360975	9.2	20.1	1353	9.3	13.9	221268	9.3	19.7	539998	9.4	20.8	262312	9.5	19.7
429587	9.1	21.4	280133	9.2	19.2	86474	9.3	19.1	482748	9.3	21.3	376936	9.4	20.8	45140	9.5	18.5
171258	9.1	19.4	438746	9.2	21.1	477061	9.3	20.6	397058	9.3	19.7	426261	9.4	20.6	443738	9.5	19.9
891	9.1	14.1	16881	9.2	17.6	183570	9.3	18.9	418115	9.3	20.0	509820	9.4	20.8	184265	9.5	19.0
288635	9.1	20.0	24930	9.2	18.4	404361	9.3	20.3	263969	9.3	21.0	99352	9.4	19.1	93403	9.5	18.1
166426	9.1	19.5	275472	9.2	20.4	26037	9.3	18.2	115855	9.3	18.4	205707	9.4	20.0	357035	9.5	19.4
212146	9.1	18.5	454490	9.2	21.3	201123	9.3	19.3	380855	9.3	20.8	469984	9.4	20.4	257699	9.5	21.1
531123	9.1	20.0	40457	9.2	18.4	282790	9.3	18.6	339376	9.3	20.6	141178	9.4	19.5	534494	9.5	19.8
243583	9.1	19.4	244424	9.2	19.8	308647	9.3	19.8	408278	9.3	20.9	522189	9.4	21.4	50484	9.5	19.0
127798	9.1	19.4	98681	9.2	18.9	425321	9.3	20.0	277251	9.3	19.0	488576	9.4	20.7	430351	9.5	20.8
98468	9.1	19.1	363301	9.2	20.4	253806	9.3	20.0	456087	9.3	21.4	166573	9.4	19.2	41875	9.5	17.6
383244	9.1	19.9	216517	9.2	19.8	175364	9.3	20.4	239702	9.4	20.5	311958	9.4	20.4	61382	9.5	17.9
388912	9.1	20.2	504622	9.2	20.8	364728	9.3	20.8	91021	9.4	17.3	44539	9.4	18.8	16163	9.5	16.5
276420	9.1	19.2	176022	9.2	19.2	319035	9.3	19.6	356398	9.4	20.1	254211	9.4	19.7	300012	9.5	19.2
538209	9.1	21.0	359374	9.2	19.5	534704	9.3	20.8	209793	9.4	19.7	537581	9.4	20.8	227358	9.5	21.1
399274	9.1	20.7	394243	9.2	20.4	187421	9.3	19.8	513567	9.4	20.8	533450	9.4	21.4	214486	9.5	18.8
360972	9.1	20.1	85291	9.2	16.8	291923	9.3	19.6	21161	9.4	17.0	132781	9.4	18.3	457290	9.5	20.3
357581	9.1	20.3	399912	9.2	21.0	420437	9.3	21.2	52730	9.4	17.0	512547	9.4	20.1	481469	9.5	21.1
40560	9.1	17.6	347067	9.2	20.7	343680	9.3	20.9	437502	9.4	20.6	287910	9.4	20.1	61686	9.5	18.6
479979	9.1	20.3	274775	9.2	19.1	488943	9.3	18.3	165358	9.4	19.1	515211	9.4	20.9	11987	9.5	17.3
149007	9.1	19.1	1180	9.2	14.6	323550	9.3	19.5	473085	9.4	20.7	182247	9.4	20.5	479296	9.5	21.3
434388	9.1	20.9	510928	9.2	21.4	262379	9.3	20.5	203379	9.4	18.4	438120	9.4	20.0	313928	9.5	19.4
346165	9.1	20.7	392207	9.2	20.6	78162	9.3	18.7	250421	9.4	19.2	263492	9.4	19.6	502331	9.5	20.2
308137	9.1	19.6	7696	9.2	17.5	150212	9.3	18.9	211113	9.4	20.7	289287	9.4	20.6	331795	9.5	19.2
28238	9.1	18.1	347019	9.2	21.4	391725	9.3	20.6	377803	9.4	21.0	189025	9.4	18.8	63157	9.5	15.3
364110	9.1	21.4	441954	9.2	19.9	27069	9.3	18.0	114431	9.4	19.2	5894	9.4	16.3	251351	9.5	20.0
251739	9.1	19.9	521480	9.2	20.2	343565	9.3	20.2	435751	9.4	20.0	175286	9.4	20.9	237062	9.5	19.4
512932	9.1	20.4	308573	9.2	20.4	366511	9.3	20.9	19097	9.4	17.8	457707	9.4	21.7	312769	9.5	20.6
27764	9.1	18.1	92046	9.2	18.6	169868	9.3	19.4	361495	9.4	20.9	499293	9.4	19.8	183192	9.5	18.0
384039	9.1	20.3	347084	9.2	20.8	302353	9.3	19.5	445433	9.4	20.6	343411	9.4	20.4	480711	9.5	21.3
508541	9.1	20.0	514631	9.2	20.8	60784	9.3	18.7	119443	9.4	19.2	192168	9.4	20.2	419630	9.5	19.9
184889	9.1	20.0	224919	9.2	20.7	203326	9.3	19.7	33087	9.4	17.4	71412	9.4	17.7	188719	9.5	19.2
471647	9.1	20.4	254381	9.2	20.3	123817	9.3	19.8	250883	9.4	19.6	48980	9.4	16.9	523775	9.5	22.8
297648	9.1	18.8	228732	9.2	19.7	152397	9.3	19.0	286777	9.4	20.6	274101	9.4	20.1	68179	9.5	18.7
519062	9.1	21.1	195456	9.2	19.1	382197	9.3	20.1	528717	9.4	20.2	231680	9.4	19.4	19141	9.5	17.4
125739	9.1	17.1	438197	9.2	19.8	453411	9.3	21.1	519194	9.4	21.6	462011	9.4	19.7	314152	9.5	20.1
115543	9.1	18.4	366570	9.2	19.4	257402	9.3	19.4	316405	9.4	20.2	286599	9.4	19.9	352110	9.5	20.1
121712	9.1	18.4	279446	9.2	20.0	290249	9.3	19.1	540728	9.4	20.3	35510	9.4	19.3	364056	9.5	20.1
444974	9.1	21.6	349738	9.2	20.7	196578	9.3	18.7	212037	9.4	20.5	476356	9.4	20.2	481276	9.5	21.3
118438	9.1	19.7	524750	9.2	20.3	513686	9.3	20.1	171790	9.4	18.0	196161	9.4	19.8	18976	9.5	18.6
67168	9.1	18.1	205989	9.2	19.4	384516	9.3	21.4	195320	9.4	20.2	346813	9.4	20.6	497710	9.5	19.8
11990	9.1	17.3	276143	9.2	19.4	537434	9.3	20.8	522729	9.4	21.2	89991	9.4	19.5	415513	9.5	20.7
438270	9.1	22.0	397023	9.2	20.3	11772	9.3	17.8	514370	9.4	19.8	273992	9.4	20.5	331927	9.5	19.3
392199	9.2	20.5	103092	9.2	19.4	151448	9.3	19.7	29530	9.4	18.3	516209	9.4	20.7	311988	9.5	21.4
219140	9.2	19.8	24784	9.2	17.1	128613	9.3	18.7	94825	9.4	19.5	288649	9.4	19.5	455301	9.5	21.6
259343	9.2	20.6	530341	9.2	21.4	537128	9.3	21.5	370962	9.4	20.6	31173	9.4	16.9	67284	9.5	17.8
90335	9.2	20.0	198384	9.2	19.5	272576	9.3	19.9	259379	9.4	20.0	365918	9.4	21.0	211106	9.5	20.1
441434	9.2	21.7	167508	9.2	19.3	505917	9.3	20.8	507033	9.4	19.8	507423	9.4	20.7	241652	9.5	20.6
443057	9.2	19.9	490	9.2	12.6	366591	9.3	20.2	483222	9.4	20.6	36960	9.4				

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
361527	9.5	20.7	331038	9.6	18.4	239127	9.7	19.9	444966	9.8	21.5	185571	9.8	20.7	254543	9.9	20.0
312448	9.5	20.0	60996	9.6	19.7	72404	9.7	18.5	517634	9.8	19.7	95727	9.8	19.6	238653	9.9	21.1
150158	9.5	19.7	203347	9.6	19.0	476465	9.7	21.1	214749	9.8	20.0	372947	9.8	19.7	313000	9.9	19.7
47326	9.5	18.0	417796	9.6	20.6	65314	9.7	20.6	233099	9.8	20.5	192390	9.8	19.9	499900	9.9	21.3
53118	9.5	18.7	457373	9.6	21.1	165997	9.7	19.3	214163	9.8	20.3	501069	9.8	19.7	272533	9.9	19.0
99677	9.5	18.5	518552	9.6	19.9	254325	9.7	19.3	318605	9.8	21.1	398981	9.8	20.2	411620	9.9	20.1
268160	9.5	19.9	414149	9.6	21.3	320720	9.7	21.1	216240	9.8	19.3	5296	9.8	17.1	179469	9.9	19.7
442122	9.5	20.5	388707	9.6	19.9	333421	9.7	20.4	352003	9.8	20.7	335529	9.8	20.8	52173	9.9	18.9
529965	9.5	20.5	387107	9.6	20.2	480621	9.7	20.3	62943	9.8	18.4	357990	9.8	20.2	414055	9.9	19.0
64310	9.5	19.1	323387	9.6	19.0	313155	9.7	20.1	528355	9.8	21.1	301401	9.8	19.9	90788	9.9	19.0
531952	9.5	21.4	364034	9.6	21.5	385082	9.7	21.0	354510	9.8	19.1	364736	9.8	20.4	445349	9.9	20.5
273494	9.5	19.9	392429	9.6	20.4	163357	9.7	19.2	277524	9.8	20.1	383982	9.9	19.9	37890	9.9	18.4
53011	9.5	17.4	160662	9.6	19.1	328471	9.7	18.7	203388	9.8	19.0	501894	9.9	20.7	62088	9.9	19.0
248584	9.5	20.4	414451	9.6	20.5	173588	9.7	19.3	443961	9.8	21.4	392484	9.9	19.3	318918	9.9	19.8
83515	9.5	19.5	208632	9.6	20.7	38050	9.7	16.8	300061	9.8	19.6	360935	9.9	21.3	434252	9.9	19.1
38602	9.5	16.9	459126	9.6	21.5	60955	9.7	18.2	196403	9.8	20.4	16937	9.9	16.8	530270	9.9	21.6
475632	9.6	20.8	119933	9.6	19.0	252815	9.7	19.6	366328	9.8	20.1	10486	9.9	17.5	292035	9.9	21.5
236233	9.6	18.9	498500	9.6	20.2	503107	9.7	19.7	68012	9.8	17.7	1433	9.9	14.8	65274	9.9	17.7
305531	9.6	21.4	358052	9.6	20.6	154946	9.7	19.3	312632	9.8	20.4	181244	9.9	18.9	476007	9.9	21.4
188350	9.6	18.6	237474	9.6	19.3	222753	9.7	17.2	3391	9.8	17.2	81068	9.9	17.2	466657	9.9	19.8
537610	9.6	19.8	189578	9.6	19.0	305498	9.7	20.2	68112	9.8	19.3	465650	9.9	20.4	255377	9.9	20.1
440635	9.6	19.5	515105	9.6	20.7	305796	9.7	20.0	85660	9.8	17.9	335601	9.9	19.5	381583	9.9	20.6
58801	9.6	18.9	218361	9.6	17.7	340405	9.7	20.9	123325	9.8	19.5	131890	9.9	19.1	329806	9.9	19.5
388751	9.6	19.9	248105	9.6	19.3	213901	9.7	18.8	8359	9.8	16.6	131540	9.9	19.0	540928	9.9	20.4
242179	9.6	19.1	60403	9.6	18.5	474576	9.7	20.8	261180	9.8	20.7	445818	9.9	20.4	513016	9.9	20.7
233189	9.6	20.5	20923	9.6	18.8	253892	9.7	20.4	115931	9.8	18.3	379925	9.9	18.5	290506	9.9	18.9
93504	9.6	19.1	78046	9.6	18.5	160464	9.7	19.9	251600	9.8	20.3	534127	9.9	19.4	393166	9.9	20.8
141065	9.6	19.3	533098	9.6	21.6	359345	9.7	20.7	78036	9.8	18.6	195102	9.9	20.2	257951	9.9	20.5
111245	9.6	18.5	509580	9.6	21.2	154918	9.7	19.9	46512	9.8	17.4	207523	9.9	19.2	509603	9.9	22.0
102497	9.6	18.6	342051	9.6	20.0	488992	9.7	20.2	171046	9.8	20.4	173632	9.9	20.2	390141	9.9	20.0
271726	9.6	20.1	442410	9.6	20.1	261147	9.7	19.0	437530	9.8	20.8	418944	9.9	21.1	245686	9.9	20.6
445431	9.6	20.5	355748	9.6	21.1	442018	9.7	20.6	142183	9.8	18.0	483431	9.9	21.0	38938	9.9	18.3
149125	9.6	20.1	537326	9.6	21.7	540040	9.7	20.9	250978	9.8	19.2	149124	9.9	19.5	44733	9.9	19.0
395683	9.6	19.9	394323	9.6	19.9	114045	9.7	17.9	153387	9.8	19.5	371675	9.9	20.0	25029	9.9	18.5
388222	9.6	21.3	327438	9.6	19.0	542396	9.7	20.9	236599	9.8	19.7	92115	9.9	18.5	525169	9.9	18.9
449372	9.6	21.0	260647	9.6	20.2	478954	9.7	19.8	440971	9.8	21.0	73894	9.9	18.9	202279	9.9	20.1
482759	9.6	21.3	522760	9.6	20.4	470742	9.7	20.5	416000	9.8	20.7	511153	9.9	20.8	410779	9.9	20.7
525855	9.6	20.9	629	9.6	14.7	242878	9.7	19.6	199668	9.8	19.7	340482	9.9	21.1	160657	9.9	18.6
442860	9.6	21.0	155777	9.7	19.6	257373	9.7	19.6	285545	9.8	19.7	389020	9.9	20.3	107114	9.9	19.1
410783	9.6	20.2	427749	9.7	19.9	316392	9.7	20.6	442013	9.8	20.3	469993	9.9	21.4	174537	9.9	20.1
89740	9.6	19.8	233202	9.7	19.1	78640	9.7	17.8	6808	9.8	16.5	36038	9.9	19.0	437649	9.9	21.4
184763	9.6	20.2	404072	9.7	21.2	204509	9.7	19.7	240666	9.8	21.0	171752	9.9	19.5	126112	9.9	18.6
357964	9.6	20.3	252987	9.7	19.5	152599	9.7	19.6	534711	9.8	19.3	355692	9.9	19.9	465319	9.9	19.8
190141	9.6	18.7	151041	9.7	20.2	13859	9.7	17.4	277430	9.8	19.6	508658	9.9	20.0	338046	9.9	19.8
395572	9.6	20.0	315277	9.7	19.6	474623	9.7	20.8	307312	9.8	20.2	508761	9.9	20.4	531488	9.9	20.8
59509	9.6	19.1	112223	9.7	18.3	474734	9.7	20.8	530920	9.8	21.1	395182	9.9	19.2	31287	9.9	17.7
201561	9.6	19.5	352006	9.7	20.5	36899	9.7	16.9	508319	9.8	21.5	69729	9.9	18.3	219917	9.9	18.8
196316	9.6	20.1	303290	9.7	19.2	367472	9.7	21.5	458109	9.8	20.1	88907	9.9	19.2	358874	9.9	20.4
216510	9.6	19.2	178564	9.7	19.7	529863	9.7	20.9	233364	9.8	20.3	539715	9.9	21.0	80934	9.9	17.8
434770	9.6	21.7	124685	9.7	18.4	247449	9.7	19.3	135438	9.8	19.4	312770	9.9	20.7	495991	9.9	19.1
446531	9.6	20.9	530214	9.7	21.2	488368	9.7	19.4	415046	9.8	20.4	415082	9.9	21.0	365120	9.9	20.9
46308	9.6	17.5	395092	9.7	20.9	60343	9.7	19.2	287591	9.8	20.9	354791	9.9	19.1	139343	9.9	19.1
314022	9.6	19.4	70893	9.7	19.1	7356	9.7	17.7	52947	9.8	18.3	358444	9.9	20.9	94322	9.9	19.2
372899	9.6	19.9	124166	9.7	18.7	126933	9.7	19.5	493568	9.8	20.5	378296	9.9	21.4	353212	9.9	20.7
260331	9.6	20.3	363493	9.7	18.8	311246	9.7	20.9	306946	9.8	19.5	255745	9.9	18.6	33301	9.9	17.6
417490	9.6	20.1	257447	9.7	18.9	173504	9.7	19.3	372911	9.8	19.4	535823	9.9	20.5	507845	9.9	20.1
408803	9.6	19.1	228872	9.7	20.6	389314	9.7	20.6	236915	9.8	19.9	208572	9.9	19.9	421893	9.9	19.8
134696	9.6	17.5	459844	9.7	19.5	402846	9.7	19.5	54062	9.8	18.2	215226	9.9	18.4	247616	9.9	18.2
288046	9.6	19.2	253340	9.7	20.2	106180	9.7	19.0	283081	9.8	19.2	253909	9.9	20.6	405475	9.9	20.1
273734	9.6	20.0	26110	9.7	16.1	249068	9.8	19.9	178649	9.8	19.0	303694	9.9	21.0	350061	9.9	20.3
42275	9.6	18.4	360967	9.7	19.9	186967	9.8	18.8	521567	9.8	20.7	475734	9.9	21.1	5835	9.9	17.2
426330	9.6	19.4	504303	9.7	21.6	48038	9.8	18.8	248968	9.8	19.6	472720	9.9	20.8	16505	9.9	17.2
469524	9.6	20.1	221909	9.7	19.9	440750	9.8	20.6	493628	9.8	20.7	319437	9.9	20.8	242526	9.9	20.8
111	9.6	11.7	503449	9.7	20.2	192178	9.8	20.6	343378	9.8	19.1	91445	9.9	17.9	85311	9.9	19.3
173328	9.6	18.3	21038	9.7	18.6	430083	9.8	20.3	355828	9.8	20.4	39676	9.9	18.1	490682	9.9	20.2
255735	9.6	19.6	161970	9.7	20.4	51923	9.8	18.9	147867	9.8	19.9	68909	9.9	18.7	84287	9.9	17.9
455153	9.6	19.3	119824	9.7	19.6	81003	9.8	20.1	376569	9.8	19.0	58613	9.9	18.2	251869	9.9	20.3
47480	9.6	17.9	455700	9.7	21.6	383271	9.8	19.2	93784	9.8	16.6	395589	9.9	20.0	488340	9.9	20.0
346297	9.6	20.1	422969	9.7	22.1	289183	9.8	20.0	8670	9.8	16.8	292735	9.9	20.4	469918	9.9	21.2
392825	9.6	19.9	274079	9.7	20.0	237333	9.8	18.3	169836	9.8	19.6	353351	9.9	20.5	398512	9.9	20.3
39042	9.6	18.8	6518	9.7	18.3	153247	9.8	19.7	107833	9.8	19.8	154232	9.9	19.5	171507		

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
432625	10.0	20.5	419613	10.1	19.8	352649	10.1	20.5	343614	10.2	19.7	445991	10.3	20.7	162480	10.4	18.5
318249	10.0	19.6	259216	10.1	19.7	435736	10.1	20.0	287682	10.2	19.5	512381	10.3	20.5	180152	10.4	19.7
511489	10.0	21.3	510965	10.1	21.5	192799	10.1	18.5	141503	10.2	18.6	4637	10.3	17.3	320389	10.4	20.0
444667	10.0	21.3	280088	10.1	20.2	268054	10.1	20.2	373200	10.2	21.5	266813	10.3	20.3	315304	10.4	20.0
342421	10.0	19.5	380309	10.1	21.7	67726	10.1	19.0	260043	10.2	20.8	67730	10.3	18.4	309843	10.4	20.4
96281	10.0	18.8	89841	10.1	19.1	467330	10.1	19.6	33770	10.2	17.6	57784	10.3	19.1	9923	10.4	17.9
59917	10.0	18.4	212067	10.1	19.6	205173	10.1	20.4	288884	10.2	19.5	127191	10.3	19.7	393925	10.4	19.4
253876	10.0	20.4	191039	10.1	19.5	338573	10.1	18.6	262264	10.2	20.3	73557	10.3	19.1	44178	10.4	19.0
179353	10.0	19.8	22613	10.1	18.8	459994	10.2	20.3	342254	10.2	19.4	498295	10.3	20.8	494827	10.4	19.9
395951	10.0	20.8	100567	10.1	20.3	507162	10.2	22.2	137736	10.2	18.9	516510	10.3	20.4	142699	10.4	19.2
259946	10.0	20.1	361481	10.1	20.8	495194	10.2	21.1	344461	10.2	20.3	410700	10.3	20.3	202801	10.4	19.0
362877	10.0	20.2	263705	10.1	19.9	160342	10.2	18.6	132072	10.2	19.4	199023	10.3	19.8	192718	10.4	18.7
185810	10.0	19.6	336436	10.1	18.7	137148	10.2	19.6	433282	10.2	21.4	143764	10.3	19.5	85412	10.4	18.5
342438	10.0	19.5	313396	10.1	20.8	318548	10.2	21.4	471265	10.2	20.9	480704	10.3	20.9	250358	10.4	18.4
177942	10.0	18.9	424176	10.1	21.0	513024	10.2	19.5	33308	10.2	17.4	393377	10.3	19.4	320308	10.4	19.4
448989	10.0	20.9	410238	10.1	20.1	355513	10.2	20.7	500255	10.2	21.3	431142	10.3	19.7	280974	10.4	19.9
11684	10.0	17.1	210289	10.1	19.3	94604	10.2	18.5	100679	10.2	18.0	494402	10.3	20.5	360419	10.4	20.5
213491	10.0	19.4	102235	10.1	19.5	210542	10.2	18.7	380561	10.2	20.1	443101	10.3	20.7	202845	10.4	20.8
240412	10.0	19.7	65961	10.1	19.2	390009	10.2	20.1	22529	10.2	18.5	481204	10.3	20.9	769	10.4	13.2
477071	10.0	20.3	357873	10.1	20.4	533711	10.2	18.6	385065	10.2	20.8	530432	10.3	21.5	366237	10.4	20.0
465248	10.0	19.3	390030	10.1	20.1	357947	10.2	20.6	387794	10.2	20.2	222773	10.3	19.7	8536	10.4	17.5
177311	10.0	20.0	35059	10.1	17.5	153297	10.2	19.7	214022	10.2	20.5	542572	10.3	21.4	307149	10.4	19.2
392114	10.0	21.1	342725	10.1	19.9	389569	10.2	21.4	542719	10.2	20.8	536033	10.3	21.7	177917	10.4	19.7
169776	10.0	19.3	126018	10.1	18.0	129530	10.2	19.4	249550	10.2	20.8	521032	10.3	20.7	312620	10.4	20.9
188547	10.0	20.0	40806	10.1	19.6	383320	10.2	21.2	519111	10.2	21.0	513229	10.3	19.3	172705	10.4	20.4
13203	10.0	17.7	261448	10.1	19.3	532697	10.2	20.5	398622	10.2	20.2	303336	10.3	19.4	133099	10.4	18.6
89985	10.0	18.9	306331	10.1	19.9	446181	10.2	21.6	308587	10.2	20.7	368097	10.3	20.4	184507	10.4	19.4
67911	10.0	16.8	261139	10.1	20.3	166393	10.2	19.0	6200	10.2	14.8	212252	10.3	20.6	280992	10.4	19.8
60212	10.0	18.3	444414	10.1	20.5	376190	10.2	19.8	11312	10.2	17.5	361475	10.3	20.4	192354	10.4	18.0
3673	10.0	14.8	169631	10.1	19.4	449922	10.2	19.8	512110	10.2	20.7	475394	10.3	20.2	327740	10.4	19.6
152389	10.0	20.4	100897	10.1	18.5	100335	10.2	19.7	191064	10.2	19.5	318269	10.3	19.5	28154	10.4	18.3
506241	10.0	21.2	537337	10.1	21.6	215026	10.2	19.8	21504	10.2	16.7	410269	10.3	18.2	359634	10.4	19.7
426960	10.0	21.0	877	10.1	13.1	190416	10.2	18.2	178419	10.2	17.9	416077	10.3	20.9	161648	10.4	19.6
297599	10.0	20.3	307572	10.1	20.1	21992	10.2	16.8	25037	10.2	17.5	383930	10.3	20.2	106487	10.4	19.4
474756	10.0	17.9	539045	10.1	19.8	77315	10.2	19.9	394704	10.2	20.9	374028	10.3	19.3	389842	10.4	20.4
468694	10.0	20.7	410239	10.1	19.3	479795	10.2	19.9	34224	10.2	17.4	420492	10.3	21.0	269094	10.4	20.2
198205	10.0	20.4	138180	10.1	19.2	246267	10.2	20.4	311433	10.2	19.8	17857	10.3	15.9	152441	10.4	20.7
528907	10.0	20.8	274602	10.1	20.7	45900	10.2	17.3	508954	10.2	19.5	42099	10.3	18.4	385191	10.4	23.2
175163	10.0	19.9	379214	10.1	20.0	257404	10.2	19.8	262349	10.2	19.7	488348	10.3	20.6	51584	10.4	18.2
100773	10.0	20.0	120771	10.1	17.0	6378	10.2	16.5	135963	10.2	18.7	66068	10.3	17.5	510605	10.4	19.1
243897	10.0	20.4	481508	10.1	21.1	252993	10.2	19.8	149589	10.2	19.5	271791	10.3	19.3	8836	10.4	17.2
540379	10.0	20.6	259003	10.1	19.8	83433	10.2	18.2	314475	10.2	19.2	328175	10.3	21.1	41443	10.4	17.0
395270	10.0	20.5	519162	10.1	20.9	430572	10.2	19.4	508263	10.2	20.9	256093	10.3	19.8	235341	10.4	18.4
155386	10.0	20.5	275339	10.1	20.0	366099	10.2	20.6	398088	10.2	20.4	241738	10.3	19.5	146846	10.4	19.0
456864	10.0	18.9	407661	10.1	20.7	352018	10.2	20.8	156106	10.2	18.7	111805	10.3	19.1	30054	10.4	18.3
516965	10.0	21.3	347145	10.1	21.2	11038	10.2	17.3	241550	10.3	19.8	524739	10.3	20.4	109143	10.4	18.7
455725	10.0	21.4	60322	10.1	18.8	3952	10.2	17.0	308033	10.3	19.3	97943	10.3	19.0	246773	10.4	19.2
39294	10.0	18.3	308517	10.1	19.4	527790	10.2	22.1	445839	10.3	20.2	496612	10.3	20.5	375750	10.4	20.7
207954	10.0	18.8	370	10.1	13.3	110598	10.2	18.7	271699	10.3	19.2	313429	10.3	19.9	476257	10.4	20.2
55691	10.0	18.0	120180	10.1	19.1	245204	10.2	19.4	314689	10.3	20.2	198216	10.3	18.4	355737	10.4	20.2
119898	10.0	18.7	73731	10.1	18.0	443774	10.2	20.5	435161	10.3	20.7	478366	10.3	20.0	482320	10.4	20.2
384713	10.0	20.8	27448	10.1	17.3	526735	10.2	20.9	509814	10.3	20.7	433284	10.3	21.1	32646	10.4	20.4
200553	10.0	19.8	375740	10.1	20.4	216890	10.2	20.2	41858	10.3	18.3	314159	10.3	21.5	188154	10.4	20.9
521531	10.0	21.2	415092	10.1	20.5	89457	10.2	18.8	299920	10.3	20.3	330534	10.3	21.3	445780	10.4	20.4
252158	10.1	20.2	511459	10.1	20.6	477174	10.2	19.6	463801	10.3	20.8	379263	10.3	20.7	311948	10.4	21.3
114519	10.1	19.7	22717	10.1	17.6	222610	10.2	19.4	33683	10.3	18.7	134307	10.3	19.2	234927	10.4	19.4
99737	10.1	19.9	258986	10.1	19.0	316237	10.2	19.6	252829	10.3	19.2	365813	10.3	19.1	287389	10.4	19.4
383172	10.1	21.4	175663	10.1	20.3	385602	10.2	21.0	138273	10.3	19.9	312883	10.3	20.5	388569	10.4	19.4
528359	10.1	19.9	393807	10.1	19.6	396016	10.2	21.2	480363	10.3	20.7	477949	10.3	20.3	294551	10.4	20.1
59862	10.1	18.4	396820	10.1	19.6	254356	10.2	19.4	192660	10.3	18.3	387946	10.3	20.4	121229	10.4	19.4
231490	10.1	19.2	236488	10.1	20.4	24938	10.2	16.6	63070	10.3	19.1	416308	10.3	18.9	249151	10.4	20.7
210277	10.1	18.9	229514	10.1	19.2	530342	10.2	22.5	174455	10.3	20.1	391928	10.3	20.7	82128	10.4	18.1
242669	10.1	20.4	252866	10.1	20.1	490850	10.2	20.9	29572	10.3	17.7	279259	10.3	20.8	24702	10.4	16.9
322500	10.1	20.2	51370	10.1	18.1	443393	10.2	20.1	435119	10.3	18.4	216296	10.3	18.6	88181	10.4	17.0
167166	10.1	19.8	202421	10.1	20.5	349923	10.2	20.4	309724	10.3	21.0	398109	10.3	21.3	473223	10.4	21.2
268974	10.1	17.9	328887	10.1	19.6	180105	10.2	21.5	102139	10.3	18.4	215848	10.3	20.3	510485	10.4	21.1
39596	10.1	17.7	168444	10.1	19.4	18372	10.2	16.9	44057	10.3	18.0	176438	10.4	19.5	313938	10.4	19.8
469303	10.1	20.3	281000	10.1	20.4	460585	10.2	20.8	80020	10.3	19.7	503977	10.4	19.7	285478	10.4	21.0
400464	10.1	20.8	505573	10.1	21.1	429677	10.2										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
214458	10.4	19.8	134014	10.5	19.1	496487	10.6	20.3	385834	10.6	20.4	475069	10.7	19.9	153300	10.8	20.3
113855	10.4	18.9	436565	10.5	19.7	243851	10.6	18.3	389206	10.6	20.9	297546	10.7	20.2	512903	10.8	20.6
237598	10.4	20.7	237781	10.5	19.2	72516	10.6	17.6	47355	10.6	19.2	379255	10.7	20.3	279573	10.8	20.3
211532	10.4	18.8	511910	10.5	21.0	300997	10.6	19.3	423277	10.6	19.9	3524	10.7	17.3	186782	10.8	20.5
88214	10.4	17.6	65301	10.5	19.5	126801	10.6	19.9	17467	10.6	17.3	390078	10.7	19.5	534163	10.8	20.1
314480	10.4	19.5	163391	10.5	19.2	540729	10.6	20.4	397726	10.6	21.1	256842	10.7	20.3	388000	10.8	20.6
27099	10.4	18.3	395868	10.5	20.6	415605	10.6	20.0	141548	10.6	20.1	270276	10.7	20.2	74874	10.8	18.4
386853	10.4	21.1	8231	10.5	16.9	21549	10.6	18.2	250510	10.7	18.5	46140	10.7	18.5	93689	10.8	19.2
357891	10.4	20.5	42247	10.5	18.4	200283	10.6	19.7	123659	10.7	19.2	309834	10.7	19.5	367770	10.8	19.8
240947	10.4	20.4	431010	10.5	21.5	315299	10.6	19.2	542246	10.7	20.5	204763	10.7	19.9	250065	10.8	20.1
288677	10.4	20.2	470361	10.5	19.8	342133	10.6	20.3	21466	10.7	18.5	70321	10.7	17.8	93737	10.8	18.4
276454	10.4	19.7	383299	10.5	20.9	496136	10.6	19.4	249231	10.7	19.2	474747	10.7	20.1	40432	10.8	17.0
305595	10.4	19.9	532643	10.5	19.4	94687	10.6	19.1	330963	10.7	19.9	312105	10.7	19.4	309403	10.8	19.9
502430	10.4	19.9	464046	10.5	20.9	276222	10.6	20.1	11037	10.7	18.1	92140	10.7	18.1	442940	10.8	21.1
270980	10.4	19.2	262784	10.5	20.7	363074	10.6	19.5	416808	10.7	21.4	535833	10.7	20.5	133794	10.8	17.7
517192	10.4	19.9	154167	10.5	18.8	494390	10.6	20.8	424230	10.7	19.8	401184	10.7	20.9	11137	10.8	16.3
34617	10.4	18.4	92334	10.5	19.4	418141	10.6	21.4	77760	10.7	17.3	279330	10.7	20.1	286804	10.8	20.4
112503	10.4	19.4	188715	10.5	20.7	30893	10.6	18.2	533473	10.7	21.0	439408	10.7	19.8	275567	10.8	17.9
44981	10.4	18.7	360404	10.5	21.0	60086	10.6	18.4	91807	10.7	18.2	396099	10.7	19.8	41990	10.8	17.4
388270	10.4	20.7	62627	10.5	18.2	425144	10.6	19.8	350173	10.7	20.8	521565	10.7	21.0	42938	10.8	17.8
376969	10.4	20.9	316245	10.5	19.7	316057	10.6	20.3	503497	10.7	20.8	200157	10.7	20.6	54925	10.8	17.4
218410	10.4	20.0	475293	10.5	20.9	471322	10.6	20.6	83718	10.7	18.7	428003	10.7	20.9	362120	10.8	19.9
276117	10.4	20.6	435993	10.5	19.0	56698	10.6	17.7	89836	10.7	19.9	311172	10.7	19.2	521143	10.8	20.6
67954	10.4	18.3	61729	10.5	18.4	423996	10.6	20.0	159140	10.7	19.7	72140	10.7	19.1	5667	10.8	15.6
336202	10.4	19.2	48225	10.5	19.1	393062	10.6	20.8	287937	10.7	19.6	89794	10.7	18.5	34152	10.8	19.0
263833	10.4	19.9	342345	10.5	19.5	106654	10.6	19.5	499535	10.7	20.1	23306	10.7	16.4	351484	10.8	19.9
491780	10.4	20.7	276096	10.5	20.0	59021	10.6	18.3	129579	10.7	17.0	434135	10.7	20.3	213739	10.8	19.6
253846	10.4	20.4	203989	10.5	19.7	471587	10.6	19.6	537105	10.7	20.4	488876	10.7	20.1	179712	10.8	19.4
358959	10.5	20.6	506356	10.5	19.0	139155	10.6	19.4	158384	10.7	20.2	227385	10.7	20.2	350051	10.8	20.3
150043	10.5	19.2	482386	10.5	21.0	259271	10.6	20.3	373589	10.7	20.2	507002	10.7	19.7	280117	10.8	20.2
440932	10.5	20.3	159093	10.5	19.9	314090	10.6	20.8	480823	10.7	21.6	521467	10.7	20.5	434666	10.8	21.6
99373	10.5	19.0	289771	10.5	20.2	314379	10.6	20.1	52081	10.7	19.4	379653	10.7	20.3	127395	10.8	20.1
43368	10.5	16.5	504757	10.5	19.9	223255	10.6	18.2	314191	10.7	20.7	166460	10.7	18.4	357503	10.8	20.2
40788	10.5	17.8	99802	10.5	19.0	515964	10.6	20.4	314318	10.7	19.0	528074	10.7	20.7	408101	10.8	21.8
254160	10.5	18.7	87465	10.5	17.8	185808	10.6	19.8	327688	10.7	19.9	260663	10.7	20.5	499615	10.8	19.8
72126	10.5	18.8	65205	10.5	19.6	529517	10.6	22.0	83404	10.7	19.0	359409	10.7	19.1	414114	10.8	19.6
531923	10.5	20.5	237022	10.5	19.9	241334	10.6	19.4	401478	10.7	20.9	140481	10.7	18.8	313944	10.8	19.8
85271	10.5	19.8	45461	10.5	17.1	204064	10.6	20.4	52410	10.7	18.2	261378	10.7	19.9	296813	10.8	19.5
264909	10.5	19.8	155894	10.5	20.3	306324	10.6	20.4	90632	10.7	18.3	222851	10.7	20.2	434723	10.8	21.0
533002	10.5	21.8	173167	10.5	18.4	185844	10.6	19.0	44356	10.7	19.2	434097	10.7	20.7	438265	10.8	19.9
297746	10.5	19.3	355182	10.5	20.7	440588	10.6	20.6	310334	10.7	19.4	511213	10.7	19.2	183635	10.8	19.6
310314	10.5	19.5	178488	10.5	19.9	224278	10.6	19.9	169905	10.7	19.4	510846	10.7	21.1	311419	10.8	19.9
307020	10.5	20.0	229988	10.5	20.0	260213	10.6	19.9	308718	10.7	20.7	430547	10.7	21.1	417501	10.8	20.0
361104	10.5	20.4	536797	10.5	22.1	318157	10.6	19.4	375035	10.7	20.5	225842	10.7	19.1	203386	10.8	19.6
530303	10.5	21.8	59596	10.5	18.9	32943	10.6	18.0	315786	10.7	19.7	518605	10.7	20.8	356437	10.8	21.0
121551	10.5	19.3	206049	10.6	19.9	285351	10.6	20.7	216632	10.7	20.4	224430	10.8	19.5	74100	10.8	17.9
123544	10.5	17.9	150007	10.6	19.7	212531	10.6	19.8	19308	10.7	21.5	533392	10.8	21.4	23392	10.8	16.9
377737	10.5	18.8	398300	10.6	20.0	527892	10.6	22.1	163925	10.7	19.9	527993	10.8	21.4	436113	10.8	20.6
191240	10.5	19.3	62407	10.6	18.6	310028	10.6	19.5	229552	10.7	19.4	525031	10.8	20.0	212420	10.8	19.3
136856	10.5	19.8	31368	10.6	17.9	443516	10.6	21.0	16178	10.7	18.2	47414	10.8	19.1	437255	10.8	20.3
290604	10.5	20.2	270539	10.6	19.5	73194	10.6	19.0	43810	10.7	17.0	32603	10.8	18.0	60099	10.8	17.6
469216	10.5	21.4	429661	10.6	20.8	153282	10.6	19.5	419626	10.7	19.3	414404	10.8	21.3	403379	10.8	19.8
263971	10.5	20.4	405089	10.6	20.1	208702	10.6	21.1	495297	10.7	22.4	69320	10.8	19.3	510024	10.8	19.9
400397	10.5	21.7	474881	10.6	19.4	512580	10.6	21.3	140030	10.7	18.7	462183	10.8	19.9	411945	10.8	20.2
443407	10.5	19.9	17869	10.6	18.6	324135	10.6	20.8	202712	10.7	20.3	34270	10.8	16.3	363967	10.8	19.9
270473	10.5	19.1	205880	10.6	19.5	197878	10.6	19.9	172566	10.7	18.6	249458	10.8	19.2	294962	10.8	20.2
231361	10.5	19.6	471569	10.6	20.2	410178	10.6	19.6	112808	10.7	18.9	47872	10.8	18.0	206912	10.8	19.0
250041	10.5	19.5	134129	10.6	20.0	20409	10.6	17.5	317904	10.7	19.8	533454	10.8	21.7	351486	10.8	20.4
535696	10.5	21.4	242752	10.6	19.0	535364	10.6	21.4	338756	10.7	19.2	437750	10.8	20.2	252746	10.8	19.6
528027	10.5	21.2	525475	10.6	21.4	2662	10.6	16.6	497065	10.7	20.6	160409	10.8	18.6	393911	10.8	20.5
501316	10.5	20.6	465385	10.6	20.7	297560	10.6	19.6	59909	10.7	17.6	419712	10.8	20.3	449008	10.8	20.5
273859	10.5	20.2	152481	10.6	19.8	72826	10.6	19.0	471269	10.7	21.9	248146	10.8	19.8	394576	10.8	20.9
488364	10.5	20.7	321819	10.6	19.1	285127	10.6	19.6	352619	10.7	21.8	106468	10.8	19.3	390204	10.8	20.3
356428	10.5	20.1	64644	10.6	19.1	283176	10.6	18.9	115810	10.7	19.6	215224	10.8	19.2	59508	10.8	17.6
86125	10.5	19.0	320734	10.6	21.2	144157	10.6	20.6	40831	10.7	18.3	9606	10.8	17.3	9516	10.9	16.9
443398	10.5	20.6	262019	10.6	19.5	301640	10.6	20.0	121660	10.7	18.0	537647	10.8	21.2	505570	10.9	20.2
190303	10.5	18.6	138973	10.6	19.7	171276	10.6	19.5	289885	10.7	20.6	469575	10.8	20.7	150652	10.9	20.2
29474	10.5	17.1	94342	10.6	16.7	284437	10.6	21.3	509657	10.7	21.5	540858	10.8	21.4	251594	10.9	20.9
488379	10.5	20.8	153801	10.6	19.4	371613	10.6	21.1	433								

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
310	10.9	14.5	358960	10.9	21.3	540334	11.0	21.0	69945	11.1	17.2	436266	11.2	20.3	320666	11.3	21.0
523642	10.9	21.9	254156	10.9	19.4	360125	11.0	20.4	153869	11.1	17.6	255354	11.2	19.4	512836	11.3	20.6
358445	10.9	20.5	258538	10.9	20.4	323684	11.0	18.8	70582	11.1	19.1	58430	11.2	17.3	205685	11.3	19.7
328170	10.9	20.5	338669	10.9	19.8	227388	11.0	19.3	14735	11.1	16.3	167437	11.2	19.8	401388	11.3	20.4
102613	10.9	16.8	152141	10.9	18.7	177645	11.0	19.4	161991	11.1	19.7	256998	11.2	19.7	373280	11.3	17.7
485671	10.9	19.8	73736	10.9	18.8	336757	11.0	20.6	135617	11.1	20.2	432794	11.2	20.8	87663	11.3	17.1
386122	10.9	20.9	252740	10.9	19.5	534208	11.0	20.0	17211	11.1	18.1	277578	11.2	20.0	178609	11.3	20.0
246088	10.9	20.2	22227	10.9	18.7	324999	11.0	21.3	151454	11.1	19.2	316607	11.2	19.9	416319	11.3	19.3
187376	10.9	21.3	393974	10.9	20.2	295005	11.0	19.9	306665	11.1	18.8	326916	11.2	20.8	230399	11.3	20.1
271743	10.9	19.7	170287	10.9	18.5	321814	11.0	18.8	287060	11.1	19.8	505962	11.2	21.4	171176	11.3	19.8
497702	10.9	20.4	236151	10.9	19.5	13176	11.0	17.6	360569	11.1	19.6	276023	11.2	20.2	143570	11.3	20.0
23020	10.9	16.8	370116	10.9	19.0	104230	11.0	19.5	281748	11.1	20.8	463702	11.2	20.0	423978	11.3	19.5
102795	10.9	17.5	433682	10.9	20.1	411635	11.0	21.2	510891	11.1	21.5	434315	11.2	20.6	212668	11.3	20.2
255434	10.9	19.3	376621	10.9	20.8	273746	11.0	20.8	201487	11.1	19.4	292296	11.2	19.0	316803	11.3	20.4
278369	10.9	19.1	89735	10.9	19.4	520908	11.0	21.6	483085	11.1	20.4	48296	11.2	18.9	48681	11.3	18.4
480001	10.9	21.0	400452	10.9	21.0	253348	11.0	19.7	470785	11.1	20.6	74634	11.2	17.6	119880	11.3	19.7
37470	10.9	19.2	428315	10.9	21.3	115631	11.0	20.0	6398	11.1	17.8	77418	11.2	18.6	95256	11.3	19.0
438790	10.9	20.8	311924	10.9	20.4	115995	11.0	19.3	240678	11.1	20.2	494210	11.2	20.2	500951	11.3	21.0
401073	10.9	21.2	242776	10.9	20.6	440297	11.0	19.3	352353	11.1	20.2	349086	11.2	20.5	490198	11.3	18.8
24882	10.9	18.5	91033	10.9	19.4	416060	11.0	20.0	188793	11.1	20.0	257989	11.2	20.5	250811	11.3	19.1
86398	10.9	17.9	195117	10.9	20.2	190286	11.0	19.3	402798	11.1	21.1	311222	11.2	20.3	333141	11.3	19.4
515230	10.9	20.4	141130	10.9	19.5	523612	11.0	25.4	72291	11.1	19.2	169444	11.2	20.4	188933	11.3	19.8
435865	10.9	19.6	39687	10.9	18.6	86329	11.0	18.0	277423	11.1	18.8	285405	11.2	19.0	17528	11.3	18.0
219718	10.9	18.3	533479	10.9	21.5	97919	11.1	17.9	25040	11.1	18.0	245608	11.2	19.6	85921	11.3	19.0
33291	10.9	18.1	39466	10.9	18.0	366574	11.1	19.1	321945	11.1	20.0	249621	11.2	18.8	479047	11.3	20.1
198416	10.9	19.6	478533	10.9	20.9	234797	11.1	19.8	318544	11.1	20.8	40959	11.2	17.5	503258	11.3	19.7
535362	10.9	21.8	457575	10.9	20.8	254340	11.1	19.0	132322	11.1	20.1	394200	11.2	21.0	80707	11.3	19.9
12182	10.9	16.9	295183	10.9	20.0	250384	11.1	19.2	228239	11.1	20.1	499689	11.2	20.8	26402	11.3	18.6
16516	10.9	16.6	414118	10.9	19.8	79903	11.1	19.9	532290	11.1	20.9	371935	11.2	20.9	487687	11.3	19.6
32355	10.9	17.5	313071	10.9	19.3	434642	11.1	21.3	160343	11.1	17.8	241922	11.2	19.9	175881	11.3	18.4
505149	10.9	19.8	383264	10.9	19.5	332103	11.1	20.4	279314	11.1	19.1	222545	11.2	20.4	290996	11.3	20.2
335158	10.9	19.3	371878	10.9	20.3	460424	11.1	20.2	164184	11.1	22.2	535958	11.2	21.2	533658	11.3	21.5
418085	10.9	21.3	289215	10.9	20.1	32106	11.1	18.9	390924	11.1	21.6	137846	11.2	17.6	316339	11.3	20.8
535620	10.9	21.3	257705	10.9	20.0	356962	11.1	20.2	394728	11.1	20.9	472932	11.2	20.9	408274	11.3	18.6
237212	10.9	19.6	35277	10.9	19.0	355670	11.1	20.2	85892	11.1	19.7	127022	11.2	19.9	190579	11.3	18.6
382164	10.9	19.9	498473	10.9	21.5	212684	11.1	19.0	511511	11.1	19.1	291708	11.2	19.6	437752	11.3	21.2
410675	10.9	20.1	31286	10.9	18.1	304442	11.1	19.8	317462	11.1	18.9	10291	11.2	16.5	475888	11.3	21.1
41474	10.9	16.8	20949	10.9	19.0	134950	11.1	18.9	130449	11.1	18.1	398611	11.2	20.9	214872	11.3	19.2
497363	10.9	20.3	63954	10.9	18.5	395520	11.1	20.5	408961	11.1	19.9	457708	11.2	21.3	407708	11.3	20.2
504039	10.9	21.4	275732	10.9	20.9	395062	11.1	21.7	424419	11.1	21.6	89755	11.2	18.8	441391	11.3	20.9
356229	10.9	21.1	539316	10.9	21.2	200210	11.1	19.3	330669	11.1	20.5	35782	11.2	18.7	160075	11.3	20.6
40430	10.9	19.3	158367	10.9	19.7	195270	11.1	19.9	108304	11.2	18.9	149174	11.2	20.1	408095	11.3	20.5
169539	10.9	20.1	299825	10.9	20.2	276037	11.1	20.6	120485	11.2	19.9	142069	11.2	17.9	316038	11.3	21.6
517602	10.9	20.8	164225	10.9	19.0	318440	11.1	20.9	504797	11.2	19.5	515209	11.2	22.5	356427	11.3	20.7
33217	10.9	18.7	314384	10.9	21.1	389182	11.1	20.2	118788	11.2	18.7	24510	11.2	18.1	324993	11.3	20.6
39103	10.9	18.3	201569	10.9	19.1	481331	11.1	20.2	359953	11.2	20.1	410274	11.2	19.4	519594	11.3	20.1
346810	10.9	20.2	429973	10.9	21.2	472418	11.1	21.6	193793	11.2	20.0	212661	11.2	20.2	431300	11.3	21.4
423286	10.9	20.0	291511	11.0	19.2	437429	11.1	20.3	1143	11.2	15.2	526595	11.2	20.1	505623	11.3	20.4
46683	10.9	19.9	246170	11.0	18.9	532046	11.1	21.4	143540	11.2	19.4	373143	11.2	21.5	512404	11.3	20.9
367999	10.9	21.3	356206	11.0	20.5	481001	11.1	19.6	48751	11.2	17.2	532091	11.2	19.9	352136	11.3	20.3
387056	10.9	20.1	376062	11.0	20.5	126501	11.1	19.1	430523	11.2	20.0	155536	11.2	18.9	23617	11.3	17.0
393098	10.9	21.2	56947	11.0	19.8	469157	11.1	20.1	462443	11.2	19.5	439432	11.2	19.7	127819	11.3	19.6
64904	10.9	17.1	222672	11.0	19.4	336148	11.1	20.2	66765	11.2	18.3	460558	11.2	19.4	20997	11.3	17.4
288654	10.9	19.4	158401	11.0	20.2	439746	11.1	20.2	17875	11.2	17.5	524447	11.2	20.1	334723	11.3	19.8
301757	10.9	21.1	48187	11.0	19.1	427401	11.1	19.5	38071	11.2	23.9	453415	11.2	21.2	390245	11.3	19.2
166145	10.9	19.5	152405	11.0	20.2	534603	11.1	19.2	508296	11.2	21.2	56913	11.2	19.0	101911	11.3	18.3
59679	10.9	17.3	128602	11.0	19.1	113363	11.1	19.4	160415	11.2	18.0	266945	11.2	19.7	127981	11.3	19.6
396534	10.9	19.7	441971	11.0	20.0	40060	11.1	18.5	57717	11.2	18.2	496303	11.2	21.2	499683	11.3	21.0
253095	10.9	20.0	170987	11.0	20.0	231941	11.1	20.4	309687	11.2	20.9	85780	11.2	18.3	129232	11.3	17.1
384719	10.9	19.2	9309	11.0	17.1	145593	11.1	20.1	392451	11.2	20.5	533113	11.2	21.5	123822	11.3	19.3
462225	10.9	20.5	442076	11.0	19.9	385766	11.1	20.2	263987	11.2	19.5	65891	11.2	18.0	108404	11.3	19.7
422571	10.9	19.1	509632	11.0	20.2	240209	11.1	19.0	157656	11.2	19.8	248077	11.2	19.2	130662	11.3	19.0
139221	10.9	20.2	59997	11.0	17.7	536107	11.1	20.5	134664	11.2	18.2	540763	11.2	19.6	332968	11.3	20.6
169741	10.9	18.7	378255	11.0	19.8	352449	11.1	20.1	500872	11.2	20.3	495367	11.2	20.3	47227	11.3	18.2
13419	10.9	18.3	530796	11.0	20.3	482721	11.1	20.5	442128	11.2	19.5	238134	11.2	19.8	440105	11.3	20.2
318457	10.9	20.5	384372	11.0	19.7	445397	11.1	20.8	507761	11.2	20.6	147171	11.2	18.5	407734	11.3	20.8
304444	10.9	20.6	191102	11.0	19.6	187322	11.1	19.5	93296	11.2	19.3	107276	11.2	20.3	149550	11.3	19.8
178637	10.9	19.8	283230	11.0	19.6	390323	11.1	20.8	186968	11.2	20.2	539552	11.2	20.6	105931	11.3	19.1
504982	10.9	20.9	479269	11.0	21.0	21986	1										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
73729	11.3	19.3	125768	11.4	19.7	301113	11.5	19.4	51104	11.6	19.0	443587	11.6	20.2	201575	11.7	18.6
127567	11.3	19.3	463114	11.4	21.2	522517	11.5	20.3	100848	11.6	19.1	94086	11.6	19.6	39377	11.7	19.5
401260	11.3	20.3	227360	11.4	20.4	74964	11.5	18.6	106087	11.6	18.6	164436	11.6	19.8	377750	11.7	20.8
435769	11.3	20.1	1197	11.4	15.3	4326	11.5	17.2	484556	11.6	21.4	185480	11.6	19.9	280789	11.7	18.8
520163	11.3	20.7	470354	11.4	19.7	275342	11.5	19.5	528867	11.6	20.2	391039	11.6	20.9	213120	11.7	19.4
290251	11.3	20.9	188798	11.4	19.6	200074	11.5	18.8	257380	11.6	20.1	519940	11.6	20.1	239796	11.7	19.0
424385	11.3	20.9	198504	11.4	18.6	320595	11.5	20.5	236576	11.6	20.6	123875	11.6	19.9	478203	11.7	21.3
19957	11.3	17.6	393254	11.4	19.5	290386	11.5	19.6	335584	11.6	20.4	228333	11.6	18.7	508643	11.7	20.1
438950	11.3	21.3	385330	11.4	19.6	359974	11.5	20.1	36655	11.6	18.3	168868	11.6	19.4	406796	11.7	20.9
248136	11.3	20.3	206330	11.4	19.9	58872	11.5	19.0	183812	11.6	21.1	333658	11.6	18.6	506364	11.7	21.4
361096	11.3	19.8	236667	11.4	19.5	431931	11.5	19.6	287892	11.6	20.3	239701	11.6	20.4	19927	11.7	17.6
18156	11.3	17.2	345924	11.4	20.0	465922	11.5	19.9	348378	11.6	19.9	266632	11.6	20.7	38194	11.7	18.7
242901	11.4	19.5	354356	11.4	21.2	315305	11.5	19.1	43013	11.6	18.3	274084	11.6	21.2	491982	11.7	19.9
425244	11.4	19.9	399684	11.4	20.7	255158	11.5	20.9	404672	11.6	20.6	292072	11.6	19.2	38967	11.7	19.6
205374	11.4	19.1	115278	11.4	19.1	320621	11.5	21.4	113522	11.6	17.4	412109	11.6	20.5	254935	11.7	19.9
440699	11.4	20.8	129451	11.4	19.6	169499	11.5	19.6	478412	11.6	21.2	142498	11.6	19.1	457563	11.7	20.7
115145	11.4	18.9	162857	11.4	20.0	365655	11.5	19.9	24766	11.6	17.5	424162	11.7	21.0	203350	11.7	19.7
121455	11.4	19.3	230361	11.4	19.2	65003	11.5	19.1	536543	11.6	21.3	361472	11.7	20.7	496342	11.7	19.6
463149	11.4	20.8	116651	11.4	19.3	404914	11.5	21.2	532017	11.6	21.3	438828	11.7	20.8	195562	11.7	20.6
469961	11.4	20.7	119522	11.4	19.3	252702	11.5	19.5	424445	11.6	20.2	186428	11.7	18.4	530359	11.7	21.5
50283	11.4	18.7	184867	11.4	18.6	73706	11.5	19.4	389759	11.6	20.2	35876	11.7	18.2	103214	11.7	19.4
211122	11.4	20.3	472976	11.4	20.2	462832	11.5	21.1	516981	11.6	19.7	528429	11.7	20.5	23019	11.7	18.6
178541	11.4	18.4	515098	11.4	19.8	119808	11.5	19.3	170740	11.6	20.3	393157	11.7	20.3	379753	11.7	21.2
16080	11.4	17.0	496320	11.4	21.0	508192	11.5	21.1	115579	11.6	18.8	229476	11.7	20.2	467632	11.7	18.9
252833	11.4	19.5	304238	11.4	20.7	417658	11.5	21.0	520338	11.6	20.8	20286	11.7	18.1	204852	11.7	19.9
156584	11.4	20.1	472942	11.4	20.6	156487	11.5	19.6	475716	11.6	19.7	395541	11.7	19.7	448614	11.7	20.6
258871	11.4	19.9	446449	11.4	20.0	133914	11.5	18.1	459554	11.6	21.4	342873	11.7	20.8	361478	11.7	21.1
505781	11.4	21.3	537237	11.4	21.2	247397	11.5	20.2	209304	11.6	18.9	103599	11.7	19.8	258890	11.7	20.6
540351	11.4	19.8	378293	11.4	20.0	344496	11.5	19.3	163343	11.6	19.5	374935	11.7	20.7	412160	11.7	21.3
166310	11.4	20.1	63154	11.4	18.3	420952	11.5	20.5	62562	11.6	20.5	258983	11.7	19.3	394683	11.7	20.3
524087	11.4	19.8	476531	11.4	20.4	220149	11.5	19.2	404681	11.6	20.5	34151	11.7	18.9	48913	11.7	18.4
325245	11.4	21.4	312397	11.4	20.6	262903	11.5	19.3	102038	11.6	18.4	36270	11.7	18.9	404655	11.7	21.2
396058	11.4	21.1	175866	11.4	19.3	91370	11.5	19.8	200913	11.6	20.1	393822	11.7	19.1	79623	11.7	17.2
505799	11.4	21.3	147850	11.4	19.9	400249	11.5	18.9	344688	11.6	19.8	330022	11.7	20.0	386350	11.7	20.3
443744	11.4	19.7	201322	11.4	18.7	457365	11.5	19.8	390345	11.6	21.1	41942	11.7	18.0	222624	11.7	19.4
539313	11.4	21.0	468537	11.4	20.3	528189	11.5	22.0	128096	11.6	19.7	319918	11.7	20.6	166535	11.7	17.9
67790	11.4	18.0	430763	11.4	19.6	128397	11.5	19.5	501623	11.6	21.0	353179	11.7	20.6	31928	11.7	18.1
436271	11.4	21.6	39163	11.4	18.7	465600	11.5	21.5	67979	11.6	18.9	101308	11.7	18.1	20462	11.7	18.0
524436	11.4	21.4	293626	11.4	19.2	111810	11.5	18.3	464117	11.6	20.0	467495	11.7	20.0	511199	11.7	21.8
389564	11.4	20.0	21110	11.4	17.1	464770	11.5	18.9	308151	11.6	19.7	202242	11.7	20.1	449581	11.7	20.9
144153	11.4	18.5	157345	11.4	19.0	475237	11.5	21.6	472981	11.6	21.4	143645	11.7	20.1	494946	11.7	21.4
227486	11.4	20.0	228598	11.4	19.2	178718	11.5	19.3	307100	11.6	20.1	144061	11.7	20.2	467248	11.7	21.4
211135	11.4	20.1	51398	11.4	17.8	520084	11.5	20.7	358738	11.6	19.9	513241	11.7	22.0	348141	11.7	20.7
26925	11.4	18.2	96990	11.4	18.7	424120	11.5	21.6	284788	11.6	20.1	259065	11.7	19.3	371609	11.7	19.1
120793	11.4	19.3	216082	11.5	18.2	209360	11.5	19.6	504804	11.6	21.3	309120	11.7	20.2	9842	11.7	17.2
241401	11.4	20.0	386095	11.5	19.9	36929	11.5	18.0	538886	11.6	19.4	95679	11.7	18.6	470908	11.7	21.1
266240	11.4	20.2	237946	11.5	19.7	307128	11.5	19.5	225877	11.6	19.8	425698	11.7	21.0	46612	11.7	18.5
324967	11.4	21.3	478334	11.5	20.3	382937	11.5	18.8	351563	11.6	21.0	386124	11.7	20.4	388048	11.7	20.5
19385	11.4	16.7	21913	11.5	17.8	205721	11.5	20.5	416757	11.6	20.7	213534	11.7	20.8	263087	11.7	19.9
146868	11.4	20.0	278874	11.5	20.2	432853	11.5	20.8	504054	11.6	20.7	200878	11.7	17.9	285867	11.7	20.1
27392	11.4	18.7	12145	11.5	18.6	358422	11.5	20.3	463128	11.6	20.5	190619	11.7	19.7	68574	11.7	19.4
521483	11.4	21.4	316790	11.5	19.4	207461	11.5	19.9	95636	11.6	19.1	383942	11.7	19.0	291811	11.7	19.8
349214	11.4	20.0	377669	11.5	20.4	59767	11.5	17.1	41302	11.6	18.3	506987	11.7	19.7	371702	11.8	18.3
280333	11.4	19.2	430983	11.5	20.5	92029	11.5	18.4	533632	11.6	22.0	98445	11.7	18.8	223236	11.8	20.7
477177	11.4	20.6	297757	11.5	19.7	162604	11.5	18.5	121236	11.6	17.8	481497	11.7	21.7	225450	11.8	19.9
355662	11.4	21.3	11601	11.5	17.2	360356	11.5	19.5	463775	11.6	20.9	522546	11.7	20.5	260530	11.8	20.5
255487	11.4	19.5	39510	11.5	17.3	369032	11.5	20.5	325086	11.6	20.9	220983	11.7	21.0	336332	11.8	20.0
201446	11.4	20.4	107879	11.5	19.7	412879	11.5	20.4	37498	11.6	17.2	311549	11.7	20.9	182754	11.8	19.8
403169	11.4	20.2	425561	11.5	20.4	192767	11.6	20.6	253084	11.6	19.2	298748	11.7	19.3	7267	11.8	17.0
35032	11.4	18.5	430375	11.5	21.2	120329	11.6	20.0	237849	11.6	20.3	357541	11.7	20.0	481521	11.8	20.4
4303	11.4	15.9	472911	11.5	21.6	449870	11.6	19.4	524451	11.6	21.5	299220	11.7	19.9	247839	11.8	18.0
383249	11.4	21.5	204422	11.5	19.3	246289	11.6	20.8	508107	11.6	20.8	120818	11.7	20.5	450047	11.8	19.9
32933	11.4	19.3	216021	11.5	20.1	121682	11.6	19.2	40146	11.6	18.1	320374	11.7	20.0	9907	11.8	18.2
482151	11.4	21.1	17131	11.5	17.8	148412	11.6	19.1	32947	11.6	18.4	149792	11.7	20.7	419677	11.8	20.0
482159	11.4	20.4	340428	11.5	20.3	526390	11.6	22.6	438130	11.6	20.7	432042	11.7	20.0	514392	11.8	20.4
221437	11.4	20.6	366102	11.5	20.7	293371	11.6	20.1	229935	11.6	19.0	133946	11.7	19.6	134740	11.8	18.4
17094	11.4	17.5	198318	11.5	19.8	290280	11.6	20.3	504788	11.6	21.2	125025	11.7	19.0	39573	11.8	19.0
523068	11.4	20.5	393378	11.5	19.8	514329	11.6	20.4	94790	11.6	19.4	380307	11.7	20.2	504978	11.8	20.1
536951	11.4	20.7	86782	11.5	18.6	39914											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
95020	11.8	18.4	144754	11.8	20.7	349592	11.9	20.4	179372	11.9	20.3	207291	12.1	19.6	400199	12.1	20.6
61208	11.8	17.2	357933	11.8	20.2	471333	11.9	20.7	9694	11.9	17.4	102667	12.1	18.9	362466	12.1	20.3
37791	11.8	18.3	301861	11.8	20.5	129720	11.9	18.1	227843	11.9	18.4	474907	12.1	19.6	108100	12.1	19.8
440344	11.8	20.3	475235	11.9	20.6	338781	11.9	18.2	72038	11.9	18.2	231904	12.1	18.5	125984	12.1	19.1
217599	11.8	20.3	502937	11.9	20.5	104692	11.9	18.9	94264	12.0	19.2	226335	12.1	21.0	250244	12.1	18.8
430312	11.8	20.9	148936	11.9	18.1	23388	11.9	17.4	508483	12.0	20.9	409365	12.1	20.9	69533	12.2	17.8
157518	11.8	20.3	218754	11.9	19.7	214491	11.9	19.3	238288	12.0	20.6	107399	12.1	19.7	532848	12.2	20.3
85952	11.8	19.1	516834	11.9	21.1	399624	11.9	20.0	425565	12.0	19.9	76952	12.1	19.4	420314	12.2	20.4
17202	11.8	17.7	513399	11.9	21.5	412447	11.9	21.2	422899	12.0	19.4	306863	12.1	20.2	88472	12.2	18.3
287991	11.8	19.2	447360	11.9	20.7	183214	11.9	19.4	533585	12.0	21.3	272728	12.1	19.8	359846	12.2	20.9
186284	11.8	20.9	303962	11.9	20.2	466064	11.9	20.2	365058	12.0	20.4	539356	12.1	21.0	381914	12.2	19.8
205638	11.8	18.8	437525	11.9	20.0	261098	11.9	19.5	44863	12.0	18.1	420319	12.1	20.5	237818	12.2	18.6
103535	11.8	19.7	433981	11.9	20.5	39634	11.9	17.4	28364	12.0	16.8	476126	12.1	21.1	437062	12.2	20.8
34215	11.8	18.7	262433	11.9	19.3	9386	11.9	16.8	59346	12.0	17.9	450089	12.1	20.2	399460	12.2	20.6
54030	11.8	18.6	131608	11.9	19.0	329288	11.9	19.6	195342	12.0	21.0	248182	12.1	19.3	18304	12.2	17.1
533325	11.8	21.5	286631	11.9	20.5	340442	11.9	20.3	399265	12.0	21.3	62816	12.1	18.6	254265	12.2	19.5
442042	11.8	20.3	353203	11.9	20.5	38737	11.9	18.3	199809	12.0	18.8	451385	12.1	21.0	101901	12.2	18.7
342522	11.8	19.0	59462	11.9	18.4	58358	11.9	18.9	215241	12.0	20.0	377628	12.1	19.5	347068	12.2	21.0
281608	11.8	19.6	375918	11.9	20.7	29438	11.9	18.3	263408	12.0	20.0	157773	12.1	20.5	64045	12.2	19.4
421016	11.8	20.3	355751	11.9	20.5	467619	11.9	21.3	37273	12.0	18.7	443074	12.1	20.3	123036	12.2	19.1
345920	11.8	20.3	320335	11.9	19.7	397433	11.9	20.9	186926	12.0	19.9	123101	12.1	19.5	443098	12.2	20.9
446462	11.8	21.5	472093	11.9	21.1	385008	11.9	19.9	212274	12.0	20.7	389222	12.1	20.6	90850	12.2	18.5
357966	11.8	21.7	446071	11.9	20.9	404434	11.9	19.5	37735	12.0	16.4	352692	12.1	20.6	423888	12.2	19.0
191108	11.8	19.9	28622	11.9	17.9	521630	11.9	21.4	496650	12.0	21.4	126847	12.1	19.6	429140	12.2	19.8
384386	11.8	20.5	390797	11.9	21.0	77053	11.9	19.5	490157	12.0	20.9	81987	12.1	18.7	429594	12.2	20.9
71904	11.8	19.2	507749	11.9	19.5	437493	11.9	21.0	471730	12.0	20.5	57783	12.1	18.8	149330	12.2	19.4
435129	11.8	21.9	501741	11.9	20.9	509308	11.9	21.3	376073	12.0	21.3	325966	12.1	20.1	353238	12.2	21.7
496328	11.8	20.6	112262	11.9	20.0	374577	11.9	20.3	474606	12.0	20.7	175696	12.1	21.2	282729	12.2	21.1
343112	11.8	19.7	66050	11.9	17.6	231615	11.9	19.4	380804	12.0	20.6	12112	12.1	17.0	18827	12.2	16.2
444641	11.8	20.7	434256	11.9	19.2	523617	11.9	21.8	179557	12.0	19.8	444708	12.1	22.0	184185	12.2	19.1
217382	11.8	19.4	93888	11.9	19.2	197547	11.9	20.5	42932	12.0	17.9	477040	12.1	20.3	512519	12.2	20.8
374323	11.8	20.7	64589	11.9	19.2	442530	11.9	20.5	241901	12.0	20.0	533354	12.1	20.1	536382	12.2	21.6
491925	11.8	19.7	508877	11.9	22.4	476992	11.9	20.7	527908	12.0	20.7	47728	12.1	18.4	292820	12.2	20.5
501832	11.8	21.2	471291	11.9	21.6	151729	11.9	20.2	33118	12.0	19.1	288617	12.1	19.4	366205	12.2	20.0
296532	11.8	20.2	295206	11.9	21.4	230385	11.9	20.0	357329	12.0	20.8	122568	12.1	19.0	472738	12.2	20.7
309307	11.8	20.3	207270	11.9	20.1	396649	11.9	20.8	316629	12.0	19.5	168401	12.1	20.1	371115	12.2	18.7
303987	11.8	20.7	409383	11.9	20.1	244694	11.9	18.5	118080	12.0	19.1	68450	12.1	19.4	95061	12.2	19.3
307309	11.8	20.8	25363	11.9	17.9	446415	11.9	22.1	250928	12.0	19.4	301737	12.1	20.4	244845	12.2	19.9
363266	11.8	21.6	376955	11.9	20.1	519037	11.9	20.7	459577	12.0	21.0	283919	12.1	19.8	253371	12.2	20.3
322518	11.8	19.8	544047	11.9	20.8	250904	11.9	19.9	359790	12.0	19.7	361447	12.1	20.6	42452	12.2	19.3
410766	11.8	21.1	27780	11.9	19.0	250394	11.9	19.4	207613	12.0	19.6	172579	12.1	19.6	305323	12.2	20.0
21722	11.8	18.0	244031	11.9	20.2	41152	11.9	19.4	472595	12.0	21.1	216522	12.1	19.7	186031	12.2	19.3
461664	11.8	21.3	418936	11.9	20.3	479996	11.9	20.8	310144	12.0	20.9	295435	12.1	20.5	142396	12.2	18.8
385853	11.8	20.3	310454	11.9	18.7	528017	11.9	21.6	408740	12.0	20.7	283679	12.1	20.4	99837	12.2	19.1
299393	11.8	19.6	433288	11.9	20.9	419464	11.9	22.0	316947	12.0	21.1	249097	12.1	20.7	408795	12.2	21.4
495326	11.8	20.6	530368	11.9	21.2	200699	11.9	18.6	359347	12.0	20.4	288278	12.1	20.6	508317	12.2	21.7
393135	11.8	21.0	158958	11.9	20.0	25605	11.9	17.6	433646	12.0	19.1	483220	12.1	20.4	272227	12.2	18.6
442541	11.8	19.5	59845	11.9	18.0	61398	11.9	18.4	292821	12.0	20.0	479161	12.1	20.9	519543	12.2	20.3
329998	11.8	20.7	497666	11.9	20.4	168916	11.9	19.9	258766	12.0	19.8	467611	12.1	21.0	394298	12.2	20.3
56217	11.8	18.0	185842	11.9	21.1	430289	11.9	19.4	471302	12.0	22.1	370659	12.1	19.6	307113	12.2	20.2
534585	11.8	20.5	221169	11.9	20.0	395643	11.9	20.0	171758	12.0	19.0	432636	12.1	20.8	145033	12.2	19.4
197431	11.8	19.9	144877	11.9	19.0	27218	11.9	17.8	349992	12.0	20.2	423407	12.1	20.4	103314	12.2	19.7
355779	11.8	20.6	115740	11.9	19.8	114595	11.9	20.1	342695	12.1	20.1	532011	12.1	22.2	225324	12.2	20.9
480834	11.8	19.8	530097	11.9	20.8	520049	11.9	20.9	307152	12.1	20.8	336236	12.1	19.2	420342	12.2	20.1
118931	11.8	19.5	202752	11.9	18.4	412597	11.9	20.3	107283	12.1	16.8	228595	12.1	19.7	447108	12.2	19.9
216374	11.8	20.6	191914	11.9	19.7	427898	11.9	20.9	480605	12.1	20.8	475035	12.1	19.9	447731	12.2	21.1
457608	11.8	21.2	36921	11.9	18.6	292108	11.9	19.3	192473	12.1	19.7	356983	12.1	20.6	364444	12.2	21.0
322559	11.8	20.6	192127	11.9	18.3	495398	11.9	19.9	150588	12.1	19.2	117424	12.1	19.6	251887	12.2	19.4
325936	11.8	19.8	198914	11.9	19.9	357044	11.9	19.4	186352	12.1	19.9	303331	12.1	19.3	119500	12.2	19.5
252834	11.8	20.0	177033	11.9	20.0	296782	11.9	20.0	408697	12.1	20.2	254871	12.1	20.0	539693	12.2	20.8
33494	11.8	18.8	396294	11.9	20.6	236187	11.9	20.1	157486	12.1	19.4	498532	12.1	21.7	114075	12.2	18.9
94792	11.8	19.2	397049	11.9	20.4	16887	11.9	17.5	406331	12.1	19.5	423999	12.1	20.6	185784	12.2	20.0
440608	11.8	20.0	420830	11.9	20.2	398602	11.9	20.4	517201	12.1	21.6	188019	12.1	19.4	44438	12.2	17.7
310103	11.8	20.3	157084	11.9	18.3	87541	11.9	19.3	318463	12.1	21.3	188774	12.1	19.3	107346	12.2	19.6
540924	11.8	20.7	428300	11.9	21.5	17175	11.9	16.5	166027	12.1	20.4	109223	12.1	19.6	111697	12.2	18.7
4151	11.8	17.1	529569	11.9	21.5	354746	11.9	20.7	423535	12.1	20.7	347041	12.1	21.2	26042	12.2	17.8
216825	11.8	19.6	62492	11.9	19.2	99489	11.9	18.5	310223	12.1	20.7	91632	12.1	19.4	537146	12.2	21.9
438779	11.8	19.9	255715	11.9	18.9	443374	11.9	20.5	94910	12.1	19.2	160969	12.1	20.0	92253	12.2	18.3
361088	11.8	20.9	441328	11.9	20.5	1916											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
434269	12.2	20.0	116516	12.3	19.1	476057	12.4	19.5	343679	12.5	20.2	501343	12.5	20.3	281620	12.6	19.9
359339	12.2	20.2	102458	12.3	19.3	150519	12.4	20.0	249684	12.5	18.7	353199	12.5	20.9	410251	12.6	19.6
70414	12.2	17.4	481186	12.3	20.7	198422	12.4	18.5	37704	12.5	18.7	7600	12.5	17.1	162475	12.6	17.8
354695	12.2	20.1	32459	12.3	18.2	488442	12.4	19.9	379711	12.5	20.3	274083	12.5	20.8	538723	12.6	21.2
427720	12.2	20.3	432296	12.3	20.6	437268	12.4	20.4	16047	12.5	17.6	353046	12.5	20.5	181993	12.6	20.2
3709	12.2	15.9	117065	12.3	18.5	341316	12.4	19.5	379187	12.5	20.3	44796	12.5	16.9	91873	12.6	18.3
509157	12.2	21.7	418209	12.3	21.3	142063	12.4	20.1	471610	12.5	20.9	496936	12.5	19.9	537514	12.6	20.8
471632	12.2	21.1	292466	12.3	20.8	345877	12.4	19.8	302861	12.5	21.0	496224	12.5	21.0	94193	12.6	19.2
151471	12.2	19.2	272114	12.3	19.8	526344	12.4	22.3	302306	12.5	19.9	94178	12.5	19.1	208559	12.6	20.3
469956	12.2	21.5	308505	12.3	20.9	52805	12.4	18.1	510944	12.5	22.3	201743	12.5	19.7	438393	12.6	19.7
511502	12.2	20.7	138080	12.3	19.0	398477	12.4	20.6	251334	12.5	19.3	398281	12.5	20.7	120152	12.6	19.5
539026	12.2	21.2	437007	12.3	21.0	79331	12.4	19.0	184700	12.5	19.2	123433	12.5	19.7	199594	12.6	20.3
55048	12.2	18.0	460732	12.3	20.3	275027	12.4	21.0	3723	12.5	16.9	36259	12.5	18.5	191075	12.6	19.2
803	12.2	14.0	193982	12.3	19.3	178830	12.4	20.2	128228	12.5	18.8	151466	12.5	20.3	455649	12.6	21.6
485162	12.2	19.5	124251	12.3	19.4	436304	12.4	20.6	417507	12.5	20.8	442019	12.5	19.8	286866	12.6	19.1
116536	12.2	18.8	294282	12.3	20.0	347033	12.4	20.2	243304	12.5	19.8	86323	12.5	18.5	245209	12.6	19.1
126559	12.2	20.2	494223	12.3	20.4	12898	12.4	17.4	443079	12.5	20.5	289095	12.5	20.1	438911	12.6	21.1
9292	12.2	15.4	232658	12.3	19.3	77360	12.4	19.1	254142	12.5	18.7	119488	12.5	18.1	457669	12.6	20.8
249774	12.2	19.6	448527	12.3	20.1	151813	12.4	19.8	199701	12.5	20.3	209961	12.5	19.7	16533	12.6	18.0
327422	12.2	18.8	77071	12.3	19.5	254541	12.4	21.1	156955	12.5	19.9	69622	12.5	18.4	311253	12.6	21.0
1819	12.2	14.8	233327	12.3	19.9	211131	12.4	20.0	175031	12.5	20.1	448617	12.5	19.8	397703	12.6	22.0
58886	12.2	16.9	350059	12.3	20.6	353181	12.4	20.6	432289	12.5	20.9	192306	12.5	20.8	266488	12.6	19.9
87622	12.2	17.9	257203	12.3	20.0	394230	12.4	20.8	513121	12.5	18.7	279471	12.5	20.3	511173	12.6	21.7
471317	12.2	20.6	252672	12.3	20.7	70381	12.4	19.2	359518	12.5	19.9	84069	12.5	17.7	44330	12.6	18.5
204715	12.3	20.5	463109	12.3	20.8	287265	12.4	18.7	472951	12.5	20.8	335784	12.5	21.1	93303	12.6	19.2
121063	12.3	19.6	201448	12.3	20.3	336326	12.4	20.5	20654	12.5	18.2	527661	12.5	19.5	357850	12.6	20.0
139055	12.3	19.7	456778	12.3	19.7	506517	12.4	19.4	525028	12.5	20.6	432458	12.5	19.6	267504	12.6	18.9
177405	12.3	19.7	329160	12.3	20.2	287971	12.4	19.7	86332	12.5	18.4	339353	12.5	19.9	24188	12.6	17.7
106723	12.3	19.3	112216	12.3	20.1	67877	12.4	17.2	400460	12.5	20.5	533540	12.5	21.3	103353	12.6	18.2
184212	12.3	22.9	203181	12.3	19.7	40910	12.4	17.4	88756	12.5	19.0	316393	12.5	20.4	178082	12.6	19.7
404686	12.3	19.5	446126	12.3	20.5	282271	12.4	20.2	231610	12.5	20.5	311180	12.5	20.4	177890	12.6	19.5
204037	12.3	19.0	398986	12.3	21.0	151782	12.4	19.5	355352	12.5	20.3	509156	12.5	21.3	134578	12.6	18.9
163072	12.3	19.6	257945	12.3	19.7	508040	12.4	19.7	398896	12.5	20.6	246365	12.5	18.4	55903	12.6	18.9
358982	12.3	19.4	206424	12.3	19.3	121824	12.4	20.6	213420	12.5	18.6	158901	12.5	17.9	330344	12.6	20.8
469971	12.3	21.7	414129	12.3	20.3	81535	12.4	19.4	196414	12.5	20.2	308111	12.5	21.2	344504	12.6	20.9
407707	12.3	19.6	507800	12.3	21.1	202818	12.4	19.5	59610	12.5	19.4	480427	12.6	20.6	517427	12.6	19.7
413787	12.3	21.0	394316	12.3	20.1	111349	12.4	19.1	516948	12.5	21.8	283669	12.6	20.3	344668	12.6	19.1
432665	12.3	19.5	248426	12.3	19.3	20001	12.4	17.4	101511	12.5	19.1	245785	12.6	19.8	217377	12.6	19.5
260675	12.3	20.0	173604	12.3	19.7	410309	12.4	19.8	494655	12.5	20.5	336812	12.6	20.7	470383	12.6	20.7
486808	12.3	20.7	316617	12.3	19.8	77268	12.4	19.0	34608	12.5	18.3	224504	12.6	20.9	495340	12.6	20.7
125981	12.3	20.2	529589	12.3	21.8	360411	12.4	20.6	446223	12.5	21.1	156069	12.6	20.0	38052	12.6	20.2
441404	12.3	21.3	208156	12.3	20.2	483107	12.4	20.2	500966	12.5	20.9	472040	12.6	20.5	403953	12.6	20.5
3355	12.3	15.9	524156	12.3	20.7	158452	12.4	20.3	179451	12.5	19.0	418333	12.6	21.3	93312	12.6	19.4
72429	12.3	18.7	412117	12.3	20.0	262208	12.4	21.4	133498	12.5	18.6	233502	12.6	19.6	392573	12.6	19.6
47674	12.3	18.5	166948	12.4	20.4	437048	12.4	20.6	93533	12.5	17.9	118728	12.6	19.5	163988	12.6	18.9
376911	12.3	19.2	125669	12.4	19.5	278273	12.4	20.2	91199	12.5	18.4	91198	12.6	18.5	439863	12.6	21.0
322579	12.3	20.4	296648	12.4	19.9	153649	12.4	18.6	131256	12.5	19.1	258647	12.6	20.9	462339	12.6	21.1
324452	12.3	21.1	504739	12.4	20.6	155733	12.4	18.9	290877	12.5	20.8	360979	12.6	20.2	126391	12.6	18.6
392715	12.3	21.2	320285	12.4	19.7	254576	12.4	20.8	446606	12.5	20.0	145528	12.6	19.7	339511	12.6	20.3
248602	12.3	20.2	533281	12.4	20.9	133066	12.4	17.5	358757	12.5	20.6	179860	12.6	19.4	168238	12.6	20.0
513681	12.3	20.4	269954	12.4	19.6	492350	12.4	21.9	289214	12.5	19.4	505448	12.6	22.9	93230	12.6	18.9
387151	12.3	18.7	525867	12.4	20.5	385898	12.4	20.2	473256	12.5	21.3	458821	12.6	20.3	409787	12.6	20.9
353186	12.3	20.7	507868	12.4	20.9	322377	12.4	19.6	471806	12.5	20.5	471331	12.6	21.0	357757	12.6	20.5
309661	12.3	20.3	5262	12.4	16.7	248124	12.4	19.4	315750	12.5	19.4	5941	12.6	16.8	34467	12.6	18.7
521026	12.3	20.5	257198	12.4	20.6	16604	12.4	17.5	354826	12.5	19.6	187265	12.6	19.8	161909	12.6	19.9
156986	12.3	20.3	100851	12.4	19.4	465406	12.4	21.3	81900	12.5	18.6	376181	12.6	20.7	477761	12.6	20.0
511446	12.3	21.0	361083	12.4	20.8	204688	12.4	19.6	241335	12.5	20.4	42036	12.6	18.8	530900	12.6	19.8
100356	12.3	18.9	83657	12.4	17.1	148385	12.4	19.5	479290	12.5	20.8	459669	12.6	21.0	385336	12.6	21.0
382489	12.3	21.1	212650	12.4	19.3	154338	12.4	19.4	315307	12.5	20.0	142435	12.6	19.0	478007	12.6	20.8
65171	12.3	18.8	347322	12.4	19.2	349204	12.4	18.9	330327	12.5	19.5	424128	12.6	21.0	163322	12.6	19.0
239762	12.3	19.9	446751	12.4	20.6	215346	12.4	19.6	503992	12.5	19.2	36893	12.6	17.7	250771	12.7	20.2
342418	12.3	20.4	123352	12.4	19.6	488378	12.4	20.1	19142	12.5	17.2	180879	12.6	20.6	27665	12.7	18.7
415171	12.3	21.1	37827	12.4	18.9	289303	12.4	20.1	8026	12.5	16.5	381968	12.6	21.1	389136	12.7	20.5
79439	12.3	20.0	150139	12.4	20.3	117302	12.4	18.5	282660	12.5	19.3	200521	12.6	19.3	461931	12.7	20.8
341210	12.3	20.5	525960	12.4	21.4	419762	12.4	19.7	289521	12.5	20.7	3678	12.6	16.9	31356	12.7	19.1
536348	12.3	21.9	186078	12.4	19.8	129952	12.4	18.0	314443	12.5	19.4	333246	12.6	17.6	438263	12.7	19.1
182022	12.3	19.7	344698	12.4	19.7	365576	12.4	20.9	172830	12.5	20.2	345183	12.6	19.7	384005	12.7	20.8
192648	12.3	19.2	430362	12.4	20.2	253004	12.4	19.8	16935	12.5	16.9	358385	12.6	20.3	218787	12.7	19.1
342692	12.3	20.8	338829	12.4	19.3	165197	1										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
4489	12.7	16.1	170961	12.7	19.8	314304	12.8	19.3	260116	12.9	19.5	257498	12.9	19.7	467971	13.0	20.6
160071	12.7	17.2	252839	12.7	20.5	392865	12.8	20.4	154621	12.9	18.3	275144	12.9	18.9	73017	13.0	19.4
353109	12.7	19.9	457372	12.7	19.0	352537	12.8	21.0	41559	12.9	17.6	222465	12.9	19.8	446734	13.0	19.8
533255	12.7	21.6	210953	12.7	19.2	477523	12.8	21.1	29086	12.9	16.6	157274	12.9	20.1	139200	13.0	19.3
282858	12.7	21.3	284057	12.7	20.1	184842	12.8	19.7	68559	12.9	18.8	465411	12.9	20.8	238661	13.0	20.3
10779	12.7	18.0	382408	12.7	19.7	523997	12.8	19.4	98983	12.9	18.6	441813	12.9	21.3	318006	13.0	19.2
369687	12.7	21.5	389309	12.7	20.8	280339	12.8	19.5	355691	12.9	21.5	160350	12.9	18.3	9651	13.0	17.2
279738	12.7	19.5	143488	12.7	21.3	491715	12.8	21.2	350244	12.9	20.8	51436	12.9	17.1	39919	13.0	18.3
69273	12.7	17.1	215215	12.7	19.7	188420	12.8	21.1	104451	12.9	19.7	245291	12.9	19.3	429519	13.0	22.0
350267	12.7	20.0	74056	12.7	18.6	15988	12.8	16.7	289991	12.9	19.9	131688	12.9	19.6	242494	13.0	20.1
243108	12.7	20.3	119431	12.7	18.8	66866	12.8	18.1	133537	12.9	19.1	504517	12.9	20.4	394663	13.0	20.3
503387	12.7	21.5	436237	12.7	20.0	178173	12.8	19.7	25082	12.9	17.9	18306	12.9	18.4	204541	13.0	19.4
257248	12.7	20.7	380879	12.7	19.9	463467	12.8	20.3	459064	12.9	21.4	191133	12.9	19.7	532686	13.0	20.0
23036	12.7	16.7	378267	12.7	21.2	261920	12.8	20.1	434668	12.9	21.0	444321	12.9	20.4	330388	13.0	19.7
198023	12.7	19.5	216349	12.7	20.4	529716	12.8	20.5	540976	12.9	20.2	142616	12.9	18.0	535817	13.0	20.7
102240	12.7	19.9	503493	12.7	21.5	34776	12.8	17.0	160324	12.9	19.9	131031	12.9	17.9	1869	13.0	17.5
448019	12.7	20.8	468798	12.8	21.8	481302	12.8	20.9	316446	12.9	20.6	355137	12.9	20.1	530420	13.0	20.1
184852	12.7	19.4	497581	12.8	21.2	70879	12.8	18.8	97933	12.9	18.0	342761	12.9	20.1	417562	13.0	20.3
37551	12.7	18.4	342855	12.8	19.5	535081	12.8	21.0	422827	12.9	20.8	311230	12.9	20.3	432683	13.0	22.2
479949	12.7	21.4	248434	12.8	19.3	55509	12.8	19.8	252178	12.9	20.4	523916	12.9	20.5	371900	13.0	20.5
164057	12.7	19.4	320301	12.8	19.4	355755	12.8	20.7	211143	12.9	20.2	73018	12.9	19.1	163711	13.0	19.6
24603	12.7	19.0	328207	12.8	20.4	320506	12.8	20.8	264057	12.9	20.5	528060	12.9	21.1	511207	13.0	21.4
329044	12.7	19.5	438301	12.8	20.5	93899	12.8	19.2	317704	12.9	19.4	347000	12.9	20.0	157494	13.0	17.6
313667	12.7	19.5	149783	12.8	20.6	37534	12.8	18.6	291887	12.9	20.0	161277	12.9	19.8	437702	13.0	19.7
255190	12.7	20.9	395602	12.8	19.8	19937	12.8	19.1	59	12.9	11.0	424049	12.9	19.5	422846	13.0	19.9
441014	12.7	20.1	283371	12.8	20.0	145482	12.8	19.9	153754	12.9	19.3	350341	12.9	20.3	22012	13.0	18.8
318571	12.7	20.2	524628	12.8	21.0	10725	12.8	16.2	79044	12.9	18.7	190292	12.9	17.6	465639	13.0	20.0
362497	12.7	20.7	185948	12.8	19.8	353211	12.8	20.4	176414	12.9	20.3	106538	12.9	22.1	475013	13.0	20.4
356893	12.7	20.2	436131	12.8	21.4	240648	12.8	19.7	98570	12.9	18.1	529315	12.9	21.4	372005	13.0	21.3
103036	12.7	17.4	395681	12.8	20.3	187728	12.8	21.1	98647	12.9	18.4	166109	12.9	19.3	251686	13.0	19.9
265659	12.7	20.6	16650	12.8	15.9	155556	12.8	19.2	363970	12.9	20.8	75216	12.9	17.5	136427	13.0	19.4
21481	12.7	19.7	316941	12.8	20.4	71553	12.8	18.9	390464	12.9	20.7	320171	12.9	19.6	8781	13.0	18.2
524181	12.7	22.0	534007	12.8	19.6	145599	12.8	19.4	385466	12.9	20.3	258621	12.9	20.5	263443	13.0	20.2
503463	12.7	21.7	307161	12.8	19.4	403176	12.8	21.2	255432	12.9	20.0	163720	12.9	19.7	314610	13.1	19.4
62947	12.7	18.0	436544	12.8	20.9	192215	12.8	19.8	80936	12.9	18.9	308052	12.9	19.0	132473	13.1	20.3
32096	12.7	17.8	99070	12.8	18.9	505504	12.8	20.3	23609	12.9	18.4	25964	12.9	19.2	493043	13.1	19.9
294906	12.7	20.6	37414	12.8	19.5	2535	12.8	15.1	24915	12.9	18.9	467023	12.9	21.2	431063	13.1	21.1
296666	12.7	19.6	306954	12.8	19.3	42503	12.8	18.8	133677	12.9	19.3	525367	12.9	21.1	125825	13.1	18.9
238185	12.7	19.3	347255	12.8	20.2	338689	12.8	20.0	52086	12.9	19.8	142233	12.9	18.9	20922	13.1	17.3
75088	12.7	17.3	141288	12.8	19.1	225794	12.8	19.5	54418	12.9	15.7	69094	12.9	19.8	384873	13.1	19.5
321914	12.7	20.6	412252	12.8	21.5	198900	12.8	18.7	410707	12.9	21.5	437833	12.9	18.9	77301	13.1	19.0
123395	12.7	19.2	499095	12.8	20.7	479170	12.8	21.2	112152	12.9	19.4	113511	12.9	19.3	281980	13.1	20.3
392204	12.7	20.4	235142	12.8	18.9	139327	12.8	19.8	206222	12.9	18.8	356862	12.9	19.8	128438	13.1	18.7
3910	12.7	15.9	9732	12.8	16.1	244226	12.8	19.7	43760	12.9	17.7	214586	12.9	20.5	103398	13.1	18.7
184022	12.7	20.9	106108	12.8	18.6	432832	12.8	21.2	8983	12.9	16.3	215300	12.9	18.3	437292	13.1	21.0
227570	12.7	19.3	394239	12.8	20.4	225947	12.8	20.2	188039	12.9	19.2	365478	12.9	21.2	499679	13.1	19.5
36337	12.7	18.2	170768	12.8	19.3	384073	12.8	20.0	416468	12.9	19.8	207921	12.9	19.5	373578	13.1	19.8
63000	12.7	19.0	239773	12.8	20.9	400884	12.8	20.4	539732	12.9	20.8	398963	12.9	20.2	85798	13.1	18.6
529430	12.7	21.4	1141	12.8	15.0	151379	12.8	19.9	255357	12.9	19.8	188454	12.9	18.8	302270	13.1	19.8
249042	12.7	19.1	19898	12.8	18.2	513213	12.8	20.9	387273	12.9	20.4	385549	12.9	19.3	165230	13.1	18.9
436585	12.7	21.7	510933	12.8	22.1	430421	12.8	19.0	24501	12.9	18.4	299861	12.9	20.2	195181	13.1	19.8
204937	12.7	20.5	414839	12.8	20.3	126550	12.8	19.3	150624	12.9	20.3	161548	12.9	18.5	70546	13.1	18.4
97966	12.7	17.8	16510	12.8	17.4	355747	12.8	21.1	404260	12.9	20.6	294576	12.9	18.8	445480	13.1	20.0
332061	12.7	20.1	159598	12.8	18.6	278053	12.8	20.5	431940	12.9	20.2	424077	12.9	21.3	135544	13.1	18.5
57555	12.7	17.6	463231	12.8	21.6	147679	12.9	19.5	307146	12.9	20.6	376945	12.9	19.6	247169	13.1	18.1
476206	12.7	20.7	309669	12.8	20.7	5058	12.9	15.1	25651	12.9	18.5	430454	12.9	19.6	371895	13.1	21.3
399993	12.7	19.5	387089	12.8	20.9	508254	12.9	21.6	318533	12.9	20.6	276649	12.9	19.7	359895	13.1	20.0
152386	12.7	19.9	475146	12.8	21.1	311155	12.9	19.6	263845	12.9	19.6	279282	12.9	20.5	360171	13.1	20.4
41956	12.7	18.5	279700	12.8	20.5	124755	12.9	19.2	151846	12.9	19.6	500155	12.9	21.7	19875	13.1	18.5
173550	12.7	19.0	439300	12.8	20.6	473967	12.9	21.2	540789	12.9	21.4	355589	13.0	20.5	297673	13.1	19.4
127234	12.7	20.4	441812	12.8	20.8	528137	12.9	21.8	95549	12.9	19.1	176573	13.0	20.2	260217	13.1	18.1
290344	12.7	20.2	21474	12.8	18.8	537719	12.9	20.7	311959	12.9	21.7	445517	13.0	20.0	214930	13.1	19.7
260367	12.7	19.9	448975	12.8	21.1	443609	12.9	20.6	124463	12.9	18.6	530774	13.0	20.9	105467	13.1	18.5
397089	12.7	20.5	436503	12.8	21.8	418170	12.9	20.8	381432	12.9	20.6	340523	13.0	20.5	271724	13.1	20.9
191697	12.7	18.7	442067	12.8	20.7	342375	12.9	21.1	471779	12.9	19.2	310112	13.0	19.8	88056	13.1	17.8
159375	12.7	18.7	352671	12.8	20.7	41204	12.9	17.9	140799	12.9	18.9	437812	13.0	20.6	42860	13.1	17.6
479293	12.7	21.1	399891	12.8	18.6	153722	12.9	19.7	248507	12.9	19.8	249802	13.0	19.6	11028	13.1	16.4
219835	12.7	20.0	117270	12.8	19.2	429582	12.9	22.1	432890	12.9	21.0	242765	13.0	19.0	133939	13.1	20.7
191132	12.7	20.0	296787	12.8	19.8	24208	12.9	18.4</									

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
218480	13.1	18.7	20604	13.2	18.0	256907	13.2	20.5	502002	13.3	20.6	501873	13.4	20.0	79296	13.4	18.1
63795	13.1	18.7	379304	13.2	20.0	172355	13.2	18.9	198047	13.3	19.3	231469	13.4	19.6	310692	13.5	19.5
179937	13.1	19.0	175269	13.2	20.5	303673	13.2	20.3	69706	13.3	18.5	501564	13.4	21.3	505447	13.5	23.2
33919	13.1	16.8	377	13.2	12.0	519059	13.2	21.0	217121	13.3	20.2	486898	13.4	20.9	378339	13.5	20.8
177989	13.1	19.4	163102	13.2	19.5	74832	13.2	18.0	275301	13.3	20.0	26754	13.4	18.7	374301	13.5	20.2
6058	13.1	15.5	188458	13.2	20.2	510885	13.2	22.2	27059	13.3	17.7	447275	13.4	20.1	345046	13.5	21.1
28920	13.1	17.5	24271	13.2	16.8	387081	13.2	20.2	306913	13.3	19.4	395892	13.4	20.8	208890	13.5	18.5
93478	13.1	18.6	250344	13.2	19.1	438074	13.2	18.6	153145	13.3	19.3	446249	13.4	20.6	356207	13.5	20.0
318304	13.1	20.1	250677	13.2	20.2	27852	13.2	18.3	93255	13.3	18.9	531990	13.4	21.5	258876	13.5	18.8
253300	13.1	19.6	115686	13.2	19.4	140236	13.2	19.4	495229	13.3	20.2	148468	13.4	19.7	67671	13.5	17.5
398628	13.1	19.9	83821	13.2	18.6	83418	13.2	18.9	359806	13.3	20.8	17565	13.4	17.2	225864	13.5	19.1
157146	13.1	19.3	285080	13.2	20.7	172087	13.2	19.5	481756	13.3	20.2	203186	13.4	17.8	364158	13.5	20.0
124850	13.1	18.3	254617	13.2	19.2	468692	13.2	21.1	7853	13.3	18.1	36274	13.4	17.9	289207	13.5	18.9
425300	13.1	21.1	7698	13.2	18.5	260338	13.2	20.6	257127	13.3	19.8	288241	13.4	19.8	45413	13.5	17.1
192028	13.1	19.1	322397	13.2	19.5	158999	13.2	18.0	357501	13.3	19.1	509462	13.4	20.0	35842	13.5	18.3
357931	13.1	20.6	89043	13.2	17.9	210426	13.2	19.4	307080	13.3	19.6	76029	13.4	18.4	394717	13.5	21.2
420365	13.1	17.5	124976	13.2	18.5	530456	13.3	22.2	75590	13.3	18.6	107477	13.4	19.6	326209	13.5	21.2
534701	13.1	18.4	27374	13.2	17.8	428032	13.3	19.7	408622	13.3	20.6	321991	13.4	20.3	215795	13.5	20.8
12762	13.1	16.9	525921	13.2	19.4	9630	13.3	16.3	358925	13.3	20.9	482186	13.4	20.6	297778	13.5	19.4
243645	13.1	19.5	178308	13.2	19.4	120230	13.3	18.5	10569	13.3	17.4	97196	13.4	20.0	1007	13.5	14.2
492322	13.1	21.0	358436	13.2	20.2	241153	13.3	19.4	102675	13.3	18.1	386117	13.4	20.5	469393	13.5	19.1
230310	13.1	19.0	289145	13.2	18.8	534395	13.3	20.0	200871	13.3	19.9	382379	13.4	18.6	362568	13.5	19.3
440312	13.1	19.7	503455	13.2	21.3	478381	13.3	20.7	16009	13.3	14.3	122854	13.4	18.8	117674	13.5	19.4
331544	13.1	18.8	357909	13.2	20.8	118662	13.3	19.1	446499	13.3	20.6	173973	13.4	20.1	535837	13.5	21.7
426868	13.1	21.0	144717	13.2	19.5	35103	13.3	16.7	205759	13.3	19.6	396021	13.4	20.5	90703	13.5	16.8
253050	13.1	18.8	449972	13.2	20.6	537206	13.3	21.5	499788	13.3	19.8	444722	13.4	20.3	48016	13.5	18.5
410746	13.1	20.4	232210	13.2	20.2	226948	13.3	18.8	274272	13.3	20.2	432652	13.4	21.2	188434	13.5	20.0
380587	13.1	20.7	112636	13.2	18.4	87613	13.3	17.9	309735	13.3	20.5	251839	13.4	18.9	508547	13.5	20.5
390964	13.1	19.3	504034	13.2	25.6	332554	13.3	19.8	307029	13.3	19.9	307214	13.4	19.7	5023	13.5	17.1
393846	13.1	19.4	87470	13.2	18.2	431130	13.3	21.4	149089	13.3	19.6	169929	13.4	19.4	20564	13.5	17.6
380559	13.1	19.9	202299	13.2	19.0	393877	13.3	20.1	308581	13.3	19.5	327625	13.4	20.2	250353	13.5	18.6
98521	13.1	18.4	439751	13.2	20.4	399904	13.3	20.6	29434	13.3	18.2	261974	13.4	19.1	276452	13.5	20.1
357578	13.1	19.2	507622	13.2	21.3	446523	13.3	20.9	537907	13.3	21.9	259744	13.4	20.1	276135	13.5	19.8
355609	13.1	20.6	251804	13.2	20.4	232283	13.3	19.9	522585	13.3	20.9	244784	13.4	18.9	475654	13.5	20.4
54269	13.1	18.1	158149	13.2	20.1	231509	13.3	19.5	468620	13.3	21.4	311990	13.4	20.6	163052	13.5	19.5
92398	13.1	19.6	41509	13.2	18.5	195425	13.3	20.0	269670	13.3	21.0	236131	13.4	18.2	333418	13.5	20.7
394260	13.1	20.2	363795	13.2	20.3	286782	13.3	20.1	234004	13.3	19.8	106118	13.4	18.4	417776	13.5	20.1
184210	13.1	19.4	200601	13.2	18.6	44853	13.3	18.3	420447	13.3	20.8	237015	13.4	18.0	352090	13.5	20.0
4710	13.1	16.0	9664	13.2	18.3	143869	13.3	20.3	55774	13.3	19.4	481009	13.4	19.9	357767	13.5	20.0
536789	13.1	21.4	328053	13.2	19.7	539410	13.3	21.2	26852	13.3	16.2	318403	13.4	20.4	130788	13.5	19.5
466239	13.1	21.1	308389	13.2	19.5	116263	13.3	19.5	392714	13.3	20.7	311436	13.4	21.1	471744	13.5	20.3
358688	13.1	20.8	368888	13.2	20.6	305754	13.3	21.0	19664	13.3	18.7	45954	13.4	17.6	130044	13.5	19.0
139141	13.1	19.6	127473	13.2	18.6	341218	13.3	20.8	316129	13.3	20.6	463762	13.4	20.4	113568	13.5	18.7
367774	13.1	18.0	140373	13.2	19.5	56921	13.3	17.9	254946	13.3	19.8	379353	13.4	20.5	416328	13.5	19.5
103245	13.1	18.7	311523	13.2	20.6	31152	13.3	17.8	105858	13.3	17.9	277796	13.4	19.3	395272	13.5	20.8
121231	13.1	18.1	66245	13.2	18.0	246945	13.3	18.2	123940	13.3	19.2	449595	13.4	20.6	22194	13.5	18.3
174165	13.1	19.2	530788	13.2	19.2	124809	13.3	18.2	31763	13.3	18.0	424642	13.4	19.6	19216	13.5	16.8
444643	13.1	20.7	397782	13.2	20.5	233491	13.3	20.8	325227	13.4	21.2	260316	13.4	20.4	470330	13.5	20.3
121814	13.1	19.3	90634	13.2	18.5	90897	13.3	16.9	15584	13.4	18.0	254606	13.4	19.9	247807	13.5	18.5
493273	13.1	21.0	162835	13.2	19.5	501800	13.3	19.7	312500	13.4	19.9	415149	13.4	20.8	349946	13.5	21.0
539470	13.1	19.9	473149	13.2	21.4	176580	13.3	20.3	353781	13.4	19.1	199998	13.4	20.1	499687	13.5	20.8
188806	13.1	18.5	365153	13.2	20.8	438681	13.3	20.3	263173	13.4	20.8	400229	13.4	20.3	111012	13.5	19.2
169476	13.1	19.0	30509	13.2	17.8	150121	13.3	20.0	389310	13.4	20.5	288390	13.4	20.4	439652	13.5	20.3
292110	13.1	19.0	352119	13.2	20.5	295011	13.3	20.8	257433	13.4	19.5	542635	13.4	19.7	147931	13.5	20.3
304532	13.1	19.3	258597	13.2	19.8	382597	13.3	20.1	539040	13.4	20.0	182212	13.4	19.4	173142	13.5	20.2
43109	13.1	17.7	446125	13.2	20.5	446596	13.3	20.5	269420	13.4	19.6	456245	13.4	21.0	284555	13.5	20.1
88232	13.1	19.1	355898	13.2	19.2	359888	13.3	20.5	86267	13.4	18.4	210888	13.4	19.5	111538	13.5	18.3
431429	13.1	20.6	213514	13.2	20.4	75493	13.3	18.3	375802	13.4	18.9	177628	13.4	19.7	479275	13.5	20.5
188164	13.1	19.2	115861	13.2	19.3	428222	13.3	19.6	503570	13.4	20.2	129780	13.4	18.6	434338	13.5	20.1
55113	13.1	18.7	440985	13.2	20.8	256551	13.3	19.7	21886	13.4	18.8	88330	13.4	17.7	282743	13.5	19.3
268091	13.1	19.8	532642	13.2	20.6	39460	13.3	18.6	169505	13.4	19.1	334773	13.4	18.1	422931	13.5	19.8
496129	13.1	20.7	21576	13.2	18.6	32277	13.3	16.7	342778	13.4	20.3	96189	13.4	19.7	283147	13.5	18.9
175802	13.1	19.4	358038	13.2	18.6	393566	13.3	20.4	445491	13.4	20.3	444338	13.4	20.3	493534	13.5	20.8
282402	13.1	19.8	356397	13.2	19.6	504035	13.3	20.2	233825	13.4	20.2	418948	13.4	20.8	137739	13.5	19.8
404801	13.1	20.3	89774	13.2	19.2	423921	13.3	19.0	311211	13.4	19.9	409023	13.4	21.0	331780	13.5	20.3
208028	13.1	20.3	536662	13.2	21.8	216760	13.3	20.6	520154	13.4	20.8	126967	13.4	19.5	255309	13.5	20.0
205938	13.1	20.6	519137	13.2	21.0	454223	13.3	20.8	373587	13.4	18.5	75747	13.4	17.2	180463	13.5	20.0
296154	13.2	19.9	362470	13.2	20.0	381184	13.3	20.9	455694	13.4	20.8	126939	13.4	19.6	513854	13.5	21.8
254195	13.2	19.3	236627	13.2	19.9	101507	13.3										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
266199	13.5	18.4	467746	13.6	20.1	496475	13.7	19.7	225882	13.7	18.1	254278	13.8	18.5	438987	13.9	19.6
103548	13.5	19.7	431255	13.6	20.3	85959	13.7	17.1	205712	13.7	20.9	326128	13.8	20.8	38293	13.9	18.6
157239	13.5	19.3	537075	13.6	21.1	405425	13.7	18.9	459670	13.7	21.1	117483	13.8	19.4	294311	13.9	19.1
393504	13.5	18.9	141920	13.6	17.9	348386	13.7	20.2	334401	13.7	20.1	39278	13.8	18.4	306000	13.9	19.5
120908	13.5	18.8	482784	13.6	21.3	68603	13.7	18.9	119835	13.7	19.9	496549	13.8	19.9	211492	13.9	17.8
95940	13.5	19.3	35827	13.6	17.7	162491	13.7	17.9	37279	13.7	18.9	289734	13.8	20.4	410276	13.9	19.0
23662	13.5	16.7	88093	13.6	18.1	162909	13.7	19.3	442087	13.7	19.7	415080	13.8	20.6	497232	13.9	20.5
506274	13.5	21.2	251969	13.6	18.7	537570	13.7	20.7	376934	13.7	20.8	104153	13.8	18.7	145826	13.9	18.7
404213	13.5	19.8	374293	13.6	20.1	390727	13.7	20.4	425612	13.7	19.3	121710	13.8	18.4	418186	13.9	21.1
186548	13.5	19.3	85706	13.6	17.4	62387	13.7	17.8	438984	13.7	19.7	112490	13.8	19.6	217481	13.9	19.2
428339	13.5	20.9	514689	13.6	20.1	226703	13.7	19.0	156968	13.7	19.7	424018	13.8	19.4	297561	13.9	18.9
293489	13.5	20.2	482434	13.6	20.8	186354	13.7	21.0	348513	13.7	18.7	258630	13.8	20.2	472339	13.9	21.4
361720	13.5	19.9	39747	13.6	18.6	472107	13.7	20.4	170941	13.7	19.0	123438	13.8	19.2	354887	13.9	20.3
215419	13.5	20.1	479966	13.6	19.9	59735	13.7	17.6	288900	13.7	19.8	311163	13.8	19.5	513005	13.9	18.1
481760	13.5	20.2	544817	13.6	21.4	260972	13.7	19.6	481729	13.7	21.0	396095	13.8	20.1	58303	13.9	17.4
532055	13.5	22.0	526297	13.6	21.1	196562	13.7	18.7	290737	13.8	19.2	443462	13.8	20.4	420459	13.9	21.3
494997	13.5	21.6	259802	13.6	22.5	117668	13.7	19.5	425808	13.8	21.5	514924	13.8	20.6	56778	13.9	16.9
131146	13.5	19.9	280053	13.6	22.0	236619	13.7	19.7	284962	13.8	20.8	165300	13.8	19.3	220811	13.9	19.6
449016	13.5	21.1	533346	13.6	21.9	316698	13.7	19.0	311005	13.8	20.0	531527	13.8	20.6	268489	13.9	17.2
442161	13.5	20.1	521683	13.6	20.5	143326	13.7	19.8	307133	13.8	20.6	532078	13.8	20.9	171167	13.9	19.8
165161	13.5	18.7	191850	13.6	17.5	9352	13.7	16.9	188984	13.8	20.8	147198	13.8	19.1	446493	13.9	20.6
68947	13.5	19.3	166469	13.6	18.7	165167	13.7	18.7	414750	13.8	20.6	23210	13.8	18.3	304678	13.9	21.3
93254	13.5	18.1	55494	13.6	18.6	76185	13.7	18.0	529757	13.8	19.4	22637	13.8	17.0	187388	13.9	19.8
193565	13.5	20.5	150634	13.6	19.8	513554	13.7	20.0	265618	13.8	19.5	42752	13.8	17.8	291192	13.9	19.7
135661	13.5	19.4	127694	13.6	18.8	239765	13.7	19.9	161894	13.8	19.9	182774	13.8	19.7	234726	13.9	19.5
251735	13.5	19.2	245831	13.6	20.6	378361	13.7	19.7	530198	13.8	20.7	245391	13.8	20.0	178841	13.9	19.6
432260	13.5	20.1	503794	13.6	20.8	511246	13.7	20.7	356219	13.8	20.6	278634	13.8	18.9	119803	13.9	18.8
518798	13.5	20.8	75666	13.6	18.4	308612	13.7	19.1	424178	13.8	21.0	427233	13.8	20.7	437965	13.9	25.2
21371	13.5	18.7	396806	13.6	19.6	345034	13.7	20.7	505970	13.8	21.7	154546	13.8	20.0	210804	13.9	19.7
299740	13.5	20.5	494241	13.6	19.8	309177	13.7	20.1	510598	13.8	20.5	121252	13.9	18.0	280257	13.9	18.9
123360	13.5	19.1	430659	13.6	20.5	425706	13.7	21.5	441366	13.8	21.3	234015	13.9	19.4	297689	13.9	19.4
342877	13.5	19.3	210080	13.6	19.7	184196	13.7	19.7	478601	13.8	19.8	387383	13.9	21.2	3699	13.9	15.1
268947	13.5	21.1	148112	13.6	23.5	255749	13.7	19.6	410236	13.8	19.5	129457	13.9	19.4	435763	13.9	18.7
143971	13.6	18.9	22926	13.6	17.7	256033	13.7	19.8	362816	13.8	21.2	60443	13.9	17.8	297013	13.9	20.0
286471	13.6	20.4	1749	13.6	16.1	93887	13.7	18.9	173556	13.8	19.4	137680	13.9	19.4	204737	13.9	19.9
534908	13.6	19.6	264028	13.6	19.6	340520	13.7	20.1	536996	13.8	21.8	333917	13.9	18.4	397131	13.9	17.5
536375	13.6	21.9	71900	13.6	18.0	316367	13.7	20.4	257400	13.8	19.8	87345	13.9	18.2	272450	13.9	20.7
125291	13.6	18.6	37854	13.6	17.1	504033	13.7	21.1	202411	13.8	20.4	209599	13.9	20.1	296040	13.9	20.2
243353	13.6	20.0	464636	13.6	19.0	238626	13.7	20.9	173348	13.8	19.1	532941	13.9	20.4	343499	13.9	20.8
482229	13.6	20.6	351216	13.6	20.9	286873	13.7	20.0	245567	13.8	19.3	488283	13.9	19.3	406299	13.9	20.9
441379	13.6	21.5	57145	13.6	18.3	170410	13.7	18.6	514743	13.8	20.7	141071	13.9	18.8	111928	13.9	19.4
339715	13.6	21.2	143629	13.6	19.8	312203	13.7	18.9	125875	13.8	18.5	313538	13.9	22.0	324389	13.9	19.3
510852	13.6	21.2	287585	13.6	20.0	118386	13.7	18.7	166495	13.8	19.4	95398	13.9	18.3	189452	13.9	19.3
403982	13.6	19.9	393965	13.6	19.9	314041	13.7	19.7	165297	13.8	19.0	395247	13.9	19.5	69820	13.9	18.3
474037	13.6	21.3	475477	13.6	20.9	409786	13.7	20.8	482139	13.8	20.3	94728	13.9	19.4	461599	13.9	19.5
118994	13.6	19.1	523052	13.6	20.1	61463	13.7	17.3	205059	13.8	19.7	356426	13.9	20.8	524040	13.9	21.2
137465	13.6	18.9	90569	13.6	19.4	384696	13.7	20.4	235254	13.8	19.1	303739	13.9	19.3	519987	13.9	20.6
248113	13.6	18.3	102564	13.6	19.8	259348	13.7	19.6	335437	13.8	20.5	112621	13.9	17.5	384526	13.9	20.6
73071	13.6	18.8	127455	13.6	17.7	369737	13.7	20.6	253364	13.8	20.3	110928	13.9	19.8	28271	13.9	18.3
269766	13.6	20.5	222063	13.6	19.6	192223	13.7	19.3	39670	13.8	18.8	262004	13.9	19.7	404864	13.9	20.1
218445	13.6	19.2	123174	13.6	18.4	431558	13.7	19.2	104147	13.8	18.1	116901	13.9	19.2	121350	13.9	17.5
436526	13.6	20.8	24128	13.6	18.7	133183	13.7	20.0	71261	13.8	18.1	495037	13.9	21.0	346793	13.9	20.2
346123	13.6	20.5	91196	13.6	18.0	118857	13.7	18.1	297147	13.8	20.3	155418	13.9	20.2	117366	13.9	17.3
189381	13.6	18.9	363256	13.6	21.2	277455	13.7	21.1	389400	13.8	19.7	494213	13.9	21.0	330615	13.9	21.3
468392	13.6	20.3	359552	13.6	20.4	189763	13.7	19.2	266808	13.8	20.0	389536	13.9	20.9	67713	13.9	17.8
284052	13.6	19.9	366321	13.6	20.6	260497	13.7	20.2	278540	13.8	20.1	479285	13.9	20.2	131252	13.9	19.6
367181	13.6	18.8	186377	13.6	19.6	87397	13.7	19.0	19782	13.8	16.9	22120	13.9	16.9	1823	13.9	15.5
530463	13.6	21.7	179400	13.6	19.3	173123	13.7	20.8	501644	13.8	20.4	396557	13.9	20.4	176736	13.9	18.9
544012	13.6	20.3	43901	13.6	18.5	416567	13.7	20.2	12391	13.8	15.6	504796	13.9	19.8	415584	13.9	18.7
504821	13.6	21.1	505724	13.6	21.3	208552	13.7	20.4	529662	13.8	22.4	524802	13.9	19.9	24418	13.9	16.4
490778	13.6	20.3	429668	13.6	21.3	430317	13.7	20.6	525357	13.8	20.8	188995	13.9	19.7	464878	13.9	20.4
415285	13.6	20.6	205365	13.6	19.6	439450	13.7	20.2	264147	13.8	19.7	184230	13.9	19.2	157803	13.9	19.2
86099	13.6	18.7	470130	13.6	20.3	701	13.7	13.6	238212	13.8	19.8	50242	13.9	18.8	138004	13.9	19.3
361498	13.6	20.3	95462	13.7	18.9	413152	13.7	20.2	115225	13.8	18.3	261948	13.9	19.4	283281	13.9	19.6
423066	13.6	19.7	475715	13.7	20.2	20720	13.7	18.1	164700	13.8	18.4	133235	13.9	18.9	527815	13.9	21.5
392088	13.6	20.1	475376	13.7	21.5	388913	13.7	20.0	481141	13.8	20.6	395379	13.9	20.3	415724	13.9	18.6
431043	13.6	21.2	128959	13.7	18.8	414443	13.7	21.4	406744	13.8	20.8	102132	13.9	18.0	269753	13.9	19.5
177431	13.6	18.6	214575	13.7	19.6	213522	13.7	19.9	370082	13.8	18.9	262582	13.9	19.5	472121	13.9	20.8
188785	13.6	18.4	524559	13.7	21.5	187											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
377670	13.9	20.2	107845	14.1	19.4	46175	14.1	19.1	38597	14.2	19.1	125747	14.3	19.4	111683	14.4	18.8
534146	13.9	20.3	148457	14.1	20.0	380827	14.1	20.3	205763	14.2	17.3	188056	14.3	18.8	402420	14.4	20.8
344117	13.9	20.6	223220	14.1	19.8	317358	14.2	19.7	130793	14.2	19.8	539382	14.3	20.7	13264	14.4	17.0
28287	13.9	17.8	472669	14.1	21.0	169023	14.2	18.9	491817	14.2	20.5	72460	14.3	17.9	155372	14.4	18.1
296819	13.9	18.9	195269	14.1	19.5	340563	14.2	20.2	393662	14.2	19.5	302235	14.3	19.2	524446	14.4	22.0
463713	13.9	19.7	428729	14.1	19.6	9818	14.2	17.8	504685	14.2	19.2	328248	14.3	19.2	37016	14.4	18.2
342722	13.9	19.7	509135	14.1	21.4	377326	14.2	19.1	336271	14.2	20.3	288287	14.3	20.6	20221	14.4	19.3
333793	13.9	19.8	264075	14.1	20.3	443603	14.2	19.9	126492	14.2	18.5	96678	14.3	18.5	427934	14.4	20.6
231666	13.9	19.5	99156	14.1	18.9	391011	14.2	20.4	428292	14.2	20.1	111834	14.3	19.1	413578	14.4	20.3
314373	13.9	19.1	355700	14.1	20.5	472908	14.2	21.1	127420	14.2	18.9	134405	14.3	19.3	430964	14.4	20.5
463725	13.9	18.7	386975	14.1	20.4	494443	14.2	20.8	133148	14.2	18.0	72977	14.3	19.2	67707	14.4	19.0
112090	13.9	18.9	47541	14.1	18.5	166526	14.2	19.7	437708	14.2	20.9	358933	14.3	21.4	261174	14.4	19.6
225220	13.9	20.3	130598	14.1	18.3	390818	14.2	20.3	479281	14.2	21.3	345479	14.3	19.7	258430	14.4	19.6
42696	14.0	18.5	6359	14.1	16.3	39148	14.2	17.3	238201	14.2	19.3	232630	14.3	19.6	444349	14.4	20.6
264101	14.0	20.0	230183	14.1	19.2	431308	14.2	20.0	227103	14.2	18.2	406812	14.3	20.6	4068	14.4	16.5
290223	14.0	20.7	312907	14.1	19.2	136642	14.2	18.4	38609	14.2	19.1	38216	14.3	18.5	103835	14.4	19.0
299724	14.0	19.8	250447	14.1	18.5	533763	14.2	21.1	179551	14.2	20.1	462540	14.3	21.6	168004	14.4	19.3
471557	14.0	19.6	343871	14.1	20.5	26873	14.2	18.1	119574	14.2	18.8	17313	14.3	17.9	478219	14.4	20.5
340569	14.0	19.0	432306	14.1	20.9	87377	14.2	17.4	33237	14.2	19.2	307616	14.3	21.3	32810	14.4	16.9
37229	14.0	18.6	355624	14.1	21.2	15304	14.2	15.7	388921	14.2	20.1	454480	14.3	20.9	295118	14.4	20.5
39220	14.0	17.4	39784	14.1	19.1	471772	14.2	20.4	461546	14.2	20.2	433676	14.3	21.0	272514	14.4	20.5
139313	14.0	19.2	281595	14.1	19.2	30528	14.2	18.2	26695	14.2	18.9	519645	14.3	20.6	193656	14.4	19.8
80856	14.0	18.3	399913	14.1	20.0	38599	14.2	18.4	107022	14.2	18.9	38574	14.3	18.5	410256	14.4	18.9
205740	14.0	19.8	494485	14.1	20.2	481257	14.2	19.8	478363	14.2	20.5	501363	14.3	20.5	90904	14.4	19.3
240969	14.0	17.7	522335	14.1	20.8	38249	14.2	18.1	31617	14.2	17.9	509617	14.3	21.7	159648	14.4	19.7
513283	14.0	19.5	313967	14.1	20.0	365499	14.2	19.8	62138	14.2	18.9	477054	14.3	20.7	366578	14.4	19.3
295819	14.0	20.7	302304	14.1	20.2	434384	14.2	21.2	387203	14.2	20.0	78911	14.3	18.7	247360	14.4	24.8
444464	14.0	20.8	206389	14.1	18.9	176553	14.2	20.8	285515	14.2	20.4	326235	14.3	20.2	49264	14.4	20.6
25509	14.0	18.1	304525	14.1	20.6	79662	14.2	18.9	84970	14.3	19.1	180164	14.3	19.9	442988	14.4	19.5
115273	14.0	18.4	335271	14.1	20.3	251942	14.2	20.4	455655	14.3	21.5	528053	14.3	21.5	472707	14.4	20.4
418132	14.0	21.4	386368	14.1	19.5	462602	14.2	20.6	521404	14.3	20.2	353362	14.3	20.2	525525	14.4	20.6
123645	14.0	18.9	41235	14.1	18.0	133582	14.2	19.2	217670	14.3	19.7	481251	14.3	20.6	176394	14.4	19.9
521368	14.0	20.7	282899	14.1	20.3	437604	14.2	20.4	218383	14.3	19.1	512826	14.3	20.4	141924	14.4	17.7
275550	14.0	20.2	293040	14.1	19.8	238697	14.2	19.5	463430	14.3	20.9	211121	14.3	20.3	528107	14.4	21.5
488351	14.0	20.4	236178	14.1	19.2	414759	14.2	19.6	441386	14.3	21.7	98557	14.3	18.9	295182	14.4	20.8
184709	14.0	19.3	418136	14.1	21.5	440203	14.2	21.5	319574	14.3	20.3	267840	14.3	19.3	330091	14.4	19.4
222511	14.0	18.5	150559	14.1	19.9	28921	14.2	17.8	492625	14.3	19.9	195167	14.3	19.3	236452	14.4	20.1
483212	14.0	20.5	216134	14.1	18.9	379338	14.2	19.2	172434	14.3	18.7	481107	14.3	19.4	91550	14.4	18.4
507142	14.0	20.4	14333	14.1	17.0	149455	14.2	19.8	267435	14.3	20.0	420394	14.3	20.6	80444	14.4	18.5
525307	14.0	20.2	317274	14.1	20.9	538183	14.2	20.8	163377	14.3	17.9	88143	14.3	19.4	480090	14.4	20.7
332393	14.0	17.7	250929	14.1	19.9	413445	14.2	20.7	68946	14.3	16.8	266772	14.3	20.4	75833	14.4	18.3
495930	14.0	23.1	355743	14.1	21.1	330668	14.2	20.7	414401	14.3	20.6	140421	14.3	19.2	232844	14.4	19.5
451342	14.0	20.3	227387	14.1	19.8	430550	14.2	20.4	353202	14.3	20.3	206080	14.3	19.4	257929	14.4	20.2
504309	14.0	20.5	537638	14.1	21.4	510351	14.2	20.2	126849	14.3	19.4	150490	14.3	18.4	326191	14.4	20.8
276822	14.0	18.1	218070	14.1	19.3	509624	14.2	21.3	496967	14.3	20.1	41535	14.3	16.6	238627	14.4	19.8
141256	14.0	19.4	198407	14.1	19.7	447238	14.2	20.6	434661	14.3	21.7	333889	14.3	18.7	410366	14.4	20.0
219667	14.0	18.2	10230	14.1	17.8	171343	14.2	19.1	239368	14.3	19.5	410291	14.3	19.5	422045	14.4	19.8
446682	14.0	20.0	507255	14.1	21.1	103124	14.2	19.0	61677	14.3	18.6	19643	14.3	18.2	540934	14.4	21.0
131815	14.0	19.1	515234	14.1	20.7	371457	14.2	20.2	28589	14.3	18.1	337996	14.3	20.6	491556	14.4	19.2
531283	14.0	18.9	497241	14.1	20.9	116826	14.2	18.2	187372	14.3	19.8	212928	14.3	21.1	33233	14.4	18.6
500154	14.0	21.4	191110	14.1	19.5	519320	14.2	21.4	14518	14.3	18.5	102604	14.3	17.3	174644	14.4	17.9
356943	14.0	19.7	471658	14.1	20.1	530374	14.2	22.2	250609	14.3	20.0	432399	14.3	19.8	86911	14.4	16.8
429974	14.0	20.3	188170	14.1	19.3	182216	14.2	19.5	102704	14.3	18.6	4999	14.3	16.6	312001	14.4	20.3
205190	14.0	20.2	28420	14.1	17.8	343790	14.2	21.1	329321	14.3	19.7	118790	14.3	18.7	370958	14.4	20.2
260851	14.0	19.6	380848	14.1	20.0	400647	14.2	21.2	506058	14.3	20.9	95537	14.3	19.6	497434	14.4	19.6
244916	14.0	19.8	449620	14.1	20.8	443355	14.2	20.6	274703	14.3	20.1	66642	14.4	19.5	489498	14.4	20.9
18734	14.0	18.1	314146	14.1	20.6	124595	14.2	18.2	258426	14.3	19.7	439221	14.4	19.7	449917	14.4	21.4
345925	14.1	19.3	512347	14.1	21.5	192841	14.2	19.5	117257	14.3	18.9	364140	14.4	20.0	336266	14.4	19.3
395744	14.1	19.6	169706	14.1	19.5	107182	14.2	18.8	33361	14.3	19.5	498453	14.4	19.5	185651	14.4	19.0
478310	14.1	20.4	24332	14.1	17.0	120992	14.2	19.4	102343	14.3	17.6	500769	14.4	21.8	428072	14.4	20.6
276929	14.1	19.3	202713	14.1	20.0	31655	14.2	17.3	68700	14.3	19.1	409179	14.4	19.4	7641	14.4	16.7
432349	14.1	20.4	228124	14.1	18.8	43220	14.2	18.7	478792	14.3	20.8	77424	14.4	19.3	172615	14.4	19.5
42486	14.1	18.7	429669	14.1	21.1	348324	14.2	20.0	41501	14.3	17.8	174359	14.4	18.6	437019	14.4	20.2
456156	14.1	20.7	270439	14.1	20.5	356194	14.2	20.5	521609	14.3	20.3	270559	14.4	20.3	160564	14.4	18.7
212888	14.1	20.1	123364	14.1	18.5	83311	14.2	18.8	355878	14.3	20.5	133595	14.4	18.9	437716	14.4	20.2
310504	14.1	19.2	349780	14.1	20.7	17859	14.2	16.8	93511	14.3	18.3	235207	14.4	19.5	192952	14.4	20.4
59058	14.1	18.4	32987	14.1	17.0	145873	14.2	18.1	293762	14.3	20.7	482184	14.4	20.1	318129	14.4	18.6
288300	14.1	19.7	230979	14.1	22.7	255381	14.2	20.4	125540	14.3	18.5	80877	14.4	19.5	327436	14.4	19.1
491332	14.1	19.2	472171	14.1	20.3	100619	14.										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
350330	14.5	20.0	491707	14.5	20.6	178517	14.6	19.1	105494	14.7	18.8	513707	14.8	21.2	283197	14.8	19.1
173052	14.5	19.1	467852	14.5	20.6	461812	14.6	21.5	123714	14.7	18.7	303288	14.8	20.0	239622	14.8	20.0
450044	14.5	20.1	421315	14.5	19.9	252781	14.6	18.1	199001	14.7	19.7	539440	14.8	20.5	471810	14.8	19.0
467656	14.5	20.2	163060	14.5	18.3	160965	14.6	19.3	422044	14.7	21.0	187293	14.8	19.3	508850	14.8	22.2
293388	14.5	20.4	134649	14.5	17.9	422811	14.6	20.0	412043	14.7	21.0	433270	14.8	20.3	125961	14.8	18.6
24565	14.5	17.1	246482	14.5	20.4	515820	14.6	19.2	398104	14.7	20.5	198421	14.8	19.8	45816	14.8	18.7
153256	14.5	20.1	143403	14.5	19.7	30485	14.6	17.3	347389	14.7	19.8	25140	14.8	17.0	315162	14.8	20.5
72436	14.5	19.1	113424	14.5	18.7	119906	14.6	19.4	91903	14.7	18.6	526858	14.8	21.9	290552	14.8	19.8
208606	14.5	19.5	198978	14.5	19.6	533538	14.6	20.9	338577	14.7	18.5	246123	14.8	20.7	313160	14.8	21.2
490576	14.5	20.8	72373	14.5	18.1	195286	14.6	19.7	319819	14.7	19.0	483876	14.8	20.6	17806	14.8	17.1
293394	14.5	21.0	189558	14.5	19.2	95390	14.6	19.3	242605	14.7	19.7	385547	14.8	19.2	36190	14.8	17.9
156974	14.5	20.1	501291	14.5	19.4	314966	14.6	20.5	71915	14.7	18.4	503965	14.8	20.2	61801	14.8	17.0
315087	14.5	19.9	203257	14.5	18.8	128830	14.6	19.2	398226	14.7	20.2	66685	14.8	18.9	185553	14.8	20.9
532960	14.5	20.8	431110	14.5	21.2	374444	14.6	18.5	530931	14.7	20.1	121238	14.8	18.9	262097	14.8	20.6
437418	14.5	18.9	11203	14.5	16.9	321926	14.6	19.1	336231	14.7	19.7	79524	14.8	18.8	101466	14.8	18.9
335828	14.5	19.4	111968	14.5	18.5	181834	14.6	18.7	390358	14.7	20.5	147166	14.8	18.0	279426	14.8	19.0
455311	14.5	22.9	156005	14.5	18.4	67399	14.6	19.9	71967	14.7	17.9	398482	14.8	20.9	74052	14.8	18.0
101920	14.5	18.4	420790	14.5	20.6	46452	14.6	17.9	120913	14.7	18.4	529016	14.8	21.8	192720	14.8	19.0
440954	14.5	20.0	307573	14.5	20.5	1611	14.6	15.8	316133	14.7	20.1	56637	14.8	18.6	414103	14.8	19.6
474152	14.5	20.0	325819	14.5	20.1	436318	14.6	21.5	342986	14.7	20.4	425176	14.8	20.8	213425	14.8	19.7
422478	14.5	20.4	71649	14.5	18.9	319484	14.6	20.1	62938	14.7	17.8	352627	14.8	20.9	131676	14.8	17.7
466533	14.5	20.1	103480	14.5	19.0	291940	14.6	19.7	382132	14.7	21.1	349438	14.8	20.7	443633	14.8	20.4
33199	14.5	19.5	39695	14.5	17.1	470287	14.6	21.6	516731	14.7	21.1	446058	14.8	21.3	184563	14.8	20.5
437603	14.5	21.1	346693	14.5	20.7	325016	14.6	20.9	306048	14.7	20.6	54910	14.8	18.0	128737	14.9	19.3
510919	14.5	20.8	326170	14.5	19.4	204328	14.6	20.2	240724	14.7	20.1	361444	14.8	20.0	353765	14.9	20.8
505871	14.5	21.3	446177	14.5	20.9	66633	14.6	18.2	388308	14.7	20.5	234668	14.8	20.8	20714	14.9	17.5
308473	14.5	19.3	80213	14.5	18.5	407260	14.6	20.6	16630	14.7	17.0	97233	14.8	19.7	249359	14.9	19.7
503118	14.5	20.9	215860	14.6	19.9	254634	14.6	19.8	293850	14.7	18.8	197529	14.8	20.3	414128	14.9	20.2
443162	14.5	19.3	258579	14.6	20.3	122457	14.7	18.1	358434	14.7	20.9	439295	14.8	20.5	256073	14.9	19.9
321452	14.5	20.8	295502	14.6	20.3	537112	14.7	21.6	181645	14.7	19.0	310330	14.8	19.3	342818	14.9	20.3
119815	14.5	19.6	398275	14.6	19.7	501260	14.7	20.0	468014	14.7	20.7	39696	14.8	17.1	408427	14.9	20.9
212850	14.5	20.4	340495	14.6	21.1	309722	14.7	20.8	14490	14.7	16.5	262104	14.8	19.0	144770	14.9	20.0
250052	14.5	19.4	180832	14.6	18.6	300902	14.7	19.8	382961	14.7	19.3	536670	14.8	21.3	416265	14.9	20.9
356389	14.5	20.6	206018	14.6	19.7	314532	14.7	19.8	352554	14.7	20.5	316351	14.8	19.4	500088	14.9	20.8
47268	14.5	19.7	372760	14.6	20.4	104245	14.7	19.4	359483	14.7	20.7	180449	14.8	20.6	255517	14.9	19.8
394269	14.5	20.2	96856	14.6	18.3	319545	14.7	20.7	503094	14.7	20.7	122755	14.8	19.2	340233	14.9	20.2
251349	14.5	20.1	121881	14.6	19.2	145314	14.7	19.5	261817	14.7	19.8	169889	14.8	20.2	89288	14.9	18.9
217841	14.5	19.2	460189	14.6	20.4	171266	14.7	19.3	530708	14.7	21.0	439348	14.8	20.3	218610	14.9	19.1
192714	14.5	18.9	138043	14.6	19.9	346797	14.7	20.2	350793	14.7	21.1	459013	14.8	20.1	74250	14.9	17.7
527678	14.5	20.5	437823	14.6	21.1	326355	14.7	18.8	237383	14.7	20.6	262427	14.8	19.9	340366	14.9	20.6
7541	14.5	17.1	53324	14.6	18.3	256883	14.7	20.9	347869	14.7	20.1	316068	14.8	20.5	355136	14.9	19.9
482218	14.5	20.7	309633	14.6	20.8	107794	14.7	19.4	355675	14.7	20.5	530726	14.8	19.5	389296	14.9	20.8
442061	14.5	20.7	433946	14.6	20.1	377695	14.7	20.3	231446	14.7	19.9	285218	14.8	21.0	262032	14.9	20.0
407287	14.5	19.8	454979	14.6	20.9	151904	14.7	20.3	204532	14.7	20.0	393384	14.8	20.9	347940	14.9	21.9
425728	14.5	20.2	436232	14.6	20.2	192521	14.7	18.1	177365	14.7	19.5	338683	14.8	19.4	104898	14.9	16.5
482131	14.5	19.8	538138	14.6	21.0	18769	14.7	16.5	244369	14.7	18.2	455304	14.8	22.1	172101	14.9	19.4
447351	14.5	20.3	413449	14.6	21.2	399928	14.7	20.9	489665	14.7	19.5	384581	14.8	20.1	289317	14.9	20.0
121369	14.5	19.6	74842	14.6	17.9	165381	14.7	18.3	264114	14.7	19.6	238776	14.8	19.8	184921	14.9	19.4
234008	14.5	20.3	217359	14.6	19.3	481023	14.7	20.5	446260	14.7	21.3	154293	14.8	18.4	31172	14.9	16.5
473743	14.5	20.6	249739	14.6	19.2	146882	14.7	19.5	251803	14.7	20.0	261977	14.8	20.2	87503	14.9	19.4
296270	14.5	20.1	264119	14.6	19.8	342889	14.7	19.8	472088	14.7	20.7	322761	14.8	19.6	123008	14.9	17.7
162128	14.5	18.3	530087	14.6	21.4	308064	14.7	19.9	13060	14.7	17.4	395480	14.8	20.7	427635	14.9	19.0
525411	14.5	20.5	32725	14.6	17.9	9250	14.7	18.5	459608	14.7	20.9	322005	14.8	19.5	191986	14.9	19.8
361641	14.5	20.2	155213	14.6	19.0	41716	14.7	17.7	461459	14.7	21.0	107320	14.8	19.2	208596	14.9	17.9
472750	14.5	21.1	37710	14.6	19.1	338764	14.7	19.2	360194	14.7	19.8	465114	14.8	19.5	205833	14.9	19.7
414460	14.5	19.8	359612	14.6	19.8	281351	14.7	18.0	90847	14.7	19.3	509796	14.8	19.4	220800	14.9	19.8
274392	14.5	19.7	496368	14.6	20.5	500117	14.7	20.6	400489	14.7	21.2	56640	14.8	17.3	535918	14.9	21.0
531011	14.5	21.1	181194	14.6	19.4	31096	14.7	16.6	524523	14.7	18.7	161343	14.8	20.0	140748	14.9	19.2
363746	14.5	20.2	496030	14.6	20.3	203897	14.7	19.9	386854	14.7	20.8	22830	14.8	17.5	145523	14.9	19.8
528926	14.5	21.5	278487	14.6	20.6	293253	14.7	19.8	175738	14.7	18.7	388275	14.8	20.1	256534	14.9	20.8
22247	14.5	18.1	102992	14.6	19.0	175280	14.7	19.4	95571	14.7	19.4	442024	14.8	20.5	322757	14.9	19.9
214176	14.5	19.9	250605	14.6	19.9	508237	14.7	21.2	512196	14.7	20.4	123076	14.8	18.1	524322	14.9	19.6
420483	14.5	20.9	280055	14.6	19.6	339428	14.7	19.7	338677	14.7	20.2	241640	14.8	18.5	12458	14.9	17.9
341416	14.5	20.0	138986	14.6	19.9	102552	14.7	19.1	435843	14.7	20.6	102135	14.8	19.1	461617	14.9	20.2
102939	14.5	18.2	180780	14.6	19.4	379637	14.7	20.3	370024	14.7	21.0	85833	14.8	17.4	205979	14.9	19.1
138999	14.5	20.4	316149	14.6	20.3	502018	14.7	20.2	173663	14.7	20.3	272823	14.8	19.7	466138	14.9	20.6
400481	14.5	20.3	351883	14.6	20.2	273792	14.7	20.9	476258	14.7	20.7	398873	14.8	20.7	145728	14.9	18.3
482813	14.5	20.3	4146	14.6	16.4	405109	14.7	20.5	488597	14.7	19.6	99787	14.8	19.5	393053	14.9	20.8
281570	14.5	19.0	23958	14.6	17.1												

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
435187	14.9	20.1	475854	14.9	20.8	390540	15.1	19.1	39019	15.1	18.6	477103	15.2	20.4	51424	15.3	17.9
15454	14.9	18.0	366531	14.9	20.7	523662	15.1	22.9	391814	15.1	19.6	510446	15.2	21.0	153319	15.3	19.5
397109	14.9	20.0	164767	14.9	18.7	207394	15.1	19.1	425711	15.1	21.8	455858	15.2	19.7	204056	15.3	19.5
120420	14.9	19.5	204829	14.9	19.1	283163	15.1	20.6	229928	15.1	19.7	206406	15.2	19.3	335160	15.3	19.0
414125	14.9	19.6	490764	14.9	20.8	472648	15.1	19.8	281696	15.1	18.4	128571	15.2	19.2	182209	15.3	18.5
94415	14.9	18.9	6724	14.9	16.6	94652	15.1	19.1	48046	15.1	19.2	432899	15.2	20.1	96862	15.3	18.1
132609	14.9	19.4	464702	14.9	19.2	257375	15.1	19.3	167257	15.1	19.5	231498	15.2	19.0	40578	15.3	16.6
482393	14.9	20.2	184886	14.9	20.3	197601	15.1	20.4	238458	15.1	18.9	246276	15.2	19.7	40902	15.3	18.5
107444	14.9	19.6	171424	14.9	19.1	16043	15.1	16.7	256596	15.1	20.1	359540	15.2	20.0	169532	15.3	19.6
377321	14.9	18.9	308095	14.9	19.7	30811	15.1	16.6	84622	15.1	18.8	58939	15.2	17.9	152539	15.3	20.3
52098	14.9	17.6	223234	14.9	19.7	482818	15.1	20.0	446779	15.1	20.0	530415	15.2	19.3	264071	15.3	20.3
316508	14.9	19.7	10319	14.9	16.6	226042	15.1	19.5	145213	15.1	19.4	356611	15.2	20.2	43518	15.3	19.9
243180	14.9	19.6	217367	14.9	19.4	318297	15.1	20.1	234314	15.1	19.8	124964	15.2	19.5	77051	15.3	19.1
179569	14.9	19.6	316029	14.9	20.6	240659	15.1	21.5	123728	15.1	19.3	385061	15.2	20.2	307699	15.3	19.1
275495	14.9	19.9	236571	15.0	20.3	241197	15.1	19.5	107173	15.1	20.1	350321	15.2	20.5	431078	15.3	20.8
75642	14.9	19.4	173301	15.0	19.4	85359	15.1	19.5	356706	15.1	21.0	336707	15.2	19.6	261905	15.3	19.6
510518	14.9	21.2	379686	15.0	20.7	152121	15.1	19.7	142419	15.1	18.5	235766	15.2	18.8	175372	15.3	20.6
311479	14.9	19.8	198217	15.0	19.5	119910	15.1	19.5	100720	15.1	19.2	525507	15.2	21.2	234353	15.3	20.8
11976	14.9	16.4	123212	15.0	18.7	320394	15.1	20.3	314452	15.1	21.6	425075	15.2	19.1	146890	15.3	19.4
360048	14.9	20.5	507149	15.0	20.9	293453	15.1	19.6	149202	15.1	19.4	160533	15.2	19.0	327174	15.3	20.7
499115	14.9	20.5	521393	15.0	20.6	287173	15.1	19.4	519985	15.1	20.1	249239	15.2	19.4	164752	15.3	18.5
42084	14.9	18.7	309688	15.0	20.3	253903	15.1	20.3	264988	15.1	19.8	202577	15.2	20.2	264207	15.3	19.5
410296	14.9	20.7	249775	15.0	18.2	332558	15.1	19.2	25645	15.1	18.6	478153	15.2	20.9	284603	15.3	19.5
189616	14.9	19.7	203361	15.0	18.9	30019	15.1	16.4	501751	15.1	20.2	275905	15.2	18.5	206037	15.3	19.6
98458	14.9	18.4	507168	15.0	21.1	128135	15.1	19.2	329766	15.1	21.3	230631	15.2	18.9	206668	15.3	20.8
172526	14.9	19.0	353167	15.0	20.1	67686	15.1	18.5	294553	15.1	19.7	522514	15.2	21.1	386764	15.3	19.9
363709	14.9	19.3	540829	15.0	20.9	109475	15.1	17.9	385611	15.1	21.4	31054	15.2	17.6	310012	15.3	20.4
237835	14.9	19.2	241973	15.0	19.6	16924	15.1	16.0	106638	15.2	18.7	58728	15.2	19.6	509471	15.3	20.8
119775	14.9	19.4	91885	15.0	19.2	39860	15.1	19.1	533196	15.2	21.2	401813	15.2	19.7	541875	15.3	20.4
530444	14.9	21.5	280038	15.0	20.5	308036	15.1	19.0	347142	15.2	20.7	316484	15.2	19.6	85676	15.3	19.9
174704	14.9	19.1	525302	15.0	20.7	21547	15.1	17.7	92458	15.2	18.7	490002	15.2	20.4	500915	15.3	21.2
163938	14.9	19.1	60890	15.0	18.9	456062	15.1	21.5	341091	15.2	18.5	335787	15.2	20.4	512167	15.3	19.9
94257	14.9	18.1	39585	15.0	18.5	461508	15.1	18.9	71682	15.2	17.3	248139	15.2	19.6	286467	15.3	20.0
166331	14.9	19.6	134539	15.0	18.5	75183	15.1	17.9	412411	15.2	20.9	78324	15.2	17.3	244269	15.3	20.4
40085	14.9	19.1	320061	15.0	20.1	433534	15.1	18.5	321725	15.2	19.4	151117	15.2	18.7	63611	15.3	17.7
507959	14.9	19.6	286493	15.0	19.9	535290	15.1	21.8	134311	15.2	18.9	94373	15.2	19.1	512181	15.3	20.1
328196	14.9	20.6	371534	15.0	20.6	40204	15.1	18.6	154790	15.2	19.0	72949	15.2	17.5	336171	15.3	20.4
319684	14.9	20.1	225859	15.0	17.5	438931	15.1	21.2	113245	15.2	19.0	75595	15.2	19.1	351215	15.3	20.3
381487	14.9	20.3	176042	15.0	19.2	388598	15.1	20.0	90998	15.2	19.3	92000	15.2	19.4	152025	15.3	19.8
311458	14.9	19.7	177946	15.0	19.7	184395	15.1	18.4	74321	15.2	17.6	436072	15.2	20.8	394646	15.3	20.1
311432	14.9	20.5	107307	15.0	19.8	510868	15.1	21.5	35672	15.2	19.0	533291	15.2	21.5	114721	15.3	19.1
515411	14.9	19.5	375214	15.0	20.7	106303	15.1	19.3	67249	15.2	17.6	329765	15.2	20.8	514507	15.3	20.3
262483	14.9	19.0	181407	15.0	19.3	535660	15.1	22.4	126863	15.2	19.4	166161	15.2	19.8	217533	15.3	18.5
20090	14.9	18.2	32768	15.0	16.3	397221	15.1	20.9	366793	15.2	19.3	487608	15.2	20.2	157668	15.3	20.0
223642	14.9	19.4	141952	15.0	19.4	513838	15.1	21.7	313926	15.2	18.8	478974	15.2	20.0	151188	15.3	20.2
373237	14.9	20.7	104225	15.0	19.6	475829	15.1	20.7	36636	15.2	18.6	116668	15.2	19.4	456147	15.3	21.8
534820	14.9	20.8	47266	15.0	18.9	7535	15.1	16.9	387980	15.2	22.1	58930	15.2	19.2	261800	15.3	20.3
38843	14.9	18.7	239761	15.0	19.8	273772	15.1	20.4	502184	15.2	20.2	22259	15.2	18.2	188714	15.3	20.0
385073	14.9	20.8	434688	15.0	20.7	347858	15.1	19.2	249663	15.2	18.8	344035	15.2	20.0	117154	15.3	18.6
18731	14.9	17.2	355722	15.0	20.7	433271	15.1	21.2	455288	15.2	21.2	124777	15.2	19.1	297686	15.3	19.9
390386	14.9	19.4	389811	15.0	20.2	407704	15.1	20.4	123222	15.2	18.6	416733	15.2	20.8	244410	15.3	19.1
102697	14.9	19.1	390490	15.0	19.8	214943	15.1	20.2	504780	15.2	21.2	8234	15.2	16.8	342531	15.3	19.0
87340	14.9	18.2	437583	15.0	20.0	537119	15.1	22.0	88012	15.2	19.0	376698	15.2	19.0	318545	15.3	20.4
260491	14.9	19.7	162539	15.0	19.0	393099	15.1	20.2	186368	15.2	19.4	509385	15.2	21.8	395690	15.3	19.7
377746	14.9	21.2	496829	15.0	19.7	520415	15.1	20.2	425025	15.2	20.2	301130	15.2	19.3	146141	15.3	19.3
539775	14.9	20.8	420521	15.0	20.1	475967	15.1	22.6	508465	15.2	19.4	23644	15.2	18.9	436259	15.3	20.4
53949	14.9	19.3	102353	15.0	18.0	499908	15.1	21.1	342559	15.2	19.8	264103	15.3	20.3	98600	15.3	18.9
253375	14.9	19.6	497541	15.0	21.2	20394	15.1	17.5	505364	15.2	21.4	406509	15.3	19.8	287662	15.3	18.7
110989	14.9	19.5	386645	15.0	20.5	441963	15.1	20.7	501848	15.2	20.8	396678	15.3	19.9	523002	15.3	19.9
383276	14.9	19.5	364507	15.0	21.4	12472	15.1	18.6	124233	15.2	18.8	278076	15.3	20.0	121362	15.3	19.8
12780	14.9	18.5	402461	15.0	20.6	206536	15.1	19.0	253927	15.2	20.6	430642	15.3	19.6	59249	15.3	18.8
230339	14.9	19.9	362530	15.0	19.6	530848	15.1	21.5	351580	15.2	19.0	88229	15.3	19.3	531755	15.3	18.9
505968	14.9	20.2	275324	15.0	19.9	482415	15.1	21.0	89510	15.2	18.3	410699	15.3	21.2	397050	15.3	20.5
313989	14.9	19.9	260219	15.0	18.9	171486	15.1	21.3	237166	15.2	20.8	393929	15.3	19.6	532010	15.3	21.5
238046	14.9	19.6	440598	15.0	20.3	95022	15.1	19.2	201638	15.2	19.2	359449	15.3	19.9	497594	15.3	21.8
435707	14.9	20.8	336216	15.0	20.1	512151	15.1	20.1	373217	15.2	21.3	541004	15.3	20.5	191283	15.3	19.8
281879	14.9	20.1	23842	15.0	16.5	94486	15.1	17.7	233279	15.2	20.4	382111	15.3	19.7	530113	15.3	21.2
52898	14.9	17.8	390901	15.0	21.2	443100	15.1	21.1	18875	15.2	18.4	75524	15.3	18.9	94260	15.3	18.5
254902	14.9	20.4	388084	15.0	20.4	316946	15.										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
30372	15.3	18.0	71125	15.4	17.7	438174	15.5	19.9	192402	15.6	19.7	473788	15.6	20.8	247695	15.7	20.6
177732	15.3	19.8	9712	15.4	17.5	96638	15.5	19.3	469963	15.6	21.3	316651	15.6	17.7	409375	15.7	20.0
132046	15.3	20.3	420527	15.4	20.4	22748	15.5	18.4	304508	15.6	20.4	13884	15.6	18.8	429465	15.7	20.0
47734	15.3	18.4	322164	15.4	21.0	248656	15.5	20.7	292138	15.6	19.2	258038	15.6	20.6	509107	15.7	21.4
384471	15.3	20.8	111421	15.4	20.0	537531	15.5	20.0	84993	15.6	19.0	193523	15.6	19.5	156941	15.7	19.7
192484	15.3	19.4	420450	15.4	19.8	218456	15.5	19.6	77655	15.6	18.9	85705	15.6	18.1	72372	15.7	18.7
237934	15.3	19.4	203728	15.4	18.9	530935	15.5	20.6	257405	15.6	19.0	455583	15.6	20.0	395741	15.7	19.9
358552	15.3	19.4	221699	15.4	20.3	493598	15.5	20.4	178863	15.6	19.9	356261	15.6	19.3	69658	15.7	18.4
198574	15.3	19.2	408627	15.4	20.1	405843	15.5	20.0	303283	15.6	21.1	418257	15.6	21.2	259931	15.7	20.1
210937	15.3	19.9	170751	15.4	19.6	439047	15.5	20.1	236360	15.6	20.2	276002	15.6	18.7	226326	15.7	19.9
538107	15.3	21.3	52919	15.4	17.4	344014	15.5	20.3	525099	15.6	20.0	254174	15.6	19.8	133588	15.7	18.6
316166	15.3	20.7	98433	15.4	18.2	536638	15.5	21.1	532720	15.6	21.7	250958	15.6	19.8	198373	15.7	18.5
540864	15.3	20.7	352417	15.4	20.6	159150	15.5	18.9	364466	15.6	20.6	128136	15.6	19.5	474777	15.7	20.7
141387	15.3	18.8	208407	15.4	19.5	161004	15.5	19.2	124908	15.6	18.4	444679	15.6	20.5	442149	15.7	19.4
319248	15.3	19.5	396041	15.4	20.0	521078	15.5	20.6	305567	15.6	19.3	192806	15.7	17.5	394652	15.7	21.8
350226	15.3	18.7	77566	15.4	19.3	282016	15.5	20.3	471764	15.6	20.6	373253	15.7	21.0	61299	15.7	16.9
86065	15.3	18.3	78951	15.4	18.7	117164	15.5	18.8	173637	15.6	20.1	259212	15.7	17.9	88101	15.7	18.8
1243	15.3	14.2	533514	15.4	21.5	189759	15.5	19.3	382051	15.6	21.1	39288	15.7	19.5	365673	15.7	19.9
44421	15.3	18.8	526444	15.4	22.1	336951	15.5	20.9	438807	15.6	20.2	80729	15.7	19.2	466801	15.7	20.1
143489	15.3	19.7	350825	15.4	20.4	308704	15.5	20.6	449631	15.6	20.6	92897	15.7	17.9	17535	15.7	17.7
476498	15.3	21.5	162622	15.4	18.2	482188	15.5	19.9	506610	15.6	21.6	86487	15.7	18.3	257388	15.7	20.5
240316	15.4	19.3	222558	15.4	19.1	412045	15.5	20.8	59835	15.6	18.1	433885	15.7	21.1	250807	15.7	20.3
457438	15.4	20.3	321108	15.4	20.6	118795	15.5	18.3	73039	15.6	19.1	166013	15.7	20.0	538974	15.7	21.2
285346	15.4	18.1	23503	15.4	18.3	102199	15.5	18.2	507015	15.6	20.1	13862	15.7	18.2	525920	15.7	20.6
74785	15.4	18.8	473269	15.4	20.2	230340	15.5	19.5	112521	15.6	19.0	254116	15.7	19.3	132573	15.7	18.4
541064	15.4	20.9	105647	15.4	19.0	357874	15.5	21.0	412163	15.6	21.0	434715	15.7	21.6	206708	15.7	20.1
500962	15.4	21.3	312688	15.4	19.6	531840	15.5	21.2	119606	15.6	19.0	393200	15.7	21.1	499394	15.7	19.8
442077	15.4	20.3	204364	15.4	19.4	362443	15.5	20.1	362823	15.6	20.6	483110	15.7	20.0	446355	15.7	21.3
205942	15.4	20.3	131743	15.4	19.3	31524	15.5	18.3	117284	15.6	17.7	383854	15.7	18.7	53462	15.7	18.1
198427	15.4	20.3	147788	15.4	19.7	432780	15.5	20.6	19313	15.6	16.3	212990	15.7	19.5	83572	15.7	19.3
96566	15.4	18.8	506216	15.4	20.6	435158	15.5	21.3	540689	15.6	19.9	292067	15.7	19.4	131233	15.7	19.8
410346	15.4	18.9	475462	15.4	19.6	435573	15.5	21.0	313679	15.6	19.4	200581	15.7	17.4	125013	15.7	19.1
85182	15.4	21.7	103144	15.4	18.0	277829	15.5	20.5	526360	15.6	22.3	293356	15.7	19.2	85777	15.7	17.6
126871	15.4	19.9	381173	15.4	19.8	350236	15.5	19.9	99447	15.6	18.4	514566	15.7	21.5	177362	15.7	20.5
214149	15.4	20.3	362490	15.4	20.5	441659	15.5	19.8	524948	15.6	22.0	502071	15.7	20.8	455309	15.7	21.6
58581	15.4	17.1	312683	15.4	19.8	130919	15.5	18.7	533577	15.6	21.4	480606	15.7	21.0	231253	15.7	19.4
80642	15.4	18.6	33853	15.4	18.3	417977	15.5	20.0	449347	15.6	21.3	81323	15.7	17.8	78523	15.7	18.6
268168	15.4	18.0	184832	15.4	19.2	410368	15.5	19.2	374298	15.6	19.8	537656	15.7	20.2	137815	15.7	18.9
488426	15.4	20.5	325958	15.4	19.8	118483	15.5	19.0	107004	15.6	19.4	217329	15.7	18.8	242162	15.7	20.7
46402	15.4	18.5	277689	15.4	19.5	411191	15.5	21.3	36964	15.6	18.3	86957	15.7	19.2	362017	15.7	19.7
115025	15.4	19.0	73284	15.4	18.9	508972	15.5	20.1	214147	15.6	20.6	500980	15.7	19.9	415030	15.7	20.1
47484	15.4	18.2	299759	15.4	20.1	496964	15.5	21.1	25518	15.6	18.0	182279	15.7	19.7	273880	15.7	20.8
287604	15.4	20.9	57845	15.4	19.1	112349	15.5	19.7	94253	15.6	19.6	91158	15.7	18.4	377709	15.7	19.9
89886	15.4	19.4	543667	15.4	20.2	442954	15.5	20.5	287736	15.6	18.0	238006	15.7	19.1	313395	15.7	20.7
358765	15.4	20.5	449065	15.4	20.7	532695	15.5	20.5	39824	15.6	19.2	260374	15.7	18.6	439452	15.7	21.6
63714	15.4	18.7	61175	15.4	17.5	442030	15.5	19.7	363975	15.6	21.4	468163	15.7	20.0	98559	15.7	17.2
248320	15.4	19.7	164428	15.4	20.2	427629	15.5	18.2	186518	15.6	18.9	218539	15.7	19.0	74301	15.7	18.6
511850	15.4	20.8	66001	15.4	18.1	513693	15.5	21.7	270424	15.6	20.4	116034	15.7	18.8	226027	15.8	19.4
344486	15.4	20.0	204844	15.4	19.7	272417	15.5	18.8	155335	15.6	20.7	437557	15.7	20.5	199889	15.8	20.5
419321	15.4	20.0	62210	15.4	18.9	535570	15.5	20.9	177672	15.6	20.9	481032	15.7	22.8	185614	15.8	19.7
445794	15.4	20.9	292240	15.5	20.1	519267	15.5	19.7	444666	15.6	21.0	213530	15.7	19.6	184772	15.8	19.3
165360	15.4	18.2	65487	15.5	19.2	56238	15.5	18.9	214240	15.6	19.8	511325	15.7	21.0	103384	15.8	19.6
315031	15.4	20.5	428277	15.5	20.8	21164	15.5	16.9	68116	15.6	17.5	342833	15.7	19.5	48073	15.8	17.8
389868	15.4	20.0	175158	15.5	19.6	510395	15.5	20.6	207696	15.6	19.2	12905	15.7	17.9	235828	15.8	19.9
11704	15.4	17.4	165053	15.5	19.4	333824	15.5	21.3	354758	15.6	19.5	176987	15.7	20.5	194147	15.8	20.0
420411	15.4	21.3	142350	15.5	18.5	272635	15.5	19.4	39130	15.6	18.3	125184	15.7	18.6	357938	15.8	21.1
80611	15.4	19.2	526021	15.5	20.8	140814	15.5	19.0	497225	15.6	21.2	260284	15.7	19.6	296604	15.8	20.0
319813	15.4	19.7	242547	15.5	21.1	307539	15.5	20.5	52255	15.6	17.0	477208	15.7	20.0	153725	15.8	19.1
291658	15.4	21.0	242516	15.5	20.2	395580	15.5	20.6	361016	15.6	20.7	298737	15.7	20.5	529054	15.8	20.9
219601	15.4	18.9	262801	15.5	20.5	448681	15.5	20.8	521121	15.6	20.2	332884	15.7	20.2	21064	15.8	18.8
281687	15.4	20.5	388187	15.5	20.6	441958	15.5	19.7	60312	15.6	17.9	67895	15.7	17.9	326831	15.8	19.4
48916	15.4	18.1	233419	15.5	20.4	67997	15.5	19.0	537040	15.6	21.1	470574	15.7	21.5	188758	15.8	20.9
394058	15.4	19.9	208369	15.5	20.4	387382	15.6	20.3	452812	15.6	21.0	468451	15.7	18.8	162890	15.8	20.1
442864	15.4	20.9	117856	15.5	18.2	393867	15.6	20.3	520070	15.6	21.4	255186	15.7	21.0	393563	15.8	20.1
540761	15.4	20.2	404745	15.5	19.6	269749	15.6	19.9	459542	15.6	20.4	537411	15.7	20.9	524734	15.8	19.2
206095	15.4	19.6	62839	15.5	18.7	436584	15.6	20.8	20428	15.6	17.3	192303	15.7	19.9	418142	15.8	22.1
349925	15.4	22.3	9859	15.5	16.7	247007	15.6	19.0	479845	15.6	20.8	399025	15.7	20.9	449597	15.8	20.3
207313	15.4	19.4	118465	15.5	17.8	348381	15.6	20.4	350058	15.6	20.9	459002	15.7	20.2	321709	15.8	20.4
311508	15.4	20.4	4844	15.5	16.5	102982	15.6</										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
412507	15.8	20.7	480069	15.9	21.5	356423	15.9	20.5	94529	16.0	19.2	229519	16.1	19.1	471114	16.2	21.0
127554	15.8	19.0	289594	15.9	20.9	398296	15.9	20.3	507019	16.0	21.2	213342	16.1	19.5	85675	16.2	17.7
21479	15.8	16.1	507742	15.9	20.4	380310	15.9	20.6	361501	16.0	20.5	19414	16.1	15.4	338545	16.2	19.7
362377	15.8	19.4	3277	15.9	14.5	454807	15.9	20.0	273774	16.0	21.0	106459	16.1	18.6	537109	16.2	21.7
13759	15.8	17.2	443627	15.9	19.8	221911	15.9	19.6	420959	16.0	19.8	198195	16.1	18.4	349274	16.2	18.4
184781	15.8	19.2	508871	15.9	23.3	282728	15.9	21.1	255151	16.0	19.1	203298	16.1	18.7	286079	16.2	16.7
503324	15.8	20.1	164009	15.9	19.0	374303	15.9	19.9	56802	16.0	18.5	471082	16.1	20.7	97133	16.2	18.7
172835	15.8	20.4	317890	15.9	20.9	436142	15.9	20.7	366269	16.0	20.8	47377	16.1	17.3	482764	16.2	20.4
411249	15.8	20.0	63309	15.9	19.6	498387	15.9	19.8	522869	16.0	19.9	86127	16.1	18.2	330706	16.2	19.6
431506	15.8	19.4	378290	15.9	18.3	94435	15.9	18.3	437049	16.0	20.0	55710	16.1	18.7	71602	16.2	18.7
151424	15.8	19.6	370095	15.9	20.0	407442	15.9	20.4	154761	16.0	19.3	393137	16.1	19.3	322715	16.2	20.6
321899	15.8	19.2	540117	15.9	20.7	293464	15.9	20.4	62728	16.0	17.6	218064	16.1	20.4	70066	16.2	17.1
237466	15.8	19.4	386780	15.9	20.9	517673	15.9	20.7	463140	16.0	21.1	178508	16.1	18.7	208349	16.2	19.6
123143	15.8	18.8	100892	15.9	19.6	392193	15.9	20.6	65249	16.0	18.5	175759	16.1	20.4	251672	16.2	20.6
23680	15.8	18.0	92043	15.9	18.4	446218	15.9	21.3	328933	16.0	19.1	407772	16.1	19.9	400210	16.2	20.8
247182	15.8	19.9	273877	15.9	21.1	252787	15.9	20.3	407282	16.0	20.7	141934	16.1	18.7	424394	16.2	20.9
39803	15.8	19.1	469297	15.9	21.1	113322	15.9	19.1	294888	16.0	20.1	496984	16.1	19.1	493231	16.2	21.2
24495	15.8	19.5	172883	15.9	19.9	389031	15.9	20.1	98039	16.0	17.3	51259	16.1	17.9	127714	16.2	19.1
214138	15.8	19.4	375894	15.9	19.7	509674	15.9	21.2	301811	16.0	19.8	6501	16.1	16.7	418205	16.2	21.3
342454	15.8	20.6	523120	15.9	20.7	171274	15.9	18.6	17093	16.0	17.5	256315	16.1	19.9	497704	16.2	19.4
306149	15.8	19.8	15716	15.9	16.3	299793	15.9	20.0	192350	16.0	19.8	312610	16.1	19.8	222871	16.2	19.8
208199	15.8	18.8	214161	15.9	19.1	49646	15.9	17.9	291520	16.0	19.8	60057	16.1	17.6	457376	16.2	20.0
86580	15.8	17.8	498285	15.9	20.8	344910	15.9	19.6	337975	16.0	20.4	365569	16.1	19.6	207230	16.2	19.2
287895	15.8	20.5	387287	15.9	20.0	309714	15.9	20.2	366813	16.0	20.3	390914	16.1	20.9	75224	16.2	18.5
488412	15.8	20.9	412016	15.9	20.3	366595	15.9	19.1	358774	16.1	21.2	115887	16.1	19.9	269520	16.2	20.4
255863	15.8	20.4	378359	15.9	19.6	398307	15.9	19.9	354214	16.1	21.4	254503	16.1	19.7	380208	16.2	21.0
185584	15.8	20.4	133136	15.9	19.2	208047	15.9	18.8	431106	16.1	20.2	397781	16.1	21.3	454593	16.2	20.5
444051	15.8	20.0	157682	15.9	18.3	40088	15.9	17.1	6580	16.1	18.3	180926	16.1	19.3	168932	16.2	19.0
150654	15.8	19.7	252698	15.9	20.1	33422	15.9	18.5	445503	16.1	20.6	296664	16.1	20.1	376909	16.2	19.4
127353	15.8	19.3	24731	15.9	18.7	96253	15.9	18.7	479270	16.1	20.5	448100	16.1	20.6	116717	16.2	19.6
525493	15.8	20.9	75086	15.9	17.3	352437	15.9	20.7	102563	16.1	19.9	70230	16.1	18.4	301649	16.2	20.8
355694	15.8	20.2	125289	15.9	18.7	75198	15.9	19.2	212492	16.1	19.7	22095	16.1	17.5	255786	16.2	18.3
253708	15.8	19.6	206441	15.9	18.6	59634	15.9	18.4	122737	16.1	19.1	374297	16.1	19.8	158340	16.2	19.4
110256	15.8	17.9	309873	15.9	21.0	477837	15.9	21.9	122819	16.1	18.8	24372	16.1	17.8	505478	16.2	23.8
88240	15.8	19.9	408177	15.9	21.5	139205	15.9	19.1	295159	16.1	20.8	208153	16.1	20.1	392699	16.2	20.5
289927	15.8	20.9	206973	15.9	18.2	97806	15.9	18.1	198298	16.1	20.4	93838	16.1	18.3	475196	16.2	20.8
428778	15.8	20.2	470286	15.9	20.3	50429	15.9	18.1	254145	16.1	19.2	36188	16.1	17.1	379284	16.2	19.6
184222	15.8	19.1	521546	15.9	20.6	342482	15.9	20.1	216718	16.1	20.1	356240	16.1	20.8	480595	16.2	20.6
150586	15.8	19.0	151909	15.9	19.4	418038	15.9	19.7	327767	16.1	19.9	401735	16.1	20.0	340358	16.2	20.4
497760	15.8	20.3	523554	15.9	20.8	279476	15.9	20.3	43497	16.1	18.4	432617	16.1	20.2	448596	16.2	19.2
168976	15.8	19.2	344530	15.9	18.8	211823	15.9	19.3	426472	16.1	19.6	516989	16.1	19.8	400444	16.2	21.5
281826	15.8	20.7	58491	15.9	17.8	261429	15.9	20.3	335164	16.1	19.1	162642	16.1	19.0	503514	16.2	20.8
254290	15.8	19.7	424461	15.9	21.3	356360	15.9	20.3	68903	16.1	19.6	393404	16.1	19.8	215811	16.2	19.5
20952	15.8	18.2	177097	15.9	19.2	126253	15.9	19.0	139272	16.1	18.7	495004	16.1	20.5	246515	16.2	19.9
345981	15.8	20.1	400613	15.9	19.7	120690	15.9	18.8	129078	16.1	18.3	462580	16.1	21.0	208637	16.2	20.0
76939	15.8	18.8	136969	15.9	18.5	495863	15.9	18.6	1159	16.1	14.7	15835	16.1	17.6	78308	16.2	19.5
499731	15.8	20.9	8296	15.9	16.1	436197	15.9	19.8	7670	16.1	17.5	475453	16.1	20.6	480751	16.2	21.6
177426	15.8	19.2	61408	15.9	18.5	381159	15.9	21.7	320996	16.1	19.6	152584	16.1	19.6	3693	16.2	15.1
302272	15.8	20.1	457628	15.9	21.4	513379	15.9	21.2	521639	16.1	21.1	342184	16.2	19.9	114227	16.2	19.0
203040	15.8	19.5	344708	15.9	20.9	186950	15.9	19.7	290684	16.1	19.4	315328	16.2	19.5	391092	16.2	20.7
401005	15.8	21.1	457671	15.9	20.9	55944	15.9	19.0	257052	16.1	19.3	147576	16.2	19.8	76848	16.2	18.2
289768	15.8	20.4	43111	15.9	19.1	2790	15.9	15.3	233087	16.1	20.2	193404	16.2	17.5	434395	16.2	21.0
458181	15.8	20.1	279786	15.9	19.4	59583	15.9	19.9	239062	16.1	20.5	2314	16.2	16.3	332124	16.2	19.3
389571	15.8	20.4	326641	15.9	18.8	54013	15.9	20.1	474090	16.1	20.1	342589	16.2	20.1	522969	16.2	20.3
362699	15.8	19.9	493658	15.9	20.6	382940	15.9	19.6	151916	16.1	18.6	519237	16.2	19.9	446433	16.2	21.2
461810	15.8	20.9	285404	15.9	19.0	379531	15.9	21.1	323563	16.1	19.8	503548	16.2	19.0	230809	16.2	19.9
117352	15.8	18.0	537107	15.9	21.2	289720	15.9	20.7	513504	16.1	20.7	133509	16.2	18.2	434103	16.2	22.1
115922	15.8	18.7	445398	15.9	20.6	12088	15.9	17.3	70171	16.1	17.0	276517	16.2	19.4	414164	16.2	19.3
512804	15.8	20.9	397762	15.9	20.3	463214	15.9	21.8	443021	16.1	21.2	53382	16.2	17.9	355872	16.2	20.2
44167	15.8	17.7	179810	15.9	19.4	465060	15.9	19.9	250949	16.1	19.7	141928	16.2	18.0	231664	16.2	19.6
424591	15.8	20.4	100168	15.9	18.0	241195	15.9	19.0	144450	16.1	20.0	284950	16.2	20.0	249810	16.2	19.3
433230	15.8	19.9	343355	15.9	20.2	305562	15.9	20.0	335761	16.1	20.5	402396	16.2	20.7	488655	16.2	19.6
516305	15.8	20.4	255696	15.9	19.9	254977	15.9	19.7	28341	16.1	17.6	429183	16.2	19.5	339399	16.2	19.8
539624	15.9	20.6	417512	15.9	20.2	337997	16.0	20.1	63360	16.1	19.1	329171	16.2	20.2	65653	16.2	19.5
12997	15.9	19.3	130382	15.9	19.8	5123	16.0	16.9	176970	16.1	19.7	54975	16.2	18.0	25024	16.2	16.4
241266	15.9	19.9	211146	15.9	19.9	57919	16.0	20.0	183868	16.1	18.7	70587	16.2	18.5	240293	16.2	19.4
390747	15.9	19.4	273822	15.9	19.4	433518	16.0	19.5	469985	16.1	20.4	509186	16.2	20.6	506438	16.2	18.7
128881	15.9	17.9	317756	15.9	18.8	153784	16.0	18.5	533468	16.1	20.3	131943	16.2	17.6	187092	16.2	18.5
525064	15.9	19.8	387758	15.9	20.5	178560	16.0										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
270353	16.2	18.4	384488	16.3	20.5	321620	16.4	19.9	248528	16.5	21.0	48934	16.6	18.4	524022	16.6	20.6
524113	16.2	20.1	503370	16.3	21.1	98420	16.4	18.2	255176	16.5	20.5	410698	16.6	21.1	33113	16.6	19.2
300415	16.2	20.3	188727	16.3	19.1	88658	16.4	18.3	105604	16.5	18.2	540931	16.6	19.8	536667	16.6	21.1
453667	16.2	20.8	53449	16.3	19.2	191054	16.4	19.3	474585	16.5	19.6	154689	16.6	18.5	294986	16.6	19.7
506602	16.2	20.2	107119	16.3	20.0	253790	16.4	19.6	91168	16.5	18.9	459515	16.6	21.1	187916	16.6	17.4
159282	16.2	20.1	296801	16.3	19.5	92413	16.4	19.3	297160	16.5	20.9	818	16.6	13.5	512142	16.6	20.9
435676	16.2	19.9	481490	16.3	21.7	408387	16.4	20.7	248121	16.5	19.7	499061	16.6	21.1	408313	16.6	19.9
443061	16.2	20.6	26084	16.3	17.9	506983	16.4	18.9	493236	16.5	19.9	148124	16.6	19.1	442560	16.6	20.2
158417	16.2	19.5	510761	16.3	19.6	357814	16.4	20.5	401490	16.5	19.0	435682	16.6	19.7	478150	16.6	20.1
124630	16.3	18.8	69140	16.3	19.0	253808	16.4	20.1	115507	16.5	18.6	478950	16.6	20.4	523615	16.6	23.8
316504	16.3	19.8	61153	16.3	18.0	482128	16.4	19.1	526303	16.5	21.7	105704	16.6	18.5	246093	16.6	20.1
114992	16.3	18.2	516290	16.3	20.1	164458	16.4	20.1	333562	16.5	19.9	175904	16.6	19.1	531858	16.6	22.1
398744	16.3	20.1	358800	16.3	21.5	186358	16.4	19.8	42234	16.5	16.1	415120	16.6	20.9	377630	16.6	20.6
392016	16.3	20.1	42224	16.3	18.7	474921	16.4	20.5	90020	16.5	18.8	258993	16.6	18.2	14899	16.6	16.9
378289	16.3	20.8	199975	16.3	20.0	361550	16.4	18.6	278501	16.5	19.8	165999	16.6	19.8	519626	16.6	20.7
111409	16.3	18.9	216831	16.3	19.1	243511	16.4	19.9	294729	16.5	20.3	238243	16.6	18.5	173894	16.6	19.7
520762	16.3	20.4	387078	16.3	20.2	365816	16.4	19.6	459483	16.5	20.2	343814	16.6	20.8	546427	16.6	19.5
126572	16.3	19.7	533587	16.3	21.2	219935	16.4	20.8	246524	16.5	19.8	137849	16.6	20.4	260662	16.6	19.8
325941	16.3	19.6	473806	16.3	20.6	195489	16.4	18.0	395688	16.5	19.5	34610	16.6	17.8	103071	16.6	19.3
293353	16.3	21.5	253874	16.3	20.7	148007	16.4	19.9	290633	16.5	20.5	177987	16.6	19.3	201631	16.6	18.2
342186	16.3	20.4	478697	16.3	20.3	439001	16.4	18.8	525289	16.5	19.6	19113	16.6	17.8	534016	16.6	20.0
437813	16.3	20.9	472799	16.3	20.6	114866	16.4	18.7	524024	16.5	20.2	147404	16.6	20.1	349128	16.6	20.5
354784	16.3	19.4	249296	16.3	20.2	476419	16.4	20.3	485757	16.5	20.9	373836	16.6	19.5	212682	16.6	18.6
338804	16.3	19.4	480136	16.4	20.5	483257	16.4	21.2	181946	16.5	18.9	521568	16.6	20.5	255510	16.6	20.1
466073	16.3	20.5	500912	16.4	19.0	491868	16.4	20.9	67326	16.5	19.1	302328	16.6	20.0	369909	16.6	20.3
45790	16.3	17.5	280920	16.4	20.9	507794	16.4	21.1	5025	16.5	17.0	23075	16.6	17.4	296467	16.6	19.8
96155	16.3	19.6	497267	16.4	21.1	99189	16.4	19.3	88186	16.5	16.8	415115	16.6	20.1	62772	16.6	18.9
251871	16.3	20.0	134005	16.4	18.6	472959	16.4	20.7	467232	16.5	20.5	233159	16.6	19.7	102627	16.6	18.1
149163	16.3	20.1	468852	16.4	20.3	449657	16.4	20.1	259035	16.5	18.5	541910	16.6	20.6	429423	16.6	20.7
195376	16.3	20.1	375860	16.4	20.2	305402	16.4	20.1	185213	16.5	19.9	527893	16.6	21.1	517132	16.6	20.9
465647	16.3	21.3	164470	16.4	19.5	208509	16.4	18.4	496301	16.5	21.4	353721	16.6	20.6	482147	16.6	20.7
127052	16.3	19.3	312438	16.4	20.1	276107	16.4	21.0	310611	16.5	19.8	276884	16.6	19.7	127896	16.6	19.6
184197	16.3	19.7	184945	16.4	19.9	319183	16.4	20.4	295408	16.5	19.9	40561	16.6	17.8	184662	16.6	19.2
65306	16.3	18.4	160477	16.4	19.8	383323	16.4	20.5	510636	16.5	20.6	27357	16.6	17.4	398991	16.6	20.3
476960	16.3	19.7	249632	16.4	18.4	502708	16.4	20.4	377322	16.5	19.8	106226	16.6	18.6	307083	16.6	20.0
129932	16.3	19.0	34658	16.4	18.6	480431	16.4	20.1	405754	16.5	19.9	248156	16.6	19.1	539401	16.6	20.6
205714	16.3	20.4	261167	16.4	19.1	16343	16.4	17.9	365574	16.5	18.2	22206	16.6	18.0	513701	16.6	21.6
91302	16.3	19.8	77503	16.4	19.4	438648	16.4	20.8	61895	16.5	17.2	539439	16.6	21.1	203690	16.6	17.8
299639	16.3	20.8	322627	16.4	21.6	221912	16.4	19.3	91620	16.5	18.9	249761	16.6	19.1	412601	16.6	20.1
263260	16.3	20.9	427093	16.4	19.8	506366	16.5	20.1	361697	16.5	20.2	260840	16.6	19.9	35172	16.6	16.9
27716	16.3	18.0	198383	16.4	20.1	4933	16.5	16.9	540975	16.5	20.4	204746	16.6	20.2	387510	16.6	20.3
459115	16.3	21.0	199900	16.4	19.3	520302	16.5	20.7	53773	16.5	18.7	203345	16.6	19.7	382276	16.6	20.6
250019	16.3	20.2	357780	16.4	19.3	440956	16.5	21.0	379783	16.5	20.6	245328	16.6	20.3	117259	16.6	17.6
503499	16.3	21.2	142696	16.4	18.9	144410	16.5	20.1	384924	16.5	20.5	4835	16.6	17.7	36219	16.6	17.6
504094	16.3	21.4	97082	16.4	17.5	191081	16.5	19.0	40095	16.5	17.1	204575	16.6	20.5	405424	16.6	19.9
180325	16.3	19.4	248497	16.4	19.3	60006	16.5	18.6	532138	16.5	19.9	43379	16.6	18.5	159308	16.6	19.4
91734	16.3	18.4	469831	16.4	19.6	184243	16.5	18.9	187595	16.5	20.6	334735	16.6	18.9	72309	16.6	18.1
110855	16.3	19.5	511220	16.4	20.7	213041	16.5	20.6	156962	16.5	19.3	490687	16.6	19.8	327802	16.6	19.9
314551	16.3	20.1	276067	16.4	19.8	157591	16.5	19.1	21729	16.5	18.1	34201	16.6	17.9	237604	16.6	19.1
135182	16.3	21.9	440976	16.4	21.2	481220	16.5	19.2	136867	16.5	20.0	237761	16.6	18.9	82591	16.6	18.0
39253	16.3	17.7	361150	16.4	20.1	507054	16.5	20.5	28079	16.5	16.7	186913	16.6	19.7	505446	16.6	23.5
397724	16.3	21.1	74824	16.4	17.4	112646	16.5	18.0	216808	16.5	20.5	216719	16.6	20.2	280857	16.6	20.4
371582	16.3	20.2	315921	16.4	20.3	244893	16.5	19.9	235166	16.5	19.1	382005	16.6	19.8	76006	16.6	19.7
81089	16.3	19.3	199615	16.4	20.0	253762	16.5	20.2	197332	16.5	19.1	280020	16.6	20.3	19888	16.6	17.6
520073	16.3	20.7	449193	16.4	21.1	310432	16.5	19.9	63195	16.5	18.8	434764	16.6	20.4	305445	16.6	21.0
402412	16.3	21.2	429478	16.4	20.2	444065	16.5	19.9	382149	16.5	20.5	5247	16.6	15.7	254886	16.6	19.5
504720	16.3	20.3	265765	16.4	20.4	470324	16.5	20.3	384071	16.5	21.0	162148	16.6	18.3	537465	16.6	20.9
472946	16.3	19.8	314040	16.4	20.5	343885	16.5	20.1	215429	16.5	20.1	365663	16.6	19.5	150008	16.6	19.1
442132	16.3	19.9	42062	16.4	18.3	541056	16.5	20.6	308706	16.5	20.4	481114	16.6	19.5	357773	16.6	19.9
273758	16.3	20.4	485748	16.4	20.5	28623	16.5	18.3	437290	16.5	20.9	38611	16.6	19.1	94383	16.6	17.8
187548	16.3	21.0	304049	16.4	20.2	495343	16.5	19.3	247736	16.5	19.9	309100	16.6	19.8	436944	16.6	20.0
39191	16.3	17.8	346720	16.4	18.6	328327	16.5	19.4	121484	16.5	19.5	340501	16.6	20.1	220555	16.6	20.0
379794	16.3	20.5	91321	16.4	19.3	296654	16.5	21.0	353740	16.5	20.4	508593	16.6	19.7	391631	16.6	20.5
95788	16.3	19.5	315617	16.4	19.8	462507	16.5	19.5	297550	16.5	19.4	382953	16.6	20.2	69120	16.6	19.1
66327	16.3	18.7	285897	16.4	18.6	308679	16.5	20.5	262955	16.5	20.7	310678	16.6	21.2	37778	16.6	19.1
154869	16.3	19.5	231458	16.4	19.9	279772	16.5	20.1	509062	16.5	20.3	410691	16.6	20.5	33822	16.6	19.2
422952	16.3	19.3	62833	16.4	17.3	268410	16.5	20.2	319455	16.6	19.8	443547	16.6	21.4	296817	16.6	20.0
347746	16.3	19.0	461621	16.4	21.7	376953	16.5	19.9	396191	16.6	20.1	363040	16.6	18.8	107126	16.6	17.8
161342	16.3	18.7	459541	16.4	21.0	87270	16.5</										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
322657	16.7	20.2	276461	16.8	20.2	466256	16.9	19.9	137855	16.9	18.5	259798	17.0	20.3	234640	17.1	20.8
120976	16.7	19.1	218712	16.8	20.7	106799	16.9	18.6	27244	16.9	18.4	257407	17.0	20.7	505542	17.1	20.0
226348	16.7	19.8	332179	16.8	19.1	142081	16.9	19.8	478336	16.9	19.8	345992	17.0	20.6	429884	17.1	19.7
152540	16.7	19.3	346777	16.8	20.1	252949	16.9	19.0	67114	16.9	18.4	311972	17.0	19.5	198444	17.1	19.8
431383	16.7	21.5	343174	16.8	19.4	114902	16.9	19.4	261169	16.9	20.5	162629	17.0	18.9	268040	17.1	19.5
528571	16.7	20.4	152237	16.8	19.3	401063	16.9	19.8	443449	16.9	21.4	267724	17.0	20.4	540536	17.1	20.5
35815	16.7	17.5	504065	16.8	20.9	156198	16.9	19.1	416816	16.9	20.6	500969	17.0	20.3	510525	17.1	21.0
232839	16.7	18.9	192351	16.8	20.1	369884	16.9	19.3	541853	16.9	20.7	439307	17.0	20.6	131197	17.1	19.7
457709	16.7	21.2	46166	16.8	18.9	106774	16.9	19.3	88117	16.9	17.5	21308	17.0	17.7	103004	17.1	18.3
182903	16.7	20.0	261013	16.8	20.4	475351	16.9	21.3	508956	16.9	19.3	491960	17.0	20.6	317564	17.1	18.8
419683	16.7	20.3	442166	16.8	20.1	186946	16.9	20.1	155554	16.9	18.5	434083	17.0	20.1	408322	17.1	21.2
189978	16.7	20.2	276050	16.8	19.0	319185	16.9	19.6	526985	16.9	19.5	518753	17.0	20.9	321951	17.1	19.3
507004	16.7	20.7	441446	16.8	21.1	235859	16.9	20.3	291847	16.9	19.1	177119	17.0	20.4	316406	17.1	19.3
28075	16.7	17.3	387821	16.8	20.1	536105	16.9	20.3	285057	16.9	20.5	75353	17.0	17.0	85637	17.1	19.8
464226	16.7	20.2	497150	16.8	19.7	260615	16.9	20.2	319471	16.9	20.2	34831	17.0	18.1	241964	17.1	19.7
474802	16.7	20.5	179736	16.8	19.3	118957	16.9	19.5	92077	16.9	18.7	247003	17.0	19.4	167734	17.1	18.7
125817	16.7	20.0	506031	16.8	21.0	57929	16.9	18.1	177940	16.9	20.5	385473	17.0	19.4	215855	17.1	20.6
173179	16.7	17.7	397752	16.8	20.1	461419	16.9	19.9	55500	16.9	19.0	154894	17.0	18.6	289248	17.1	20.0
402764	16.7	21.0	501162	16.8	19.6	442524	16.9	20.4	198204	16.9	19.2	162102	17.0	17.2	212874	17.1	19.6
453254	16.7	20.3	472617	16.8	21.4	472071	16.9	19.8	141899	16.9	19.0	278131	17.0	17.9	489764	17.1	20.5
92251	16.7	18.4	63253	16.8	19.2	321075	16.9	19.1	436391	16.9	21.1	476615	17.0	20.5	21661	17.1	16.4
301100	16.7	20.4	93724	16.8	19.3	22238	16.9	19.0	364091	16.9	20.1	444046	17.0	20.8	293297	17.1	21.4
189541	16.7	18.9	146078	16.8	18.9	147396	16.9	19.4	207049	16.9	19.4	391802	17.0	20.5	116930	17.1	18.9
425765	16.7	21.7	438866	16.8	19.8	504970	16.9	20.8	154540	16.9	19.6	213677	17.0	18.9	296908	17.1	20.4
356996	16.7	19.4	56212	16.8	17.1	45287	16.9	16.5	168635	16.9	20.6	460687	17.0	20.3	191060	17.1	19.5
534748	16.7	19.8	208920	16.8	19.0	116043	16.9	19.9	468636	16.9	20.0	489519	17.0	19.8	429829	17.1	20.8
256537	16.7	19.9	121876	16.8	19.2	514479	16.9	19.2	170887	16.9	18.9	438577	17.0	20.6	380853	17.1	20.8
96712	16.7	19.9	322778	16.8	19.9	89924	16.9	19.6	504756	16.9	20.8	257206	17.0	19.9	108117	17.1	18.7
494944	16.7	21.4	147816	16.8	18.9	305305	16.9	20.2	170677	16.9	20.4	264632	17.1	19.5	531808	17.1	20.4
381435	16.7	19.4	253816	16.8	19.1	85962	16.9	19.8	289286	16.9	19.5	389304	17.1	20.2	277831	17.1	18.8
60601	16.7	18.8	121701	16.8	19.4	363737	16.9	19.2	92061	16.9	18.6	362840	17.1	20.6	160999	17.1	19.6
397758	16.7	20.3	346085	16.8	19.8	184001	16.9	20.7	463151	16.9	21.5	91094	17.1	19.1	103017	17.1	18.7
541039	16.7	19.6	534616	16.8	20.1	472531	16.9	20.2	531021	16.9	21.2	221904	17.1	20.2	64193	17.1	18.5
343089	16.7	19.5	311929	16.8	20.3	27591	16.9	19.0	260696	16.9	19.5	178556	17.1	18.4	17548	17.1	17.6
263277	16.7	21.1	95123	16.8	18.6	466286	16.9	20.2	328150	16.9	21.3	127219	17.1	19.4	79749	17.1	18.7
524027	16.7	19.9	153286	16.8	19.7	539592	16.9	20.5	7351	16.9	17.3	487331	17.1	20.9	463716	17.1	20.9
322041	16.7	19.5	191926	16.8	20.3	38541	16.9	17.9	284993	16.9	20.2	335806	17.1	19.3	536080	17.1	20.8
55605	16.7	17.3	511437	16.8	20.9	382606	16.9	22.0	386321	16.9	19.9	264482	17.1	19.6	343501	17.1	20.3
69922	16.7	18.3	388606	16.8	19.2	263108	16.9	20.1	68775	16.9	17.6	113116	17.1	18.0	248436	17.1	19.2
483007	16.7	19.4	8340	16.8	16.4	24338	16.9	18.9	161684	16.9	19.9	264166	17.1	19.5	325074	17.1	20.4
20116	16.8	17.9	217296	16.8	19.7	316875	16.9	18.7	435754	16.9	20.8	509931	17.1	20.5	93054	17.1	18.0
510668	16.8	20.0	498233	16.8	19.7	284030	16.9	20.2	280043	16.9	19.7	327811	17.1	19.1	102722	17.1	19.9
159176	16.8	18.5	121408	16.8	19.2	168662	16.9	19.8	371570	16.9	19.4	91982	17.1	19.0	161844	17.1	19.5
368153	16.8	17.1	283685	16.8	20.9	93875	16.9	18.1	411078	16.9	20.3	508059	17.1	19.9	431806	17.1	20.8
288800	16.8	19.8	398659	16.8	19.5	246979	16.9	18.6	517138	16.9	19.3	7790	17.1	18.1	47622	17.1	19.1
274337	16.8	18.7	429684	16.8	21.4	145707	16.9	18.8	257246	16.9	20.5	295086	17.1	21.3	301052	17.1	20.8
5658	16.8	16.5	186326	16.8	20.0	39270	16.9	18.9	326667	16.9	18.6	171786	17.1	20.2	204595	17.1	20.5
481480	16.8	21.3	22678	16.8	18.4	333139	16.9	20.1	236486	16.9	19.7	375941	17.1	19.9	270416	17.1	20.6
200051	16.8	19.0	11698	16.8	17.9	325149	16.9	19.8	206694	16.9	20.2	153314	17.1	18.2	508133	17.1	20.5
204673	16.8	19.8	310397	16.8	20.0	528719	16.9	20.8	321570	16.9	19.7	267740	17.1	20.4	310880	17.1	18.6
186340	16.8	19.7	317354	16.8	19.7	476626	16.9	20.9	384486	16.9	20.1	179500	17.1	19.7	205065	17.1	19.0
419669	16.8	20.3	215852	16.8	20.4	43139	16.9	17.4	120784	16.9	20.2	423742	17.1	21.0	89332	17.1	18.3
525182	16.8	20.2	361119	16.8	20.4	328222	16.9	20.9	535769	16.9	20.5	183781	17.1	20.6	420824	17.2	20.7
155246	16.8	18.9	439404	16.8	20.8	10680	16.9	17.5	106821	16.9	18.1	367500	17.1	21.0	271884	17.2	19.8
503453	16.8	21.5	204667	16.8	19.4	308405	16.9	20.5	235762	17.0	18.8	338552	17.1	18.9	507724	17.2	20.5
325058	16.8	21.2	462566	16.8	20.5	169903	16.9	19.7	481749	17.0	21.2	8858	17.1	17.4	405761	17.2	20.3
90729	16.8	18.3	67371	16.8	16.5	245681	16.9	19.7	192666	17.0	19.1	49887	17.1	18.9	251402	17.2	20.3
428849	16.8	20.5	423922	16.8	19.8	393957	16.9	20.2	313953	17.0	19.2	521504	17.1	20.8	309721	17.2	20.3
245116	16.8	19.4	161024	16.8	19.3	156327	16.9	18.8	413229	17.0	19.7	254206	17.1	18.9	375747	17.2	20.1
404341	16.8	20.2	354121	16.8	21.1	335133	16.9	19.2	11925	17.0	17.0	505877	17.1	20.1	67735	17.2	17.4
241483	16.8	20.0	312008	16.8	18.8	511308	16.9	20.1	455416	17.0	21.4	526855	17.1	21.9	69416	17.2	19.5
106253	16.8	17.9	480442	16.8	20.7	188524	16.9	19.4	289114	17.0	19.7	306753	17.1	20.4	234809	17.2	20.2
216125	16.8	20.6	320111	16.8	20.0	323655	16.9	20.3	156580	17.0	19.9	156480	17.1	19.1	97154	17.2	19.1
21740	16.8	17.2	85790	16.8	18.1	481751	16.9	20.5	328877	17.0	20.1	513874	17.1	21.2	279468	17.2	20.3
417874	16.8	23.5	34802	16.8	18.3	535581	16.9	21.8	301080	17.0	20.0	356212	17.1	20.6	263212	17.2	20.7
180442	16.8	20.4	521603	16.8	20.9	356223	16.9	20.5	438745	17.0	21.0	504906	17.1	21.0	27243	17.2	16.7
468344	16.8	20.7	342814	16.8	17.9	156309	16.9	17.9	335130	17.0	20.2	180148	17.1	20.1	480893	17.2	20.0
393474	16.8	20.6	88078	16.8	18.5	178711	16.9	19.0	162556	17.0	18.1	321702	17.1	20.6	18290	17.2	17.0
198499	16.8	18.2	219909	16.8	20.0												

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
151950	17.2	19.3	455319	17.2	21.4	529097	17.3	21.3	255502	17.4	19.9	81839	17.5	17.3	352996	17.5	20.5
359532	17.2	20.6	94326	17.2	18.5	483646	17.3	20.0	250037	17.4	20.6	183597	17.5	19.2	264317	17.5	18.6
522850	17.2	20.4	23088	17.2	18.1	245557	17.3	18.9	17410	17.4	16.3	303763	17.5	19.9	321892	17.5	19.8
245297	17.2	19.9	180436	17.2	20.1	226695	17.3	19.9	316220	17.4	19.3	330026	17.5	19.8	298769	17.5	19.6
72034	17.2	18.2	129333	17.2	18.2	384544	17.3	20.0	347850	17.4	20.5	299376	17.5	20.5	385014	17.5	20.6
246602	17.2	20.5	525053	17.2	20.7	308183	17.3	19.3	64794	17.4	18.8	360070	17.5	20.4	203696	17.5	19.2
537903	17.2	19.5	481525	17.2	21.3	435218	17.3	20.2	245783	17.4	20.6	101068	17.5	18.8	106005	17.5	18.4
404665	17.2	20.4	120878	17.2	18.5	380851	17.3	21.0	535963	17.4	21.6	24860	17.5	17.3	58412	17.5	19.2
103625	17.2	19.7	523513	17.2	20.1	414445	17.3	20.7	17879	17.4	18.1	274559	17.5	19.9	443907	17.5	21.4
312699	17.2	19.1	301440	17.2	20.1	364192	17.3	19.5	183133	17.4	18.8	250032	17.5	19.9	263809	17.5	19.5
511455	17.2	20.9	262167	17.2	20.2	268226	17.3	20.6	273904	17.4	20.6	259459	17.5	19.1	123009	17.5	18.1
433587	17.2	20.6	526451	17.2	22.4	9392	17.3	16.5	364751	17.4	19.2	254422	17.5	20.6	424348	17.5	20.0
72521	17.2	18.6	315759	17.2	20.0	404806	17.3	20.5	302844	17.4	20.1	373371	17.5	20.3	256550	17.5	20.1
278994	17.2	20.2	257415	17.2	20.9	321510	17.3	20.6	181232	17.4	20.2	277645	17.5	20.3	111849	17.5	19.7
99914	17.2	19.3	354225	17.2	20.8	358061	17.3	21.0	215639	17.4	19.2	507752	17.5	20.8	25447	17.5	17.5
436227	17.2	20.7	128134	17.2	19.0	53541	17.3	18.2	221602	17.4	20.3	112575	17.5	20.1	165215	17.6	19.5
184924	17.2	18.9	170233	17.2	19.2	393964	17.3	20.1	527052	17.4	20.2	245334	17.5	19.5	364201	17.6	19.5
490835	17.2	21.0	248134	17.2	18.7	404794	17.3	20.8	121283	17.4	19.1	262506	17.5	21.0	4988	17.6	15.2
93398	17.2	18.4	439497	17.2	21.6	395581	17.3	19.8	260376	17.4	19.6	71494	17.5	17.5	123236	17.6	18.1
268047	17.2	19.9	348767	17.2	19.5	89875	17.3	18.9	471304	17.4	21.2	193251	17.5	19.2	531139	17.6	21.5
120872	17.2	18.7	468581	17.2	20.3	181845	17.3	18.3	528123	17.4	21.1	127371	17.5	19.7	186901	17.6	18.7
263188	17.2	20.1	372976	17.3	19.7	87547	17.3	19.5	190604	17.4	18.7	357320	17.5	20.3	105959	17.6	18.9
394026	17.2	19.5	376931	17.3	20.8	183915	17.3	20.0	24200	17.4	16.5	186940	17.5	18.9	509844	17.6	19.4
537493	17.2	21.2	415286	17.3	20.6	228626	17.3	19.2	425281	17.4	21.4	363478	17.5	19.5	457711	17.6	20.8
540214	17.2	20.9	456729	17.3	20.1	291529	17.3	19.6	295929	17.4	19.8	62783	17.5	16.8	106841	17.6	18.1
50399	17.2	18.8	125189	17.3	18.8	130968	17.3	19.2	164210	17.4	19.3	436321	17.5	21.1	252724	17.6	19.7
384416	17.2	18.9	203740	17.3	19.9	530625	17.3	19.8	387960	17.4	20.8	366029	17.5	20.8	93199	17.6	17.7
445804	17.2	20.9	306989	17.3	18.7	442014	17.3	20.0	383333	17.4	19.8	124950	17.5	19.5	94245	17.6	18.8
207804	17.2	20.3	80544	17.3	18.6	91861	17.3	18.9	463555	17.4	20.9	387495	17.5	18.8	530235	17.6	21.0
380170	17.2	19.2	310707	17.3	20.5	131729	17.3	18.7	524314	17.4	20.0	528397	17.5	20.2	467938	17.6	21.5
530980	17.2	19.5	508239	17.3	21.2	74812	17.3	18.0	372844	17.4	20.9	257781	17.5	19.4	255103	17.6	19.4
541058	17.2	20.7	361491	17.3	20.1	160270	17.3	18.4	542287	17.4	21.3	301422	17.5	20.8	508426	17.6	20.9
99139	17.2	19.8	439410	17.3	20.2	120125	17.3	19.0	430279	17.4	19.5	336264	17.5	19.6	69368	17.6	19.7
509582	17.2	21.8	155819	17.3	17.6	87261	17.3	17.9	183506	17.4	19.1	473773	17.5	21.0	468659	17.6	19.4
254118	17.2	20.3	251327	17.3	19.7	397674	17.3	21.5	538912	17.4	20.8	307987	17.5	19.0	464844	17.6	22.2
241580	17.2	18.5	161858	17.3	20.5	260205	17.3	19.5	334838	17.4	20.0	1763	17.5	14.4	329218	17.6	20.4
106833	17.2	17.9	537424	17.3	20.5	352515	17.3	20.2	522884	17.4	20.9	210876	17.5	19.9	151382	17.6	20.3
442059	17.2	20.8	31414	17.3	17.2	202791	17.3	19.5	256692	17.4	20.9	310638	17.5	19.9	392200	17.6	20.9
443911	17.2	20.3	175308	17.3	20.3	342562	17.4	20.6	420307	17.4	20.6	532988	17.5	20.7	347840	17.6	20.1
287854	17.2	19.0	76247	17.3	17.4	18058	17.4	18.5	503425	17.4	20.4	177036	17.5	20.1	358516	17.6	20.4
160398	17.2	18.3	115426	17.3	19.0	263518	17.4	21.2	468555	17.4	20.2	448378	17.5	21.1	69272	17.6	17.1
439859	17.2	20.9	522389	17.3	21.3	375046	17.4	20.1	445255	17.4	20.9	525489	17.5	19.9	533349	17.6	20.6
295642	17.2	20.9	496680	17.3	20.5	530006	17.4	20.4	108431	17.4	19.8	144766	17.5	19.3	519466	17.6	21.2
293525	17.2	20.5	512148	17.3	21.1	201640	17.4	19.8	15560	17.4	15.8	387530	17.5	21.4	16639	17.6	16.2
339484	17.2	20.0	279	17.3	14.3	359459	17.4	20.5	436950	17.4	19.8	352380	17.5	19.7	75719	17.6	19.6
51405	17.2	19.0	395687	17.3	19.5	41290	17.4	18.0	407949	17.4	21.0	540494	17.5	20.1	356183	17.6	20.5
341265	17.2	20.5	34116	17.3	17.3	440719	17.4	20.1	449965	17.4	20.4	395618	17.5	20.3	524438	17.6	20.6
319205	17.2	20.4	400944	17.3	20.2	331111	17.4	19.1	439435	17.4	20.5	3976	17.5	15.3	476423	17.6	20.7
492394	17.2	19.6	7306	17.3	17.8	50	17.4	10.6	312044	17.4	18.5	482158	17.5	19.8	383967	17.6	20.2
423195	17.2	19.6	89023	17.3	18.3	295725	17.4	20.0	55301	17.4	18.6	543227	17.5	21.2	493393	17.6	20.4
169051	17.2	19.7	24981	17.3	18.2	211965	17.4	20.6	107392	17.4	18.4	440704	17.5	20.0	507003	17.6	20.5
355283	17.2	20.4	208017	17.3	19.8	263485	17.4	20.6	55114	17.4	18.2	144164	17.5	19.5	248638	17.6	20.4
526283	17.2	19.6	459509	17.3	21.5	103040	17.4	18.8	217756	17.4	18.6	388879	17.5	20.7	228162	17.6	20.4
196455	17.2	18.9	38069	17.3	17.4	137391	17.4	18.2	480452	17.4	20.6	61947	17.5	18.3	379251	17.6	20.8
96106	17.2	17.8	237928	17.3	19.7	25	17.4	10.2	226365	17.4	20.6	23874	17.5	16.9	117768	17.6	19.5
507169	17.2	19.3	513313	17.3	21.0	515975	17.4	20.8	364611	17.4	20.4	263978	17.5	20.8	524879	17.6	21.1
29385	17.2	18.0	444725	17.3	19.4	503713	17.4	20.9	366081	17.4	20.0	263070	17.5	20.5	373555	17.6	18.7
137927	17.2	18.8	308412	17.3	19.2	185633	17.4	19.7	486697	17.4	20.6	118059	17.5	18.0	246531	17.6	19.5
355680	17.2	20.8	308589	17.3	20.2	248474	17.4	19.8	273879	17.4	20.2	51679	17.5	16.7	349430	17.6	20.6
508024	17.2	21.3	260320	17.3	20.0	524077	17.4	21.2	179398	17.4	19.3	187836	17.5	18.9	297613	17.6	19.7
16816	17.2	19.1	183871	17.3	19.7	136862	17.4	19.8	457755	17.4	21.0	433528	17.5	20.0	345471	17.6	20.0
72305	17.2	19.4	527236	17.3	21.4	102963	17.4	18.4	110645	17.4	18.7	251509	17.5	19.9	508238	17.6	20.2
366217	17.2	20.2	335794	17.3	20.7	140845	17.4	19.6	432629	17.4	20.7	7029	17.5	17.0	480784	17.6	20.9
256055	17.2	20.9	353306	17.3	20.1	22136	17.4	17.7	494260	17.4	20.6	107255	17.5	18.9	511274	17.6	21.2
132707	17.2	17.9	203477	17.3	20.1	387943	17.4	21.3	392705	17.5	20.4	70886	17.5	18.4	486550	17.6	21.1
19913	17.2	18.0	205751	17.3	17.5	91659	17.4	18.4	9999	17.5	16.7	471762	17.5	20.2	182849	17.6	20.4
389822	17.2	20.8	203391	17.3	19.9	360675	17.4	19.7	163727	17.5	19.6	472977	17.5	20.2	164710	17.6	20.4
371630	17.2	19.8	452592	17.3	19.6	535719	17.4	20.4	481094	17.5	20.8	228677	17.5	19.7	193394	17.6	18.6
296903	17.2	20.3	228525	17.3	19.5	35438											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
434211	17.6	18.6	111806	17.7	20.2	114944	17.7	18.1	83864	17.8	19.1	117509	17.9	19.0	195566	17.9	20.0
78961	17.6	19.4	121500	17.7	17.7	316051	17.7	21.3	397768	17.8	20.5	65396	17.9	19.2	170196	17.9	18.4
475083	17.6	20.9	428319	17.7	21.4	536768	17.7	21.9	198051	17.8	20.3	364490	17.9	21.1	227396	17.9	20.8
469504	17.6	22.6	169533	17.7	19.8	108105	17.7	18.6	386627	17.8	20.2	390354	17.9	19.8	508161	17.9	20.0
642	17.6	14.5	21604	17.7	17.8	162575	17.7	18.9	137000	17.8	19.0	257561	17.9	20.3	322035	17.9	19.2
352467	17.6	20.9	537093	17.7	21.0	22988	17.7	18.9	258901	17.8	19.2	257946	17.9	19.8	406399	17.9	19.7
90658	17.6	17.8	481368	17.7	22.1	338762	17.7	17.7	332408	17.8	20.4	445239	17.9	21.0	346665	17.9	20.3
412059	17.6	20.5	396998	17.7	19.7	490708	17.7	19.7	165389	17.8	18.9	127028	17.9	20.2	200254	17.9	19.0
165036	17.6	19.6	238178	17.7	20.1	310663	17.7	20.3	497911	17.8	20.2	234107	17.9	19.5	13366	17.9	17.9
412321	17.6	21.0	395610	17.7	20.2	533338	17.7	21.1	535728	17.8	21.1	468617	17.9	21.4	264055	17.9	20.6
474803	17.6	19.7	140115	17.7	19.3	21976	17.7	17.3	146987	17.8	18.7	265538	17.9	18.5	199685	17.9	20.0
424113	17.6	21.5	478322	17.7	20.3	161877	17.7	19.7	483180	17.8	20.1	236702	17.9	20.1	327316	17.9	20.5
432378	17.6	20.9	41556	17.7	17.6	294636	17.7	21.3	440986	17.8	20.5	62005	17.9	16.8	144154	17.9	19.3
132447	17.6	19.2	65923	17.7	18.3	390594	17.7	20.3	389316	17.8	20.9	319152	17.9	20.9	316152	17.9	19.8
435155	17.6	21.4	275305	17.7	19.3	111875	17.7	18.1	175326	17.8	20.0	221826	17.9	20.3	415525	17.9	20.5
363927	17.6	21.0	96215	17.7	18.2	459904	17.7	20.1	159178	17.8	19.4	184491	17.9	20.2	340382	17.9	21.0
480377	17.6	20.8	269961	17.7	19.0	290513	17.7	21.0	438865	17.8	20.7	73011	17.9	19.3	219638	17.9	18.1
186348	17.6	19.5	264006	17.7	19.7	478937	17.7	20.7	533689	17.8	20.9	168221	17.9	19.1	524922	17.9	21.4
178720	17.6	19.0	253071	17.7	19.6	519784	17.7	20.9	233435	17.8	21.0	410169	17.9	19.4	357916	17.9	20.9
339344	17.6	19.4	332322	17.7	19.4	151391	17.7	19.2	73808	17.8	19.8	191313	17.9	20.2	376811	17.9	20.9
165570	17.6	20.2	42082	17.7	18.5	345057	17.7	20.9	512596	17.8	19.2	260366	17.9	18.9	216839	17.9	18.5
442833	17.6	21.1	246292	17.7	20.0	35084	17.7	17.4	537693	17.8	20.8	171774	17.9	17.2	313103	17.9	19.0
330994	17.6	19.2	325879	17.7	20.1	471652	17.7	20.3	265294	17.8	19.8	95670	17.9	18.9	88040	17.9	18.6
33076	17.6	16.0	427575	17.7	21.4	509380	17.7	21.7	413473	17.8	20.2	218997	17.9	19.9	256888	17.9	20.1
439429	17.6	20.7	511953	17.7	20.0	48137	17.7	17.5	437180	17.8	21.0	429083	17.9	20.2	11381	17.9	18.1
155855	17.6	19.9	400443	17.7	20.8	165225	17.7	19.6	433283	17.8	20.9	357871	17.9	20.6	13588	17.9	18.1
50045	17.6	18.4	212362	17.7	20.7	346752	17.7	20.6	396086	17.8	21.3	357876	17.9	20.5	184192	17.9	19.9
352824	17.6	20.6	151388	17.7	20.0	432833	17.7	20.7	475222	17.8	20.1	437420	17.9	19.4	131566	17.9	19.0
169032	17.6	20.3	334415	17.7	21.2	89652	17.7	19.3	487181	17.8	20.8	45285	17.9	18.5	341132	17.9	19.8
338513	17.6	19.3	209888	17.7	20.3	536237	17.7	22.0	507877	17.8	21.1	414136	17.9	19.3	480420	17.9	20.9
539793	17.6	20.1	201552	17.7	19.1	455427	17.7	20.3	54973	17.8	18.8	6095	17.9	16.0	409376	17.9	20.2
314533	17.6	19.7	537499	17.7	20.1	356220	17.7	20.7	24979	17.8	16.9	73783	17.9	18.5	58713	17.9	19.1
241164	17.6	19.5	536643	17.7	21.3	288513	17.7	20.6	374080	17.8	19.6	56202	17.9	17.2	212344	17.9	19.9
29751	17.6	18.5	63284	17.7	19.0	68422	17.7	17.6	4425	17.8	16.9	285689	17.9	18.7	111793	17.9	18.8
535066	17.6	21.0	69594	17.7	19.3	344424	17.7	20.2	234323	17.8	20.1	391636	17.9	20.4	186960	17.9	19.4
80022	17.6	18.6	187914	17.7	18.4	337115	17.7	16.9	187371	17.8	19.8	436766	17.9	20.6	471211	17.9	20.0
521598	17.6	21.3	338571	17.7	18.1	341279	17.7	20.9	77487	17.8	19.7	462541	17.9	21.2	106241	17.9	18.7
442140	17.6	20.4	235890	17.7	20.4	99462	17.7	17.8	130557	17.8	17.2	92203	17.9	19.5	177863	17.9	18.8
248375	17.6	19.6	524397	17.7	21.3	376630	17.7	20.2	446690	17.8	21.3	442113	17.9	20.5	184218	17.9	19.2
12476	17.6	17.9	444124	17.7	19.2	61057	17.7	17.8	89898	17.8	20.0	141473	17.9	19.6	87158	17.9	16.9
191078	17.6	19.4	70315	17.7	18.8	190265	17.7	19.4	150637	17.8	19.9	5925	17.9	17.0	477916	17.9	20.0
348899	17.6	20.5	214344	17.7	20.0	535804	17.7	21.1	268428	17.8	20.9	236560	17.9	20.5	478416	17.9	21.3
520324	17.6	21.3	361914	17.7	20.4	336143	17.8	19.7	43027	17.8	18.2	37110	17.9	17.8	398196	17.9	19.7
496073	17.6	20.2	146911	17.7	20.0	346412	17.8	18.6	386613	17.8	21.4	103559	17.9	19.4	225215	17.9	20.0
171815	17.6	20.6	444702	17.7	21.0	83422	17.8	18.6	221402	17.8	20.1	206054	17.9	19.4	198863	17.9	19.1
299675	17.6	20.2	252742	17.7	20.2	315028	17.8	20.1	499564	17.8	19.9	172504	17.9	19.5	250627	17.9	20.3
201532	17.6	19.4	262305	17.7	20.6	524065	17.8	19.3	448738	17.8	20.0	34388	17.9	18.4	440705	17.9	19.9
37242	17.6	18.2	75110	17.7	18.3	161109	17.8	18.6	531031	17.8	21.2	133489	17.9	19.5	480853	17.9	19.9
68707	17.6	18.4	231835	17.7	18.4	375763	17.8	20.0	255507	17.8	19.8	199434	17.9	20.0	512087	17.9	19.8
457732	17.6	20.8	23249	17.7	18.2	25932	17.8	19.3	408814	17.8	18.4	414120	17.9	19.5	367484	17.9	20.5
285002	17.6	18.8	186998	17.7	20.2	428079	17.8	21.2	6279	17.8	16.1	500126	17.9	21.6	100936	17.9	19.1
427438	17.6	21.5	86028	17.7	19.1	12567	17.8	17.5	91325	17.8	17.1	219663	17.9	18.1	185607	17.9	20.8
191311	17.6	20.3	39712	17.7	16.7	72089	17.8	18.5	269622	17.8	19.7	526273	17.9	22.1	166580	17.9	18.4
177081	17.6	19.3	153108	17.7	19.5	389810	17.8	20.8	402462	17.8	21.1	247425	17.9	20.4	468814	17.9	21.7
284604	17.6	20.4	370931	17.7	19.7	23133	17.8	17.2	111046	17.8	18.4	120876	17.9	18.8	538277	17.9	21.3
479580	17.6	20.3	419640	17.7	21.4	250445	17.8	19.1	501607	17.8	20.0	40816	17.9	18.5	116013	17.9	18.9
90390	17.6	17.3	533548	17.7	21.4	257993	17.8	19.9	91178	17.8	18.0	459207	17.9	21.5	220335	17.9	19.6
356209	17.6	20.1	119612	17.7	19.5	470365	17.8	20.7	356901	17.8	20.5	241140	17.9	19.3	432688	17.9	20.2
224293	17.6	20.0	444293	17.7	21.4	541640	17.8	21.2	390023	17.8	20.3	203382	17.9	18.5	244066	17.9	19.5
332544	17.6	18.4	291573	17.7	20.7	202561	17.8	20.8	74537	17.8	18.4	24275	17.9	18.2	136226	17.9	19.0
392156	17.6	20.6	317802	17.7	18.9	492369	17.8	20.6	444697	17.8	20.9	160209	17.9	19.9	34993	17.9	19.0
408656	17.6	19.8	323390	17.7	20.2	54677	17.8	18.6	393090	17.8	20.8	138050	17.9	19.2	71514	17.9	18.4
8515	17.6	16.8	363745	17.7	19.8	280415	17.8	19.7	41229	17.8	16.9	253377	17.9	20.2	278377	17.9	21.3
462241	17.6	21.4	310505	17.7	19.0	35437	17.8	18.5	38038	17.8	18.1	515219	17.9	20.9	158421	17.9	19.6
255732	17.6	18.8	476543	17.7	20.9	386797	17.8	20.8	315440	17.8	18.0	131679	17.9	19.7	423627	17.9	20.3
310997	17.6	19.3	478320	17.7	21.0	202094	17.8	18.2	4035	17.8	16.3	187450	17.9	19.9	312647	17.9	19.3
269096	17.6	20.5	61239	17.7	18.5	140815	17.8	19.2	117543	17.8	19.8	134583	17.9	19.1	390904	17.9	20.5
307000	17.7	20.3	19106	17.7	18.9	480006	17.8	20.4	506804	17.8	21.1	388178	17.9	20.0	69621	17.9	19.2
398740	17.7	20.9	481319	17.7	20.6	246177	17.8										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
229547	18.0	17.8	134241	18.1	19.3	399283	18.2	20.2	214687	18.2	19.9	389307	18.3	20.4	319753	18.4	19.7
276068	18.0	20.8	352548	18.1	20.9	80978	18.2	19.1	509619	18.2	21.8	230319	18.3	20.4	297011	18.4	20.1
484	18.0	13.4	320714	18.1	19.6	123517	18.2	19.5	250469	18.2	20.8	296581	18.3	20.4	523123	18.4	20.7
291054	18.0	19.3	268072	18.1	19.1	107449	18.2	19.4	187615	18.2	21.0	357195	18.3	20.7	398516	18.4	20.4
510893	18.0	21.1	446239	18.1	20.8	68781	18.2	19.1	156375	18.2	19.6	246481	18.3	20.0	208855	18.4	19.3
377642	18.0	20.4	237843	18.1	20.6	193453	18.2	18.9	221414	18.2	19.8	292712	18.3	20.7	154515	18.4	19.0
449621	18.0	21.9	243494	18.1	19.7	446402	18.2	21.4	37781	18.2	18.5	256149	18.3	20.7	531587	18.4	20.2
156465	18.0	20.0	533046	18.1	20.8	213119	18.2	19.8	233387	18.2	20.4	288689	18.3	19.0	92981	18.4	17.6
509850	18.0	21.3	288872	18.1	19.8	230265	18.2	19.7	103270	18.2	19.4	496312	18.3	21.3	290541	18.4	19.6
101625	18.0	18.4	340424	18.1	20.8	404094	18.2	20.2	74837	18.2	18.7	499718	18.3	20.1	190565	18.4	19.8
366479	18.0	21.3	353737	18.1	20.1	512898	18.2	20.0	488375	18.2	20.7	514527	18.3	20.0	519116	18.4	20.5
142401	18.0	19.3	533453	18.1	21.7	146369	18.2	19.0	120694	18.2	19.3	437300	18.3	20.8	481359	18.4	19.7
389331	18.0	20.6	542187	18.1	20.3	444127	18.2	19.5	122613	18.2	16.5	515918	18.3	20.1	180755	18.4	19.4
348401	18.0	19.7	482182	18.1	20.3	505476	18.2	23.0	433269	18.2	20.7	282416	18.3	19.4	506281	18.4	20.5
214376	18.0	19.6	15565	18.1	18.1	18375	18.2	15.9	498547	18.2	21.5	319314	18.3	19.3	119048	18.4	19.4
235359	18.0	20.2	488430	18.1	20.5	261475	18.2	18.4	501985	18.2	20.7	424727	18.3	19.9	528157	18.4	21.0
43527	18.0	18.9	379309	18.1	21.0	542194	18.2	19.6	208853	18.2	20.3	501417	18.3	20.6	132673	18.4	19.3
236176	18.0	18.9	219626	18.1	19.8	512765	18.2	20.1	293495	18.2	20.0	460285	18.3	20.7	43795	18.4	17.8
24884	18.0	17.3	482212	18.1	20.7	482933	18.2	20.5	510626	18.2	19.9	82774	18.3	18.2	213872	18.4	18.4
416768	18.0	20.9	347943	18.1	20.0	255334	18.2	20.6	80372	18.2	18.8	250890	18.3	18.7	371949	18.4	21.1
388244	18.0	20.1	363639	18.1	18.7	201585	18.2	18.3	150636	18.3	19.5	85578	18.3	19.9	64228	18.4	18.3
377635	18.0	20.6	148926	18.1	19.1	308733	18.2	20.7	159790	18.3	18.6	46168	18.3	20.2	311348	18.4	19.3
330634	18.0	20.4	275219	18.1	19.8	355687	18.2	20.9	306057	18.3	19.9	309771	18.3	19.3	159656	18.4	19.6
344745	18.0	19.1	348527	18.1	20.5	513802	18.2	20.5	380560	18.3	19.2	241288	18.3	19.3	260333	18.4	20.1
105980	18.0	18.8	310648	18.1	19.9	507363	18.2	20.1	539229	18.3	19.7	237931	18.3	20.0	528321	18.4	20.8
63340	18.0	19.0	364501	18.1	21.1	156414	18.2	20.6	48095	18.3	19.0	180516	18.3	20.3	216930	18.4	19.3
428055	18.0	20.7	184655	18.1	19.9	512857	18.2	21.4	16425	18.3	17.5	254414	18.3	18.9	442842	18.4	20.7
314427	18.0	19.6	206616	18.1	18.5	217276	18.2	20.6	72399	18.3	19.5	540310	18.3	21.0	392189	18.4	20.2
340603	18.0	19.5	465409	18.1	21.4	432494	18.2	20.8	21480	18.3	18.3	504073	18.3	20.1	463782	18.4	20.4
290310	18.0	20.7	144934	18.1	20.5	251477	18.2	19.4	302224	18.3	18.7	328214	18.3	21.2	139013	18.4	19.9
60788	18.0	17.7	381990	18.1	18.6	91042	18.2	18.3	289307	18.3	19.9	443551	18.3	20.8	439722	18.4	21.3
533072	18.0	20.9	274762	18.1	19.1	376925	18.2	20.3	343520	18.3	20.0	111971	18.3	19.4	382909	18.4	19.8
396209	18.0	19.8	89523	18.1	18.0	79645	18.2	17.7	238831	18.3	20.1	257390	18.3	20.1	312622	18.4	20.3
482172	18.0	20.1	532032	18.1	20.6	32645	18.2	18.7	219786	18.3	18.4	249800	18.3	19.1	45526	18.4	17.0
315058	18.0	20.1	432428	18.1	20.1	132305	18.2	19.0	499686	18.3	21.3	349081	18.3	19.8	146090	18.4	19.7
435840	18.0	20.4	412977	18.1	20.4	362566	18.2	19.7	17429	18.3	18.9	433782	18.3	20.9	310308	18.4	20.2
71196	18.0	18.6	62508	18.1	18.9	324110	18.2	19.8	350374	18.3	19.9	61793	18.3	18.8	386947	18.4	19.4
512195	18.0	20.3	355777	18.1	20.7	73163	18.2	17.9	59568	18.3	18.3	371957	18.3	21.5	518862	18.4	20.6
95826	18.0	19.6	151795	18.1	20.7	32413	18.2	18.0	119332	18.3	19.3	71085	18.3	18.9	91843	18.4	17.9
56831	18.0	18.1	402377	18.1	21.1	78199	18.2	18.1	282753	18.3	20.4	419851	18.3	20.7	442108	18.4	19.5
336541	18.0	20.9	209347	18.1	19.4	170879	18.2	19.3	48133	18.3	19.4	146761	18.3	19.5	448045	18.4	22.0
368109	18.0	20.4	429656	18.1	21.0	237697	18.2	18.8	408152	18.3	20.6	468802	18.3	19.9	530684	18.4	19.1
299410	18.0	19.9	529599	18.1	21.5	542817	18.2	20.8	294788	18.3	20.5	319234	18.3	20.5	399026	18.4	21.2
247122	18.1	18.5	243271	18.1	20.7	188946	18.2	20.2	149723	18.3	19.5	225318	18.3	20.3	524141	18.4	20.2
207386	18.1	18.8	218879	18.1	18.8	15104	18.2	16.5	226372	18.3	20.1	309770	18.3	20.7	342044	18.4	19.5
364551	18.1	20.9	206414	18.1	19.8	58685	18.2	18.7	446647	18.3	19.6	351979	18.3	19.6	424839	18.4	20.1
149462	18.1	19.8	255817	18.1	19.1	128794	18.2	19.0	28477	18.3	18.6	83981	18.3	19.4	264334	18.4	20.6
253722	18.1	18.5	429442	18.1	20.1	355695	18.2	20.5	203025	18.3	20.3	167712	18.3	19.2	438857	18.4	21.6
276458	18.1	20.7	406831	18.1	20.0	381954	18.2	21.0	94416	18.3	19.3	171145	18.3	19.9	534074	18.4	22.3
333952	18.1	20.0	479957	18.1	20.7	56478	18.2	18.3	62462	18.3	17.8	536847	18.3	21.6	88246	18.4	19.6
61406	18.1	18.0	314081	18.1	21.4	46079	18.2	19.1	82897	18.3	18.7	15548	18.3	18.2	433173	18.4	19.3
11797	18.1	17.0	358938	18.1	21.4	305384	18.2	20.4	438667	18.3	20.1	507025	18.3	20.0	70121	18.4	18.6
262194	18.1	19.7	443741	18.1	21.2	386314	18.2	20.5	60036	18.3	18.2	235610	18.3	19.0	458739	18.4	19.2
470790	18.1	19.4	260388	18.1	19.5	263290	18.2	20.1	317503	18.3	19.0	15407	18.3	15.5	404903	18.4	20.1
6496	18.1	16.5	94299	18.1	19.7	531597	18.2	20.7	491730	18.3	20.6	481433	18.3	19.8	45927	18.4	18.9
84091	18.1	17.9	291381	18.1	19.5	423946	18.2	19.2	510494	18.3	21.0	148370	18.3	19.0	475674	18.4	21.0
401201	18.1	18.9	471282	18.1	21.6	87614	18.2	17.9	57422	18.3	18.5	351958	18.4	19.7	522718	18.4	20.7
213493	18.1	20.2	80636	18.1	18.5	170971	18.2	20.5	378237	18.3	20.5	392982	18.4	20.8	2145	18.4	16.2
472960	18.1	20.0	117198	18.1	18.5	129914	18.2	18.0	12633	18.3	18.5	513795	18.4	20.6	145295	18.4	19.5
395524	18.1	20.1	501753	18.1	20.5	159582	18.2	20.5	83924	18.3	18.9	196340	18.4	19.6	510947	18.4	22.0
232863	18.1	20.4	544861	18.1	20.7	252180	18.2	19.7	381849	18.3	19.8	58500	18.4	18.6	180104	18.4	20.2
499116	18.1	21.9	53301	18.2	18.9	535068	18.2	20.7	526282	18.3	22.1	148133	18.4	19.1	7381	18.4	15.4
459512	18.1	21.7	306226	18.2	19.7	4499	18.2	16.4	461607	18.3	19.9	157716	18.4	19.8	120627	18.4	20.4
385049	18.1	19.8	69019	18.2	16.8	77512	18.2	18.7	471675	18.3	20.1	62738	18.4	18.2	462599	18.4	21.5
179979	18.1	18.9	122297	18.2	18.6	434710	18.2	21.1	387938	18.3	21.4	50014	18.4	18.6	209319	18.4	18.7
158024	18.1	18.6	519492	18.2	20.6	279579	18.2	20.6	528020	18.3	21.2	443515	18.4	21.4	376878	18.4	18.9
94980	18.1	19.7	72565	18.2	19.2	171761	18.2	19.3	398923	18.3	20.6	135555	18.4	19.1	254562	18.4	20.8
371952	18.1	20.4	135001	18.2	19.9	499924	18.2	19.4	87330	18.3	19.7	376924	18.4	19.3	25360	18.4	16.3
393642	18.1	19.5	393076	18.2	19.9	342245	18.2</										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
19333	18.5	16.4	216214	18.5	20.0	519721	18.6	21.5	380270	18.7	20.7	65980	18.8	19.3	150050	18.8	19.4
234444	18.5	20.1	374331	18.5	20.7	126019	18.6	18.4	181215	18.7	19.8	355577	18.8	20.8	467750	18.8	20.5
320568	18.5	20.3	425545	18.5	19.1	169434	18.6	20.1	540953	18.7	20.2	525877	18.8	20.9	360231	18.8	20.4
255754	18.5	19.3	284618	18.5	19.6	530182	18.6	20.5	382370	18.7	20.2	245217	18.8	19.1	364515	18.8	21.0
412924	18.5	20.2	198433	18.5	19.9	42743	18.6	18.9	96054	18.7	19.1	120875	18.8	18.3	341226	18.8	19.2
223238	18.5	20.2	166565	18.5	19.3	527840	18.6	21.5	23118	18.7	18.2	383986	18.8	19.9	199546	18.8	19.9
238558	18.5	19.2	283863	18.5	19.8	424835	18.6	20.5	233557	18.7	18.9	224064	18.8	20.9	529780	18.8	22.1
354208	18.5	20.8	142499	18.5	18.5	491366	18.6	21.6	239926	18.7	18.2	12551	18.8	16.3	190017	18.8	19.3
395242	18.5	20.9	257401	18.5	19.2	356438	18.6	20.7	61256	18.7	16.8	351460	18.8	20.6	397060	18.8	18.9
304330	18.5	20.3	7982	18.5	17.9	536047	18.6	20.3	510143	18.7	21.0	506955	18.8	21.2	398252	18.8	20.5
508437	18.5	18.7	158023	18.5	17.2	209942	18.6	20.4	123705	18.7	18.0	1706	18.8	15.6	152293	18.8	18.4
357970	18.5	19.8	398904	18.5	19.7	238480	18.6	18.5	73370	18.7	17.8	197556	18.8	19.9	75074	18.8	18.5
384559	18.5	20.5	335838	18.5	19.8	126574	18.6	19.6	308529	18.7	19.3	117571	18.8	19.8	210933	18.8	19.7
476495	18.5	20.9	280351	18.5	19.9	128012	18.6	19.2	200277	18.7	18.6	8420	18.8	17.4	255644	18.8	20.8
492471	18.5	21.6	518354	18.5	21.7	259108	18.6	18.7	272688	18.7	17.9	188479	18.8	19.8	312722	18.8	20.0
335156	18.5	19.2	354720	18.5	19.6	107338	18.6	19.8	310027	18.7	19.9	482328	18.8	21.0	433349	18.8	20.3
436339	18.5	20.1	433487	18.5	19.2	10843	18.6	17.1	312494	18.7	19.8	312619	18.8	20.1	166492	18.8	20.0
162394	18.5	19.6	393084	18.5	19.0	475631	18.6	19.6	533365	18.7	21.2	87213	18.8	17.9	371566	18.8	20.4
204489	18.5	19.0	26794	18.5	18.0	315202	18.6	18.1	270440	18.7	20.7	273714	18.8	20.6	180439	18.9	20.3
189857	18.5	18.8	498478	18.5	21.0	39666	18.6	18.7	286991	18.7	21.1	481267	18.8	20.8	129794	18.9	19.5
306952	18.5	20.7	321838	18.5	20.3	491882	18.6	22.0	89548	18.7	18.7	320648	18.8	21.0	392238	18.9	20.4
61975	18.5	18.5	492380	18.5	21.5	502471	18.6	20.5	63084	18.7	19.1	42183	18.8	19.6	305442	18.9	20.4
420752	18.5	19.9	408406	18.5	20.6	256950	18.6	20.9	537057	18.7	22.0	222509	18.8	17.9	393979	18.9	20.4
121153	18.5	19.7	20325	18.5	15.8	159871	18.6	19.2	285821	18.7	20.4	276095	18.8	21.0	333127	18.9	20.1
10637	18.5	17.1	5442	18.6	16.6	230909	18.6	19.1	145139	18.7	20.8	174036	18.8	20.6	242554	18.9	20.0
342811	18.5	20.0	96484	18.6	18.0	522947	18.6	20.3	405879	18.7	19.9	471298	18.8	21.8	482211	18.9	20.7
457677	18.5	21.1	119893	18.6	19.3	343631	18.6	20.0	479637	18.7	20.1	14641	18.8	16.6	385221	18.9	20.8
483789	18.5	21.3	138982	18.6	19.4	155710	18.6	17.4	163702	18.7	19.3	42756	18.8	18.5	87471	18.9	18.8
178511	18.5	19.1	118428	18.6	19.1	316100	18.6	20.0	295414	18.7	20.1	526073	18.8	20.8	66150	18.9	18.0
510413	18.5	20.8	52470	18.6	17.3	181218	18.6	19.5	5732	18.7	17.4	238468	18.8	19.5	186904	18.9	20.0
410290	18.5	19.3	208782	18.6	18.6	510719	18.6	19.5	321808	18.7	19.7	73250	18.8	17.6	218349	18.9	18.6
171586	18.5	19.6	353356	18.6	20.5	463380	18.6	21.4	459085	18.7	21.6	354115	18.8	20.2	526106	18.9	20.3
123759	18.5	18.8	305971	18.6	19.9	116247	18.6	19.5	181121	18.7	20.0	293251	18.8	21.1	51134	18.9	19.9
116218	18.5	18.8	336290	18.6	19.5	153207	18.6	18.3	149744	18.7	18.5	185718	18.8	18.4	158255	18.9	18.5
70130	18.5	18.4	453395	18.6	21.3	35890	18.6	18.9	40392	18.7	16.9	406780	18.8	20.4	284597	18.9	19.7
53163	18.5	19.0	442980	18.6	20.0	188670	18.6	20.3	77692	18.7	19.2	416161	18.8	20.8	363277	18.9	21.0
354535	18.5	20.0	392196	18.6	20.3	354133	18.6	21.7	261725	18.7	20.2	316525	18.8	20.0	501336	18.9	19.3
180488	18.5	20.5	365706	18.6	20.3	384804	18.6	20.3	422333	18.7	20.1	531632	18.8	20.8	284142	18.9	19.1
96279	18.5	19.4	332369	18.6	19.9	330290	18.6	19.5	34516	18.7	18.0	371615	18.8	19.4	129160	18.9	19.6
315405	18.5	18.9	9807	18.6	17.7	281001	18.6	20.4	220286	18.7	18.9	202614	18.8	19.6	257971	18.9	20.1
150863	18.5	19.3	143832	18.6	18.6	207529	18.6	20.4	5167	18.7	15.8	97150	18.8	18.6	248398	18.9	18.9
231351	18.5	20.0	221771	18.6	20.0	92486	18.6	17.2	174588	18.7	17.6	222844	18.8	19.8	525833	18.9	20.3
161366	18.5	19.2	77198	18.6	18.8	200527	18.6	20.0	402460	18.7	21.2	293266	18.8	20.6	318944	18.9	19.7
466723	18.5	20.1	254795	18.6	19.4	408110	18.6	20.7	491661	18.7	19.2	142203	18.8	18.8	161951	18.9	19.6
22984	18.5	18.0	379852	18.6	19.1	112794	18.6	19.9	326176	18.7	20.3	54667	18.8	18.6	5114	18.9	16.6
302220	18.5	20.1	480016	18.6	21.5	293511	18.6	20.9	185305	18.7	20.3	391051	18.8	19.8	482195	18.9	21.1
10237	18.5	17.7	10493	18.6	16.7	75168	18.7	19.5	210280	18.7	20.4	412095	18.8	20.3	475557	18.9	20.5
452771	18.5	20.7	258338	18.6	20.1	318375	18.7	19.5	203008	18.7	18.3	383199	18.8	19.8	222862	18.9	20.1
46033	18.5	18.8	98848	18.6	19.6	279279	18.7	19.9	239392	18.7	19.7	311212	18.8	19.4	425817	18.9	20.7
401508	18.5	21.2	134255	18.6	18.8	380784	18.7	19.1	510135	18.7	19.7	159658	18.8	19.3	100818	18.9	20.3
75655	18.5	19.6	178341	18.6	20.7	413729	18.7	21.2	277473	18.7	18.7	436911	18.8	20.0	355224	18.9	20.9
59133	18.5	17.9	384550	18.6	20.3	233382	18.7	20.5	333649	18.7	21.5	222864	18.8	19.4	281018	18.9	20.4
109991	18.5	18.6	105278	18.6	18.3	524030	18.7	20.0	329301	18.7	17.2	144634	18.8	19.0	216543	18.9	19.6
247470	18.5	17.4	512902	18.6	20.3	192423	18.7	20.5	299401	18.7	20.7	36271	18.8	18.8	522765	18.9	20.4
63159	18.5	18.1	94659	18.6	18.9	531363	18.7	20.3	33251	18.7	18.5	40689	18.8	17.4	26875	18.9	17.9
195513	18.5	19.5	510659	18.6	20.3	42173	18.7	18.0	392446	18.7	20.4	502431	18.8	19.7	180498	18.9	21.2
33969	18.5	18.4	379737	18.6	20.0	231516	18.7	20.1	489817	18.7	21.7	31555	18.8	17.9	490703	18.9	18.3
191786	18.5	19.7	390874	18.6	18.4	488497	18.7	18.2	266890	18.7	20.5	17157	18.8	16.5	94000	18.9	18.5
513134	18.5	18.7	252699	18.6	19.7	322313	18.7	20.7	255194	18.7	20.7	359354	18.8	20.2	329146	18.9	20.1
290182	18.5	20.4	184923	18.6	20.0	125468	18.7	19.4	512210	18.7	20.1	436923	18.8	19.6	995	18.9	12.9
524445	18.5	21.5	7338	18.6	16.4	311635	18.7	19.0	508952	18.7	20.6	191104	18.8	19.4	475735	18.9	20.8
478014	18.5	20.7	485710	18.6	21.2	79833	18.7	18.5	301495	18.7	20.9	238827	18.8	20.5	240527	18.9	20.1
481214	18.5	20.4	497692	18.6	20.2	526562	18.7	21.2	393077	18.7	20.4	3703	18.8	16.4	7260	18.9	17.1
91093	18.5	17.5	440978	18.6	20.6	338650	18.7	19.2	313931	18.7	20.0	23353	18.8	17.7	303323	18.9	19.7
93537	18.5	18.9	42926	18.6	18.5	376111	18.7	20.5	44866	18.7	19.0	217579	18.8	20.3	350926	18.9	19.2
412551	18.5	20.7	459156	18.6	22.3	477676	18.7	19.6	471751	18.7	20.6	175604	18.8	19.2	470792	18.9	20.2
129902	18.5	19.5	76016	18.6	18.2	406735	18.7	21.2	255245	18.7	19.5	73211	18.8	19.0	17604	18.9	17.7
43939	18.5	18.7	91189	18.6	17.9	67197	18.7	18.3	171448	18.7	19.6	247768	18.8	18.7	20928	18.9	18.0
131767	18.5	19.1	424011	18.6	19.8	540688	18.7	19.4</									

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
310874	18.9	21.0	449677	18.9	20.3	373115	19.1	19.7	198426	19.1	19.1	33784	19.2	19.2	278384	19.3	19.8
205226	18.9	19.7	232469	18.9	20.1	508739	19.1	19.8	434149	19.1	20.6	408733	19.2	20.6	379593	19.3	20.8
480676	18.9	20.0	462247	18.9	20.9	237080	19.1	19.3	447324	19.1	20.4	161017	19.2	19.4	313139	19.3	20.3
359589	18.9	19.5	406797	18.9	20.9	394779	19.1	20.5	384472	19.1	20.3	411186	19.2	19.9	139517	19.3	19.2
3260	18.9	15.6	271099	18.9	17.3	9414	19.1	16.2	178201	19.1	19.8	335623	19.2	20.1	425772	19.3	21.5
465876	18.9	20.9	408646	18.9	19.8	410750	19.1	20.9	473061	19.1	19.7	73297	19.2	18.7	453435	19.3	19.9
353272	18.9	21.1	332593	18.9	19.0	442078	19.1	19.9	318017	19.1	20.7	42376	19.2	19.1	457682	19.3	21.0
497758	18.9	19.2	160318	18.9	20.2	339313	19.1	18.7	36834	19.1	18.3	342327	19.2	20.9	303319	19.3	20.0
320523	18.9	20.7	453204	18.9	21.1	355886	19.1	20.2	9384	19.1	17.9	202765	19.2	20.2	375042	19.3	19.4
390831	18.9	21.4	372326	18.9	21.1	36390	19.1	17.0	99346	19.1	18.9	111395	19.2	19.5	217335	19.3	19.7
175624	18.9	19.8	139691	18.9	18.5	112731	19.1	19.6	362369	19.1	20.4	465076	19.2	19.5	439773	19.3	20.9
13738	18.9	18.1	250399	19.0	18.4	405058	19.1	17.6	506619	19.1	20.2	461613	19.2	21.0	526913	19.3	22.1
433052	18.9	20.4	28440	19.0	18.0	192712	19.1	17.8	29618	19.1	18.6	380780	19.2	20.4	295786	19.3	20.4
509870	18.9	21.0	500804	19.0	21.7	99596	19.1	19.7	322515	19.1	20.3	269086	19.2	20.6	422676	19.3	19.4
163960	18.9	18.5	460471	19.0	19.6	179889	19.1	19.5	507718	19.1	19.6	443090	19.2	21.0	284068	19.3	20.5
34144	18.9	18.1	197538	19.0	20.0	438418	19.1	20.3	365952	19.1	20.2	214954	19.2	20.0	502172	19.3	20.0
461907	18.9	19.2	255175	19.0	20.4	437581	19.1	20.4	438992	19.1	19.2	8086	19.2	16.6	7354	19.3	17.8
146880	18.9	19.8	525376	19.0	21.5	262554	19.1	20.9	164079	19.1	19.6	344082	19.2	20.3	192246	19.3	20.4
159679	18.9	19.0	355570	19.0	19.8	465854	19.1	19.2	356900	19.1	20.3	513705	19.2	20.7	375980	19.3	18.7
407807	18.9	19.6	247306	19.0	19.3	182824	19.1	20.0	456480	19.1	21.2	171367	19.2	19.5	182794	19.3	20.8
190689	18.9	19.3	288020	19.0	19.8	431850	19.1	19.8	391727	19.2	20.4	483178	19.2	20.8	157586	19.3	20.0
41958	18.9	18.3	524741	19.0	20.8	306736	19.1	20.7	506965	19.2	20.4	150017	19.2	19.4	60079	19.3	18.5
529789	18.9	20.4	399676	19.0	20.0	490817	19.1	20.7	360952	19.2	21.1	95812	19.2	19.4	339254	19.3	18.8
436181	18.9	20.3	305389	19.0	20.1	505813	19.1	20.5	296951	19.2	21.1	121924	19.2	18.5	382393	19.3	18.6
289456	18.9	20.8	6083	19.0	15.7	181836	19.1	18.9	357174	19.2	20.3	302854	19.2	21.3	210565	19.3	19.2
448065	18.9	21.5	200685	19.0	19.4	106557	19.1	17.2	364925	19.2	20.7	151468	19.2	21.0	121354	19.3	19.5
118440	18.9	20.3	357918	19.0	20.2	62873	19.1	18.5	153767	19.2	18.3	96153	19.2	19.3	281411	19.3	18.4
508157	18.9	20.5	369885	19.0	20.1	252753	19.1	19.2	253053	19.2	18.8	149056	19.2	19.7	22353	19.3	16.6
200549	18.9	19.6	435674	19.0	19.2	125173	19.1	19.6	515973	19.2	20.3	125498	19.2	19.3	252732	19.3	19.6
208585	18.9	20.1	434577	19.0	20.5	528167	19.1	21.0	167895	19.2	19.3	388246	19.2	17.8	107025	19.3	18.4
472618	18.9	20.4	134929	19.0	18.5	115254	19.1	19.3	39797	19.2	19.3	117362	19.2	19.6	248081	19.3	18.9
95436	18.9	18.9	390316	19.0	20.7	313298	19.1	20.3	221786	19.2	20.2	79079	19.2	18.8	380288	19.3	20.3
191068	18.9	19.9	353184	19.0	20.9	93337	19.1	19.3	180608	19.2	19.4	177373	19.2	19.7	353738	19.3	19.8
476045	18.9	19.8	474993	19.0	20.8	537209	19.1	20.6	525029	19.2	20.3	426423	19.2	20.0	445233	19.3	20.1
347290	18.9	20.2	94198	19.0	19.0	482417	19.1	20.6	14728	19.2	16.0	380844	19.2	20.0	290555	19.3	19.8
162476	18.9	18.9	483158	19.0	20.2	234345	19.1	20.7	521636	19.2	20.8	31775	19.2	16.7	391286	19.3	20.7
264068	18.9	19.6	341972	19.0	19.9	417494	19.1	19.9	435654	19.2	20.8	465900	19.2	20.6	184768	19.3	20.7
282666	18.9	19.3	64979	19.0	17.2	333490	19.1	18.2	11668	19.2	17.6	242662	19.2	19.5	138628	19.3	23.2
353188	18.9	20.8	1975	19.0	15.3	354342	19.1	20.1	263808	19.2	20.7	513863	19.2	21.2	20921	19.3	17.8
497732	18.9	20.7	356266	19.0	20.1	456167	19.1	21.4	314476	19.2	19.4	383303	19.2	19.8	114415	19.3	18.4
361056	18.9	21.2	304675	19.0	20.4	515823	19.1	19.8	529781	19.2	19.0	14158	19.2	16.9	42534	19.3	16.0
315515	18.9	21.2	302837	19.0	19.5	22828	19.1	17.8	514061	19.2	21.4	485623	19.2	20.0	525772	19.3	20.6
357502	18.9	18.9	386727	19.0	19.4	401678	19.1	21.0	286091	19.2	18.8	253924	19.2	20.1	251487	19.3	19.9
145592	18.9	19.1	412040	19.0	20.9	139243	19.1	19.9	374158	19.2	20.7	210741	19.2	18.6	161424	19.3	20.3
386165	18.9	20.2	588	19.0	14.9	362819	19.1	20.3	112744	19.2	17.4	390317	19.2	20.5	93932	19.3	18.1
263825	18.9	19.2	12495	19.0	17.7	321170	19.1	19.9	493795	19.2	19.2	273493	19.3	20.3	74646	19.3	19.7
12836	18.9	17.3	259086	19.0	19.0	389341	19.1	21.1	66029	19.2	18.2	279428	19.3	19.4	155750	19.3	19.6
528035	18.9	21.0	367785	19.0	19.4	347882	19.1	18.9	42176	19.2	19.7	472791	19.3	21.7	295729	19.3	19.8
384095	18.9	20.0	86180	19.0	17.8	285164	19.1	19.5	14218	19.2	16.7	257205	19.3	20.2	281415	19.3	20.1
118998	18.9	18.3	152296	19.0	20.4	64650	19.1	18.3	429176	19.2	19.6	448655	19.3	19.9	449376	19.3	20.6
491130	18.9	20.2	418974	19.0	21.0	344430	19.1	20.3	520341	19.2	21.0	345907	19.3	19.1	187833	19.3	19.4
369880	18.9	20.0	144391	19.0	19.6	75362	19.1	18.1	444664	19.2	20.3	128100	19.3	19.3	500842	19.3	21.8
257891	18.9	19.4	200223	19.0	18.1	541025	19.1	18.8	149168	19.2	19.6	254627	19.3	20.5	503788	19.3	20.1
253780	18.9	20.1	533602	19.0	21.4	358901	19.1	21.3	172989	19.2	20.1	314535	19.3	20.8	277658	19.3	20.7
488488	18.9	20.5	22884	19.0	17.9	282188	19.1	19.2	27245	19.2	19.0	306106	19.3	21.1	442151	19.3	20.2
513687	18.9	20.9	518323	19.0	19.7	66670	19.1	18.4	270567	19.2	20.7	358425	19.3	21.7	512654	19.3	20.4
459625	18.9	21.8	521728	19.0	20.8	72394	19.1	18.6	36278	19.2	17.9	405452	19.3	20.4	433826	19.3	19.8
344999	18.9	20.3	407251	19.0	20.6	175734	19.1	21.5	209877	19.2	20.1	181054	19.3	19.5	68846	19.3	18.4
402476	18.9	21.4	113646	19.0	18.1	276527	19.1	18.5	206524	19.2	19.5	170420	19.3	19.7	452194	19.3	20.3
366156	18.9	20.4	410199	19.0	20.2	435928	19.1	20.4	340370	19.2	21.1	336806	19.3	20.2	490765	19.3	21.3
79702	18.9	18.1	119641	19.0	17.4	408391	19.1	20.8	263143	19.2	19.5	383341	19.3	20.4	532797	19.3	20.8
275698	18.9	19.6	35828	19.0	19.0	438821	19.1	21.0	180475	19.2	20.3	485073	19.3	21.4	340505	19.3	20.5
257416	18.9	19.9	420939	19.0	20.4	1321	19.1	14.2	120343	19.2	19.5	48101	19.3	19.9	415333	19.3	20.7
390288	18.9	21.2	320396	19.0	20.6	328112	19.1	21.1	520943	19.2	19.9	248633	19.3	20.0	47547	19.3	19.6
414157	18.9	18.7	529979	19.0	19.6	277509	19.1	20.8	297108	19.2	19.6	153901	19.3	20.2	264100	19.3	21.1
86074	18.9	18.8	520281	19.0	21.5	528918	19.1	21.1	314470	19.2	20.0	336390	19.3	20.2	355258	19.3	21.8
171920	18.9	19.5	36633	19.0	17.3	37656	19.1	18.7	410224	19.2	20.7	401236	19.3	21.0	477147	19.3	20.4
119009	18.9	18.2	157080	19.1	20.0	445013	19.1	20.8	402201	19.2	20.8	313022	19.3	20.2	121599	19.3	19.6
505794	18.9	20.8	163740	19.1	19.8	3216											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
99562	19.3	19.3	127393	19.4	19.4	97453	19.5	19.3	350158	19.6	20.8	159632	19.6	19.9	439707	19.7	21.3
107471	19.3	19.7	348544	19.4	19.4	360878	19.5	20.1	120817	19.6	20.0	103970	19.6	18.8	397046	19.7	20.5
95454	19.3	18.9	211201	19.4	20.2	527842	19.5	21.8	482342	19.6	19.8	201230	19.6	19.0	307307	19.7	19.8
127667	19.3	17.2	255352	19.4	20.1	34239	19.5	18.1	231297	19.6	20.0	390531	19.6	21.4	404868	19.7	20.4
315867	19.4	21.0	214310	19.4	20.3	323409	19.5	21.2	537130	19.6	22.5	216103	19.6	18.0	261708	19.7	20.8
117400	19.4	19.2	36956	19.4	18.3	353195	19.5	21.1	72124	19.6	19.5	215856	19.6	20.5	210184	19.7	20.4
390333	19.4	21.3	252741	19.4	20.3	208713	19.5	19.0	163380	19.6	18.0	260294	19.6	19.3	368947	19.7	19.5
400925	19.4	20.1	410230	19.4	19.8	141433	19.5	19.7	256548	19.6	20.4	395615	19.6	20.0	27070	19.7	18.0
333701	19.4	18.6	102148	19.4	18.4	340478	19.5	21.3	65657	19.6	16.6	355187	19.6	19.9	433781	19.7	21.1
506121	19.4	22.5	525764	19.4	20.1	312781	19.5	20.0	38356	19.6	18.0	139257	19.6	19.6	391884	19.7	19.9
469960	19.4	21.2	326070	19.4	20.4	333288	19.5	18.0	182433	19.6	19.1	400898	19.6	20.1	532883	19.7	20.4
338800	19.4	18.9	7222	19.4	16.1	160860	19.5	19.4	111933	19.6	18.4	235211	19.6	18.7	41304	19.7	16.4
425932	19.4	20.3	39203	19.4	18.7	508204	19.5	19.5	465642	19.6	20.1	286	19.6	13.6	148408	19.7	19.2
542863	19.4	20.7	507732	19.4	19.7	149156	19.5	19.7	341462	19.6	20.0	45994	19.7	19.3	497870	19.7	20.8
403245	19.4	19.4	299722	19.4	20.4	295209	19.5	20.2	151788	19.6	19.8	361505	19.7	21.3	1924	19.7	16.6
195031	19.4	20.1	187686	19.4	21.0	227662	19.5	19.9	16859	19.6	17.1	362863	19.7	21.1	75794	19.7	19.2
501750	19.4	21.0	356277	19.4	20.5	384100	19.5	20.4	533623	19.6	20.9	26697	19.7	18.3	105833	19.7	18.5
322071	19.4	20.1	210088	19.4	20.2	286536	19.5	18.9	53772	19.6	19.3	121184	19.7	18.7	470877	19.7	20.8
473611	19.4	20.3	259555	19.4	18.1	191128	19.5	18.7	442094	19.6	20.5	18845	19.7	17.4	121301	19.7	19.2
92285	19.4	18.5	536862	19.4	20.6	191061	19.5	20.2	442027	19.6	20.1	379652	19.7	21.1	188125	19.7	20.3
257302	19.4	20.4	208603	19.4	19.7	504989	19.5	20.9	246350	19.6	20.3	310094	19.7	20.7	442016	19.7	20.1
482168	19.4	20.2	75832	19.4	19.0	315078	19.5	20.0	343750	19.6	19.7	381881	19.7	20.1	360677	19.7	20.1
253870	19.4	21.0	6552	19.4	18.1	261341	19.5	20.7	169578	19.6	20.3	506957	19.7	20.6	261478	19.7	19.8
107890	19.4	18.9	257187	19.5	20.4	86319	19.5	18.4	440420	19.6	20.4	93817	19.7	18.7	325319	19.7	20.7
93007	19.4	19.0	12032	19.5	17.7	35790	19.5	18.1	152061	19.6	19.1	90877	19.7	17.9	296360	19.7	21.2
187014	19.4	19.9	271649	19.5	20.0	143956	19.5	19.9	38685	19.6	16.6	79006	19.7	18.7	373616	19.7	20.4
60476	19.4	18.8	126880	19.5	19.3	58755	19.5	19.0	130448	19.6	19.0	429601	19.7	20.4	384044	19.7	19.4
498433	19.4	20.3	187269	19.5	20.3	319208	19.5	19.9	255622	19.6	19.6	119678	19.7	19.2	209178	19.7	19.2
309126	19.4	20.1	526434	19.5	22.2	487660	19.5	19.9	129361	19.6	19.7	62931	19.7	17.2	442884	19.7	21.1
47320	19.4	17.4	201236	19.5	19.7	295481	19.5	19.6	254327	19.6	18.5	85284	19.7	18.3	38600	19.7	18.7
369632	19.4	19.8	436075	19.5	20.3	111807	19.5	18.6	277481	19.6	18.8	120111	19.7	18.2	9713	19.7	18.1
476525	19.4	21.0	506215	19.5	19.7	42619	19.5	20.1	344696	19.6	20.2	436752	19.7	20.5	155279	19.7	20.1
50500	19.4	19.2	521298	19.5	21.5	471595	19.5	20.6	522983	19.6	21.3	425664	19.7	21.3	389714	19.7	21.0
516221	19.4	20.6	515370	19.5	20.6	185076	19.5	19.3	95299	19.6	18.5	318213	19.7	19.6	155059	19.7	19.7
314391	19.4	19.3	377745	19.5	19.5	131260	19.5	19.4	515242	19.6	20.6	234784	19.7	20.2	204048	19.7	19.9
349920	19.4	20.4	33388	19.5	17.6	186752	19.5	19.7	371932	19.6	20.4	404156	19.7	20.8	123755	19.7	19.6
191073	19.4	19.9	164749	19.5	20.3	390711	19.5	21.2	108004	19.6	19.1	487677	19.7	20.8	56096	19.7	18.3
332224	19.4	22.4	205807	19.5	19.5	353757	19.5	20.8	148359	19.6	19.0	201669	19.7	19.0	337134	19.7	19.1
291590	19.4	20.9	375677	19.5	19.9	528202	19.5	21.8	343475	19.6	19.7	275742	19.7	19.5	233367	19.7	19.8
291651	19.4	20.5	382929	19.5	19.5	467616	19.5	21.2	175131	19.6	20.0	212001	19.7	19.4	252159	19.7	19.7
125379	19.4	19.1	384837	19.5	19.5	129694	19.5	18.9	222790	19.6	20.0	29362	19.7	17.6	41439	19.7	17.7
118956	19.4	19.1	349246	19.5	19.4	38974	19.5	19.1	129805	19.6	19.5	266953	19.7	20.2	65179	19.7	19.4
469923	19.4	21.1	376939	19.5	20.2	355706	19.5	21.5	397132	19.6	20.1	508375	19.7	20.4	278135	19.7	20.2
353200	19.4	20.1	475523	19.5	20.9	447285	19.5	20.4	523236	19.6	21.1	151730	19.7	19.6	482145	19.7	21.0
312256	19.4	20.2	375855	19.5	20.6	305189	19.5	20.3	247014	19.6	19.0	355716	19.7	21.1	246746	19.7	20.2
353209	19.4	20.4	314560	19.5	19.8	41763	19.5	17.5	238624	19.6	19.6	308661	19.7	20.7	230952	19.7	19.1
106351	19.4	20.2	343681	19.5	19.6	55497	19.5	19.3	468472	19.6	18.6	161547	19.7	19.3	156318	19.7	20.2
335797	19.4	20.4	223272	19.5	19.7	24481	19.5	17.8	208629	19.6	21.0	464037	19.7	20.5	127728	19.7	19.6
388659	19.4	19.1	330656	19.5	21.5	527688	19.6	20.9	428021	19.6	21.1	42446	19.7	19.2	141528	19.7	19.7
353208	19.4	20.6	52017	19.5	18.5	498430	19.6	20.0	439252	19.6	20.5	342839	19.7	19.1	357727	19.7	20.3
138118	19.4	18.8	214072	19.5	20.1	162105	19.6	18.5	291209	19.6	19.8	448105	19.7	20.8	319868	19.7	20.4
394220	19.4	20.7	217132	19.5	19.6	496174	19.6	22.9	287742	19.6	19.8	333206	19.7	19.9	4689	19.7	16.1
286523	19.4	19.0	392488	19.5	19.5	215712	19.6	20.1	232266	19.6	19.9	359436	19.7	20.1	418989	19.7	20.6
160525	19.4	19.3	376646	19.5	21.1	317393	19.6	19.5	213897	19.6	19.7	501561	19.7	20.7	253192	19.7	18.4
535156	19.4	20.1	261150	19.5	19.0	498483	19.6	19.2	479309	19.6	21.7	380198	19.7	21.0	281963	19.7	21.3
37076	19.4	17.2	137612	19.5	19.2	374314	19.6	20.2	396087	19.6	19.6	69188	19.7	19.7	344501	19.8	20.6
504997	19.4	20.8	209550	19.5	18.8	531281	19.6	20.7	320757	19.6	21.3	277412	19.7	20.1	77173	19.8	19.0
414784	19.4	19.5	195134	19.5	20.3	494202	19.6	20.8	398202	19.6	19.9	92821	19.7	18.7	398247	19.8	21.0
342741	19.4	20.0	150000	19.5	18.7	442129	19.6	19.8	371974	19.6	21.3	513113	19.7	19.2	178048	19.8	20.1
200639	19.4	19.8	100187	19.5	19.9	379773	19.6	20.9	157800	19.6	20.5	246991	19.7	19.2	192765	19.8	19.8
136971	19.4	18.7	170187	19.5	19.7	479893	19.6	20.3	222134	19.6	19.5	154004	19.7	17.8	504095	19.8	21.5
510971	19.4	21.5	87032	19.5	18.5	119876	19.6	20.3	15999	19.6	17.6	350399	19.7	19.2	341080	19.8	19.7
437283	19.4	20.8	169824	19.5	19.1	23355	19.6	18.6	319683	19.6	20.3	520043	19.7	20.6	1560	19.8	14.1
431951	19.4	19.8	383254	19.5	20.8	306806	19.6	18.6	175263	19.6	20.0	326004	19.7	19.9	259674	19.8	20.9
537140	19.4	21.4	361072	19.5	20.1	531010	19.6	20.6	378124	19.6	20.6	31390	19.7	16.9	510674	19.8	21.3
533436	19.4	21.2	384577	19.5	20.1	443497	19.6	20.9	118981	19.6	18.3	42627	19.7	18.5	80271	19.8	18.4
531003	19.4	20.6	126479	19.5	19.6	392862	19.6	19.0	73312	19.6	19.0	957	19.7	13.9	426430	19.8	18.9
510630	19.4	20.3	65986	19.5	19.4	528126	19.6	21.2	210617	19.6	20.7	373554	19.7	19.3	125206	19.8	19.6
430738	19.4	20.6	510481	19.5	20.4	404759											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
361902	19.8	21.1	11445	19.8	16.4	98486	19.9	18.3	423781	19.9	20.5	448742	20.1	20.5	439317	20.1	20.2
206646	19.8	19.4	527373	19.8	20.2	336288	19.9	19.7	146754	19.9	19.5	522582	20.1	21.3	347155	20.1	20.6
408126	19.8	21.1	205233	19.8	18.5	366262	19.9	20.2	365130	19.9	20.7	399774	20.1	22.8	85737	20.1	18.5
75905	19.8	18.8	172433	19.8	19.0	214140	19.9	20.8	89852	19.9	19.8	386674	20.1	20.4	254656	20.1	20.1
160523	19.8	19.0	447343	19.8	20.6	525513	19.9	21.3	519722	19.9	21.2	504802	20.1	21.8	140755	20.1	18.9
73161	19.8	18.5	508185	19.8	21.1	127243	19.9	19.3	499631	19.9	20.1	291762	20.1	20.3	315124	20.1	20.6
273895	19.8	20.0	420474	19.8	20.7	367509	19.9	20.2	1647	19.9	17.5	376964	20.1	20.9	44942	20.1	18.0
145539	19.8	20.2	440617	19.8	19.6	303775	19.9	21.0	225062	19.9	19.8	128862	20.1	19.5	237482	20.1	20.4
253852	19.8	19.4	482167	19.8	21.0	78408	19.9	18.7	482113	19.9	19.0	120511	20.1	18.5	218505	20.1	19.5
261337	19.8	19.8	319438	19.9	20.6	9039	19.9	16.8	521439	19.9	20.1	102784	20.1	19.9	408952	20.1	20.2
535344	19.8	21.7	248160	19.9	18.7	91180	19.9	19.0	255578	19.9	19.9	469544	20.1	20.4	322659	20.1	18.8
38434	19.8	18.0	123103	19.9	18.4	501622	19.9	20.1	91728	19.9	18.7	404859	20.1	19.9	525327	20.1	20.0
472684	19.8	21.2	195532	19.9	19.7	5881	19.9	16.1	160661	19.9	19.8	56355	20.1	19.2	260860	20.1	20.0
252877	19.8	19.9	35446	19.9	18.8	504704	19.9	19.6	495087	19.9	20.4	36444	20.1	17.7	313966	20.1	19.6
179554	19.8	20.8	71754	19.9	17.2	79543	19.9	18.0	507735	19.9	19.5	485259	20.1	20.7	105505	20.1	17.8
393369	19.8	18.9	43009	19.9	17.7	512894	19.9	20.6	132565	19.9	18.5	233776	20.1	20.6	218396	20.1	19.8
128468	19.8	18.7	213840	19.9	18.1	264073	19.9	20.2	336353	19.9	20.2	512111	20.1	21.0	264051	20.1	20.5
304306	19.8	19.9	216699	19.9	19.9	269546	19.9	19.8	312637	19.9	20.1	103100	20.1	18.5	385187	20.2	20.3
397127	19.8	19.6	520443	19.9	21.7	61727	19.9	18.5	409330	20.0	19.5	40567	20.1	18.0	68865	20.2	19.0
355757	19.8	20.0	111067	19.9	18.8	144144	19.9	19.1	378336	20.0	21.4	290076	20.1	19.8	386324	20.2	20.5
472727	19.8	20.7	146898	19.9	20.2	480696	19.9	21.0	519663	20.0	19.5	185501	20.1	20.1	195478	20.2	19.8
433027	19.8	20.0	123128	19.9	19.7	425896	19.9	19.8	83601	20.0	18.7	103791	20.1	19.4	513582	20.2	20.4
433712	19.8	20.6	250802	19.9	20.1	174837	19.9	18.5	363525	20.0	19.2	75473	20.1	18.2	297144	20.2	19.9
39576	19.8	18.7	193596	19.9	19.6	196160	19.9	19.4	384828	20.0	19.7	362982	20.1	19.8	116463	20.2	19.2
37512	19.8	17.5	278288	19.9	19.8	531913	19.9	20.5	278334	20.0	20.2	522604	20.1	20.6	175997	20.2	18.7
399621	19.8	21.4	166550	19.9	19.4	293226	19.9	20.0	136414	20.0	19.5	523736	20.1	21.1	206334	20.2	19.7
238829	19.8	19.3	438365	19.9	21.1	277482	19.9	20.3	533620	20.0	21.2	183753	20.1	20.0	262765	20.2	20.6
264062	19.8	19.7	430546	19.9	21.1	153166	19.9	20.1	162520	20.0	18.9	173205	20.1	18.5	152039	20.2	19.0
387087	19.8	20.9	92618	19.9	18.4	35984	19.9	18.8	456192	20.0	21.9	492334	20.1	20.7	95377	20.2	19.7
39282	19.8	18.2	213192	19.9	19.3	436180	19.9	20.9	228657	20.0	19.9	499497	20.1	20.7	533285	20.2	20.8
257006	19.8	20.5	390913	19.9	21.0	152138	19.9	19.7	11870	20.0	17.6	427760	20.1	19.1	310671	20.2	19.6
30049	19.8	19.1	362583	19.9	20.0	540996	19.9	20.4	320587	20.0	19.9	415347	20.1	21.3	312766	20.2	20.0
319291	19.8	20.9	288009	19.9	19.8	410235	19.9	20.4	338060	20.0	20.1	350920	20.1	19.1	202658	20.2	20.5
424014	19.8	19.9	256532	19.9	21.3	360966	19.9	20.2	78374	20.0	18.9	334378	20.1	19.6	505738	20.2	21.2
240998	19.8	19.6	267752	19.9	20.8	393656	19.9	18.1	353198	20.0	20.9	534392	20.1	20.1	512198	20.2	21.1
98271	19.8	19.1	413781	19.9	20.1	126258	19.9	19.5	159047	20.0	18.7	433285	20.1	21.2	67788	20.2	18.2
78486	19.8	17.4	504965	19.9	19.9	263517	19.9	21.3	510637	20.0	20.7	168328	20.1	19.7	119894	20.2	19.0
336274	19.8	19.6	254373	19.9	20.0	71422	19.9	18.1	245247	20.0	18.9	89913	20.1	19.6	256524	20.2	19.9
538964	19.8	21.3	478290	19.9	20.6	397460	19.9	20.6	456968	20.0	21.0	478031	20.1	20.7	40091	20.2	17.9
366530	19.8	20.6	245777	19.9	19.5	68452	19.9	18.5	342427	20.0	20.0	349798	20.1	20.2	238731	20.2	19.5
528687	19.8	20.6	121775	19.9	19.3	274386	19.9	19.4	20739	20.0	18.7	255200	20.1	20.4	73058	20.2	19.2
389997	19.8	20.4	106066	19.9	20.2	340373	19.9	20.8	38327	20.0	18.6	418014	20.1	19.0	96062	20.2	19.3
404495	19.8	20.8	390781	19.9	19.2	291861	19.9	19.4	439911	20.0	19.8	77439	20.1	19.6	304487	20.2	20.4
326934	19.8	21.0	540246	19.9	20.1	236929	19.9	20.6	379270	20.0	18.9	170691	20.1	20.0	397657	20.2	20.4
260486	19.8	19.9	529018	19.9	21.9	100819	19.9	20.7	280361	20.0	19.5	319245	20.1	20.9	121849	20.2	19.6
175145	19.8	19.4	117631	19.9	19.8	533253	19.9	20.8	482133	20.0	20.8	524574	20.1	19.9	216768	20.2	20.8
5318	19.8	16.7	397063	19.9	19.9	216906	19.9	20.7	18665	20.0	18.1	436396	20.1	20.3	520473	20.2	21.3
63231	19.8	19.6	12579	19.9	18.7	136402	19.9	20.4	431390	20.0	19.8	481179	20.1	19.8	38156	20.2	16.9
313941	19.8	20.0	205412	19.9	19.9	37925	19.9	18.7	84365	20.0	18.7	533943	20.1	19.5	421446	20.2	19.9
145308	19.8	19.5	177264	19.9	20.2	80910	19.9	20.1	269929	20.0	19.3	279204	20.1	19.9	392739	20.2	20.0
472087	19.8	20.6	269970	19.9	19.4	385579	19.9	19.3	285639	20.0	19.0	171938	20.1	19.4	427728	20.2	19.8
357131	19.8	19.6	381133	19.9	20.7	419943	19.9	19.4	179364	20.0	19.3	245112	20.1	19.3	123585	20.2	18.0
464268	19.8	20.5	500859	19.9	21.2	536062	19.9	20.8	404143	20.0	20.2	157402	20.1	19.5	6403	20.2	16.5
528438	19.8	20.8	169519	19.9	19.9	108340	19.9	18.4	388755	20.0	20.3	151498	20.1	19.9	93673	20.2	18.6
361858	19.8	20.0	204502	19.9	19.7	89882	19.9	17.3	181964	20.0	19.2	540815	20.1	20.3	70129	20.2	18.1
170210	19.8	19.9	290655	19.9	20.6	180453	19.9	20.3	82194	20.0	19.0	4436	20.1	16.4	38888	20.2	17.8
368659	19.8	21.5	507689	19.9	20.0	118467	19.9	18.0	294897	20.0	20.8	208653	20.1	20.0	482369	20.2	20.7
44743	19.8	18.1	131217	19.9	18.7	398245	19.9	20.2	94543	20.0	19.1	407276	20.1	20.8	60824	20.2	18.3
431423	19.8	20.3	424013	19.9	18.8	542653	19.9	21.0	205781	20.0	19.6	77103	20.1	19.9	505477	20.2	23.4
215837	19.8	20.6	424082	19.9	20.8	481173	19.9	20.7	500127	20.0	21.1	1331	20.1	14.6	155049	20.2	18.7
340542	19.8	20.1	307007	19.9	19.1	358868	19.9	19.9	327351	20.0	19.8	471787	20.1	20.4	442031	20.2	19.6
512018	19.8	21.0	120893	19.9	19.5	355063	19.9	21.0	13475	20.0	18.4	175414	20.1	20.2	431013	20.2	20.8
263527	19.8	20.8	238975	19.9	19.2	277207	19.9	18.9	198442	20.0	19.1	416303	20.1	19.0	244169	20.2	20.1
315356	19.8	20.7	442167	19.9	20.1	223523	19.9	21.1	167768	20.0	19.2	281973	20.1	20.0	387442	20.2	19.9
410772	19.8	21.6	243496	19.9	20.2	76011	19.9	18.6	367712	20.0	20.6	357505	20.1	19.5	20379	20.2	18.4
56581	19.8	19.2	307569	19.9	19.8	336328	19.9	20.3	464027	20.0	21.6	299385	20.1	20.8	83427	20.2	18.0
521476	19.8	21.1	236763	19.9	19.3	92063	19.9	18.7	530950	20.0	22.0	209361	20.1	20.3	327828	20.2	20.2
14043	19.8	16.7	67862	19.9	18.3	287122	19.9	18.8	24809	20.1	16.1	297563	20.1	19.2	497859	20.2	20.7
540992	19.8	20.7	397000	19.9	21.5	335128	19.										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
500788	20.2	21.5	217556	20.3	20.2	85574	20.3	19.3	40945	20.4	18.9	390409	20.5	19.9	191843	20.6	18.6
298288	20.2	18.9	258698	20.3	20.4	527620	20.3	19.9	103552	20.4	19.2	20211	20.5	19.2	417528	20.6	19.6
251847	20.2	19.2	111221	20.3	17.1	527991	20.3	21.8	104651	20.4	17.6	533486	20.5	20.3	503564	20.6	20.5
486858	20.2	21.8	31687	20.3	18.2	24627	20.3	17.7	443019	20.4	20.6	214542	20.5	20.7	202924	20.6	19.1
509861	20.2	20.5	534932	20.3	20.5	160527	20.3	18.8	338561	20.4	19.3	495934	20.5	21.4	513358	20.6	23.9
130605	20.2	17.9	83118	20.3	18.7	364189	20.3	19.4	35047	20.4	19.3	3168	20.5	15.9	212981	20.6	20.6
438171	20.2	19.6	480756	20.3	21.6	114726	20.3	20.4	172693	20.4	20.0	389141	20.5	19.3	33226	20.6	17.9
362290	20.2	21.3	537630	20.3	20.9	226352	20.3	20.2	321532	20.4	19.8	439503	20.5	20.6	293829	20.6	20.0
313143	20.2	20.2	93613	20.3	19.1	399706	20.3	19.9	333697	20.4	18.7	284635	20.5	19.4	143383	20.6	19.2
123827	20.2	19.2	295556	20.3	20.8	359931	20.3	20.6	211198	20.4	20.1	165242	20.5	18.9	376374	20.6	19.5
360181	20.2	20.2	18101	20.3	17.4	317665	20.3	19.8	443420	20.4	20.7	447685	20.5	21.3	74739	20.6	18.4
356737	20.2	19.6	146852	20.3	19.4	342106	20.4	19.3	540819	20.4	20.8	171732	20.5	19.7	65111	20.6	19.2
183493	20.2	20.7	203776	20.3	18.4	450935	20.4	19.0	61172	20.4	18.0	446135	20.5	20.9	280419	20.6	19.1
120719	20.2	19.8	256936	20.3	19.9	338744	20.4	19.7	133769	20.4	18.6	372601	20.5	19.3	532043	20.6	20.5
530576	20.2	20.9	328474	20.3	20.4	63908	20.4	18.4	16709	20.4	17.5	126835	20.5	19.1	481465	20.6	20.5
354694	20.2	19.9	335550	20.3	19.8	225291	20.4	20.3	281793	20.4	21.0	64192	20.5	17.9	384021	20.6	19.6
208695	20.2	19.8	70090	20.3	18.8	526820	20.4	21.0	430558	20.4	21.4	180195	20.5	18.7	40178	20.6	18.4
260108	20.2	20.5	447314	20.3	20.1	145110	20.4	18.7	352610	20.4	20.9	422849	20.5	21.8	321837	20.6	20.7
501695	20.2	20.5	346779	20.3	20.3	346580	20.4	20.0	373160	20.4	21.4	120101	20.5	19.5	100385	20.6	19.5
78102	20.2	18.7	516234	20.3	20.0	245151	20.4	18.8	168616	20.4	20.0	40717	20.5	15.4	399157	20.6	20.8
76176	20.2	19.0	433265	20.3	19.4	254189	20.4	19.3	281103	20.4	20.0	192771	20.5	19.2	245281	20.6	20.0
274360	20.2	18.9	468002	20.3	18.5	389575	20.4	21.2	94263	20.4	19.2	449923	20.5	20.0	359557	20.6	19.9
472110	20.2	19.5	162820	20.3	19.8	813	20.4	13.9	125418	20.4	19.1	314539	20.5	20.1	533239	20.6	20.8
439198	20.2	19.7	69851	20.3	18.7	316070	20.4	21.2	299521	20.4	19.7	470947	20.5	21.4	463107	20.6	20.4
66800	20.2	19.0	95569	20.3	19.4	24536	20.4	18.5	199868	20.4	19.2	356446	20.5	19.9	260144	20.6	20.7
539190	20.2	20.7	312618	20.3	20.5	338493	20.4	19.3	121506	20.4	19.3	283152	20.5	19.5	307236	20.6	21.0
455702	20.2	21.1	438811	20.3	20.4	430639	20.4	19.2	99698	20.4	19.5	516316	20.5	20.4	429977	20.6	20.0
258666	20.2	20.7	441820	20.3	20.0	149553	20.4	20.1	273637	20.4	20.5	43436	20.5	19.0	87337	20.6	17.4
356255	20.2	20.9	43625	20.3	19.0	216120	20.4	20.5	479356	20.4	21.4	431024	20.5	19.5	69951	20.6	18.1
184940	20.2	19.8	521748	20.3	20.7	189486	20.4	17.2	396433	20.4	20.8	314613	20.5	20.2	230383	20.6	20.1
328203	20.2	20.4	321805	20.3	19.3	365063	20.4	20.7	123538	20.4	17.8	157585	20.5	19.2	522802	20.6	21.5
55636	20.2	19.9	250105	20.3	18.8	457704	20.4	20.7	44165	20.4	17.6	257294	20.5	20.1	42384	20.6	18.2
75426	20.2	18.2	153179	20.3	19.1	488374	20.4	20.0	347961	20.4	17.5	541043	20.5	20.4	272906	20.6	20.0
449554	20.2	19.8	271797	20.3	19.0	500961	20.4	21.8	218605	20.4	20.4	438935	20.5	21.8	499120	20.6	21.9
429177	20.2	20.4	67269	20.3	18.1	510954	20.4	21.8	242833	20.4	20.4	416428	20.5	19.2	288080	20.6	20.0
41762	20.2	18.6	291646	20.3	19.9	310547	20.4	20.7	146930	20.4	19.9	357886	20.5	19.8	370630	20.6	19.6
24383	20.2	17.9	467635	20.3	21.1	200232	20.4	17.9	150186	20.4	19.3	441990	20.5	20.4	504079	20.6	19.3
388001	20.2	21.4	287367	20.3	20.9	342735	20.4	19.8	424549	20.4	21.4	70440	20.5	16.7	482381	20.6	21.4
251037	20.2	19.6	42591	20.3	18.9	187822	20.4	17.4	125588	20.5	18.2	324947	20.5	19.6	77323	20.6	19.2
122632	20.2	18.1	258194	20.3	19.4	177334	20.4	18.8	79923	20.5	18.4	240731	20.5	20.0	190311	20.6	19.7
313927	20.2	18.8	423986	20.3	20.0	118525	20.4	17.0	533657	20.5	21.2	285430	20.5	20.5	404855	20.6	20.1
306364	20.2	20.1	203704	20.3	20.0	359670	20.4	19.5	264014	20.5	20.1	433122	20.5	20.5	516292	20.6	20.2
294202	20.2	20.5	12528	20.3	17.1	515397	20.4	21.4	65609	20.5	19.0	288162	20.5	19.4	328151	20.6	19.7
191991	20.2	18.1	312065	20.3	18.8	114040	20.4	18.6	508206	20.5	19.8	158425	20.5	20.1	192980	20.6	20.3
295746	20.2	19.3	446726	20.3	20.7	502543	20.4	19.9	430927	20.5	21.2	107975	20.5	19.6	438192	20.6	20.1
132012	20.2	19.9	455308	20.3	22.0	214093	20.4	19.4	537594	20.5	21.1	295306	20.5	20.0	297166	20.6	19.8
184233	20.2	18.6	225795	20.3	18.7	291102	20.4	19.6	245045	20.5	20.7	263399	20.5	20.4	418628	20.6	20.3
306178	20.2	20.0	184081	20.3	17.8	478300	20.4	20.9	312627	20.5	19.5	208058	20.5	18.4	420781	20.6	20.9
471382	20.2	20.6	145442	20.3	19.6	359570	20.4	20.5	377651	20.5	20.0	376256	20.5	20.6	332549	20.6	19.4
382779	20.2	20.5	208365	20.3	19.2	316934	20.4	17.8	503869	20.5	21.8	238617	20.5	20.1	437847	20.6	19.5
788	20.2	13.7	231796	20.3	20.5	398502	20.4	20.4	521407	20.5	20.1	118463	20.5	17.7	251673	20.6	19.5
38429	20.2	17.8	186963	20.3	19.2	539820	20.4	19.3	327758	20.5	19.6	167442	20.5	19.2	492617	20.6	20.4
38051	20.2	18.2	140121	20.3	19.2	261522	20.4	19.4	416481	20.5	20.9	2055	20.5	17.6	206690	20.6	19.5
298768	20.2	17.8	530005	20.3	20.8	509898	20.4	20.4	39093	20.5	18.4	221732	20.5	19.2	196504	20.6	20.2
170364	20.3	19.4	390322	20.3	20.5	437757	20.4	21.4	213569	20.5	20.4	245092	20.5	20.5	43498	20.6	17.3
468901	20.3	18.6	141291	20.3	20.0	88711	20.4	18.7	11025	20.5	17.3	442054	20.5	20.2	63239	20.6	19.0
515060	20.3	20.2	57041	20.3	18.9	430834	20.4	20.7	311506	20.5	19.7	227421	20.5	19.0	476188	20.6	20.9
247010	20.3	19.0	400206	20.3	21.3	59653	20.4	18.3	394856	20.5	20.3	9640	20.5	18.1	175336	20.6	19.8
207279	20.3	20.1	395697	20.3	19.6	126244	20.4	18.5	121467	20.5	18.8	499594	20.5	20.9	80504	20.6	19.6
15609	20.3	17.4	450032	20.3	20.1	123163	20.4	18.8	122800	20.5	19.2	328305	20.5	19.5	462499	20.6	19.4
126892	20.3	18.8	366493	20.3	21.0	257651	20.4	19.9	1294	20.5	13.0	230301	20.5	19.7	357549	20.6	21.0
218807	20.3	19.6	472082	20.3	20.1	377036	20.4	18.6	505147	20.5	20.6	140632	20.5	20.2	481986	20.6	20.4
64352	20.3	18.2	123139	20.3	18.9	263297	20.4	20.2	516832	20.5	20.0	521207	20.5	21.5	222843	20.6	19.8
135622	20.3	18.9	502298	20.3	19.8	192903	20.4	18.6	90334	20.5	17.3	2469	20.5	16.9	242052	20.6	19.3
497892	20.3	20.5	336312	20.3	20.7	503300	20.4	21.5	336258	20.5	19.3	238508	20.5	20.0	256447	20.6	20.2
311517	20.3	20.6	4536	20.3	16.7	91934	20.4	18.5	218675	20.5	19.4	30427	20.5	17.6	183503	20.6	19.7
105638	20.3	18.8	542722	20.3	21.2	417538	20.4	19.4	295134	20.5	20.9	6706	20.5	15.4	134065	20.6	20.1
256470	20.3	20.0	246090	20.3	19.8	137918	20.4	21.0	119938	20.5	19.6	472890	20.5	21.2	506039	20.6	20.4
13139	20.3	16.5	257161	20.3	20.0	80847											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
276044	20.6	20.2	461473	20.7	19.7	46554	20.8	18.0	217530	20.9	20.0	96145	20.9	18.8	250799	21.0	20.8
410759	20.6	19.9	398843	20.7	20.5	523958	20.8	20.4	503421	20.9	20.2	326974	20.9	20.6	316948	21.0	21.1
153165	20.6	19.7	196667	20.7	19.7	404535	20.8	21.7	12963	20.9	16.7	537596	20.9	19.6	338748	21.0	18.8
99700	20.6	19.8	29195	20.7	18.5	321912	20.8	20.5	170157	20.9	19.5	271079	20.9	20.1	43299	21.0	19.1
158494	20.6	19.7	355645	20.7	21.3	530011	20.8	20.3	149183	20.9	20.1	225502	20.9	19.4	316924	21.0	20.1
528092	20.6	20.8	291797	20.7	20.7	6663	20.8	16.8	236395	20.9	19.9	85642	20.9	17.2	343848	21.0	18.7
399868	20.6	21.0	37301	20.7	19.0	119468	20.8	19.4	448039	20.9	20.8	418379	20.9	21.3	355739	21.0	20.4
410171	20.6	19.8	79028	20.7	19.2	134297	20.8	19.6	233828	20.9	19.2	92831	20.9	18.5	100061	21.0	19.2
121497	20.6	18.6	214110	20.7	19.9	200239	20.8	20.2	393934	20.9	19.7	521566	20.9	20.6	336242	21.0	20.4
85098	20.7	18.9	432285	20.7	21.2	189772	20.8	19.5	400879	20.9	20.8	75267	20.9	17.5	512452	21.0	20.5
274379	20.7	19.4	465392	20.7	19.4	169440	20.8	20.1	392101	20.9	20.6	326929	20.9	20.3	263804	21.0	19.7
316141	20.7	20.3	203459	20.7	19.8	285348	20.8	19.4	326775	20.9	19.4	127892	20.9	20.0	404171	21.0	20.7
441924	20.7	21.5	358956	20.7	20.1	333084	20.8	20.2	284077	20.9	19.7	296363	20.9	19.9	440290	21.0	19.1
21599	20.7	17.9	66288	20.7	17.4	361153	20.8	21.2	388919	20.9	20.3	42374	20.9	18.3	310524	21.0	19.9
533539	20.7	21.5	216452	20.7	20.5	46599	20.8	17.9	84211	20.9	18.5	110441	20.9	18.6	122968	21.0	18.2
416331	20.7	19.9	471845	20.7	18.9	481106	20.8	20.5	167431	20.9	19.7	499571	20.9	20.9	509853	21.0	21.3
173620	20.7	20.5	506591	20.7	20.2	434207	20.8	20.1	207011	20.9	20.0	479132	20.9	21.3	355739	21.0	21.0
425506	20.7	20.2	209394	20.7	21.0	358389	20.8	21.4	519728	20.9	20.7	26660	20.9	16.9	390311	21.0	20.0
332100	20.7	19.6	92972	20.7	18.0	103757	20.8	19.1	36138	20.9	18.0	85716	20.9	17.8	179672	21.0	20.2
412161	20.7	20.5	237533	20.7	18.4	483159	20.8	20.2	123548	20.9	19.2	65223	20.9	19.4	528337	21.0	20.4
203763	20.7	19.5	367080	20.7	20.8	61945	20.8	18.4	164212	20.9	19.5	78377	20.9	19.0	374312	21.0	20.5
145669	20.7	20.2	282128	20.7	19.4	71785	20.8	18.6	485746	20.9	19.6	224020	20.9	19.4	19197	21.0	17.2
255708	20.7	19.1	249526	20.7	20.2	253665	20.8	19.1	264962	20.9	20.0	364647	20.9	19.1	384774	21.0	20.2
297542	20.7	19.9	311192	20.7	19.0	142068	20.8	18.5	521105	20.9	21.2	312522	20.9	19.3	345923	21.0	20.4
107280	20.7	19.8	353141	20.7	20.8	429153	20.8	21.2	138893	20.9	18.6	422976	20.9	21.2	77298	21.0	19.1
300683	20.7	20.3	219964	20.7	20.0	286043	20.8	19.7	135582	20.9	20.3	262512	20.9	20.0	469435	21.0	21.2
90943	20.7	17.7	177418	20.7	20.4	29610	20.8	17.4	13167	20.9	17.6	387605	20.9	20.5	435643	21.0	19.1
118135	20.7	19.2	299387	20.7	20.7	16496	20.8	17.3	422816	20.9	20.3	435803	20.9	19.7	134120	21.0	19.0
46080	20.7	19.3	198066	20.7	18.6	362049	20.8	20.9	252164	20.9	19.9	528613	20.9	20.1	479348	21.0	20.4
305462	20.7	19.9	437642	20.7	20.4	115072	20.8	19.0	251806	20.9	20.1	36720	20.9	17.7	463737	21.0	20.4
395235	20.7	19.6	326954	20.7	20.5	338796	20.8	19.6	126751	20.9	19.1	347148	20.9	19.8	44569	21.0	17.5
391981	20.7	20.2	209533	20.7	18.8	8208	20.8	16.7	49377	20.9	18.5	497672	20.9	20.8	449012	21.0	21.0
324226	20.7	20.3	74215	20.7	18.5	188139	20.8	20.2	361463	20.9	21.6	482932	20.9	20.9	127047	21.0	19.6
252933	20.7	20.1	221709	20.7	20.6	514018	20.8	21.0	455297	20.9	21.4	448594	20.9	20.7	136594	21.0	20.1
107708	20.7	19.5	173321	20.7	18.1	423677	20.8	21.1	4777	20.9	15.7	193547	20.9	19.5	278303	21.0	20.5
389567	20.7	21.0	283562	20.7	19.4	203341	20.8	17.8	218595	20.9	20.0	352659	20.9	20.2	380876	21.0	20.1
293405	20.7	21.1	177944	20.7	20.7	468793	20.8	21.9	509585	20.9	21.8	16561	20.9	17.7	500078	21.1	21.1
216009	20.7	19.8	508241	20.7	21.2	47485	20.8	18.2	219053	20.9	20.4	285455	20.9	19.0	193637	21.1	19.0
295578	20.7	20.3	73882	20.7	19.4	107073	20.8	19.7	262692	20.9	19.3	367138	20.9	19.6	402805	21.1	22.2
130191	20.7	18.8	527203	20.7	19.9	346139	20.8	20.2	256711	20.9	20.6	174572	20.9	17.4	423900	21.1	20.0
356705	20.7	19.9	512869	20.7	20.5	132090	20.8	19.5	13085	20.9	18.2	11456	20.9	18.0	289088	21.1	19.7
253763	20.7	19.5	121384	20.7	18.7	272667	20.8	20.3	438172	20.9	21.1	34970	20.9	18.8	353177	21.1	20.8
272609	20.7	20.4	147800	20.7	19.6	505779	20.8	21.1	126621	20.9	19.5	141177	20.9	19.8	446227	21.1	19.9
415165	20.7	20.5	31200	20.7	18.5	55965	20.8	18.3	49968	20.9	17.2	51309	20.9	18.8	127541	21.1	18.7
293474	20.7	20.5	204059	20.8	19.9	193590	20.8	18.4	525412	20.9	20.8	521248	20.9	21.2	283219	21.1	19.3
248096	20.7	19.2	254296	20.8	20.8	440628	20.8	19.7	248120	20.9	19.7	255460	20.9	20.8	525834	21.1	20.7
67173	20.7	18.4	176561	20.8	19.5	55937	20.8	17.5	106755	20.9	18.7	340418	20.9	19.7	92960	21.1	18.0
542657	20.7	21.1	69672	20.8	18.4	257460	20.8	20.7	472440	20.9	20.4	314173	20.9	20.5	120667	21.1	19.7
155295	20.7	19.1	282441	20.8	19.6	215828	20.8	19.7	358384	20.9	20.4	341098	20.9	20.8	542463	21.1	21.0
117213	20.7	17.9	24349	20.8	16.8	342910	20.8	19.8	540387	20.9	20.0	384851	20.9	20.2	482055	21.1	23.4
386807	20.7	20.4	155140	20.8	19.0	253153	20.8	19.8	106129	20.9	18.5	141602	20.9	19.3	390218	21.1	20.9
510923	20.7	21.4	514364	20.8	20.4	510970	20.8	22.1	435124	20.9	21.5	405796	20.9	20.8	119945	21.1	20.1
95825	20.7	19.8	451375	20.8	20.2	537447	20.8	18.7	339213	20.9	20.2	496439	20.9	21.2	257149	21.1	20.2
157323	20.7	19.0	89399	20.8	17.5	417573	20.8	21.0	320682	20.9	21.4	399665	20.9	20.3	466663	21.1	19.9
115697	20.7	17.8	86075	20.8	18.7	508898	20.8	19.9	218783	20.9	20.2	262441	20.9	20.2	592917	21.1	21.2
59995	20.7	18.7	28153	20.8	17.0	16729	20.8	17.9	376271	20.9	20.4	435719	20.9	20.5	441865	21.1	21.5
120170	20.7	19.3	132412	20.8	18.9	39292	20.8	19.6	507372	20.9	20.6	446731	20.9	20.3	78293	21.1	18.2
477562	20.7	21.2	257353	20.8	19.7	389562	20.8	19.8	167798	20.9	20.3	214401	20.9	19.2	305403	21.1	20.2
401099	20.7	19.8	20671	20.8	19.0	467034	20.8	20.6	255361	20.9	19.5	149773	20.9	19.8	87741	21.1	18.3
18226	20.7	15.7	512247	20.8	21.1	539791	20.8	20.4	74879	20.9	18.6	353363	20.9	20.2	255501	21.1	17.8
427372	20.7	20.3	361960	20.8	21.1	309836	20.8	21.1	303641	20.9	19.4	345936	21.0	20.0	251834	21.1	19.2
338635	20.7	18.9	427108	20.8	20.9	191077	20.8	20.5	539786	20.9	21.1	437302	21.0	21.5	361169	21.1	20.8
98323	20.7	17.9	361118	20.8	21.3	255826	20.8	19.5	422723	20.9	21.8	139999	21.0	18.9	315171	21.1	20.7
390548	20.7	21.0	2040	20.8	15.9	216724	20.8	20.7	7374	20.9	18.4	134520	21.0	20.2	509940	21.1	21.0
429131	20.7	20.9	289705	20.8	21.0	248079	20.9	19.3	395533	20.9	20.3	435252	21.0	20.2	362834	21.1	20.4
40391	20.7	17.3	285157	20.8	19.5	121476	20.9	18.8	383656	20.9	20.8	361028	21.0	20.5	2499	21.1	17.2
484629	20.7	20.2	529961	20.8	20.6	316956	20.9	21.1	27252	20.9	18.6	457502	21.0	19.0	225821	21.1	19.0
448628	20.7	22.3	361145	20.8	20.8	50099	20.9	17.8	298767	20.9	19.3	523011	21.0	21.1	5436	21.1	17.3
96359	20.7	20.1	338717	20.8	18.4	364603	20.										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
74283	21.1	18.6	384942	21.2	20.5	302779	21.2	20.6	120641	21.3	17.7	526439	21.4	21.7	27317	21.4	17.8
240675	21.1	19.6	359603	21.2	20.3	474448	21.2	18.9	198317	21.3	19.3	216642	21.4	19.0	293143	21.4	20.9
290661	21.1	21.2	365724	21.2	20.9	521795	21.2	20.4	506429	21.3	19.0	440886	21.4	20.2	299807	21.4	19.5
57039	21.1	19.0	211938	21.2	19.8	367306	21.2	20.8	263077	21.3	19.0	182878	21.4	20.0	127323	21.4	19.9
537578	21.1	21.0	470815	21.2	20.6	265665	21.2	20.0	461591	21.3	21.0	96026	21.4	19.6	127154	21.4	19.5
107948	21.1	19.8	149021	21.2	20.0	174739	21.2	18.8	19490	21.3	15.7	524345	21.4	21.0	387036	21.4	20.3
474061	21.1	21.4	42341	21.2	16.7	146925	21.2	19.0	442101	21.3	20.1	171315	21.4	19.6	358390	21.4	20.9
310878	21.1	19.7	91542	21.2	18.0	375664	21.2	21.5	387263	21.3	20.7	321794	21.4	19.8	534911	21.4	20.2
229894	21.1	19.7	384977	21.2	20.2	412618	21.2	20.9	389292	21.3	20.3	532400	21.4	20.6	434718	21.4	20.7
420106	21.1	21.2	514350	21.2	20.2	243316	21.2	19.9	437758	21.3	20.5	257641	21.4	20.7	125789	21.4	19.4
125916	21.1	19.3	413160	21.2	20.3	497050	21.2	20.5	29995	21.3	18.7	496856	21.4	20.0	296249	21.4	20.1
51637	21.1	18.2	144094	21.2	19.3	17041	21.2	17.8	284300	21.3	20.3	449418	21.4	22.0	366715	21.4	20.8
180348	21.1	19.8	288552	21.2	21.6	444631	21.2	20.8	177215	21.3	20.1	280057	21.4	20.6	356226	21.4	20.2
424578	21.1	21.0	352953	21.2	19.8	382025	21.2	20.5	433272	21.3	21.3	478556	21.4	20.9	511998	21.4	20.7
137990	21.1	18.3	45173	21.2	17.1	63099	21.2	16.8	430014	21.3	20.1	244700	21.4	18.9	58736	21.4	17.4
235872	21.1	18.8	150820	21.2	19.7	340475	21.2	20.9	55561	21.3	18.2	246669	21.4	20.3	467748	21.4	20.7
70976	21.1	18.5	40170	21.2	18.6	310675	21.2	21.3	415516	21.3	19.8	474002	21.4	21.6	91057	21.4	18.8
471748	21.1	20.4	89072	21.2	19.0	371603	21.2	20.1	45864	21.3	17.0	249474	21.4	18.7	290892	21.4	19.9
434265	21.1	20.3	518179	21.2	20.7	165199	21.2	18.7	278405	21.3	20.2	291438	21.4	21.3	175870	21.4	20.6
222049	21.1	19.8	53656	21.2	18.8	418078	21.2	21.1	334429	21.3	20.6	304360	21.4	19.8	192344	21.4	20.4
193405	21.1	18.3	292970	21.2	20.5	22931	21.2	18.5	142365	21.3	18.9	234350	21.4	20.4	190448	21.4	19.0
454215	21.1	20.5	90280	21.2	19.2	380005	21.2	20.4	357950	21.3	20.8	336522	21.4	19.2	288691	21.4	19.2
467494	21.1	20.2	16574	21.2	17.6	227908	21.3	20.5	318089	21.3	20.5	316461	21.4	20.6	537614	21.4	19.8
540238	21.1	20.9	529332	21.2	22.0	316358	21.3	20.4	472793	21.3	20.8	7363	21.4	16.4	208355	21.4	19.5
177898	21.1	19.2	20179	21.2	17.0	262080	21.3	19.9	154905	21.3	19.2	84855	21.4	18.5	420856	21.4	20.8
131163	21.1	19.4	219481	21.2	20.6	319277	21.3	20.1	500251	21.3	21.3	31648	21.4	18.2	387136	21.4	20.5
13030	21.1	15.9	33598	21.2	18.0	472594	21.3	20.6	41050	21.3	16.3	222717	21.4	18.6	478340	21.4	20.1
74771	21.1	19.8	182018	21.2	20.7	139083	21.3	20.8	65216	21.3	18.9	215410	21.4	19.3	437496	21.4	20.7
442797	21.1	21.7	267446	21.2	21.0	93701	21.3	18.7	198351	21.3	19.8	307294	21.4	19.8	332501	21.4	21.6
63338	21.1	18.8	410258	21.2	19.9	313685	21.3	19.5	101947	21.3	19.1	207157	21.4	20.3	537670	21.4	21.5
169524	21.1	19.7	489508	21.2	20.6	19291	21.3	18.2	104219	21.3	18.9	127985	21.4	20.0	347441	21.4	19.9
183297	21.1	19.2	321920	21.2	19.3	336309	21.3	20.8	480540	21.3	20.9	326435	21.4	19.4	506390	21.4	19.3
271055	21.1	20.7	392221	21.2	20.9	437740	21.3	21.3	254226	21.3	19.7	123206	21.4	19.6	539632	21.4	20.3
131637	21.1	18.0	328194	21.2	20.9	434673	21.3	20.6	322371	21.3	20.2	9137	21.4	17.3	508048	21.4	21.0
449952	21.1	20.8	228155	21.2	18.8	331811	21.3	17.4	482349	21.3	20.1	325812	21.4	20.7	455701	21.4	21.3
313702	21.1	19.4	386633	21.2	20.0	248068	21.3	19.2	508408	21.3	19.6	471671	21.4	19.5	273891	21.4	20.8
539346	21.1	21.1	237685	21.2	19.9	365045	21.3	19.5	482398	21.3	20.8	328980	21.4	19.8	253350	21.4	19.7
463729	21.1	20.1	423263	21.2	21.0	182850	21.3	19.6	514272	21.3	19.8	16044	21.4	18.1	209987	21.4	19.7
379305	21.1	20.8	102900	21.2	18.9	335161	21.3	19.1	88717	21.3	18.8	340477	21.4	20.0	395495	21.4	19.5
144620	21.1	19.9	485393	21.2	21.2	229706	21.3	20.8	384808	21.3	19.9	236209	21.4	19.8	2692	21.4	16.3
93768	21.1	18.8	538329	21.2	20.5	95638	21.3	20.1	248115	21.3	20.0	7237	21.4	15.7	299853	21.4	20.2
392060	21.1	20.9	361041	21.2	20.9	189775	21.3	20.0	84229	21.3	18.9	443503	21.4	20.7	336615	21.4	19.6
157092	21.1	19.3	369907	21.2	20.5	339562	21.3	20.4	231308	21.3	20.8	205944	21.4	20.6	398928	21.4	20.5
71021	21.1	19.2	530354	21.2	22.5	71055	21.3	17.5	470369	21.3	19.8	291480	21.4	19.7	340471	21.4	20.5
508427	21.1	20.3	131083	21.2	17.8	209583	21.3	19.1	117232	21.3	17.6	274172	21.4	19.3	1667	21.4	14.5
355738	21.1	21.1	333836	21.2	20.5	380192	21.3	19.3	463220	21.3	22.0	397710	21.4	21.1	470312	21.4	21.3
95385	21.1	19.4	359023	21.2	19.3	236495	21.3	20.7	407736	21.3	20.5	530918	21.4	21.0	512206	21.4	20.5
33806	21.1	18.4	312789	21.2	19.8	265015	21.3	21.4	222847	21.3	19.5	356190	21.4	20.0	72043	21.4	18.8
284428	21.1	18.5	390148	21.2	20.5	54713	21.3	18.6	180639	21.3	20.1	509637	21.4	21.9	93454	21.4	18.6
255058	21.1	20.5	523873	21.2	20.4	534733	21.3	19.9	338445	21.3	22.0	4834	21.4	15.9	63098	21.5	19.0
241762	21.1	21.3	304403	21.2	20.6	263053	21.3	21.2	181989	21.3	19.1	6736	21.4	17.4	235170	21.5	18.6
446758	21.1	20.0	255724	21.2	19.2	58165	21.3	16.6	117675	21.3	19.9	385850	21.4	19.8	404539	21.5	21.0
60119	21.1	18.9	245780	21.2	20.2	380308	21.3	20.0	177145	21.3	17.6	162550	21.4	19.3	11692	21.5	18.3
101251	21.1	19.1	349824	21.2	20.2	256751	21.3	20.5	481174	21.3	20.5	426415	21.4	19.9	91975	21.5	19.2
62990	21.1	19.1	10447	21.2	17.4	443564	21.3	20.6	403291	21.3	20.5	402410	21.4	20.9	535531	21.5	22.1
225843	21.1	20.6	242549	21.2	20.4	166188	21.3	19.4	433275	21.3	20.5	308376	21.4	19.6	504847	21.5	22.3
144685	21.1	19.5	514555	21.2	19.3	57792	21.3	17.7	25252	21.3	18.6	218084	21.4	20.4	140326	21.5	19.6
95908	21.1	20.0	311341	21.2	19.5	537640	21.3	20.8	65174	21.3	20.1	395919	21.4	20.4	263636	21.5	20.3
78123	21.1	18.6	331366	21.2	21.3	519360	21.3	20.7	409696	21.3	20.3	475901	21.4	21.5	291416	21.5	20.0
32971	21.1	18.4	531044	21.2	21.8	410706	21.3	21.2	269548	21.3	19.4	164990	21.4	19.5	445363	21.5	20.7
302244	21.1	20.3	496305	21.2	21.5	82150	21.3	18.4	161832	21.3	20.0	152143	21.4	20.9	393059	21.5	20.2
369717	21.1	20.0	458806	21.2	19.7	157633	21.3	19.9	214157	21.3	21.0	539391	21.4	21.4	496644	21.5	19.9
162132	21.1	18.9	355768	21.2	20.1	445348	21.3	20.2	438258	21.3	20.9	62166	21.4	19.0	332132	21.5	19.2
243211	21.1	20.2	15033	21.2	16.8	506303	21.3	20.0	276078	21.3	19.6	3767	21.4	16.0	7596	21.5	16.1
473281	21.1	20.0	540834	21.2	21.1	399947	21.3	20.9	239724	21.3	19.8	257406	21.4	19.7	14679	21.5	18.3
380291	21.1	20.3	37538	21.2	19.8	70995	21.3	18.6	141472	21.3	19.3	75558	21.4	17.4	508846	21.5	21.5
500189	21.1	21.3	138109	21.2	18.4	350334	21.3	19.3	270457	21.3	20.9	21372	21.4	18.7	323398	21.5	21.5
488575	21.1	21.8	74071	21.2	19.0	401527	21.3	21.3	521353	21.3	20.5	142283	21.4	18.4	510487	21.5	21.1
533238	21.1	22.5	189318	21.2	19.5	384401	21.3										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
540291	21.5	20.9	362569	21.6	21.0	452393	21.6	19.6	481269	21.7	20.5	539345	21.8	20.3	181865	21.8	19.4
74416	21.5	18.8	158072	21.6	18.7	523164	21.6	20.4	186786	21.7	18.3	430623	21.8	20.7	56205	21.8	17.3
15813	21.5	18.5	257399	21.6	20.3	490404	21.6	21.4	289598	21.7	20.4	128558	21.8	18.3	53770	21.8	19.3
343395	21.5	20.1	480768	21.6	20.7	26676	21.6	17.3	328182	21.7	21.7	330651	21.8	21.3	472338	21.8	20.7
172448	21.5	17.8	471640	21.6	20.7	361469	21.6	21.5	352452	21.7	20.6	499089	21.8	21.0	238844	21.8	19.6
45216	21.5	18.9	443775	21.6	19.8	116240	21.6	18.3	236656	21.7	20.4	355123	21.8	21.0	442171	21.8	20.7
38324	21.5	18.5	258736	21.6	20.2	150549	21.6	19.6	491648	21.7	20.0	430794	21.8	18.2	264109	21.8	19.4
160554	21.5	18.0	171951	21.6	19.4	70741	21.6	18.5	296774	21.7	19.6	325791	21.8	19.4	338690	21.9	19.5
178657	21.5	18.5	397761	21.6	20.4	436990	21.6	20.1	447204	21.7	20.4	294272	21.8	19.9	307560	21.9	20.2
256497	21.5	21.0	145021	21.6	19.7	159890	21.6	19.3	61310	21.7	17.5	152323	21.8	19.5	41935	21.9	18.1
504055	21.5	21.0	165273	21.6	18.3	505487	21.6	20.2	22822	21.7	17.7	263263	21.8	20.3	254230	21.9	19.0
180179	21.5	20.3	46235	21.6	18.2	251940	21.6	20.3	121305	21.7	18.9	180093	21.8	19.7	3290	21.9	18.2
263964	21.5	20.5	127300	21.6	20.0	91936	21.6	19.2	250349	21.7	19.1	445496	21.8	20.2	288191	21.9	20.4
449899	21.5	21.6	138016	21.6	18.9	111935	21.6	19.2	361907	21.7	20.5	146867	21.8	20.1	358947	21.9	21.7
88230	21.5	18.5	37527	21.6	16.6	395065	21.7	21.0	509810	21.7	19.0	65109	21.8	18.8	519318	21.9	22.2
480659	21.5	20.9	506953	21.6	20.7	359358	21.7	20.7	453964	21.7	20.8	475435	21.8	20.8	435211	21.9	20.4
77273	21.5	19.7	531050	21.6	21.8	519710	21.7	19.4	75063	21.7	17.7	337125	21.8	20.0	363672	21.9	20.6
262106	21.5	21.5	183182	21.6	17.6	68295	21.7	18.4	337173	21.7	20.6	513375	21.8	21.5	121646	21.9	18.4
214962	21.5	19.5	533078	21.6	21.4	377792	21.7	19.6	359832	21.7	19.8	240909	21.8	19.9	437298	21.9	21.0
12303	21.5	17.4	42187	21.6	18.5	329249	21.7	19.5	138108	21.7	19.5	178888	21.8	19.3	481147	21.9	21.3
168133	21.5	20.1	13477	21.6	16.2	258627	21.7	20.2	185567	21.7	21.2	213770	21.8	20.9	191103	21.9	19.9
396083	21.5	20.6	466091	21.6	20.5	483253	21.7	21.3	63180	21.7	18.6	510718	21.8	20.9	39427	21.9	17.9
219931	21.5	19.3	521309	21.6	21.3	399854	21.7	20.3	231358	21.7	20.4	249801	21.8	19.1	533161	21.9	21.8
67295	21.5	19.3	387547	21.6	20.7	276019	21.7	20.1	429695	21.7	20.5	35671	21.8	21.2	172737	21.9	20.4
166443	21.5	19.6	161550	21.6	18.2	404674	21.7	19.5	510087	21.7	20.7	174800	21.8	20.9	501879	21.9	20.2
45150	21.5	18.3	300247	21.6	21.0	250528	21.7	19.3	394772	21.7	21.0	234326	21.8	19.7	540799	21.9	19.9
187016	21.5	19.0	95946	21.6	18.8	349272	21.7	19.7	358363	21.7	20.9	507966	21.8	20.7	58843	21.9	19.6
487586	21.5	19.5	357179	21.6	20.9	233528	21.7	17.1	417961	21.7	20.2	275912	21.8	19.3	93962	21.9	18.5
428635	21.5	19.9	384496	21.6	21.4	466081	21.7	20.7	491749	21.7	21.1	486699	21.8	20.4	285102	21.9	20.9
122164	21.5	17.4	72671	21.6	19.3	243719	21.7	20.4	356386	21.7	20.2	17174	21.8	17.8	354357	21.9	20.3
168993	21.5	18.6	321965	21.6	20.8	290130	21.7	19.2	247195	21.7	20.1	359866	21.8	20.5	445522	21.9	20.2
349168	21.5	20.2	280101	21.6	20.3	318147	21.7	19.7	362389	21.7	19.8	462532	21.8	21.4	141977	21.9	18.6
151496	21.5	20.2	151450	21.6	19.1	123925	21.7	19.3	437073	21.7	20.2	285180	21.8	20.4	800055	21.9	20.8
165298	21.5	18.7	385274	21.6	19.3	458152	21.7	21.4	256728	21.7	19.8	336316	21.8	19.8	342476	21.9	20.1
482942	21.5	20.4	80253	21.6	19.0	514484	21.7	20.1	102761	21.7	19.5	301768	21.8	19.4	257145	21.9	20.7
105924	21.5	18.3	311466	21.6	19.5	17377	21.7	17.5	95919	21.7	19.6	356418	21.8	21.0	72722	21.9	18.4
25610	21.5	16.5	23846	21.6	18.5	257954	21.7	20.4	361015	21.7	20.5	221888	21.8	19.4	157187	21.9	18.3
418133	21.5	20.6	390753	21.6	18.8	367873	21.7	20.6	118053	21.7	18.8	58630	21.8	17.5	392928	21.9	18.8
191701	21.5	20.0	173644	21.6	19.9	39810	21.7	18.3	254365	21.7	20.2	321121	21.8	20.3	178781	21.9	18.9
197606	21.5	20.0	75753	21.6	19.8	274579	21.7	19.7	478205	21.7	19.6	217731	21.8	19.5	249214	21.9	19.5
315173	21.5	19.2	313414	21.6	20.9	326125	21.7	19.9	217413	21.7	19.5	46028	21.8	19.2	184876	21.9	20.1
514232	21.5	20.6	357948	21.6	21.2	537678	21.7	21.0	356210	21.7	20.4	388595	21.8	20.7	522583	21.9	21.4
18835	21.5	16.6	77105	21.6	19.5	73499	21.7	18.9	351520	21.7	20.5	426903	21.8	19.5	338718	21.9	18.5
225224	21.5	19.4	436066	21.6	21.2	401806	21.7	19.7	389337	21.7	20.9	105831	21.8	18.9	490135	21.9	20.2
392453	21.5	20.5	280073	21.6	21.2	308192	21.7	20.3	312561	21.7	20.3	442146	21.8	20.5	264094	21.9	19.7
508715	21.5	20.9	257295	21.6	21.0	267428	21.7	20.1	424468	21.7	20.6	481528	21.8	20.4	348003	21.9	19.0
338671	21.5	20.0	514246	21.6	20.3	457532	21.7	21.2	236619	21.7	20.0	139012	21.8	18.8	428296	21.9	20.7
244800	21.5	18.3	97283	21.6	19.1	259906	21.7	20.9	439849	21.7	19.2	396398	21.8	20.1	18922	21.9	16.1
164751	21.5	19.5	507012	21.6	20.8	269620	21.7	20.2	306960	21.7	19.5	479487	21.8	20.6	78890	21.9	19.3
477610	21.5	20.3	260812	21.6	19.7	538375	21.7	21.0	251401	21.7	19.3	16139	21.8	18.1	115008	21.9	17.4
449428	21.5	20.9	95618	21.6	18.5	350410	21.7	20.7	507179	21.7	20.0	423908	21.8	20.8	365494	21.9	20.4
380124	21.5	20.9	420834	21.6	21.0	505749	21.7	21.7	24232	21.7	18.2	211045	21.8	19.0	126428	21.9	19.5
528007	21.5	21.5	261497	21.6	19.7	304666	21.7	20.6	162607	21.7	18.6	399406	21.8	19.6	39680	21.9	17.3
511290	21.5	20.9	430283	21.6	19.3	452976	21.7	19.9	111908	21.7	19.1	185167	21.8	20.5	386147	21.9	20.4
227844	21.5	20.2	80794	21.6	19.9	172603	21.7	18.9	74194	21.7	18.9	358886	21.8	20.6	72350	21.9	19.3
355238	21.5	19.9	360054	21.6	20.8	475599	21.7	20.7	320493	21.7	21.1	302710	21.8	19.2	256370	21.9	19.5
191957	21.5	19.4	297645	21.6	18.9	393323	21.7	20.4	436397	21.7	20.8	38610	21.8	18.7	137670	21.9	19.1
140457	21.5	19.5	510917	21.6	21.6	436522	21.7	20.2	473020	21.7	20.2	378317	21.8	20.8	3564	21.9	16.5
198545	21.5	19.6	192916	21.6	18.9	531500	21.7	20.1	232145	21.7	19.3	8494	21.8	17.2	338144	21.9	20.1
81587	21.5	19.4	195084	21.6	19.4	46424	21.7	18.3	325050	21.7	20.7	474130	21.8	20.6	252708	21.9	20.5
27253	21.5	19.1	63175	21.6	19.2	92114	21.7	18.7	496922	21.7	20.9	332523	21.8	21.2	188144	21.9	20.6
184746	21.5	20.7	437280	21.6	21.1	388943	21.7	19.6	175664	21.7	19.6	136199	21.8	18.7	43407	21.9	18.6
398917	21.5	20.3	397706	21.6	20.4	134408	21.7	19.8	40087	21.7	18.3	304647	21.8	19.7	393282	21.9	20.2
76985	21.5	17.9	361567	21.6	19.8	500792	21.7	20.0	312744	21.7	20.6	357752	21.8	20.3	357724	21.9	20.5
40332	21.5	17.7	497821	21.6	19.7	345917	21.7	19.6	501215	21.7	20.2	91744	21.8	18.8	165271	21.9	18.5
126377	21.5	19.7	296588	21.6	19.9	423841	21.7	19.5	278257	21.8	19.3	117108	21.8	19.7	361441	21.9	21.4
163666	21.5	19.1	237483	21.6	18.3	346828	21.7	19.7	190111	21.8	19.5	358791	21.8	21.0	137090	21.9	18.2
210372	21.5	19.7	537329	21.6	21.2	244383	21.7	20.2	520239	21.8	20.8	292246	21.8	19.6	291309	21.9	21.5
167358	21.5	19.2	13598	21.6	18.5	47927											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
119789	21.9	19.4	429132	21.9	20.7	314227	22.0	20.0	262513	22.1	20.8	209152	22.2	19.9	79988	22.3	18.9
356409	21.9	19.4	147605	21.9	19.5	43635	22.0	18.5	477539	22.1	21.0	224486	22.2	18.9	262971	22.3	20.7
96934	21.9	19.0	344643	21.9	19.0	213437	22.0	19.3	335476	22.1	20.7	6236	22.2	16.8	138311	22.3	19.8
268950	21.9	21.0	6041	21.9	16.6	38254	22.1	19.4	434776	22.1	21.2	386412	22.2	20.5	246217	22.3	19.2
385453	21.9	18.7	99191	21.9	19.3	457560	22.1	20.4	57276	22.1	16.5	516408	22.2	21.3	60880	22.3	17.6
22052	21.9	18.0	517519	21.9	21.2	477060	22.1	21.2	169605	22.1	20.3	240572	22.2	19.7	275233	22.3	19.7
390346	21.9	20.6	261693	21.9	19.4	448509	22.1	20.6	290252	22.1	20.9	411669	22.2	20.6	98952	22.3	18.9
56977	21.9	19.4	139238	21.9	19.5	87141	22.1	18.7	237995	22.1	19.9	506168	22.2	21.0	315119	22.3	20.3
446180	21.9	21.3	311917	21.9	20.6	298619	22.1	20.2	312737	22.1	20.0	508456	22.2	21.6	536982	22.3	21.3
379935	21.9	19.6	443486	21.9	19.5	307019	22.1	19.3	47780	22.1	18.7	321506	22.2	20.3	250784	22.3	18.7
204098	21.9	19.2	443625	21.9	20.1	242624	22.1	19.4	281497	22.1	20.9	430402	22.2	19.6	468839	22.3	20.1
399853	21.9	19.7	538978	21.9	20.6	408292	22.1	21.5	61325	22.1	18.6	244927	22.2	20.7	396519	22.3	20.7
137958	21.9	18.6	524162	21.9	19.8	437694	22.1	20.4	325020	22.1	19.8	138941	22.2	20.2	205703	22.3	18.6
255641	21.9	19.5	449282	21.9	20.5	35228	22.1	17.9	537248	22.1	21.5	155988	22.2	19.5	514271	22.3	20.0
184451	21.9	20.7	103623	21.9	19.0	26694	22.1	18.7	49140	22.1	18.5	398421	22.2	20.2	336855	22.3	19.8
449021	21.9	21.0	166850	21.9	19.7	166454	22.1	19.9	198397	22.1	19.1	521729	22.2	20.9	307571	22.3	21.3
133206	21.9	18.7	449000	21.9	20.4	527785	22.1	20.0	304516	22.1	19.9	310025	22.2	19.2	250367	22.3	20.4
196185	21.9	20.4	295509	21.9	20.0	27809	22.1	17.4	257196	22.1	20.8	8542	22.2	16.6	37448	22.3	19.1
470758	21.9	20.0	338153	21.9	20.8	510697	22.1	20.4	163385	22.1	20.6	393815	22.2	19.7	284106	22.3	20.3
338805	21.9	19.7	241308	22.0	20.0	35441	22.1	17.0	129592	22.1	18.7	110084	22.2	18.6	181293	22.3	18.3
387238	21.9	20.1	398068	22.0	21.5	143913	22.1	18.8	191062	22.1	20.0	352175	22.2	19.4	363922	22.3	19.8
340336	21.9	21.0	67433	22.0	18.5	123157	22.1	19.0	306671	22.1	19.9	250830	22.2	19.6	184918	22.3	20.5
183965	21.9	20.0	174107	22.0	20.4	98786	22.1	19.0	338731	22.1	19.6	437440	22.2	20.2	446258	22.3	21.0
297635	21.9	18.7	66329	22.0	18.6	308344	22.1	20.2	254240	22.1	20.0	387318	22.2	20.6	436277	22.3	20.1
528901	21.9	21.8	149887	22.0	19.3	39192	22.1	18.5	252816	22.1	19.8	454273	22.2	20.5	522688	22.3	21.3
525485	21.9	21.4	515213	22.0	20.6	270291	22.1	20.4	250524	22.1	18.5	355778	22.2	20.4	283119	22.3	19.4
415294	21.9	20.9	371902	22.0	21.2	82065	22.1	18.3	12674	22.1	16.4	520938	22.2	20.5	183140	22.3	19.1
35230	21.9	17.9	212431	22.0	19.2	359440	22.1	19.8	147394	22.1	19.1	17186	22.2	17.9	205380	22.3	19.4
295876	21.9	20.7	253357	22.0	20.6	326373	22.1	19.7	123805	22.2	18.7	540558	22.2	21.1	191107	22.3	19.3
442088	21.9	20.4	445009	22.0	21.5	389807	22.1	20.6	104062	22.2	19.5	112138	22.2	19.4	350574	22.3	19.8
380312	21.9	21.5	271845	22.0	20.6	340208	22.1	20.7	516283	22.2	20.8	527710	22.2	21.8	191743	22.3	18.0
169595	21.9	19.0	179328	22.0	20.0	413808	22.1	20.5	500900	22.2	20.2	511406	22.2	21.0	61701	22.3	18.1
277553	21.9	20.7	389721	22.0	20.4	195193	22.1	20.8	44528	22.2	16.8	529394	22.2	20.9	462217	22.3	21.1
25965	21.9	19.3	288653	22.0	19.5	539788	22.1	19.8	282414	22.2	18.3	34227	22.2	18.8	410315	22.3	20.7
519333	21.9	21.9	202285	22.0	20.3	181947	22.1	19.0	35514	22.2	18.8	192707	22.2	18.8	336957	22.3	20.1
231810	21.9	19.5	314060	22.0	21.3	305544	22.1	19.5	5970	22.2	16.4	313072	22.2	19.0	519436	22.3	21.1
402441	21.9	20.7	92610	22.0	19.5	95655	22.1	19.2	459466	22.2	20.7	225094	22.2	20.6	156543	22.3	19.2
189195	21.9	19.4	488741	22.0	19.7	395894	22.1	21.4	349547	22.2	20.2	519044	22.2	20.6	372912	22.3	19.5
359431	21.9	20.4	290448	22.0	19.8	282165	22.1	19.6	281799	22.2	21.0	157961	22.2	19.6	90646	22.3	18.5
175491	21.9	20.9	313597	22.0	18.7	57695	22.1	18.9	181526	22.2	20.0	182331	22.2	19.1	186971	22.3	18.2
410297	21.9	20.2	291230	22.0	20.7	389335	22.1	20.7	92175	22.2	17.8	24107	22.2	17.3	306935	22.3	19.7
100684	21.9	18.1	37932	22.0	18.7	312288	22.1	20.1	378337	22.2	21.1	164794	22.2	19.7	506193	22.3	20.3
118485	21.9	20.1	451802	22.0	21.4	386406	22.1	20.4	198258	22.2	20.3	476822	22.2	20.1	351541	22.3	19.6
119011	21.9	19.2	72723	22.0	19.0	523854	22.1	20.7	439188	22.2	19.2	479490	22.2	20.5	393144	22.3	20.8
247557	21.9	20.0	36269	22.0	18.6	91192	22.1	18.3	254963	22.2	19.3	261038	22.2	20.2	147195	22.3	19.8
523601	21.9	21.8	258785	22.0	20.9	448107	22.1	20.9	228583	22.2	19.6	537519	22.2	20.7	481076	22.3	19.7
308729	21.9	20.3	214977	22.0	19.9	436964	22.1	19.6	87260	22.2	18.9	73101	22.2	19.0	537537	22.3	21.0
152098	21.9	19.5	178585	22.0	18.6	318972	22.1	20.3	387520	22.2	19.6	479289	22.2	21.1	481211	22.3	20.9
480616	21.9	20.3	289089	22.0	20.7	134681	22.1	17.1	250512	22.2	20.9	122594	22.2	18.1	506487	22.3	20.5
302324	21.9	19.9	61832	22.0	18.8	482096	22.1	20.6	295652	22.2	18.4	533389	22.2	21.8	261034	22.3	20.7
24553	21.9	18.5	139284	22.0	19.6	281942	22.1	20.6	39650	22.2	18.7	390073	22.3	20.3	203783	22.3	19.3
70419	21.9	18.0	102290	22.0	20.5	198139	22.1	20.9	444945	22.2	21.9	528149	22.3	21.5	528437	22.3	20.7
67456	21.9	18.3	90022	22.0	19.3	411948	22.1	20.0	246159	22.2	19.7	22386	22.3	18.5	529918	22.3	20.8
22208	21.9	17.6	357867	22.0	20.7	48171	22.1	19.5	65243	22.2	19.3	465877	22.3	21.0	437778	22.3	20.8
405241	21.9	19.9	442554	22.0	20.7	295038	22.1	20.7	689897	22.2	17.8	383871	22.3	19.8	23480	22.3	19.0
317831	21.9	20.2	511791	22.0	19.9	260347	22.1	20.3	420534	22.2	20.1	397713	22.3	21.0	141557	22.3	20.2
273834	21.9	20.4	251469	22.0	20.4	151467	22.1	20.5	380866	22.2	20.2	16081	22.3	17.6	442085	22.3	19.4
343775	21.9	20.5	357209	22.0	20.1	117248	22.1	19.3	1451	22.2	16.3	218797	22.3	20.5	392009	22.3	20.7
359355	21.9	20.8	359553	22.0	20.3	89116	22.1	19.2	529579	22.2	22.1	278309	22.3	20.4	352648	22.3	20.8
125344	21.9	19.0	181355	22.0	20.5	431402	22.1	20.6	70760	22.2	16.9	121507	22.3	19.9	236730	22.3	20.8
384760	21.9	20.0	125472	22.0	17.6	230032	22.1	19.1	90555	22.2	19.1	201695	22.3	19.4	44822	22.3	18.3
54341	21.9	18.7	278291	22.0	20.3	245702	22.1	20.0	376866	22.2	19.5	220324	22.3	19.5	466505	22.3	20.6
447663	21.9	20.0	483030	22.0	20.4	15442	22.1	18.1	533045	22.2	19.9	235285	22.3	20.7	512750	22.3	20.5
209176	21.9	19.3	257323	22.0	21.0	14501	22.1	16.9	263823	22.2	20.6	32087	22.3	17.9	361924	22.3	20.8
176170	21.9	20.5	238577	22.0	20.2	62977	22.1	18.7	296693	22.2	20.2	350241	22.3	20.0	111571	22.3	19.7
297643	21.9	19.7	167330	22.0	19.5	359578	22.1	20.4	507471	22.2	20.0	173334	22.3	19.1	357996	22.3	20.7
68882	21.9	20.0	501048	22.0	19.2	171262	22.1	18.8	246118	22.2	20.1	174875	22.3	19.4	501797	22.3	20.7
256510	21.9	20.7	108517	22.0	19.6	275729	22.1	20.2	193499	22.2	18.9	78804	22.3	18.6	219933	22.3	20.9
237942	21.9	20.3	477021	22.0	21.3	468166</											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
528006	22.3	22.0	104165	22.4	18.9	290796	22.5	19.1	61107	22.6	18.6	368641	22.7	21.8	387221	22.8	20.1
224524	22.3	20.0	379331	22.4	20.3	123425	22.5	18.8	255407	22.6	19.4	316835	22.7	20.4	167595	22.8	19.3
533050	22.3	21.1	311847	22.4	19.6	95602	22.5	19.0	336979	22.6	19.6	125332	22.7	17.9	295654	22.8	18.7
428317	22.3	21.3	305340	22.4	21.2	20314	22.5	16.9	282228	22.6	21.0	364114	22.7	21.2	154986	22.8	18.7
354144	22.3	20.2	184837	22.4	20.0	480268	22.5	21.0	393873	22.6	20.1	233769	22.7	19.5	513832	22.8	21.4
238252	22.3	19.5	390817	22.4	20.8	100903	22.5	19.6	377686	22.6	20.8	208662	22.7	17.2	152024	22.8	19.3
195459	22.4	19.4	389495	22.4	21.8	520480	22.5	21.2	95922	22.6	18.6	157769	22.7	18.7	425705	22.8	20.0
99575	22.4	19.2	121346	22.4	18.7	140858	22.5	20.0	528140	22.6	21.6	104379	22.7	18.4	193314	22.8	17.7
516514	22.4	21.5	356264	22.4	20.0	38041	22.5	18.5	515359	22.6	21.6	513916	22.7	22.1	73474	22.8	18.2
465062	22.4	20.9	116459	22.4	20.3	6850	22.5	17.3	26472	22.6	17.8	158454	22.7	19.6	425944	22.8	21.3
280071	22.4	19.8	252167	22.4	20.9	263819	22.5	20.6	482155	22.6	19.6	38959	22.7	18.9	318490	22.8	20.3
323542	22.4	19.9	267352	22.4	19.7	500146	22.5	21.3	186366	22.6	19.9	216992	22.7	18.4	135684	22.8	19.7
171420	22.4	19.6	246302	22.4	20.8	539524	22.5	20.9	536810	22.6	21.3	201072	22.7	19.9	327737	22.8	20.0
471266	22.4	21.9	30750	22.4	18.5	306234	22.5	21.0	63365	22.6	19.2	333231	22.7	19.8	300655	22.8	20.4
440630	22.4	19.5	397148	22.4	19.2	312070	22.5	18.1	322587	22.6	19.9	239199	22.7	19.1	123322	22.8	19.4
479624	22.4	21.0	459022	22.4	21.1	207425	22.5	20.5	57612	22.6	16.9	359545	22.7	19.9	444224	22.8	19.7
398308	22.4	20.4	342411	22.4	20.6	500176	22.5	21.7	325175	22.6	20.2	433558	22.7	19.2	255211	22.8	19.8
254465	22.4	20.5	74245	22.4	17.2	280600	22.5	19.4	146913	22.6	20.8	250539	22.7	18.7	217314	22.8	20.2
42408	22.4	18.1	356421	22.4	19.4	218075	22.5	19.4	483252	22.6	19.8	94626	22.7	19.1	254283	22.8	18.3
41852	22.4	17.1	37750	22.4	18.3	250914	22.5	19.4	233342	22.6	19.5	96444	22.7	18.6	286386	22.8	20.1
253792	22.4	19.9	104862	22.4	19.9	438915	22.5	21.0	389396	22.6	20.8	379138	22.7	19.3	236320	22.8	19.8
57904	22.4	18.9	314385	22.4	20.7	400236	22.5	20.4	236587	22.6	20.3	462461	22.7	19.8	523062	22.8	20.0
191690	22.4	19.4	434752	22.4	21.0	167306	22.5	19.7	380365	22.6	20.1	160522	22.7	19.1	386782	22.8	20.4
319405	22.4	20.3	400213	22.4	21.1	249384	22.5	19.9	307585	22.6	21.1	520517	22.7	21.3	5928	22.8	17.5
72188	22.4	18.3	102782	22.4	19.1	312004	22.5	18.0	51394	22.6	18.5	505901	22.7	20.7	490271	22.8	20.6
400457	22.4	20.3	60091	22.4	17.6	43204	22.5	18.2	459935	22.6	20.5	306847	22.7	20.2	45278	22.8	17.3
386473	22.4	20.7	317981	22.5	21.1	65236	22.5	19.1	303268	22.6	19.7	389328	22.7	21.3	204525	22.8	19.2
273654	22.4	19.2	29907	22.5	17.9	350165	22.5	20.5	307054	22.6	18.2	35642	22.7	18.1	451310	22.8	20.7
273427	22.4	18.9	254411	22.5	19.6	357528	22.5	20.0	64518	22.6	17.1	308017	22.7	18.9	399451	22.8	21.6
539397	22.4	20.8	23492	22.5	17.2	374392	22.5	20.2	36268	22.6	18.8	44397	22.7	18.2	449696	22.8	20.6
166447	22.4	18.8	156592	22.5	20.9	525181	22.5	20.6	118936	22.6	18.5	157388	22.7	19.8	91740	22.8	18.8
396976	22.4	20.2	500109	22.5	22.2	443620	22.5	20.0	211173	22.6	20.3	268056	22.7	19.9	26086	22.8	17.1
94489	22.4	19.1	397418	22.5	20.3	504774	22.5	20.3	394789	22.6	19.2	61745	22.7	16.7	79106	22.8	19.3
398998	22.4	21.0	255379	22.5	21.1	522795	22.5	20.7	256433	22.6	19.8	361122	22.7	21.1	444308	22.8	21.3
383860	22.4	20.3	257365	22.5	20.6	261927	22.5	20.4	294817	22.6	20.3	111139	22.7	19.5	478388	22.8	21.1
5048	22.4	17.6	41350	22.5	18.8	435777	22.5	20.7	354343	22.6	20.4	535436	22.7	20.8	506462	22.8	21.2
427992	22.4	22.1	427402	22.5	20.7	11600	22.5	18.9	115484	22.6	18.7	123763	22.7	19.2	76740	22.8	19.3
480013	22.4	21.6	476529	22.5	20.8	377758	22.5	19.5	13840	22.6	17.1	474901	22.7	20.7	104231	22.8	19.7
379334	22.4	20.4	519780	22.5	21.2	101781	22.5	17.1	24506	22.6	17.8	256893	22.7	21.0	383188	22.8	20.4
509491	22.4	20.1	271052	22.5	20.8	9737	22.5	17.0	419709	22.6	19.9	467752	22.7	20.8	121704	22.8	19.2
198568	22.4	18.9	389336	22.5	20.7	315133	22.5	21.0	387789	22.6	20.6	243516	22.7	20.4	364025	22.8	21.0
431983	22.4	18.7	444157	22.5	22.3	42106	22.5	18.4	155878	22.6	20.1	418156	22.7	20.5	328311	22.8	19.1
414898	22.4	20.7	321049	22.5	19.0	181910	22.5	18.3	375020	22.6	20.2	284849	22.7	19.7	68040	22.8	17.8
370689	22.4	21.0	377757	22.5	20.0	34367	22.5	18.3	452187	22.6	20.1	475852	22.7	20.3	33104	22.8	18.5
6204	22.4	17.3	9790	22.5	17.6	379672	22.6	20.7	528218	22.6	21.7	442029	22.7	20.1	296390	22.8	20.1
467347	22.4	22.0	530961	22.5	20.7	120909	22.6	18.2	291222	22.6	20.8	144204	22.7	19.1	87505	22.8	19.9
510709	22.4	20.4	393091	22.5	21.2	251024	22.6	19.7	363365	22.6	20.6	362040	22.7	21.0	200577	22.8	19.4
353952	22.4	19.4	405010	22.5	19.2	488514	22.6	20.4	422240	22.7	20.4	356419	22.7	20.0	521268	22.8	20.4
54259	22.4	18.4	460352	22.5	19.9	273878	22.6	20.0	18062	22.7	17.6	430533	22.7	20.8	523640	22.8	21.4
163245	22.4	19.3	526066	22.5	20.9	405205	22.6	21.0	343955	22.7	20.7	326951	22.7	20.3	526113	22.8	20.8
398918	22.4	20.4	394258	22.5	20.7	18616	22.6	17.4	114749	22.7	19.6	316243	22.7	19.2	478551	22.8	21.1
126200	22.4	20.0	261645	22.5	20.3	503872	22.6	19.0	272601	22.7	21.0	255149	22.7	19.6	295025	22.8	19.8
374352	22.4	19.0	487692	22.5	20.7	170478	22.6	19.9	416063	22.7	21.2	478676	22.7	20.6	126364	22.8	19.9
8574	22.4	16.4	392082	22.5	20.2	360122	22.6	20.9	155920	22.7	19.1	88576	22.7	18.1	416152	22.8	20.1
34882	22.4	17.7	310683	22.5	21.2	407676	22.6	20.1	105507	22.7	18.4	191935	22.7	18.5	314915	22.8	20.2
91155	22.4	17.9	340357	22.5	20.5	296072	22.6	20.1	258744	22.7	19.9	41338	22.7	17.9	478585	22.8	20.6
509882	22.4	19.8	336145	22.5	19.3	501746	22.6	20.9	300252	22.7	20.7	516233	22.7	20.1	525405	22.8	20.4
13148	22.4	18.5	387998	22.5	20.0	20411	22.6	18.1	95701	22.7	18.5	91773	22.7	19.5	335180	22.8	19.1
259360	22.4	20.0	402800	22.5	22.3	156992	22.6	18.9	21900	22.7	16.9	505536	22.7	21.0	490847	22.8	21.0
481145	22.4	20.5	264060	22.5	20.3	226691	22.6	19.2	208719	22.7	20.3	85230	22.7	19.9	3304	22.8	16.1
112719	22.4	18.6	87429	22.5	19.0	206035	22.6	19.5	428698	22.7	19.8	515103	22.7	20.5	192498	22.8	20.1
95883	22.4	20.7	442961	22.5	20.2	440204	22.6	22.0	164300	22.7	19.9	442131	22.7	19.9	443521	22.8	20.1
19971	22.4	16.9	247154	22.5	19.2	514043	22.6	20.3	539704	22.7	20.1	80973	22.7	18.8	80433	22.8	18.4
231934	22.4	20.8	398406	22.5	20.2	322230	22.6	19.2	35622	22.7	18.2	443707	22.7	20.2	18397	22.8	16.1
75974	22.4	19.1	204039	22.5	19.5	13362	22.6	18.0	392210	22.7	20.9	3801	22.7	18.1	263625	22.8	20.9
466647	22.4	20.7	321244	22.5	20.4	107344	22.6	20.0	410723	22.7	20.6	472270	22.7	20.1	213903	22.8	19.5
333923	22.4	18.9	524588	22.5	21.9	128259	22.6	19.2	396655	22.7	21.2	440647	22.7	20.5	315895	22.8	20.2
55282	22.4	18.2	356275	22.5	19.9	99673	22.6	19.4	308666	22.7	20.4	146944	22.7	19.7	195351	22.8	20.3
152759	22.4	19.8	242035	22.5	20.7	537025	2										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
44594	22.8	19.5	255684	22.9	20.1	377703	22.9	20.0	482137	23.0	20.5	111844	23.1	19.3	13448	23.2	16.9
238804	22.8	20.1	343070	22.9	21.0	259000	22.9	20.3	19086	23.0	16.7	102662	23.1	18.7	269575	23.2	18.6
335088	22.8	20.7	500174	22.9	21.7	342732	22.9	20.3	92219	23.1	18.0	450098	23.1	20.6	326933	23.2	20.1
89928	22.8	19.8	539702	22.9	20.7	515383	22.9	21.2	43657	23.1	19.5	11714	23.1	16.8	440194	23.2	20.9
493535	22.8	21.0	512205	22.9	20.2	455738	22.9	21.2	282074	23.1	20.1	511432	23.1	20.8	212827	23.2	18.6
95442	22.8	19.7	5630	22.9	16.9	520334	22.9	20.8	225959	23.1	19.7	263928	23.1	20.3	436124	23.2	21.1
426956	22.8	20.1	290125	22.9	19.6	139149	22.9	18.9	101558	23.1	17.6	241327	23.1	19.5	428350	23.2	21.2
435204	22.8	20.5	231493	22.9	19.8	212979	22.9	20.6	234132	23.1	19.8	360688	23.1	19.9	303291	23.2	18.9
60001	22.8	18.6	503897	22.9	19.7	385588	22.9	20.1	68002	23.1	19.3	41062	23.1	19.2	237807	23.2	19.3
127172	22.8	16.9	11036	22.9	17.6	237391	22.9	20.6	539188	23.1	20.7	75252	23.1	18.2	293434	23.2	19.8
11176	22.8	18.9	376563	22.9	20.6	332674	22.9	20.0	486716	23.1	20.5	12653	23.1	18.0	77476	23.2	18.9
218780	22.9	19.6	418145	22.9	21.0	96780	22.9	19.6	502247	23.1	20.3	532779	23.1	21.3	18385	23.2	17.7
506620	22.9	21.1	294371	22.9	21.0	496900	22.9	19.9	437595	23.1	20.1	59092	23.1	18.1	228630	23.2	18.3
364163	22.9	20.8	145767	22.9	20.0	315969	22.9	19.8	462823	23.1	20.0	204930	23.1	19.9	517213	23.2	21.0
418176	22.9	21.5	325519	22.9	19.0	316317	22.9	20.7	398244	23.1	20.3	538202	23.1	20.9	341318	23.2	20.0
266309	22.9	20.4	542195	22.9	20.8	342301	22.9	20.0	219911	23.1	20.0	100561	23.1	19.3	284519	23.2	19.8
442966	22.9	20.3	489947	22.9	20.3	358407	22.9	20.4	184189	23.1	19.1	267400	23.1	20.0	376633	23.2	19.3
349884	22.9	20.8	514273	22.9	20.2	438006	22.9	20.0	239369	23.1	19.7	427132	23.1	20.6	198532	23.2	19.6
432419	22.9	20.7	524893	22.9	20.9	375289	22.9	19.8	489336	23.1	20.1	289054	23.1	19.7	303230	23.2	19.6
66446	22.9	18.3	170970	22.9	20.2	505912	22.9	20.5	102460	23.1	19.3	268962	23.1	20.6	336327	23.2	20.5
4023	22.9	15.6	255174	22.9	20.0	355517	22.9	21.6	214153	23.1	20.7	460862	23.1	20.5	277497	23.2	19.2
263821	22.9	20.6	338802	22.9	20.6	263126	22.9	19.0	403292	23.1	20.0	85427	23.1	19.5	506182	23.2	21.2
169544	22.9	19.6	343494	22.9	20.6	334399	22.9	20.9	540271	23.1	20.8	307225	23.1	19.1	314375	23.2	19.7
397081	22.9	20.5	387059	22.9	20.8	392915	22.9	20.6	113452	23.1	19.6	503997	23.1	19.5	409298	23.2	19.4
23285	22.9	18.1	328487	22.9	19.0	326111	22.9	20.1	95236	23.1	19.3	169583	23.1	19.5	291165	23.2	20.1
2882	22.9	15.6	215647	22.9	20.1	200345	22.9	21.1	115906	23.1	19.0	344435	23.1	19.9	384896	23.2	19.9
284422	22.9	23.6	411930	22.9	21.7	418335	22.9	20.6	208130	23.1	19.1	163992	23.1	19.3	245245	23.2	19.4
139331	22.9	19.6	439197	22.9	20.2	274576	22.9	19.4	56773	23.1	17.6	483102	23.1	19.9	262904	23.2	20.2
422217	22.9	19.3	448695	22.9	20.8	38020	23.0	18.5	174031	23.1	20.0	475886	23.1	20.7	254691	23.2	19.8
205072	22.9	18.3	225150	22.9	20.0	467928	23.0	21.1	397053	23.1	20.6	454	23.1	13.1	281832	23.2	20.5
119918	22.9	19.9	257384	22.9	20.2	161652	23.0	18.9	488054	23.1	20.8	387071	23.1	20.6	12680	23.2	17.4
291583	22.9	19.8	82275	22.9	19.5	120510	23.0	18.6	215232	23.1	19.8	472106	23.1	20.6	97091	23.2	18.4
70103	22.9	20.2	140359	22.9	19.0	119942	23.0	19.5	481176	23.1	20.6	398223	23.1	20.1	314471	23.2	19.6
181668	22.9	20.3	288738	22.9	19.4	185636	23.0	19.4	356407	23.1	20.5	203017	23.1	19.8	37426	23.2	19.2
89737	22.9	19.2	103991	22.9	18.6	338738	23.0	19.2	406325	23.1	18.5	311310	23.1	20.5	35184	23.2	18.4
483135	22.9	19.6	15737	22.9	17.3	359471	23.0	20.0	184836	23.1	19.9	32443	23.1	18.2	294422	23.2	19.7
254597	22.9	19.7	163491	22.9	18.9	12498	23.0	17.4	142366	23.1	18.2	353837	23.1	20.4	254382	23.2	19.0
63272	22.9	19.1	198131	22.9	18.2	169624	23.0	20.3	42852	23.1	16.4	226341	23.1	20.3	37362	23.2	19.8
231314	22.9	19.8	273794	22.9	20.3	512060	23.0	21.2	258367	23.1	19.3	13790	23.1	18.6	415739	23.2	20.8
21735	22.9	17.7	101041	22.9	18.2	16362	23.0	17.5	162637	23.1	19.3	429638	23.1	21.7	490102	23.2	20.3
463955	22.9	20.9	3142	22.9	16.3	401617	23.0	19.8	440582	23.1	19.6	293054	23.1	24.4	177864	23.2	19.9
227944	22.9	20.7	512384	22.9	20.5	194988	23.0	19.6	501384	23.1	17.9	314441	23.1	18.7	429801	23.2	20.3
321127	22.9	19.8	274905	22.9	19.9	39857	23.0	18.8	190019	23.1	19.0	314574	23.1	20.0	1447	23.2	14.7
41464	22.9	18.2	382200	22.9	20.1	150073	23.0	19.6	470370	23.1	18.7	150607	23.1	19.1	234266	23.2	18.3
173634	22.9	19.0	245779	22.9	20.4	184062	23.0	20.5	40796	23.1	17.9	430238	23.1	19.6	245663	23.2	20.3
506169	22.9	21.8	471286	22.9	21.7	157844	23.0	17.0	141363	23.1	19.0	356214	23.1	20.2	441969	23.2	20.4
91347	22.9	18.3	150939	22.9	18.9	477533	23.0	20.4	106299	23.1	18.7	387799	23.2	20.6	62246	23.2	19.0
295370	22.9	20.7	40103	22.9	17.4	40102	23.0	18.4	194950	23.1	19.2	6408	23.2	16.1	435694	23.2	19.6
481306	22.9	21.7	119946	22.9	19.5	429644	23.0	20.8	387039	23.1	19.5	287446	23.2	19.8	124571	23.2	18.4
348119	22.9	19.8	343689	22.9	20.0	326932	23.0	20.1	199125	23.1	19.8	291494	23.2	18.9	290925	23.2	20.8
64892	22.9	17.8	296720	22.9	20.2	526109	23.0	21.1	505702	23.1	20.7	22008	23.2	18.4	375868	23.2	19.5
371990	22.9	20.7	43422	22.9	18.3	519497	23.0	21.3	410154	23.1	21.2	512747	23.2	20.3	198268	23.2	19.2
398847	22.9	20.9	121625	22.9	18.8	465616	23.0	20.7	8269	23.1	15.7	436069	23.2	20.2	39293	23.2	18.7
95528	22.9	18.6	537343	22.9	20.6	451263	23.0	20.0	207384	23.1	19.3	51380	23.2	19.4	22042	23.2	18.4
127358	22.9	20.5	135660	22.9	18.5	239921	23.0	18.4	435582	23.1	20.6	150035	23.2	19.0	39310	23.2	18.4
439405	22.9	21.2	203343	22.9	19.6	273812	23.0	20.2	321895	23.1	20.4	221910	23.2	19.1	202676	23.2	19.5
56736	22.9	19.3	263378	22.9	20.0	92236	23.0	18.0	317249	23.1	18.9	416098	23.2	20.4	525173	23.2	20.1
386789	22.9	21.1	72521	22.9	18.3	162273	23.0	18.3	163269	23.1	18.2	77584	23.2	19.2	316640	23.2	19.9
423928	22.9	19.3	369672	22.9	19.7	169541	23.0	19.9	508184	23.1	20.7	316076	23.2	19.5	185646	23.2	18.8
144558	22.9	20.7	94933	22.9	18.1	311510	23.0	19.3	335738	23.1	21.2	24390	23.2	18.7	448612	23.2	20.5
86113	22.9	17.3	376543	22.9	20.6	443024	23.0	20.7	95117	23.1	18.6	199362	23.2	20.2	87496	23.2	18.2
471313	22.9	21.8	325833	22.9	19.2	537556	23.0	21.0	191301	23.1	19.6	265021	23.2	20.3	539312	23.2	20.4
249464	22.9	19.5	311115	22.9	19.6	68896	23.0	18.0	200392	23.1	19.2	176155	23.2	20.9	257987	23.2	20.5
192966	22.9	19.5	450122	22.9	20.7	398977	23.0	20.7	23416	23.1	18.3	228551	23.2	19.2	281427	23.2	18.9
394842	22.9	19.5	437295	22.9	21.1	487635	23.0	20.0	191297	23.1	21.2	235280	23.2	19.0	403979	23.2	20.6
474936	22.9	21.0	529788	22.9	21.2	351867	23.0	20.0	394020	23.1	19.5	195406	23.2	19.3	296628	23.2	20.4
208717	22.9	19.9	433291	22.9	20.6	202624	23.0	20.3	12383	23.1	17.1	260329	23.2	20.7	379760	23.2	20.8
162503	22.9	19.5	236958	22.9	20.2	25263	23.0	17.6	111785	23.1	19.7	267041	23.2	20.5	301231	23.2	21.0
430299	22.9	19.1	447690	22.9	21.3	159645	23.0										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
72440	23.3	18.8	434267	23.3	19.5	154549	23.4	19.5	528887	23.5	21.0	12921	23.5	17.7	235349	23.6	19.4
243438	23.3	21.3	46918	23.3	17.9	111792	23.4	18.9	415111	23.5	20.6	250957	23.5	20.9	329122	23.6	20.3
386433	23.3	19.5	481191	23.3	21.0	44200	23.4	16.1	117876	23.5	18.2	115617	23.5	18.8	199966	23.6	19.4
391126	23.3	20.3	366539	23.3	19.3	324540	23.4	19.5	28669	23.5	18.8	154495	23.5	19.8	247002	23.6	19.4
384584	23.3	20.8	296682	23.3	19.9	338096	23.4	19.7	311586	23.5	18.8	33804	23.5	17.3	242157	23.6	19.8
357046	23.3	19.6	152376	23.3	19.7	163959	23.4	18.8	304373	23.5	19.8	251923	23.5	18.4	100893	23.6	18.9
49651	23.3	17.2	14133	23.3	16.3	442168	23.4	20.2	62343	23.5	18.2	203650	23.5	19.8	241093	23.6	20.7
13353	23.3	18.1	479068	23.3	20.4	493531	23.4	20.6	58478	23.5	18.9	28173	23.5	18.2	443958	23.6	20.8
391762	23.3	20.6	7675	23.3	17.4	772	23.4	13.5	362917	23.5	20.8	185558	23.5	20.4	40262	23.6	19.7
252726	23.3	20.2	76541	23.3	17.7	59615	23.4	18.7	233284	23.5	20.7	500132	23.5	20.5	471758	23.6	20.3
370631	23.3	19.4	38523	23.3	18.3	427506	23.4	20.5	40646	23.5	18.5	461647	23.5	20.6	177317	23.6	19.3
565	23.3	14.3	1483	23.3	16.0	484830	23.4	19.6	190352	23.5	19.8	230410	23.5	20.7	104180	23.6	19.4
502627	23.3	20.5	256822	23.3	19.5	42628	23.4	18.3	521645	23.5	20.8	481851	23.5	19.9	35725	23.6	18.9
255731	23.3	19.4	122243	23.3	18.7	175641	23.4	19.8	254965	23.5	19.7	504963	23.5	19.7	95645	23.6	19.7
478390	23.3	20.6	355249	23.3	21.1	468644	23.4	20.2	114024	23.5	19.8	51097	23.5	17.8	386419	23.6	20.8
513120	23.3	19.7	275196	23.3	20.1	463677	23.4	20.0	338605	23.5	20.1	353158	23.6	20.9	520025	23.6	19.7
347784	23.3	21.5	57992	23.3	17.9	187974	23.4	18.2	88091	23.5	17.0	130822	23.6	18.9	398262	23.6	20.8
129710	23.3	19.0	501961	23.3	20.6	261692	23.4	19.8	80720	23.5	19.5	373560	23.6	19.7	307994	23.6	19.0
137379	23.3	18.2	67628	23.3	17.3	263391	23.4	19.9	212662	23.5	19.3	315340	23.6	20.0	446795	23.6	20.2
42589	23.3	18.1	317582	23.3	18.7	420448	23.4	21.2	9893	23.5	17.1	276026	23.6	19.9	237861	23.6	20.9
11388	23.3	16.7	455993	23.3	20.3	401665	23.4	20.3	441422	23.5	19.8	5113	23.6	17.6	357518	23.6	19.6
279334	23.3	20.3	540959	23.3	20.7	338828	23.4	19.5	495008	23.5	19.7	156981	23.6	19.3	33242	23.6	17.6
357139	23.3	20.1	291752	23.3	20.4	501815	23.4	19.7	479267	23.5	21.2	190669	23.6	19.4	382434	23.6	20.6
269813	23.3	20.3	217140	23.4	19.7	251703	23.4	19.7	261747	23.5	20.6	192004	23.6	20.3	526915	23.6	22.1
372891	23.3	20.3	14634	23.4	17.2	342450	23.4	21.1	292109	23.5	20.0	364555	23.6	20.7	533512	23.6	21.1
440959	23.3	20.2	56177	23.4	18.5	345873	23.4	19.3	200066	23.5	18.4	283688	23.6	19.8	359591	23.6	19.8
312489	23.3	19.5	521690	23.4	20.5	208928	23.4	20.1	164803	23.5	19.4	472607	23.6	20.8	286537	23.6	20.5
245093	23.3	20.5	177075	23.4	19.8	49716	23.4	18.4	264245	23.5	19.0	38117	23.6	17.6	392075	23.7	20.9
254444	23.3	19.2	204483	23.4	20.3	467601	23.4	20.1	346061	23.5	20.4	296108	23.6	20.4	355596	23.7	20.2
540734	23.3	20.2	276327	23.4	19.4	60525	23.4	19.0	411178	23.5	20.8	204127	23.6	18.6	432806	23.7	20.1
313930	23.3	19.8	420795	23.4	19.5	491305	23.4	20.5	61671	23.5	18.4	181079	23.6	19.4	394018	23.7	19.1
235669	23.3	19.6	159378	23.4	19.4	100465	23.4	18.6	213523	23.5	19.9	295493	23.6	17.8	366261	23.7	20.3
334419	23.3	19.4	404938	23.4	20.9	302156	23.4	19.3	115048	23.5	18.2	338662	23.6	20.2	107830	23.7	19.0
121541	23.3	19.2	78424	23.4	18.7	237919	23.4	19.6	340558	23.5	20.9	242159	23.6	19.0	257015	23.7	20.4
7064	23.3	17.7	331534	23.4	19.0	389321	23.4	20.8	478295	23.5	21.0	392461	23.6	20.8	166627	23.7	18.4
252195	23.3	20.5	310867	23.4	20.9	43495	23.4	16.7	259116	23.5	19.7	198387	23.6	20.4	360974	23.7	21.1
30199	23.3	18.5	131293	23.4	18.7	538559	23.4	21.2	253759	23.5	18.8	350180	23.6	19.7	380626	23.7	19.0
539981	23.3	20.0	137733	23.4	18.7	264066	23.4	19.8	128701	23.5	19.9	259701	23.6	19.9	590411	23.7	21.6
515106	23.3	20.5	345906	23.4	19.6	216387	23.4	19.7	481758	23.5	21.2	163349	23.6	18.2	383262	23.7	19.4
429969	23.3	20.4	33773	23.4	19.2	325623	23.4	20.7	68779	23.5	19.6	16089	23.6	18.3	392223	23.7	21.0
198479	23.3	19.7	4909	23.4	14.5	261530	23.4	21.1	344904	23.5	20.3	368105	23.6	20.3	280040	23.7	20.0
263033	23.3	19.9	466399	23.4	21.1	198253	23.4	18.9	533359	23.5	21.7	513238	23.6	20.3	132260	23.7	20.1
492429	23.3	21.5	42067	23.4	19.3	529513	23.4	22.5	122666	23.5	18.8	296853	23.6	20.2	419582	23.7	19.9
508144	23.3	20.7	404872	23.4	21.3	444418	23.4	19.7	111626	23.5	18.1	85235	23.6	19.3	403216	23.7	21.1
469441	23.3	22.0	324998	23.4	19.5	284789	23.4	20.0	181445	23.5	19.6	478592	23.6	20.8	490620	23.7	20.6
443073	23.3	20.0	497883	23.4	19.8	108270	23.4	18.8	116269	23.5	17.4	282282	23.6	20.0	151342	23.7	19.7
508433	23.3	20.5	446386	23.4	20.3	445379	23.4	20.1	314114	23.5	20.8	539183	23.6	20.4	373216	23.7	20.3
346713	23.3	19.7	66244	23.4	19.7	432595	23.4	20.0	251702	23.5	20.2	28244	23.6	17.6	278372	23.7	19.5
38057	23.3	15.6	261437	23.4	19.9	433401	23.4	20.4	394234	23.5	21.0	17383	23.6	17.3	421653	23.7	20.7
75121	23.3	18.8	1955	23.4	15.5	290072	23.4	19.5	304624	23.5	20.1	240313	23.6	19.7	153246	23.7	19.1
32487	23.3	17.4	287618	23.4	19.8	62685	23.4	18.3	249806	23.5	19.0	464647	23.6	19.2	509862	23.7	20.7
254413	23.3	18.3	537062	23.4	21.6	220385	23.4	19.5	237613	23.5	18.0	358781	23.6	20.2	322605	23.7	20.2
404741	23.3	19.4	87121	23.4	18.6	288172	23.4	20.8	258753	23.5	19.9	89219	23.6	18.9	210730	23.7	18.9
59281	23.3	16.9	4162	23.4	15.1	252173	23.4	19.0	237104	23.5	20.2	404118	23.6	20.8	47998	23.7	19.1
191657	23.3	17.9	362591	23.4	20.7	525465	23.4	20.4	321714	23.5	19.7	48816	23.6	17.1	397446	23.7	20.2
344741	23.3	19.6	157298	23.4	19.9	219857	23.4	20.2	398113	23.5	19.1	530974	23.6	22.6	272062	23.7	20.6
499659	23.3	19.9	318539	23.4	20.9	373193	23.4	21.4	186763	23.5	20.2	509771	23.6	19.6	536212	23.7	21.2
433297	23.3	20.8	153569	23.4	19.0	222859	23.4	19.1	210563	23.5	19.5	393354	23.6	20.0	294426	23.7	20.5
402794	23.3	20.8	396824	23.4	20.5	54921	23.4	18.8	255067	23.5	19.6	398949	23.6	20.6	285396	23.7	20.2
291559	23.3	20.2	76951	23.4	19.3	71555	23.5	17.7	508440	23.5	19.8	136176	23.6	19.2	539762	23.7	20.4
65246	23.3	18.3	511355	23.4	20.1	217379	23.5	19.3	340433	23.5	20.8	191641	23.6	20.8	306695	23.7	20.3
496356	23.3	19.6	389514	23.4	19.5	30087	23.5	18.7	501179	23.5	19.2	453685	23.6	19.8	134808	23.7	18.8
356422	23.3	20.5	345501	23.4	19.6	397386	23.5	20.2	308062	23.5	19.8	34427	23.6	17.5	497852	23.7	19.9
242880	23.3	20.2	444276	23.4	19.7	422837	23.5	21.1	327779	23.5	19.7	276479	23.6	19.8	165013	23.7	19.5
186304	23.3	20.7	94783	23.4	18.9	434092	23.5	21.2	294466	23.5	20.6	42666	23.6	17.0	216028	23.7	20.6
180419	23.3	20.0	93563	23.4	18.4	80561	23.5	17.9	181148	23.5	19.3	310055	23.6	19.4	308689	23.7	19.6
365737	23.3	20.2	911	23.4	14.8	343793	23.5	21.1	168752	23.5	19.5	283728	23.6	20.1	179404	23.7	20.0
473077	23.3	20.6	445495	23.4	19.9	511840	23.5	20.2	160321	23.5	20.0	418952	23.6	20.7	349583	23.7	20.1
376494	23.3	20.1	133232	23.4	18.3	522979	23.5	2									

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
535567	23.7	20.6	277452	23.8	19.4	201758	23.9	19.6	276645	23.9	19.0	186693	23.9	18.0	353354	24.1	20.3
310940	23.7	20.2	63660	23.8	17.5	432776	23.9	21.4	467091	23.9	21.4	144253	23.9	19.7	521425	24.1	20.6
3979	23.7	16.3	341193	23.8	19.6	392560	23.9	20.3	335547	23.9	20.8	40169	23.9	18.3	111945	24.1	20.0
126763	23.7	19.3	132159	23.8	19.4	443077	23.9	20.0	4210	23.9	16.5	356432	23.9	20.6	9115	24.1	17.0
449380	23.7	20.4	260463	23.8	19.5	166151	23.9	19.3	171387	23.9	19.0	338050	23.9	20.0	235288	24.1	19.6
275278	23.7	19.6	501809	23.8	20.0	42114	23.9	19.1	83955	23.9	19.6	503416	23.9	21.4	313142	24.1	20.2
256794	23.7	19.8	401586	23.8	21.0	503369	23.9	21.7	28133	23.9	17.5	246132	23.9	18.0	448572	24.1	20.3
155831	23.7	19.7	488415	23.8	20.7	282269	23.9	19.4	89945	23.9	18.9	483346	23.9	20.1	166503	24.1	19.3
20802	23.7	15.9	379379	23.8	20.6	513059	23.9	19.8	248524	23.9	19.5	495591	23.9	20.7	417536	24.1	19.8
42218	23.7	18.7	222544	23.8	18.8	200326	23.9	19.9	220893	23.9	19.3	240407	23.9	19.6	162096	24.1	18.5
528343	23.7	19.3	72462	23.8	18.6	93381	23.9	19.5	268932	23.9	21.0	167875	23.9	18.3	238599	24.1	20.6
103493	23.7	18.4	445279	23.8	22.5	254559	23.9	20.3	151807	23.9	20.4	450127	23.9	20.3	515851	24.1	20.3
134215	23.7	19.6	78156	23.8	18.1	441802	23.9	21.5	41236	23.9	17.8	289437	24.0	20.6	292105	24.1	20.7
63188	23.7	19.7	312371	23.8	19.4	539165	23.9	21.1	1014	23.9	15.5	431409	24.0	20.5	526882	24.1	20.5
436506	23.7	20.3	384476	23.8	20.3	456032	23.9	21.0	278067	23.9	19.5	537019	24.0	21.5	349857	24.1	20.3
181060	23.7	20.0	123787	23.8	19.0	45904	23.9	17.5	445472	23.9	19.5	457769	24.0	21.1	308066	24.1	19.6
3540	23.7	16.3	257328	23.8	19.4	105978	23.9	18.8	210466	23.9	20.3	189115	24.0	17.4	7120	24.1	16.7
233832	23.7	20.0	508479	23.8	21.5	26302	23.9	17.3	480656	23.9	19.7	487604	24.0	19.3	445840	24.1	20.2
105502	23.7	18.6	87526	23.8	19.1	417301	23.9	21.4	388826	23.9	20.4	491774	24.0	20.5	524653	24.1	20.2
128482	23.7	18.6	461650	23.8	20.0	479821	23.9	21.5	296603	23.9	20.0	343792	24.0	19.8	33373	24.1	17.3
324582	23.7	19.2	443330	23.8	20.9	295443	23.9	17.8	170637	23.9	19.0	446341	24.0	22.2	259686	24.1	20.2
427753	23.7	20.3	415113	23.8	20.5	148476	23.9	20.1	476553	23.9	20.6	296671	24.0	20.4	200952	24.1	18.3
39574	23.7	17.7	215800	23.8	19.6	280103	23.9	20.4	261614	23.9	19.7	472522	24.0	21.1	241753	24.1	20.3
326156	23.7	20.4	250699	23.8	19.4	318562	23.9	20.4	174626	23.9	18.7	467386	24.0	18.2	175497	24.1	19.4
383250	23.7	19.9	520433	23.8	20.6	128148	23.9	18.8	222611	23.9	18.5	275309	24.0	19.1	471281	24.1	17.7
506199	23.7	20.5	157491	23.8	18.8	167989	23.9	20.0	62157	23.9	17.9	313361	24.0	20.2	103405	24.1	17.7
514188	23.7	20.9	152120	23.8	20.3	404309	23.9	20.6	222579	23.9	19.5	177450	24.0	19.9	463773	24.1	20.4
477879	23.7	21.7	68520	23.8	18.5	450110	23.9	20.4	346988	23.9	20.8	128524	24.0	19.7	258016	24.1	20.8
26234	23.7	17.4	88087	23.8	18.7	118990	23.9	18.7	462607	23.9	21.3	247015	24.0	18.3	177319	24.1	19.9
313754	23.7	20.4	157417	23.8	20.3	64581	23.9	18.8	484841	23.9	20.3	64947	24.0	18.0	395660	24.1	21.0
386815	23.7	21.3	91635	23.8	18.1	23706	23.9	18.6	211153	23.9	19.8	353357	24.0	20.5	280058	24.1	20.3
185297	23.7	20.9	99180	23.8	19.1	35931	23.9	18.7	58021	23.9	19.1	526008	24.0	20.8	19353	24.1	18.4
313351	23.7	19.7	225218	23.8	20.5	97972	23.9	18.8	91414	23.9	18.4	459546	24.0	21.5	65984	24.1	18.8
434131	23.7	19.8	393194	23.8	20.2	52476	23.9	18.7	353210	23.9	19.7	508183	24.0	20.7	295905	24.1	18.3
539277	23.7	21.1	540233	23.8	19.4	442591	23.9	19.9	384006	23.9	20.9	303302	24.0	19.8	442531	24.1	20.9
77456	23.7	18.8	47550	23.8	18.0	264240	23.9	19.0	305449	23.9	20.2	424464	24.0	19.7	255496	24.1	19.9
481309	23.7	20.4	264013	23.8	20.1	198878	23.9	20.6	314602	23.9	20.0	901	24.0	13.0	439778	24.1	20.2
364178	23.7	20.0	111064	23.8	17.1	452975	23.9	20.6	467854	23.9	20.8	406273	24.0	20.5	372070	24.1	19.8
334444	23.7	20.5	439120	23.8	20.3	432352	23.9	19.3	325992	23.9	20.4	184180	24.0	19.5	262646	24.1	20.3
533663	23.7	20.6	292265	23.8	20.3	168866	23.9	18.6	283220	23.9	19.1	395110	24.0	21.1	52655	24.1	18.6
319175	23.7	20.8	301512	23.8	19.6	197524	23.9	20.4	177131	23.9	19.1	315885	24.0	20.4	120452	24.1	20.3
376393	23.7	20.8	58527	23.8	19.7	306432	23.9	18.7	88245	23.9	19.2	272839	24.0	20.1	393100	24.1	20.2
499696	23.8	21.1	312609	23.8	20.0	390789	23.9	21.2	123030	23.9	19.3	442985	24.0	20.7	22048	24.1	18.4
295449	23.8	20.3	22438	23.8	18.9	343621	23.9	20.1	93594	23.9	18.2	404333	24.0	19.8	255402	24.1	19.7
363670	23.8	20.7	436382	23.8	20.6	476227	23.9	21.3	129412	23.9	18.5	160201	24.0	19.6	57844	24.1	19.3
286268	23.8	19.1	343971	23.8	20.3	54772	23.9	16.7	85498	23.9	19.5	373547	24.0	19.6	17717	24.1	16.9
538337	23.8	20.1	186299	23.8	20.0	429187	23.9	19.9	157039	23.9	19.1	1880	24.0	15.6	362261	24.1	20.0
24367	23.8	16.3	319253	23.8	20.0	358736	23.9	20.5	240175	23.9	20.3	373557	24.0	19.1	336880	24.1	20.5
274656	23.8	20.1	2526	23.8	16.0	399974	23.9	19.6	40743	23.9	18.2	94968	24.0	18.3	68146	24.1	16.6
261130	23.8	19.1	398236	23.8	20.0	479399	23.9	19.2	83593	23.9	19.4	390296	24.0	20.4	512166	24.1	20.2
499056	23.8	21.3	529754	23.8	19.3	355213	23.9	20.8	164747	23.9	19.8	482724	24.0	21.4	66615	24.1	17.7
158378	23.8	19.6	98476	23.8	18.7	396100	23.9	20.2	247769	23.9	18.5	441417	24.0	20.5	256862	24.1	20.1
428693	23.8	20.5	390074	23.8	20.5	162488	23.9	18.1	129822	23.9	17.4	264059	24.0	20.2	122197	24.1	19.6
341241	23.8	20.5	503883	23.8	22.8	35309	23.9	17.1	428195	23.9	19.7	506604	24.0	20.9	40212	24.1	18.5
199246	23.8	19.6	217664	23.8	19.1	326894	23.9	19.7	308460	23.9	22.5	126000	24.0	19.1	147606	24.1	20.3
501014	23.8	20.8	440457	23.8	20.1	120943	23.9	19.1	440451	23.9	20.0	126553	24.0	20.1	371848	24.1	21.4
510045	23.8	21.1	408276	23.8	19.5	112635	23.9	19.2	160211	23.9	20.3	312617	24.0	20.1	33101	24.1	16.5
310433	23.8	20.1	336170	23.8	20.5	185655	23.9	18.4	64144	23.9	18.5	267725	24.0	19.6	470817	24.1	20.6
16355	23.8	16.9	295093	23.8	20.8	147684	23.9	18.9	360038	23.9	19.6	520461	24.0	22.0	158713	24.1	17.8
112396	23.8	20.0	475666	23.8	20.3	410724	23.9	20.8	348097	23.9	19.8	240036	24.0	18.5	376906	24.1	19.6
345931	23.8	20.2	213366	23.8	20.0	278519	23.9	20.6	336871	23.9	20.7	496662	24.0	21.3	93242	24.1	17.9
268022	23.8	19.4	213378	23.8	19.3	181266	23.9	18.9	184224	23.9	20.0	442050	24.0	19.8	22178	24.1	18.1
486703	23.8	19.5	270391	23.8	20.5	404879	23.9	20.6	203317	23.9	18.5	385931	24.0	20.2	287337	24.1	20.3
439491	23.8	20.5	35955	23.8	18.0	117629	23.9	19.7	201744	23.9	19.4	24313	24.0	17.2	252777	24.1	20.5
514550	23.8	19.6	30990	23.8	19.3	356224	23.9	20.6	392192	23.9	20.8	240578	24.0	18.9	473338	24.1	20.4
460	23.8	13.6	215558	23.8	20.1	459034	23.9	21.4	428313	23.9	21.2	474301	24.0	20.1	340434	24.1	20.7
128586	23.8	18.4	79444	23.8	19.2	248111	23.9	20.1	328291	23.9	20.2	98124	24.0	18.7	156675	24.1	19.4
511292	23.8	20.7	264199	23.8	18.3	211069	23.9	18.9	218426	23.9	18.6	16364	24.0	17.0	403217	24.1	19.6
162378	23.8	18.9	38568	23.8	18.1	83367	23.9										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
375838	24.1	20.0	252910	24.2	20.1	68725	24.3	19.3	190053	24.4	19.3	514893	24.4	20.6	143355	24.5	18.8
152157	24.1	19.4	296426	24.2	20.2	280886	24.3	19.8	528319	24.4	18.4	230367	24.4	19.4	504771	24.5	20.2
380178	24.1	18.5	341374	24.2	20.5	51538	24.3	18.8	60759	24.4	19.1	344679	24.4	19.7	179814	24.5	19.8
236808	24.1	20.2	206474	24.2	18.5	64549	24.3	18.1	72469	24.4	19.2	122886	24.4	18.7	167205	24.5	19.6
74276	24.1	17.5	309119	24.2	20.6	310876	24.3	20.6	16247	24.4	18.3	138206	24.4	19.7	364481	24.5	20.1
362836	24.1	19.9	474057	24.2	20.8	533275	24.3	21.1	360706	24.4	18.7	137969	24.4	19.3	86107	24.5	18.2
519183	24.1	21.0	41340	24.2	18.1	264123	24.3	19.1	512890	24.4	20.1	297369	24.4	19.6	139173	24.5	20.2
102224	24.1	17.8	182882	24.2	20.0	66636	24.3	17.8	231620	24.4	19.3	473286	24.4	20.3	396837	24.5	19.2
395285	24.1	20.1	434292	24.2	20.3	509396	24.3	21.6	214399	24.4	20.0	476150	24.4	19.7	256981	24.5	20.3
419557	24.1	19.9	465688	24.2	20.8	256382	24.3	20.8	126857	24.4	20.1	443006	24.5	20.6	133296	24.5	18.6
236464	24.1	20.7	152492	24.2	19.2	61768	24.3	18.0	165503	24.4	18.1	343367	24.5	20.4	514288	24.5	20.8
436751	24.1	20.2	311374	24.2	20.4	245566	24.3	19.9	51165	24.4	18.0	68605	24.5	19.5	204799	24.5	20.6
151461	24.1	19.4	235338	24.2	19.4	325809	24.3	20.0	2736	24.4	15.8	513240	24.5	21.0	307002	24.5	18.8
166115	24.1	20.9	257418	24.2	20.0	251930	24.3	19.3	217482	24.4	19.4	25662	24.5	17.0	323812	24.5	19.2
430578	24.1	21.0	304317	24.2	19.6	313370	24.3	19.7	511586	24.4	20.5	297158	24.5	20.2	42458	24.5	18.3
263018	24.1	21.1	52418	24.2	19.3	64109	24.3	17.4	509865	24.4	21.4	398965	24.5	20.7	528839	24.5	20.3
480592	24.1	20.8	340286	24.2	20.3	387390	24.3	20.1	288279	24.4	17.5	130768	24.5	18.8	94424	24.5	17.6
28199	24.1	17.0	447094	24.2	19.9	297545	24.3	19.2	390328	24.4	20.4	252896	24.5	20.7	432684	24.5	18.8
353794	24.1	19.6	475163	24.2	21.2	431096	24.3	20.7	285171	24.4	20.4	412472	24.5	20.2	444438	24.5	21.0
226331	24.1	20.3	121489	24.2	19.5	103052	24.3	19.3	36088	24.4	18.4	391105	24.5	20.0	62394	24.5	17.8
161660	24.1	19.4	41833	24.2	17.9	466240	24.3	21.1	495203	24.4	20.5	283697	24.5	18.7	70300	24.5	18.7
56594	24.1	17.4	139832	24.2	18.4	236024	24.3	17.5	169	24.4	11.9	400451	24.5	20.5	318473	24.5	20.3
314049	24.1	19.1	525101	24.2	20.1	78583	24.3	18.5	48740	24.4	17.1	93127	24.5	18.8	371555	24.5	20.2
122378	24.1	18.7	480082	24.2	21.7	515236	24.3	21.5	332079	24.4	18.3	529439	24.5	20.9	134824	24.5	19.4
527492	24.1	20.8	414152	24.2	20.5	386620	24.3	20.4	432694	24.4	20.5	463238	24.5	21.3	149135	24.5	19.0
95837	24.1	19.4	62442	24.2	19.0	248140	24.3	19.4	38436	24.4	19.2	516837	24.5	20.4	113359	24.5	20.5
162769	24.1	18.3	233694	24.2	19.5	202864	24.3	18.9	385765	24.4	20.8	210079	24.5	19.8	55550	24.5	18.8
289971	24.1	19.7	269464	24.2	19.5	93730	24.3	17.7	277607	24.4	20.2	90802	24.5	17.6	328628	24.5	20.3
6615	24.1	17.6	533555	24.2	21.1	320356	24.3	20.0	202865	24.4	18.7	264085	24.5	20.5	379141	24.5	21.4
260444	24.1	19.4	504060	24.2	20.1	323403	24.3	20.6	291339	24.4	20.9	241549	24.5	20.0	316135	24.5	20.6
373572	24.1	18.8	401209	24.2	20.9	213247	24.3	19.0	172863	24.4	20.0	497723	24.5	19.3	481182	24.5	20.8
283659	24.1	20.3	47002	24.2	16.9	344174	24.3	19.3	260181	24.4	20.1	309999	24.5	19.8	517728	24.5	21.8
472458	24.1	20.2	511798	24.2	19.4	280134	24.3	19.9	340392	24.4	20.1	207446	24.5	20.3	354119	24.5	19.5
288127	24.1	19.0	43321	24.2	17.0	467620	24.3	21.3	289509	24.4	20.6	344531	24.5	18.3	117904	24.5	17.6
188275	24.2	19.3	19657	24.2	16.9	282576	24.3	20.4	255409	24.4	18.6	19956	24.5	17.0	12408	24.5	17.3
240377	24.2	19.1	415270	24.2	20.4	449506	24.3	20.3	99374	24.4	18.9	481224	24.5	21.3	127751	24.5	19.4
352482	24.2	20.4	263130	24.2	19.2	246519	24.3	19.9	255465	24.4	20.7	312987	24.5	19.4	253567	24.5	18.3
164753	24.2	18.5	515077	24.2	20.4	141172	24.3	19.8	444347	24.4	20.3	228564	24.5	18.7	369068	24.5	20.0
512873	24.2	19.9	131037	24.2	19.3	471738	24.3	20.2	257027	24.4	20.0	502583	24.5	20.7	365437	24.5	20.6
481728	24.2	20.3	338822	24.2	20.0	328404	24.3	20.3	271725	24.4	20.4	318634	24.5	20.1	499751	24.5	19.5
59060	24.2	18.7	51014	24.2	18.7	504558	24.3	19.1	113679	24.4	18.9	474213	24.5	19.6	248051	24.5	19.8
502644	24.2	20.0	443576	24.2	19.7	65134	24.3	19.9	11788	24.4	17.1	187885	24.5	17.8	491048	24.5	19.6
297535	24.2	20.1	107251	24.2	18.8	463222	24.3	21.5	192349	24.4	20.4	251694	24.5	19.3	23269	24.5	18.6
26266	24.2	18.2	236532	24.2	20.7	401212	24.3	19.6	406826	24.4	19.8	155882	24.5	19.3	31548	24.5	16.4
200567	24.2	19.1	41080	24.2	18.0	257088	24.3	20.1	149154	24.4	20.6	304739	24.5	20.6	467855	24.5	20.5
216419	24.2	19.2	349350	24.2	20.2	54703	24.3	18.5	365447	24.4	19.4	56258	24.5	18.4	292601	24.5	19.8
116318	24.2	19.5	95166	24.2	19.7	233379	24.3	19.9	520252	24.4	19.6	44833	24.5	17.2	239133	24.5	19.9
438294	24.2	20.0	94573	24.2	18.6	215387	24.3	20.8	356233	24.4	20.0	539502	24.5	20.9	172544	24.5	17.8
518412	24.2	21.1	420196	24.2	20.5	362852	24.3	20.4	387551	24.4	20.8	5254	24.5	15.9	81137	24.6	18.7
476067	24.2	19.9	430275	24.2	18.8	255834	24.3	20.5	78495	24.4	17.4	543359	24.5	21.0	433639	24.6	20.7
188114	24.2	17.6	241887	24.2	19.4	95464	24.3	19.1	255083	24.4	20.2	195415	24.5	19.3	436932	24.6	20.7
290636	24.2	19.7	54472	24.2	18.4	217620	24.3	19.7	163647	24.4	19.0	350176	24.5	20.1	285941	24.6	20.2
12692	24.2	18.0	142181	24.2	18.8	141973	24.3	18.5	168207	24.4	19.8	53503	24.5	18.2	386504	24.6	18.1
392179	24.2	21.0	260149	24.2	20.3	10190	24.3	17.2	432455	24.4	20.6	257311	24.5	20.9	382475	24.6	19.3
509145	24.2	20.5	43473	24.2	18.3	467189	24.3	20.9	361156	24.4	20.5	392121	24.5	20.1	470820	24.6	20.9
159000	24.2	17.6	35853	24.2	17.8	384532	24.3	20.6	353348	24.4	21.4	353863	24.5	18.9	340489	24.6	20.7
361497	24.2	20.4	296356	24.3	20.2	447433	24.3	19.4	127042	24.4	19.6	200526	24.5	19.0	463326	24.6	20.3
445781	24.2	20.5	336142	24.3	19.0	289965	24.3	20.6	398767	24.4	20.4	167520	24.5	18.5	38567	24.6	18.5
184796	24.2	19.5	80167	24.3	19.0	358093	24.3	20.2	31253	24.4	17.8	250119	24.5	19.8	258675	24.6	20.5
96217	24.2	17.2	59435	24.3	18.5	2743	24.3	15.0	392425	24.4	20.1	270247	24.5	18.3	39105	24.6	18.6
282674	24.2	19.8	430457	24.3	19.5	276104	24.3	19.2	291681	24.4	19.5	539349	24.5	20.7	197624	24.6	19.9
304533	24.2	19.6	472831	24.3	19.8	497738	24.3	20.3	335041	24.4	19.8	476904	24.5	21.1	381194	24.6	19.8
238696	24.2	20.3	264023	24.3	20.6	256488	24.3	20.8	404441	24.4	21.5	404897	24.5	21.0	39815	24.6	16.6
167566	24.2	19.6	25100	24.3	18.2	103795	24.3	20.0	340375	24.4	21.1	250011	24.5	20.0	58542	24.6	18.6
332526	24.2	20.1	267744	24.3	19.3	264086	24.3	20.7	8790	24.4	17.2	275313	24.5	19.8	534816	24.6	21.1
392455	24.2	20.5	449082	24.3	19.7	117581	24.3	18.6	112186	24.4	18.4	340479	24.5	19.1	302672	24.6	19.8
102244	24.2	17.5	44349	24.3	18.3	347160	24.3	19.9	228593	24.4	19.9	311962	24.5	21.1	541020	24.6	20.3
395711	24.2	20.5	42064	24.3	18.2	480758	24.3	20.5	331346	24.4	20.4	65184	24.5	19.2	251898	24.6	18.8
296525	24.2	19.4	234253	24.3	18.3	69599	24.3										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
442556	24.6	20.1	237892	24.7	21.6	212988	24.7	20.3	259336	24.8	20.3	5502	24.9	17.3	25105	24.9	17.8
41438	24.6	17.0	524859	24.7	21.6	271821	24.7	19.0	47199	24.8	17.0	522657	24.9	20.8	434371	24.9	19.9
136406	24.6	19.9	5148	24.7	18.8	365646	24.7	20.1	50666	24.8	17.1	366264	24.9	20.0	167258	24.9	19.6
481813	24.6	19.8	368112	24.7	20.9	98694	24.7	18.9	525783	24.8	18.3	522785	24.9	19.7	33739	24.9	18.6
150633	24.6	19.9	312786	24.7	20.0	114929	24.7	18.5	97050	24.8	18.2	433292	24.9	20.8	440966	24.9	20.5
482420	24.6	20.1	310517	24.7	18.2	199541	24.7	18.1	209508	24.8	18.7	492336	24.9	21.1	125338	24.9	18.0
144888	24.6	19.0	356195	24.7	21.1	219472	24.7	19.8	322016	24.8	20.4	282744	24.9	20.4	380577	24.9	20.0
463502	24.6	21.0	481075	24.7	19.5	472046	24.7	20.2	510513	24.8	20.7	63276	24.9	17.9	431998	24.9	20.3
134749	24.6	18.7	215418	24.7	19.6	53926	24.7	17.2	422516	24.8	19.7	472701	24.9	22.0	56301	24.9	19.3
445425	24.6	20.5	53635	24.7	16.6	390641	24.7	20.4	86435	24.8	18.7	10549	24.9	17.2	158247	24.9	18.3
84041	24.6	17.3	498454	24.7	20.9	93489	24.7	17.7	514744	24.8	20.3	214100	24.9	20.3	86738	24.9	19.0
513579	24.6	20.4	435624	24.7	19.9	228635	24.7	18.4	412082	24.8	19.8	325392	24.9	19.2	121442	24.9	18.2
357319	24.6	21.4	115580	24.7	18.6	247153	24.7	18.6	299399	24.8	20.2	8705	24.9	16.8	471101	24.9	20.1
511627	24.6	21.6	33747	24.7	18.6	254630	24.7	20.0	533659	24.8	21.6	139253	24.9	18.3	103611	24.9	19.2
533357	24.6	21.4	472710	24.7	20.3	433279	24.7	20.6	49171	24.8	17.8	524046	24.9	21.6	355250	24.9	20.9
365670	24.6	21.0	80947	24.7	19.0	255399	24.7	19.8	322701	24.8	19.7	65579	24.9	18.8	396019	24.9	20.6
273823	24.6	20.1	285967	24.7	19.0	129325	24.7	18.4	118380	24.8	19.0	216867	24.9	20.1	380073	24.9	19.5
509148	24.6	20.5	392424	24.7	20.0	64396	24.7	18.8	377663	24.8	20.4	338621	24.9	20.6	404230	24.9	20.7
20272	24.6	17.3	281579	24.7	20.3	227491	24.7	18.6	85563	24.8	17.9	362613	24.9	18.8	313580	24.9	20.0
218936	24.6	20.0	260336	24.7	19.1	264020	24.7	19.5	437296	24.8	20.7	427535	24.9	21.0	494511	24.9	19.1
269710	24.6	20.9	398624	24.7	20.1	211634	24.7	18.4	468972	24.8	21.0	468829	24.9	20.6	150334	24.9	18.8
473182	24.6	20.5	28834	24.7	17.5	247411	24.7	19.5	385811	24.8	20.4	169235	24.9	19.2	522786	24.9	20.5
299833	24.6	20.1	393109	24.7	21.2	127269	24.7	19.4	482142	24.8	19.7	58751	24.9	17.7	137895	24.9	18.6
533554	24.6	20.3	212291	24.7	19.7	123435	24.7	19.7	480574	24.8	20.5	425558	24.9	19.3	322027	24.9	19.6
187824	24.6	19.9	403345	24.7	20.6	308475	24.7	20.0	312734	24.8	19.4	399204	24.9	20.0	418978	24.9	20.3
369712	24.6	20.1	501799	24.7	19.7	303666	24.7	19.5	255469	24.8	19.7	418931	24.9	21.0	68210	24.9	19.1
205646	24.6	19.3	177015	24.7	20.2	440443	24.7	20.5	59524	24.8	18.0	227471	24.9	19.5	115837	24.9	19.6
184732	24.6	20.7	131021	24.7	18.9	519503	24.7	21.3	366122	24.8	20.6	507170	24.9	21.1	379871	24.9	19.2
20610	24.6	17.9	330056	24.7	19.3	70149	24.7	17.8	459499	24.8	21.1	38736	24.9	17.5	186376	24.9	19.3
81045	24.6	18.9	281888	24.7	19.8	32611	24.7	18.6	285313	24.8	20.3	95535	24.9	19.4	204529	24.9	20.0
20947	24.6	18.5	306749	24.7	19.3	387469	24.7	19.5	87302	24.8	17.3	454177	24.9	19.2	222740	24.9	18.5
243063	24.6	20.7	334397	24.7	20.0	359492	24.7	20.2	537704	24.8	21.4	91851	24.9	18.5	53191	24.9	17.7
20858	24.6	17.9	241218	24.7	20.0	61973	24.7	18.0	306095	24.8	19.7	140711	24.9	19.2	357572	24.9	20.0
41270	24.6	17.8	471674	24.7	20.5	438397	24.7	20.7	55002	24.8	18.2	55575	24.9	19.2	472546	24.9	21.1
62870	24.6	18.9	235727	24.7	19.1	359382	24.7	21.1	94498	24.8	18.3	120852	24.9	20.2	362628	24.9	19.0
225211	24.6	20.7	313654	24.7	18.6	35133	24.7	16.9	467798	24.8	18.6	391017	24.9	20.5	278831	24.9	20.9
137649	24.6	18.9	354196	24.7	20.9	58837	24.8	18.2	119590	24.8	17.5	238053	24.9	20.2	121612	24.9	18.2
214742	24.6	20.2	97127	24.7	19.3	3212	24.8	16.6	1933	24.8	15.1	195263	24.9	20.1	67174	24.9	19.3
295877	24.6	20.1	32914	24.7	17.0	212345	24.8	20.7	160549	24.8	16.9	400874	24.9	19.5	107188	24.9	19.3
338773	24.6	19.9	82097	24.7	17.8	66298	24.8	18.4	10717	24.8	16.3	295754	24.9	19.8	461864	24.9	22.1
254572	24.6	19.2	403907	24.7	19.6	66320	24.8	18.5	25203	24.8	18.0	475413	24.9	21.3	213509	24.9	17.7
314102	24.6	20.4	394773	24.7	20.7	66850	24.8	17.0	65126	24.8	18.7	498421	24.9	21.4	318373	24.9	18.7
182140	24.6	18.9	436085	24.7	20.8	316553	24.8	19.7	94318	24.8	18.0	245423	24.9	19.9	255466	24.9	20.3
51087	24.6	18.6	256873	24.7	20.3	367991	24.8	18.6	314581	24.8	21.0	515222	24.9	20.9	519164	24.9	21.5
60331	24.6	18.7	87577	24.7	18.3	105530	24.8	18.9	518275	24.8	20.7	393205	24.9	21.1	226344	24.9	20.2
31698	24.6	18.4	191303	24.7	19.2	122858	24.8	18.9	118033	24.8	18.2	41862	24.9	17.3	182330	24.9	18.5
140332	24.6	19.4	188155	24.7	19.8	331912	24.8	19.8	152023	24.8	18.4	220312	24.9	19.4	392955	24.9	20.1
187518	24.6	20.1	124046	24.7	19.5	206098	24.8	18.6	206557	24.8	18.6	296887	24.9	19.9	503516	24.9	21.2
150517	24.6	17.7	426616	24.7	20.2	197580	24.8	20.0	246218	24.8	19.8	273738	24.9	20.6	511773	24.9	20.6
454240	24.6	20.7	480130	24.7	21.3	112865	24.8	19.0	355758	24.8	21.1	92350	24.9	17.6	439747	24.9	20.4
5316	24.6	16.2	480402	24.7	20.8	218932	24.8	19.6	257117	24.8	19.9	377717	24.9	20.6	106803	24.9	17.3
467935	24.6	21.1	507747	24.7	19.7	482164	24.8	20.5	380324	24.8	20.4	431412	24.9	21.2	342659	24.9	19.2
509016	24.6	20.5	142007	24.7	19.9	291225	24.8	20.0	410712	24.8	20.2	230894	24.9	19.4	380597	24.9	19.0
347124	24.6	20.6	332199	24.7	19.5	261790	24.8	20.1	91754	24.8	18.5	440983	24.9	21.0	38563	24.9	19.3
119925	24.6	19.7	279060	24.7	20.2	93952	24.8	18.8	360058	24.8	20.7	542535	24.9	21.9	533059	24.9	19.7
186813	24.6	20.3	515072	24.7	20.8	126594	24.8	20.3	245395	24.8	20.5	497099	24.9	18.9	399840	24.9	20.7
154111	24.6	20.2	163315	24.7	18.9	175620	24.8	19.9	140125	24.8	19.4	281984	24.9	20.6	172751	24.9	20.8
163082	24.6	19.8	15019	24.7	18.1	316585	24.8	19.1	117934	24.8	18.5	134285	24.9	19.3	416689	24.9	20.5
504059	24.6	19.7	526963	24.7	19.5	356444	24.8	20.0	342808	24.8	19.4	56158	24.9	19.3	64018	24.9	18.1
139893	24.6	18.0	377742	24.7	20.4	340438	24.8	21.2	513694	24.8	20.2	229605	24.9	20.8	129205	24.9	19.6
282702	24.6	20.5	311129	24.7	20.0	90873	24.8	19.7	526906	24.8	21.6	326650	24.9	17.7	127779	24.9	19.7
380578	24.6	19.0	258590	24.7	20.6	341266	24.8	20.2	278933	24.8	20.5	504961	24.9	21.9	173187	24.9	21.4
504513	24.6	20.6	115103	24.7	18.2	277507	24.8	20.0	136943	24.8	18.9	71113	24.9	18.9	389568	24.9	21.0
410710	24.6	21.0	342469	24.7	19.4	411656	24.8	20.4	65680	24.8	18.2	508492	24.9	19.6	15913	24.9	18.5
3716	24.6	16.4	281262	24.7	19.8	533631	24.8	20.9	214078	24.8	19.6	255138	24.9	19.3	392209	24.9	20.6
283074	24.6	20.1	126100	24.7	19.4	520237	24.8	21.8	275303	24.8	19.7	128702	24.9	19.2	414088	24.9	19.7
127321	24.6	19.8	445390	24.7	20.2	294114	24.8	20.1	321685	24.8	20.2	249655	24.9	19.5	133205	24.9	17.6
198523	24.6	19.4	395691	24.7	19.8	206370	24.8	19.9	141826	24.8	17.7	3779	24.9	15.3	254227	24.9	19.3
191028	24.6	19.4	6793	24.7	17.6	288614	24.8	21.									

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
242215	24.9	18.2	51739	25.1	18.9	349997	25.2	20.4	137024	25.2	19.9	537683	25.3	20.8	326238	25.4	20.8
445808	24.9	20.7	480694	25.1	20.1	223	25.2	13.8	513994	25.2	20.7	206377	25.3	20.1	501849	25.4	20.8
521029	25.0	20.7	159852	25.1	17.7	441800	25.2	21.3	320260	25.2	19.7	262448	25.3	20.7	359364	25.4	20.2
89482	25.0	18.0	434363	25.1	19.8	24117	25.2	17.1	29319	25.2	18.3	58275	25.3	18.1	395105	25.4	20.6
250894	25.0	18.8	471273	25.1	21.5	446498	25.2	20.5	198160	25.2	20.3	203702	25.3	19.2	130480	25.4	17.0
325076	25.0	20.3	402435	25.1	19.8	333601	25.2	20.8	104422	25.2	18.7	266583	25.3	18.3	160699	25.4	19.2
268046	25.0	19.4	535723	25.1	20.8	28470	25.2	19.2	343756	25.2	21.2	398302	25.3	19.8	209183	25.4	19.5
133425	25.0	18.1	15436	25.1	15.9	34528	25.2	18.5	41695	25.2	18.6	461351	25.3	20.4	139035	25.4	19.2
64445	25.0	18.7	19460	25.1	17.4	424407	25.2	20.9	306742	25.2	20.1	177643	25.3	20.0	310022	25.4	20.6
249614	25.0	17.9	497910	25.1	20.4	356271	25.2	20.5	511266	25.2	21.1	58570	25.3	17.8	456422	25.4	20.7
12802	25.0	17.5	318863	25.1	20.5	254406	25.2	19.5	138825	25.2	20.2	141872	25.3	19.1	278295	25.4	20.8
375905	25.0	19.6	149555	25.1	19.1	65017	25.2	19.3	536758	25.2	20.7	205927	25.3	19.2	361466	25.4	21.0
390336	25.0	20.7	311494	25.1	21.1	356227	25.2	20.4	183086	25.2	19.4	513108	25.3	20.4	494301	25.4	21.0
220356	25.0	20.0	3324	25.1	15.8	440665	25.2	20.4	14128	25.2	16.1	516794	25.3	22.3	33735	25.4	17.3
95686	25.0	18.9	41748	25.1	18.6	1233	25.2	15.1	473255	25.2	20.6	3547	25.3	16.5	308047	25.4	19.8
275881	25.0	19.7	72492	25.1	18.6	246284	25.2	20.1	231612	25.2	20.1	3444	25.3	14.6	312188	25.4	19.3
316315	25.0	20.1	15597	25.1	17.4	467056	25.2	20.5	77283	25.3	19.2	485734	25.3	20.6	344499	25.4	20.2
2965	25.0	17.1	146266	25.1	19.6	237799	25.2	18.4	542301	25.3	21.1	5624	25.3	16.4	85981	25.4	18.8
395281	25.0	20.2	307578	25.1	21.1	68187	25.2	18.2	347793	25.3	21.2	153068	25.3	18.6	123377	25.4	18.6
329309	25.0	19.1	424540	25.1	21.6	516956	25.2	20.8	457363	25.3	19.4	79990	25.3	19.1	382898	25.4	18.5
384527	25.0	19.8	258646	25.1	20.7	472593	25.2	20.7	378333	25.3	19.4	505976	25.3	21.4	170856	25.4	19.8
294690	25.0	20.9	314752	25.1	20.8	491834	25.2	21.0	540467	25.3	20.9	367759	25.3	19.6	521110	25.4	21.6
462597	25.0	21.3	407960	25.1	20.0	308989	25.2	20.4	95775	25.3	19.7	181156	25.3	19.1	255540	25.4	19.9
425325	25.0	20.3	259775	25.1	20.0	477497	25.2	20.9	174195	25.3	20.1	143756	25.3	18.5	511169	25.4	20.4
134572	25.0	19.5	517014	25.1	20.3	361667	25.2	20.1	13585	25.3	17.9	173260	25.3	18.4	378357	25.4	20.3
203978	25.0	19.1	326952	25.1	21.5	446097	25.2	22.0	158824	25.3	19.2	433761	25.3	21.3	478543	25.4	19.8
205106	25.0	20.3	380614	25.1	19.2	101877	25.2	18.6	403026	25.3	19.3	291547	25.3	20.9	125355	25.4	18.9
315897	25.0	19.3	154206	25.1	20.8	72167	25.2	19.1	439350	25.3	20.4	314948	25.3	19.3	112662	25.4	19.6
70125	25.0	17.5	437066	25.1	20.2	94900	25.2	18.8	206828	25.3	19.8	440511	25.3	20.6	195448	25.4	20.4
528634	25.0	19.7	156381	25.1	17.7	25256	25.2	17.8	483155	25.3	20.3	442052	25.3	20.2	402262	25.4	20.7
168907	25.0	19.0	220557	25.1	20.8	340365	25.2	20.8	60159	25.3	17.8	101492	25.3	18.7	502434	25.4	20.1
435203	25.0	20.6	43627	25.1	19.1	310668	25.2	20.0	446678	25.3	19.6	172607	25.3	19.3	532047	25.4	21.3
433287	25.0	20.7	13387	25.1	18.5	304409	25.2	20.4	325077	25.3	21.1	96977	25.3	18.1	361248	25.4	19.6
471763	25.0	20.3	439681	25.1	20.5	119917	25.2	20.1	515080	25.3	19.6	526620	25.3	20.3	112352	25.4	18.4
392043	25.0	20.6	66187	25.1	17.6	9669	25.2	16.6	392012	25.3	20.2	335579	25.3	20.7	86556	25.4	19.1
517564	25.0	19.6	418150	25.1	20.7	314583	25.2	20.4	533444	25.3	21.5	209979	25.3	20.0	211735	25.4	18.9
20729	25.0	17.4	165354	25.1	17.4	163145	25.2	18.7	195041	25.3	20.1	198088	25.3	20.3	70324	25.4	19.2
167826	25.0	20.2	56244	25.1	19.0	482090	25.2	20.2	248430	25.3	21.4	99141	25.3	19.3	72536	25.4	17.6
424453	25.0	21.5	217127	25.1	18.3	122461	25.2	18.1	417564	25.3	20.0	67637	25.3	18.3	504977	25.4	20.1
322072	25.0	18.9	71258	25.1	18.5	202218	25.2	18.6	161484	25.3	19.2	18436	25.3	18.1	130608	25.4	19.4
387840	25.0	20.9	416728	25.1	20.8	314550	25.2	20.9	215407	25.3	19.9	198549	25.3	19.1	172127	25.4	18.9
480109	25.0	21.3	200272	25.1	17.4	232299	25.2	19.4	229122	25.3	19.0	539109	25.3	20.9	181345	25.4	19.5
149811	25.0	19.7	261490	25.1	19.5	520485	25.2	21.1	229078	25.3	18.7	465909	25.3	21.2	401148	25.4	20.1
40866	25.0	18.6	307184	25.1	19.8	471846	25.2	19.6	301453	25.3	20.3	225802	25.3	18.4	83586	25.4	19.0
91160	25.0	19.0	228150	25.1	19.9	133696	25.2	18.9	126560	25.3	19.4	210795	25.3	18.8	181831	25.4	19.3
312716	25.0	20.3	456739	25.1	19.6	6212	25.2	16.6	123371	25.3	18.3	264412	25.3	20.4	339137	25.4	18.7
219612	25.0	17.3	5156	25.1	17.0	354750	25.2	20.7	526695	25.3	20.3	323299	25.3	19.3	468806	25.4	20.4
353180	25.0	20.6	521278	25.1	20.1	290007	25.2	20.0	437361	25.3	19.7	7671	25.3	16.2	468407	25.4	19.6
263810	25.0	20.3	509916	25.1	21.6	220336	25.2	20.9	316302	25.3	19.7	87404	25.3	17.2	468151	25.4	21.0
282438	25.0	18.8	393193	25.1	20.7	514733	25.2	21.3	161412	25.3	18.9	390348	25.3	19.4	20962	25.4	18.0
498929	25.0	21.0	536476	25.1	19.2	26447	25.2	18.3	234746	25.3	19.7	149178	25.3	20.2	384535	25.4	20.2
182135	25.0	18.8	9675	25.1	17.6	123802	25.2	19.1	255862	25.3	19.8	86108	25.3	18.6	534959	25.4	21.4
446743	25.0	20.4	405804	25.1	19.9	91167	25.2	19.0	320241	25.3	20.2	340468	25.4	20.1	60007	25.4	19.0
380278	25.0	20.2	170750	25.1	19.2	259380	25.2	19.8	102764	25.3	19.4	77267	25.4	19.1	61263	25.4	18.0
253316	25.0	21.4	428320	25.1	20.6	99236	25.2	19.7	13622	25.3	17.6	511341	25.4	21.0	492441	25.4	21.0
20756	25.0	17.8	517689	25.1	20.3	5283	25.2	16.1	6372	25.3	16.5	527515	25.4	20.8	342225	25.4	20.4
195365	25.1	20.4	204093	25.1	18.7	361040	25.2	19.6	341001	25.3	20.4	115162	25.4	17.8	418405	25.4	20.8
429374	25.1	19.8	345874	25.1	19.8	386281	25.2	21.6	37951	25.3	18.5	12254	25.4	17.2	475775	25.4	20.5
110496	25.1	18.2	21898	25.1	16.8	127727	25.2	20.3	469620	25.3	19.3	37866	25.4	18.9	202538	25.4	19.8
161384	25.1	18.9	281931	25.1	20.3	225276	25.2	19.5	381847	25.3	20.8	320418	25.4	20.3	441342	25.4	21.0
487606	25.1	20.8	115527	25.1	18.2	96715	25.2	19.6	190321	25.3	19.3	71844	25.4	17.9	414138	25.4	20.7
36019	25.1	17.3	472723	25.1	19.5	216750	25.2	18.5	100094	25.3	17.7	226854	25.4	19.7	383182	25.4	20.9
142591	25.1	17.9	139159	25.1	19.8	428691	25.2	20.0	312558	25.3	19.9	255871	25.4	19.4	529584	25.4	20.5
375978	25.1	19.0	386998	25.1	20.2	195617	25.2	19.3	377337	25.3	19.6	42229	25.4	17.6	404729	25.4	20.0
463230	25.1	20.8	406322	25.1	19.9	86650	25.2	19.5	244635	25.3	20.0	217015	25.4	19.3	167324	25.4	19.1
46156	25.1	18.1	280970	25.1	19.5	89871	25.2	19.5	307902	25.3	19.9	477867	25.4	21.8	121868	25.4	19.0
304600	25.1	19.5	287102	25.1	19.8	207888	25.2	20.0	240674	25.3	20.5	114907	25.4	18.7	362543	25.4	20.2
323742	25.1	20.3	230365	25.1	18.8	341255	25.2	19.9	9799	25.3	16.7	157565	25.4	19.9	249216	25.4	19.7
107960	25.1	20.0	448553	25.1	20.8	42249	25.2	18.4	1028								

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
389558	25.4	20.2	433298	25.5	19.8	328732	25.6	19.4	356424	25.6	20.7	489128	25.7	21.3	502004	25.8	20.5
429178	25.4	20.8	136674	25.5	20.0	448559	25.6	21.1	225919	25.6	20.0	97928	25.7	17.5	198355	25.8	18.9
236455	25.4	19.5	291694	25.5	19.9	252727	25.6	20.9	282742	25.6	20.5	287738	25.7	18.8	524412	25.8	20.9
60124	25.4	17.8	171522	25.5	19.4	446347	25.6	21.0	338036	25.6	19.9	95472	25.7	18.1	410229	25.8	19.9
275279	25.4	19.7	430376	25.5	20.6	343462	25.6	20.8	363698	25.7	19.6	283711	25.7	20.0	511144	25.8	19.9
415322	25.5	21.4	12734	25.5	16.0	497120	25.6	20.4	533715	25.7	21.7	358449	25.7	19.7	250113	25.8	20.8
192651	25.5	18.6	481110	25.5	20.3	68821	25.6	19.7	294443	25.7	19.8	178164	25.7	20.5	396988	25.8	20.5
504987	25.5	21.7	280527	25.5	20.7	499936	25.6	21.1	429630	25.7	20.6	146922	25.7	19.3	245635	25.8	18.9
88135	25.5	19.5	531086	25.5	21.8	437734	25.6	20.8	417477	25.7	20.2	470349	25.7	19.8	233309	25.8	20.4
31769	25.5	17.1	409767	25.5	20.7	506202	25.6	21.0	124761	25.7	19.1	51431	25.7	18.7	374326	25.8	20.1
99495	25.5	18.2	422953	25.5	20.2	416379	25.6	19.8	106791	25.7	17.3	375236	25.7	19.6	10997	25.8	17.9
216772	25.5	20.7	128333	25.5	19.2	206123	25.6	20.1	22646	25.7	18.2	434377	25.7	19.1	508806	25.8	18.7
107719	25.5	19.4	97166	25.5	19.4	127908	25.6	19.2	271639	25.7	18.7	81309	25.7	18.8	386829	25.8	20.3
87107	25.5	18.2	63265	25.5	19.4	1877	25.6	16.7	354891	25.7	20.2	521627	25.7	21.7	362452	25.8	19.3
185554	25.5	19.8	45094	25.5	18.3	542262	25.6	20.5	120821	25.7	19.3	369247	25.7	19.9	510916	25.8	21.7
304783	25.5	19.3	539105	25.5	20.0	406324	25.6	19.7	537677	25.7	20.1	313090	25.7	18.4	24795	25.8	17.7
441310	25.5	21.0	22761	25.5	17.4	442158	25.6	19.8	174833	25.7	20.0	276983	25.7	19.0	243291	25.8	19.4
11683	25.5	17.2	206134	25.5	19.6	457009	25.6	20.7	361654	25.7	20.0	535584	25.7	21.3	311217	25.8	20.7
320287	25.5	20.3	280768	25.5	20.6	504058	25.6	20.6	32321	25.7	18.5	485783	25.7	19.7	343150	25.8	19.8
38247	25.5	19.0	162775	25.5	17.9	256927	25.6	19.7	318467	25.7	20.5	195933	25.7	18.8	180485	25.8	20.0
436896	25.5	19.9	136752	25.5	18.6	440514	25.6	20.1	508005	25.7	19.7	132512	25.7	19.3	355708	25.8	20.5
106694	25.5	18.6	358494	25.5	19.5	220383	25.6	19.9	206995	25.7	19.6	357709	25.7	19.9	508900	25.8	19.8
37225	25.5	17.7	359036	25.5	20.3	516311	25.6	20.6	92342	25.7	18.6	540972	25.7	21.1	353359	25.8	20.0
240208	25.5	20.4	424405	25.5	19.4	183034	25.6	19.7	439008	25.7	19.7	432025	25.7	20.8	500896	25.8	20.3
123333	25.5	19.0	396239	25.5	19.9	374285	25.6	20.1	246568	25.7	19.8	154145	25.7	20.2	480715	25.8	20.4
494154	25.5	21.3	66119	25.5	18.6	125103	25.6	18.0	301148	25.7	19.8	326943	25.7	20.9	279438	25.8	19.8
433048	25.5	20.1	125898	25.5	19.2	237074	25.6	19.3	188176	25.7	19.9	33622	25.7	17.5	23220	25.8	17.7
512349	25.5	20.3	51418	25.5	17.8	420366	25.6	20.0	341134	25.7	20.3	429590	25.7	20.9	151490	25.8	20.2
260723	25.5	20.4	166490	25.5	19.5	219902	25.6	19.4	511232	25.7	21.0	121491	25.7	19.2	343556	25.8	20.1
412171	25.5	20.6	296674	25.5	20.0	107400	25.6	19.7	115392	25.7	18.9	430571	25.7	20.4	481236	25.8	18.8
316499	25.5	19.8	371907	25.5	21.0	526887	25.6	22.0	529860	25.7	19.8	383992	25.7	20.2	47406	25.8	18.0
483240	25.5	20.0	529813	25.5	20.8	439725	25.6	20.1	162499	25.7	18.5	528696	25.7	21.8	72257	25.8	19.0
361423	25.5	20.1	393119	25.5	20.5	308639	25.6	20.5	199525	25.7	19.3	494372	25.7	20.6	501787	25.8	19.6
141445	25.5	19.4	154863	25.5	19.8	66528	25.6	17.4	290168	25.7	19.3	392025	25.7	19.8	16990	25.8	17.6
358273	25.5	20.6	140090	25.5	19.3	34413	25.6	17.6	494525	25.7	20.5	320522	25.7	19.6	122217	25.8	18.5
235845	25.5	20.4	520377	25.5	20.5	491724	25.6	20.0	228315	25.7	18.5	234806	25.7	19.3	17667	25.8	17.7
181592	25.5	19.2	157403	25.5	19.1	500091	25.6	20.8	512762	25.7	18.9	441965	25.7	20.2	85239	25.8	19.4
142737	25.5	17.9	2560	25.5	15.6	94844	25.6	19.0	481827	25.7	19.9	469949	25.7	21.2	524416	25.8	20.1
510142	25.5	20.4	37838	25.5	16.9	524486	25.6	19.8	283456	25.7	19.7	212514	25.7	18.6	120483	25.8	20.1
297597	25.5	19.2	115465	25.5	18.6	63136	25.6	17.7	66701	25.7	17.4	357222	25.7	20.8	347005	25.8	20.0
324434	25.5	20.1	510904	25.5	20.4	199382	25.6	19.7	128900	25.7	18.2	463731	25.7	19.4	192413	25.8	18.5
322994	25.5	20.3	175662	25.5	19.8	180112	25.6	19.5	249613	25.7	19.3	395224	25.7	20.4	105302	25.8	18.5
357945	25.5	20.2	286617	25.5	21.0	198367	25.6	19.5	314556	25.7	20.1	392819	25.7	20.4	216382	25.8	20.3
299174	25.5	20.4	345052	25.5	20.6	129678	25.6	18.6	402772	25.7	21.9	22940	25.7	18.5	439223	25.8	20.8
248035	25.5	20.2	210187	25.6	20.2	55563	25.6	18.7	185073	25.7	19.7	509841	25.7	20.9	498251	25.8	20.1
102946	25.5	17.9	310478	25.6	19.2	160403	25.6	18.9	146014	25.7	19.1	134604	25.8	18.9	251585	25.8	19.0
283064	25.5	18.1	425839	25.6	20.7	191024	25.6	19.8	442922	25.7	21.1	353440	25.8	20.1	247832	25.8	19.6
499544	25.5	19.7	255326	25.6	18.8	106048	25.6	18.0	205935	25.7	19.4	190653	25.8	18.4	505482	25.8	19.6
495032	25.5	19.7	505730	25.6	20.0	196239	25.6	19.6	169609	25.7	19.2	483217	25.8	20.6	143155	25.8	19.6
471907	25.5	20.8	282280	25.6	21.1	519364	25.6	21.3	501838	25.7	20.6	437320	25.8	19.8	398884	25.8	20.1
307584	25.5	19.7	5028	25.6	16.6	112079	25.6	19.8	260844	25.7	20.2	107386	25.8	20.2	366463	25.8	18.9
11647	25.5	17.2	294183	25.6	19.4	123477	25.6	18.1	142247	25.7	18.0	359743	25.8	20.9	512000	25.8	21.1
312711	25.5	20.2	348077	25.6	19.1	341068	25.6	19.4	262977	25.7	20.0	25552	25.8	18.2	509903	25.8	20.6
219653	25.5	19.6	395544	25.6	20.5	542167	25.6	19.7	450449	25.7	20.4	73930	25.8	18.7	395623	25.8	19.9
459527	25.5	20.9	207655	25.6	18.9	473132	25.6	20.7	401083	25.7	20.6	237163	25.8	19.2	316160	25.8	20.7
390846	25.5	20.3	318657	25.6	21.1	480252	25.6	19.8	331350	25.7	19.7	316534	25.8	20.4	536355	25.8	20.8
290308	25.5	20.9	530597	25.6	21.1	261389	25.6	20.6	251701	25.7	20.0	353361	25.8	19.8	408136	25.8	21.1
108091	25.5	19.4	113695	25.6	18.0	290110	25.6	19.6	65225	25.7	18.9	232020	25.8	20.0	296008	25.8	20.6
269286	25.5	18.7	268455	25.6	20.0	225359	25.6	20.0	491278	25.7	20.0	317946	25.8	19.7	542265	25.8	20.8
152320	25.5	19.4	71591	25.6	17.8	165176	25.6	19.3	333848	25.7	20.1	436754	25.8	20.6	32341	25.8	18.3
61862	25.5	18.5	402144	25.6	19.2	480544	25.6	20.2	321732	25.7	18.9	361450	25.8	20.4	246401	25.8	19.5
447056	25.5	20.0	398992	25.6	19.7	445786	25.6	20.6	511552	25.7	22.8	36687	25.8	18.3	246866	25.8	19.4
419783	25.5	20.4	378292	25.6	19.8	133768	25.6	19.6	537059	25.7	20.8	406802	25.8	19.6	390904	25.8	19.7
382719	25.5	19.8	482350	25.6	21.3	376366	25.6	20.8	131351	25.7	18.1	165595	25.8	19.5	505789	25.8	21.5
410255	25.5	19.4	360583	25.6	19.6	85650	25.6	18.6	207486	25.7	20.7	180415	25.8	19.3	81279	25.8	18.8
527987	25.5	22.0	202209	25.6	19.0	190714	25.6	19.4	447453	25.7	19.9	419593	25.8	20.6	17643	25.8	17.5
381484	25.5	20.5	315775	25.6	20.3	94219	25.6	19.3	253834	25.7	19.5	490834	25.8	21.7	450020	25.8	20.1
437187	25.5	18.8	120149	25.6	19.3	144857	25.6	18.2	312449	25.7	20.3	387322	25.8	20.5	514048	25.8	21.7
61909	25.5	18.0	99765	25.6	2												

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
222662	25.9	19.3	312351	25.9	20.8	191302	26.0	18.9	187441	26.1	20.2	480565	26.1	20.3	393158	26.2	20.5
552	25.9	14.5	93038	25.9	17.7	432261	26.0	20.9	342294	26.1	19.2	67482	26.1	18.8	467502	26.2	21.7
249573	25.9	19.6	11428	25.9	18.1	88498	26.0	18.7	93003	26.1	18.4	131292	26.1	18.5	227524	26.2	19.3
62371	25.9	18.5	249676	25.9	18.5	220764	26.0	19.5	432845	26.1	20.0	443405	26.1	20.9	523192	26.2	20.6
73092	25.9	18.5	251743	25.9	20.0	264050	26.0	20.0	70164	26.1	19.0	72478	26.1	18.9	256663	26.2	19.3
250306	25.9	19.5	288770	25.9	19.1	18701	26.0	17.4	285482	26.1	20.7	468470	26.1	19.1	20554	26.2	18.4
186953	25.9	19.1	482175	25.9	20.3	93287	26.0	18.9	86302	26.1	17.8	127335	26.1	18.4	444086	26.2	19.9
63278	25.9	19.8	310490	25.9	20.1	123878	26.0	19.2	470664	26.1	20.8	404157	26.1	19.9	281446	26.2	20.0
53298	25.9	17.5	22291	25.9	17.3	348112	26.0	19.9	523739	26.1	23.1	469684	26.1	19.6	389342	26.2	21.1
471306	25.9	21.9	482412	25.9	20.6	499372	26.0	19.1	499488	26.1	21.8	386377	26.1	20.6	305986	26.2	20.4
225841	25.9	19.8	442071	25.9	21.0	91908	26.0	17.2	253330	26.1	20.0	81497	26.2	17.9	17813	26.2	17.8
410228	25.9	19.3	534513	25.9	20.3	84003	26.0	17.8	94047	26.1	18.6	225510	26.2	20.1	234005	26.2	20.6
238306	25.9	20.6	96794	25.9	17.6	65608	26.0	18.7	375848	26.1	18.3	452244	26.2	19.7	264932	26.2	19.0
99190	25.9	18.8	19564	25.9	17.1	113443	26.0	19.3	438596	26.1	21.0	33447	26.2	17.5	85160	26.2	17.8
395617	25.9	20.1	364626	25.9	19.9	505732	26.0	21.1	539604	26.1	20.2	356247	26.2	21.0	1336	26.2	14.3
401874	25.9	20.8	312370	25.9	20.1	511238	26.0	20.2	62754	26.1	17.0	187415	26.2	19.0	216883	26.2	19.5
114741	25.9	19.0	163384	25.9	17.6	343400	26.0	20.8	335750	26.1	21.4	510741	26.2	20.6	59618	26.2	18.7
247904	25.9	18.4	39332	25.9	18.5	514562	26.0	20.3	175160	26.1	20.2	246710	26.2	19.4	373542	26.2	19.5
176148	25.9	20.7	314096	25.9	20.3	216777	26.0	19.5	158080	26.1	18.5	263122	26.2	20.1	306971	26.2	18.7
160220	25.9	20.1	238910	25.9	20.9	500939	26.0	20.1	292074	26.1	20.4	400425	26.2	21.2	266655	26.2	20.3
123381	25.9	18.5	523629	25.9	21.5	340557	26.0	20.3	436931	26.1	20.5	417611	26.2	21.5	511479	26.2	21.1
252749	25.9	19.8	497861	25.9	20.5	430066	26.0	20.3	113000	26.1	19.6	262205	26.2	19.4	340354	26.2	20.7
36722	25.9	17.5	514270	25.9	19.8	119058	26.0	19.0	537349	26.1	21.7	464234	26.2	20.0	133191	26.2	18.4
376157	25.9	20.7	436394	25.9	20.9	373454	26.0	20.7	22744	26.1	18.1	314666	26.2	20.3	369509	26.2	19.7
361460	25.9	20.9	520014	25.9	20.9	472681	26.0	20.1	224904	26.1	20.8	151457	26.2	19.3	471884	26.2	21.2
458917	25.9	20.7	506069	25.9	20.2	426409	26.0	19.6	87166	26.1	17.8	291238	26.2	21.1	94982	26.2	18.9
436296	25.9	21.9	467396	25.9	21.3	69031	26.0	17.5	343554	26.1	20.7	330639	26.2	21.0	430832	26.2	21.5
523198	25.9	20.9	49932	25.9	17.5	93810	26.0	18.3	16953	26.1	16.4	353755	26.2	20.5	428800	26.2	19.8
261482	25.9	20.6	439144	25.9	20.5	44446	26.0	17.6	221483	26.1	19.3	186542	26.2	19.3	417839	26.2	20.1
521247	25.9	20.7	296226	25.9	21.3	481741	26.0	19.6	372375	26.1	20.0	530634	26.2	20.5	407845	26.2	19.9
103131	25.9	18.1	256386	25.9	20.2	389305	26.0	20.6	234597	26.1	19.8	253621	26.2	18.3	74699	26.2	19.1
521050	25.9	20.7	198858	25.9	19.3	32890	26.0	18.8	18116	26.1	16.8	152440	26.2	19.3	441336	26.2	20.7
169534	25.9	19.2	471788	25.9	20.8	135385	26.0	18.6	477508	26.1	21.5	257381	26.2	20.8	254600	26.2	19.0
326211	25.9	20.9	286773	25.9	21.2	459607	26.0	19.6	462600	26.1	21.6	16749	26.2	17.2	542388	26.2	21.3
74671	25.9	19.1	262095	25.9	20.7	171399	26.0	19.3	135055	26.1	19.3	520042	26.2	20.5	338761	26.2	19.3
432484	25.9	20.4	356442	25.9	19.9	407293	26.0	20.8	527485	26.1	21.2	61539	26.2	18.6	321403	26.2	20.4
436409	25.9	20.7	34568	25.9	17.5	182763	26.0	19.4	538534	26.1	19.5	265636	26.2	19.6	470652	26.2	20.8
470831	25.9	20.3	397111	25.9	20.6	196658	26.0	19.4	118372	26.1	19.3	515075	26.2	20.5	404892	26.2	20.8
291361	25.9	19.5	458997	25.9	19.6	537305	26.0	20.9	222895	26.1	18.8	537380	26.2	21.3	160994	26.2	19.4
511551	25.9	23.2	529462	25.9	22.7	29264	26.0	17.8	361462	26.1	20.6	153128	26.2	18.7	151432	26.2	19.4
364517	25.9	21.7	86105	25.9	18.5	293113	26.0	20.1	516301	26.1	19.7	544684	26.2	20.0	246357	26.2	20.0
94589	25.9	19.0	108514	25.9	19.6	191080	26.0	19.1	77815	26.1	19.2	438201	26.2	19.8	490809	26.2	20.9
539355	25.9	20.5	133077	25.9	19.5	50390	26.0	18.8	19103	26.1	19.0	141157	26.2	19.0	96373	26.2	17.2
41625	25.9	18.1	73465	25.9	17.8	213007	26.0	20.8	40046	26.1	18.9	321864	26.2	18.8	291247	26.2	20.4
177120	25.9	19.7	416575	25.9	20.7	149064	26.0	19.8	171808	26.1	19.3	106633	26.2	19.0	299157	26.2	21.2
342707	25.9	19.3	388648	25.9	20.9	243628	26.0	18.1	414081	26.1	20.1	68283	26.2	18.7	482740	26.2	20.9
225855	25.9	19.4	287641	25.9	19.8	249358	26.0	20.5	507286	26.1	21.0	195318	26.2	19.4	326234	26.2	20.1
238834	25.9	20.3	262992	25.9	20.0	434684	26.0	20.5	99590	26.1	19.4	438946	26.2	18.9	131499	26.2	18.3
67026	25.9	18.6	60227	25.9	19.3	372406	26.0	20.7	176571	26.1	18.7	542363	26.2	20.5	103212	26.2	19.7
429598	25.9	21.1	476886	25.9	20.5	366540	26.0	20.2	190681	26.1	19.5	258631	26.2	20.0	506603	26.2	21.5
253035	25.9	20.2	38336	25.9	18.9	97942	26.0	18.5	173642	26.1	20.1	533666	26.2	21.7	161534	26.2	18.9
41149	25.9	18.9	83983	25.9	18.6	250983	26.0	19.9	482756	26.1	20.9	507284	26.2	21.3	115353	26.2	19.6
189485	25.9	19.0	27082	25.9	17.1	1577	26.0	14.2	539940	26.1	22.3	252683	26.2	19.9	439430	26.2	20.7
365548	25.9	20.1	244790	25.9	20.6	3939	26.0	15.9	68951	26.1	19.6	328176	26.2	20.9	255410	26.3	20.5
251911	25.9	19.3	502950	25.9	19.8	218961	26.0	19.9	316275	26.1	19.8	359112	26.2	19.9	267460	26.3	20.4
48443	25.9	19.1	297587	25.9	20.1	465045	26.0	20.2	282424	26.1	19.5	29834	26.2	17.6	134242	26.3	20.0
117113	25.9	19.5	365927	25.9	20.5	245432	26.0	19.6	473730	26.1	21.0	476245	26.2	20.6	396169	26.3	19.8
423915	25.9	19.6	356466	25.9	19.9	363210	26.0	19.7	38679	26.1	17.4	85309	26.2	18.9	37033	26.3	17.3
13620	25.9	18.4	105495	25.9	18.6	256515	26.0	20.6	427853	26.1	19.0	544037	26.2	20.9	144780	26.3	19.4
358958	25.9	22.1	374278	25.9	21.4	225370	26.0	20.7	478633	26.1	19.8	436381	26.2	20.9	507102	26.3	21.3
4902	25.9	16.7	358926	25.9	21.0	113530	26.1	19.4	285207	26.1	19.3	255828	26.2	20.5	356583	26.3	20.7
250718	25.9	19.7	391001	25.9	20.3	476143	26.1	20.1	97831	26.1	17.8	115990	26.2	18.9	55578	26.3	18.5
37652	25.9	19.5	151053	25.9	18.7	321986	26.1	20.6	408948	26.1	20.3	315066	26.2	21.1	225210	26.3	19.2
154696	25.9	19.7	317515	25.9	19.6	27236	26.1	18.1	122662	26.1	18.3	533061	26.2	21.6	436398	26.3	20.9
452314	25.9	20.1	238484	25.9	19.8	496899	26.1	20.8	317678	26.1	20.1	34019	26.2	17.5	346675	26.3	20.5
346405	25.9	19.5	531102	25.9	20.8	13845	26.1	19.0	315926	26.1	20.1	521543	26.2	20.2	497135	26.3	23.2
386364	25.9	20.1	437301	25.9	20.3	449499	26.1	21.5	301024	26.1	19.4	45615	26.2	18.3	263832	26.3	20.4
508115	25.9	21.1	424048	25.9	20.4	321101	26.1	18.3	374501	26.1	20.4	245397	26.2	20.5	196473	26.3	20.0
532738	25.9	19.7	216261	25.9	18.3	71835	26.1	18.									

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
70208	26.3	19.0	129949	26.3	19.3	234000	26.4	18.1	386771	26.5	20.3	231943	26.6	19.9	64122	26.6	18.1
6537	26.3	15.8	357221	26.3	21.0	132052	26.4	18.1	5509	26.5	17.1	354437	26.6	20.2	542824	26.6	20.9
529919	26.3	20.9	197501	26.3	19.4	153603	26.4	18.5	478849	26.5	20.7	312374	26.6	20.3	349181	26.6	20.0
23600	26.3	18.3	108257	26.3	17.9	229190	26.4	20.7	433274	26.5	20.7	165647	26.6	19.5	430999	26.6	20.8
510945	26.3	21.8	128001	26.3	19.9	67461	26.4	17.4	205658	26.5	19.3	173759	26.6	19.8	312788	26.6	19.6
240677	26.3	20.1	359376	26.3	20.5	517232	26.4	20.1	129	26.5	11.8	52140	26.6	17.9	342510	26.6	20.4
422323	26.3	19.8	74236	26.4	19.6	37297	26.4	18.8	19535	26.5	16.9	445504	26.6	20.1	431344	26.6	19.7
225808	26.3	18.3	353861	26.4	19.8	163754	26.4	18.5	19399	26.5	18.1	362552	26.6	20.3	175223	26.6	20.3
183234	26.3	19.1	15348	26.4	16.4	459496	26.4	21.0	499743	26.5	19.7	70509	26.6	18.3	356984	26.6	21.3
75486	26.3	17.1	479666	26.4	20.2	441335	26.4	20.4	41508	26.5	18.3	430759	26.6	19.1	412723	26.6	20.6
235880	26.3	19.7	344046	26.4	19.9	89365	26.4	17.5	128464	26.5	19.1	371886	26.6	20.0	536049	26.6	21.8
449994	26.3	19.9	164345	26.4	20.3	312468	26.4	20.6	521532	26.5	20.5	318661	26.6	21.0	165585	26.6	19.6
94275	26.3	19.7	230259	26.4	20.2	147642	26.4	20.0	219139	26.5	20.1	84207	26.6	16.5	138010	26.6	19.0
170894	26.3	18.9	512128	26.4	20.5	220342	26.4	20.0	524383	26.5	21.1	520983	26.6	20.7	329155	26.6	20.3
240284	26.3	20.2	342987	26.4	19.7	103921	26.4	19.0	339483	26.5	20.4	141967	26.6	18.9	309613	26.6	21.2
360656	26.3	18.8	21554	26.4	18.5	65217	26.4	19.5	542378	26.5	21.2	251910	26.6	19.4	314140	26.6	21.3
30817	26.3	16.7	482223	26.4	20.3	220278	26.4	19.1	353831	26.5	20.4	19377	26.6	18.4	434027	26.6	19.5
505934	26.3	19.4	384723	26.4	19.8	524824	26.4	20.5	508393	26.5	19.5	614	26.6	14.0	309079	26.6	20.2
243857	26.3	19.1	524527	26.4	18.5	33287	26.4	17.4	13161	26.5	16.1	148465	26.6	19.5	313046	26.6	17.6
508384	26.3	19.8	478067	26.4	20.5	63249	26.4	18.7	233369	26.5	20.6	538948	26.6	21.2	440745	26.6	19.5
389289	26.3	21.2	23646	26.4	18.5	472116	26.4	20.2	481012	26.5	20.4	366287	26.6	21.1	499845	26.6	20.6
538658	26.3	19.4	155523	26.4	17.9	438215	26.4	20.0	178045	26.5	19.9	493624	26.6	20.7	304335	26.6	20.4
198013	26.3	18.4	531914	26.4	19.7	511698	26.4	21.2	333962	26.5	21.2	275322	26.6	20.2	446220	26.6	21.1
432650	26.3	19.8	18696	26.4	17.2	223738	26.4	18.6	343761	26.5	20.5	28960	26.6	19.4	524047	26.6	20.2
117851	26.3	19.3	422642	26.4	21.0	433538	26.4	19.2	244627	26.5	19.7	240608	26.6	20.2	527734	26.6	20.6
11807	26.3	18.3	423876	26.4	18.6	402386	26.4	19.9	468302	26.5	20.4	345857	26.6	20.3	352106	26.7	21.0
500794	26.3	20.9	35223	26.4	18.8	134600	26.4	18.5	417586	26.5	19.1	257301	26.6	19.4	465627	26.7	21.6
292380	26.3	19.9	390301	26.4	20.8	293586	26.5	18.7	22010	26.5	18.9	296634	26.6	20.1	98315	26.7	17.1
341209	26.3	20.3	261607	26.4	20.8	490756	26.5	20.9	333645	26.5	20.2	443336	26.6	21.2	478884	26.7	20.4
382108	26.3	21.0	3758	26.4	21.9	3758	26.5	16.7	56625	26.5	18.3	53692	26.6	18.8	434254	26.7	18.4
48275	26.3	18.5	330085	26.4	19.5	192224	26.5	19.6	169567	26.5	19.5	40612	26.6	18.5	384935	26.7	20.5
515226	26.3	21.1	429589	26.4	20.7	161206	26.5	19.0	531807	26.5	20.6	357863	26.6	20.1	475429	26.7	20.4
542598	26.3	21.0	396412	26.4	20.5	195417	26.5	19.7	157620	26.5	19.2	428287	26.6	21.3	9829	26.7	18.1
290935	26.3	19.8	387260	26.4	20.8	513815	26.5	22.3	259835	26.5	21.1	5444	26.6	16.7	355601	26.7	20.9
250522	26.3	19.1	245512	26.4	20.2	537634	26.5	21.3	438993	26.5	19.4	54548	26.6	18.6	403211	26.7	20.8
512133	26.3	20.5	504298	26.4	21.3	487592	26.5	20.2	508173	26.5	19.5	352334	26.6	19.6	1923	26.7	16.5
168896	26.3	17.8	123125	26.4	19.2	511475	26.5	21.3	11443	26.5	17.6	537574	26.6	20.5	195565	26.7	20.5
95253	26.3	19.5	452203	26.4	21.4	74009	26.5	18.5	295404	26.5	20.5	119939	26.6	18.3	63225	26.7	17.7
220351	26.3	19.7	289059	26.4	19.5	531216	26.5	19.3	125146	26.5	19.2	379801	26.6	21.0	435881	26.7	19.7
38613	26.3	18.1	112858	26.4	18.8	318550	26.5	20.0	193966	26.5	19.2	311117	26.6	19.7	131026	26.7	18.4
258835	26.3	20.0	356287	26.4	20.7	100909	26.5	20.1	31331	26.5	18.4	510985	26.6	20.7	399823	26.7	20.0
446041	26.3	20.4	68245	26.4	19.4	177648	26.5	19.2	163908	26.5	19.0	530543	26.6	21.0	110490	26.7	18.7
11736	26.3	17.5	514674	26.4	21.0	211081	26.5	20.7	378534	26.5	21.4	259723	26.6	18.8	151316	26.7	19.4
134593	26.3	19.2	14589	26.4	17.6	92287	26.5	18.9	277531	26.5	18.6	244737	26.6	19.4	424036	26.7	19.7
312798	26.3	20.2	310079	26.4	20.8	438775	26.5	20.7	319442	26.5	19.9	395044	26.6	20.3	221922	26.7	19.4
252990	26.3	20.4	257154	26.4	19.9	475369	26.5	21.1	320585	26.5	19.8	483254	26.6	20.5	357316	26.7	19.6
204680	26.3	19.8	29708	26.4	17.8	249257	26.5	19.5	543734	26.5	22.6	197596	26.6	19.9	479056	26.7	20.9
102937	26.3	18.5	23011	26.4	18.8	387386	26.5	20.6	512396	26.5	20.1	149189	26.6	19.2	511754	26.7	20.5
290629	26.3	20.0	157801	26.4	19.7	356265	26.5	20.5	289912	26.5	20.7	310115	26.6	20.3	486694	26.7	20.0
117854	26.3	20.1	11801	26.4	17.1	192805	26.5	17.8	242343	26.5	19.7	338091	26.6	19.7	500166	26.7	19.5
216468	26.3	19.6	166457	26.4	18.7	357870	26.5	19.9	536811	26.5	21.6	26663	26.6	20.2	428322	26.7	21.6
66455	26.3	20.2	449904	26.4	21.1	461742	26.5	20.4	500148	26.5	21.9	528322	26.6	20.5	190458	26.7	19.4
137814	26.3	18.9	432264	26.4	20.4	221003	26.5	19.3	396546	26.5	19.7	6913	26.6	16.0	164465	26.7	19.4
485796	26.3	21.1	434697	26.4	20.7	228358	26.5	19.2	46713	26.5	18.5	271733	26.6	18.1	149842	26.7	18.2
25892	26.3	17.6	207464	26.4	19.6	115000	26.5	18.3	390253	26.5	20.0	95673	26.6	18.7	211557	26.7	19.3
472945	26.3	20.8	443395	26.4	20.4	303207	26.5	20.5	427415	26.5	20.4	38893	26.6	18.3	45434	26.7	17.3
74939	26.3	18.5	211099	26.4	19.0	88931	26.5	18.1	25773	26.5	17.7	448429	26.6	20.8	185789	26.7	19.5
515965	26.3	19.6	12487	26.4	17.3	69354	26.5	17.5	254248	26.5	19.3	356889	26.6	20.2	268505	26.7	20.0
116970	26.3	20.1	440458	26.4	20.2	13125	26.5	17.3	112685	26.5	18.7	22714	26.6	18.7	503709	26.7	19.0
188765	26.3	19.5	206145	26.4	19.6	301262	26.5	20.1	264906	26.5	19.5	348190	26.6	19.1	481228	26.7	20.8
129436	26.3	19.2	528597	26.4	21.0	244662	26.5	19.9	168364	26.5	19.7	519657	26.6	20.9	357833	26.7	20.0
263922	26.3	20.5	440521	26.4	20.4	497902	26.5	20.2	347260	26.5	20.3	396724	26.6	22.0	22718	26.7	17.5
128431	26.3	19.3	206060	26.4	19.8	94363	26.5	19.2	333069	26.5	19.8	489637	26.6	18.7	121070	26.7	19.1
237189	26.3	19.9	141520	26.4	20.1	474271	26.5	20.1	227485	26.5	18.4	338550	26.6	18.6	64224	26.7	18.8
48917	26.3	18.4	398791	26.4	20.8	463330	26.5	19.2	356441	26.5	20.7	242686	26.6	19.4	426455	26.7	19.9
447225	26.3	20.9	126782	26.4	18.7	480672	26.5	20.2	215023	26.5	19.5	254168	26.6	19.9	342314	26.7	20.3
516944	26.3	20.4	326127	26.4	19.7	205196	26.5	19.9	195498	26.6	20.1	163993	26.6	19.1	35422	26.7	18.1
234419	26.3	19.6	531001	26.4	20.5	73085	26.5	18.4	371847	26.6	20.2	341127	26.6	19.9	470422	26.7	19.6
544	26.3	13.8	309096	26.4	20.0	29005	26.5	19.1									

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
153922	26.7	19.2	92017	26.8	18.9	461660	26.8	21.1	111473	26.9	19.0	511447	26.9	21.5	162345	27.1	19.4
84932	26.7	17.3	471690	26.8	20.9	338034	26.8	20.2	528094	26.9	20.9	289082	26.9	19.3	294991	27.1	20.1
317692	26.7	18.6	155451	26.8	18.5	335555	26.8	20.0	433507	26.9	20.4	367942	26.9	20.3	66571	27.1	17.9
280329	26.7	18.4	32647	26.8	18.5	316394	26.8	19.9	23123	26.9	18.2	170503	26.9	19.4	87263	27.1	19.0
67059	26.7	17.4	296305	26.8	19.8	177295	26.8	20.2	43229	26.9	18.6	150649	26.9	20.2	164066	27.1	18.6
256725	26.7	18.9	368434	26.8	19.0	469534	26.8	21.1	382990	26.9	21.2	356430	26.9	20.4	182607	27.1	18.4
91201	26.7	18.0	154493	26.8	19.9	422965	26.8	21.4	228581	26.9	18.6	480581	26.9	20.4	159191	27.1	20.0
240729	26.7	19.4	129032	26.8	18.3	542668	26.8	20.7	312427	26.9	20.4	506612	26.9	20.1	369553	27.1	19.5
264330	26.7	19.2	15474	26.8	17.4	98673	26.8	19.2	127113	26.9	20.7	269035	26.9	20.4	500820	27.1	21.1
111386	26.7	19.1	49927	26.8	18.0	266473	26.8	20.1	521756	26.9	20.9	74947	26.9	19.6	118417	27.1	17.5
78067	26.7	19.3	512064	26.8	21.3	180220	26.8	20.0	437115	26.9	19.6	501807	26.9	19.1	463130	27.1	20.2
42200	26.7	18.8	439541	26.8	21.2	228662	26.8	20.1	126472	26.9	19.2	90428	26.9	19.2	276799	27.1	19.9
61775	26.7	18.6	364107	26.8	21.1	537018	26.9	21.7	294301	26.9	19.7	33863	26.9	18.1	393125	27.1	20.5
394716	26.7	21.2	237107	26.8	20.8	235239	26.9	19.8	201680	26.9	17.9	390425	26.9	19.9	248214	27.1	20.2
452240	26.7	19.0	516099	26.8	20.8	323432	26.9	18.6	433295	26.9	20.6	319044	26.9	19.7	157492	27.1	17.6
88141	26.7	18.8	302818	26.8	20.2	342545	26.9	19.8	22728	26.9	16.7	354809	26.9	21.1	45082	27.1	17.2
12973	26.7	18.0	360290	26.8	21.1	60199	26.9	18.1	397727	26.9	21.9	432361	27.0	20.4	339463	27.1	19.5
170336	26.7	18.8	35994	26.8	17.9	490014	26.9	20.9	394344	26.9	20.1	93334	27.0	19.4	187416	27.1	18.7
37264	26.7	17.7	529538	26.8	20.9	482953	26.9	20.8	307148	26.9	20.7	377677	27.0	20.6	151443	27.1	19.7
402866	26.7	19.5	529872	26.8	20.7	168910	26.9	17.9	415682	26.9	20.3	289036	27.0	19.3	370403	27.1	19.1
71185	26.7	18.6	472009	26.8	19.5	165583	26.9	19.1	514876	26.9	20.0	95135	27.0	19.4	219866	27.1	20.3
519165	26.7	20.3	164238	26.8	20.1	102875	26.9	18.5	139764	26.9	19.1	21179	27.0	17.9	207215	27.1	20.5
472138	26.7	20.2	504768	26.8	20.6	338136	26.9	20.4	481195	26.9	19.5	280162	27.0	20.0	171805	27.1	19.0
403265	26.7	19.8	14226	26.8	18.6	411200	26.9	19.8	536594	26.9	20.1	293290	27.0	19.6	129767	27.1	19.5
497333	26.7	20.2	162124	26.8	18.6	177424	26.9	20.4	353752	26.9	20.2	255668	27.0	19.0	156164	27.1	17.2
253396	26.7	20.3	435690	26.8	20.1	71584	26.9	18.7	307549	26.9	21.0	279774	27.0	19.5	384086	27.1	20.5
401033	26.7	20.0	206446	26.8	20.4	4352	26.9	14.5	91009	26.9	18.6	263795	27.0	20.3	259370	27.1	20.5
438431	26.7	19.3	324026	26.8	20.2	475364	26.9	22.0	20642	26.9	18.0	530300	27.0	21.1	394246	27.1	19.5
307052	26.7	20.5	153896	26.8	17.3	482923	26.9	20.5	3991	26.9	16.0	106643	27.0	18.2	37789	27.1	20.0
167441	26.7	18.1	45833	26.8	18.5	150295	26.9	19.1	522740	26.9	20.9	184719	27.0	20.1	354136	27.1	20.8
523128	26.7	20.4	507746	26.8	19.7	529914	26.9	21.1	62324	26.9	18.5	436401	27.0	20.9	312567	27.1	19.7
388577	26.7	20.7	39036	26.8	18.6	295591	26.9	19.7	435293	26.9	19.2	536394	27.0	22.0	252179	27.1	19.6
296093	26.7	20.1	144581	26.8	19.4	296319	26.9	20.2	401701	26.9	21.3	461	27.0	14.5	255752	27.1	18.8
142137	26.7	18.7	36393	26.8	17.1	410769	26.9	19.9	281264	26.9	19.5	284145	27.0	18.8	528616	27.1	20.7
168876	26.7	17.9	304041	26.8	19.4	208544	26.9	20.0	397796	26.9	20.9	278346	27.0	19.8	441381	27.1	20.5
346682	26.7	21.0	93105	26.8	17.4	512152	26.9	19.8	421655	26.9	20.5	316536	27.0	20.9	516184	27.1	20.6
122236	26.7	19.0	112263	26.8	19.6	201527	26.9	19.2	89872	26.9	19.4	476641	27.0	20.7	470670	27.1	20.8
2120	26.7	15.3	177376	26.8	20.0	131186	26.9	19.9	126437	26.9	18.2	290704	27.0	20.6	275920	27.1	20.1
47992	26.7	19.1	2453	26.8	15.0	384026	26.9	20.4	25398	26.9	17.4	330324	27.0	20.8	518180	27.1	20.9
135618	26.7	20.2	50033	26.8	19.2	497484	26.9	18.3	337336	26.9	20.7	519017	27.0	20.9	390364	27.1	20.2
539255	26.7	20.2	53132	26.8	17.5	152014	26.9	19.3	1082	26.9	14.0	338056	27.0	19.9	352429	27.1	21.5
301035	26.7	19.3	181618	26.8	20.5	203743	26.9	20.1	468820	26.9	20.2	317822	27.0	19.6	431270	27.1	19.5
186296	26.7	20.4	77962	26.8	17.6	64363	26.9	19.3	278963	26.9	19.5	419620	27.0	20.2	240349	27.1	19.2
107885	26.7	19.1	129567	26.8	20.0	40220	26.9	17.5	529785	26.9	21.2	183623	27.0	18.7	390804	27.1	19.7
380590	26.7	19.4	535717	26.8	21.2	128632	26.9	19.9	463738	26.9	20.0	321873	27.0	20.4	146961	27.1	20.4
134159	26.7	19.4	446259	26.8	21.0	190602	26.9	18.1	246529	26.9	17.4	324820	27.0	19.4	170597	27.1	19.1
466296	26.7	20.3	295305	26.8	20.3	412222	26.9	21.6	367726	26.9	19.4	12609	27.0	17.8	539310	27.1	20.0
528540	26.7	20.6	336354	26.8	19.1	70878	26.9	19.1	166907	26.9	19.7	315931	27.0	20.2	463269	27.1	20.7
412400	26.7	20.8	216450	26.8	19.7	477073	26.9	20.9	485747	26.9	20.7	401751	27.0	20.4	513671	27.1	20.5
291104	26.7	19.2	37679	26.8	19.1	394793	26.9	18.9	327722	26.9	20.3	251957	27.0	19.3	465589	27.1	21.2
258007	26.7	20.3	269686	26.8	20.3	192981	26.9	20.0	111154	26.9	19.1	514511	27.0	20.6	19969	27.1	17.5
48854	26.7	19.1	7304	26.8	19.1	67065	26.9	18.5	377780	26.9	20.7	189779	27.0	19.6	237382	27.1	19.2
483221	26.7	20.0	24179	26.8	16.1	85599	26.9	19.3	539469	26.9	21.2	34520	27.0	18.1	386351	27.1	19.8
533655	26.7	21.4	153143	26.8	19.5	79615	26.9	18.2	459444	26.9	21.1	539695	27.0	20.6	389326	27.1	20.4
496162	26.7	20.0	355656	26.8	20.4	195152	26.9	19.6	49624	26.9	16.8	99619	27.0	18.7	191058	27.1	19.2
446288	26.7	23.3	68687	26.8	19.7	68713	26.9	18.5	398842	26.9	20.5	90358	27.0	19.2	126047	27.1	19.0
70506	26.7	17.9	522976	26.8	20.1	471722	26.9	20.8	522823	26.9	20.7	4082	27.0	15.1	90680	27.1	19.2
471645	26.7	20.7	324327	26.8	20.2	491937	26.9	20.3	233519	26.9	20.0	215124	27.0	18.6	508305	27.1	21.3
524849	26.7	20.6	542203	26.8	20.2	415068	26.9	20.7	151481	26.9	19.2	58708	27.0	18.9	393107	27.1	20.3
57846	26.7	18.9	521777	26.8	20.5	152479	26.9	19.6	503352	26.9	21.1	21496	27.0	17.1	308830	27.1	19.9
256545	26.8	19.3	90360	26.8	19.3	522971	26.9	20.3	1913	26.9	15.0	525427	27.0	21.4	185350	27.1	20.4
167816	26.8	19.5	345481	26.8	19.8	246726	26.9	20.7	17123	26.9	17.5	455764	27.0	20.6	60313	27.1	19.3
514065	26.8	21.0	350851	26.8	21.0	529582	26.9	21.1	474478	26.9	19.5	61520	27.0	19.0	449327	27.1	21.0
332507	26.8	21.4	533243	26.8	20.8	168362	26.9	19.1	261608	26.9	20.9	499075	27.0	21.5	257245	27.1	21.1
512659	26.8	20.3	111896	26.8	19.7	387918	26.9	19.6	407817	26.9	21.1	470339	27.0	18.8	146112	27.1	18.8
192389	26.8	19.4	105272	26.8	18.9	43987	26.9	19.2	451331	26.9	20.6	444720	27.0	20.7	1367	27.1	16.0
394034	26.8	18.1	261981	26.8	18.9	75614	26.9	17.9	26075	26.9	16.7	277467	27.1	20.7	260193	27.1	19.7
32319	26.8	17.4	436347	26.8	19.5	175309	26.9	19.8	255216	26.9	18.5	412721	27.1	20.4	237176	27.1	19.2
511946	26.8	21.1	318416	26.8	20.0	293406	26.9	19.6									

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
417513	27.1	19.3	299128	27.2	20.7	189776	27.3	19.2	537552	27.3	21.3	421511	27.4	21.6	155966	27.5	19.7
162737	27.1	18.2	28439	27.2	18.7	180414	27.3	20.3	516345	27.3	20.0	289166	27.4	18.4	433253	27.5	19.5
201143	27.1	19.8	337039	27.2	20.7	413080	27.3	19.1	376920	27.3	21.1	102313	27.4	17.4	384465	27.5	21.2
202942	27.1	19.0	167289	27.2	19.2	469953	27.3	21.3	234620	27.3	19.4	127764	27.4	19.6	434410	27.5	21.1
304524	27.1	20.2	373584	27.2	19.9	113248	27.3	18.4	345988	27.3	19.7	308200	27.4	20.1	254285	27.5	19.3
203716	27.1	20.1	491875	27.2	20.3	509721	27.3	19.5	499150	27.3	20.4	187721	27.4	20.7	137034	27.5	19.6
99964	27.1	19.1	206034	27.2	19.4	504040	27.3	20.4	397697	27.3	21.5	121200	27.4	18.6	441984	27.5	20.2
437767	27.1	21.2	69898	27.2	17.0	379853	27.3	19.1	514685	27.3	21.6	506432	27.4	18.8	55750	27.5	19.1
399013	27.1	20.5	258650	27.2	20.4	89001	27.3	18.7	150618	27.3	18.8	153637	27.4	18.5	94285	27.5	19.3
418943	27.1	19.5	534297	27.2	19.0	99212	27.3	19.4	147018	27.3	19.4	123966	27.4	19.4	515417	27.5	20.8
522561	27.1	21.3	63625	27.2	17.9	509703	27.3	19.8	104259	27.3	18.7	338491	27.4	19.6	126946	27.5	19.7
379896	27.1	18.1	268050	27.2	18.4	160017	27.3	19.6	296492	27.3	19.1	231801	27.4	19.2	417957	27.5	19.6
106109	27.1	19.1	77396	27.2	18.7	247775	27.3	19.9	183665	27.3	19.8	401271	27.4	20.4	294505	27.5	19.5
521514	27.1	20.9	377143	27.2	19.6	64760	27.3	17.9	25712	27.3	18.6	356225	27.4	20.3	25020	27.5	18.5
205836	27.1	19.2	93428	27.2	19.6	315928	27.3	20.4	74692	27.3	18.1	320099	27.4	20.9	344750	27.5	20.7
47510	27.1	18.5	23192	27.2	18.1	364741	27.3	20.6	172843	27.3	20.5	291910	27.4	20.8	520544	27.5	21.4
386337	27.1	20.0	179754	27.2	18.4	213214	27.3	19.1	314320	27.3	19.4	149884	27.4	19.6	210794	27.5	19.7
22191	27.1	18.3	513702	27.2	20.9	12604	27.3	17.6	94133	27.3	18.6	468626	27.4	21.4	83012	27.5	18.8
335812	27.1	20.6	6988	27.2	17.0	433016	27.3	19.8	41419	27.3	19.0	470302	27.4	21.6	510957	27.5	22.0
340540	27.1	20.0	85770	27.2	20.3	457519	27.3	19.4	104550	27.3	19.0	193553	27.4	19.0	190213	27.5	20.2
540395	27.1	21.0	126157	27.2	18.8	286728	27.3	20.4	357854	27.3	20.7	513573	27.4	20.6	98499	27.5	18.9
125775	27.1	19.3	435703	27.2	20.5	308379	27.3	21.4	10954	27.3	18.0	508090	27.4	20.4	540393	27.5	20.5
386366	27.1	20.1	277494	27.2	18.6	102824	27.3	18.9	533819	27.3	19.9	522753	27.4	20.5	186620	27.5	18.4
428742	27.1	20.9	70491	27.2	19.9	132192	27.3	18.6	439999	27.3	22.1	407982	27.4	19.9	444993	27.5	21.2
97889	27.1	19.3	65583	27.2	19.4	153033	27.3	20.2	418144	27.3	20.9	508125	27.4	20.6	95438	27.5	19.3
183546	27.1	20.9	390254	27.2	19.7	21260	27.3	16.6	257227	27.3	18.6	22254	27.4	15.9	81422	27.5	19.5
150992	27.1	18.4	361121	27.2	20.6	333154	27.3	20.8	472889	27.3	21.7	12532	27.4	16.8	506360	27.5	20.6
400500	27.2	21.1	471624	27.2	20.4	87381	27.3	18.4	523597	27.3	23.0	232897	27.4	19.3	252835	27.5	18.0
44209	27.2	17.4	255166	27.2	20.4	31702	27.3	16.9	32173	27.3	16.6	170026	27.4	19.3	429726	27.5	21.0
246960	27.2	18.8	431100	27.2	20.5	17647	27.3	17.3	208290	27.3	20.4	518835	27.4	20.8	496217	27.5	20.3
12675	27.2	16.5	329544	27.2	19.0	191236	27.3	18.5	517584	27.3	20.6	89821	27.4	19.0	183166	27.5	18.3
537812	27.2	20.2	397065	27.2	19.6	123018	27.3	19.5	421835	27.4	21.0	156708	27.4	20.1	105034	27.5	16.8
40855	27.2	17.3	229851	27.2	19.3	93744	27.3	18.3	497830	27.4	20.2	32359	27.4	16.8	72281	27.5	18.3
172744	27.2	19.8	209170	27.2	18.6	343889	27.3	21.0	429758	27.4	20.5	439195	27.4	20.0	277397	27.5	20.0
403955	27.2	21.4	335811	27.2	20.1	260937	27.3	19.5	174640	27.4	19.1	21989	27.4	17.6	76955	27.5	19.4
442447	27.2	20.7	257316	27.2	20.4	442271	27.3	20.0	453694	27.4	20.3	160448	27.4	19.8	254653	27.5	20.1
338798	27.2	20.2	437458	27.2	20.5	474249	27.3	19.8	358430	27.4	20.5	465414	27.4	20.8	7910	27.5	16.8
395609	27.2	20.1	264144	27.2	20.0	42600	27.3	17.1	356232	27.4	20.4	418212	27.4	21.5	130228	27.5	19.7
537181	27.2	21.7	463880	27.2	19.5	53662	27.3	16.8	36488	27.4	18.5	488723	27.4	19.7	256640	27.5	19.9
319401	27.2	19.9	389023	27.2	19.8	509783	27.3	20.0	166005	27.4	19.8	521606	27.4	20.6	155244	27.5	20.8
363976	27.2	19.4	350242	27.2	20.1	367120	27.3	19.3	321140	27.4	19.6	36131	27.4	18.6	201546	27.5	19.2
6861	27.2	16.9	326322	27.2	18.9	342346	27.3	20.0	365875	27.4	20.5	462524	27.4	20.9	424530	27.5	20.5
257385	27.2	20.0	23106	27.2	17.8	46146	27.3	19.4	113019	27.4	19.3	266891	27.4	20.3	341085	27.5	20.9
1846	27.2	16.1	55994	27.2	18.8	506595	27.3	21.4	523560	27.4	21.2	117291	27.4	18.9	104033	27.5	19.0
36257	27.2	18.1	478017	27.2	20.9	508854	27.3	21.0	95381	27.4	19.6	528112	27.4	21.8	536621	27.5	19.7
537750	27.2	20.4	95830	27.2	19.6	156966	27.3	20.8	289217	27.4	19.5	107134	27.4	19.5	478489	27.5	20.8
93109	27.2	18.1	470626	27.2	20.4	43395	27.3	17.9	133948	27.4	19.6	521350	27.4	21.8	471292	27.5	20.0
256436	27.2	20.6	21284	27.2	17.9	105756	27.3	19.1	335366	27.4	21.1	274401	27.4	19.8	386312	27.5	20.9
150002	27.2	19.5	304296	27.2	20.4	250795	27.3	19.5	23968	27.4	18.0	441814	27.4	20.3	127724	27.5	18.7
60958	27.2	20.4	234688	27.2	20.2	9611	27.3	17.8	136903	27.4	21.0	323718	27.4	20.5	48592	27.5	19.0
398580	27.2	20.0	519897	27.2	21.0	240567	27.3	18.4	250004	27.4	19.4	241754	27.4	19.8	392337	27.5	21.1
219837	27.2	19.2	440464	27.2	19.8	519976	27.3	20.9	215585	27.4	19.6	61969	27.4	19.2	69771	27.5	19.4
483582	27.2	20.1	343894	27.2	20.5	418951	27.3	21.3	528398	27.4	20.4	177780	27.4	19.4	444447	27.5	20.6
21877	27.2	19.6	42433	27.2	19.2	148411	27.3	18.8	418165	27.4	19.9	389461	27.4	20.0	155587	27.5	19.3
148428	27.2	19.9	297078	27.2	19.3	333465	27.3	20.4	44219	27.4	18.9	318573	27.4	21.1	221047	27.5	19.6
29520	27.2	18.6	438462	27.2	20.1	157627	27.3	19.0	53436	27.4	18.3	469026	27.4	20.1	448504	27.5	19.9
525445	27.2	21.6	89383	27.2	18.5	199906	27.3	19.6	478287	27.4	21.1	91914	27.4	18.2	97037	27.5	18.1
310690	27.2	20.2	503591	27.2	21.3	470529	27.3	21.7	36471	27.4	17.8	314536	27.4	21.1	529759	27.5	21.1
361130	27.2	20.8	280091	27.2	21.2	503896	27.3	20.0	507716	27.4	20.5	285894	27.4	17.7	257197	27.5	19.9
141785	27.2	18.9	311989	27.2	21.1	209082	27.3	19.9	57690	27.4	18.4	52369	27.4	18.7	2222	27.5	14.9
380326	27.2	20.4	390651	27.2	20.0	323389	27.3	19.6	103880	27.4	19.8	239433	27.4	19.7	510743	27.5	19.5
506329	27.2	20.7	482771	27.2	20.9	152883	27.3	19.5	438799	27.4	20.0	219907	27.4	20.1	93201	27.5	18.5
320571	27.2	19.8	327793	27.2	20.8	524439	27.3	19.8	234342	27.4	19.6	30439	27.4	17.1	171767	27.5	19.8
505688	27.2	20.1	426247	27.3	20.9	435876	27.3	21.2	263405	27.4	20.3	36080	27.4	18.3	99228	27.5	19.8
448697	27.2	20.3	185793	27.3	19.6	512910	27.3	19.7	278345	27.4	21.2	329308	27.4	18.8	473092	27.5	20.0
247458	27.2	21.0	189753	27.3	19.2	90725	27.3	17.8	19754	27.4	17.6	528529	27.4	19.6	363543	27.5	20.4
98256	27.2	18.4	359478	27.3	20.6	172868	27.3	20.2	423997	27.4	20.9	171016	27.5	19.4	479901	27.5	21.2
112617	27.2	19.3	360969	27.3	21.0	153255	27.3	19.8	34163	27.4	18.2	536981	27.5	21.5	16281	27.5	18.6
306345	27.2	20.4	438058	27.3	19.3	389103	27.3	19.9	208								

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
287786	27.5	19.6	253786	27.6	19.2	316639	27.7	20.6	510258	27.7	21.3	127011	27.8	19.8	316641	27.9	20.6
313171	27.5	21.1	318122	27.6	20.6	244734	27.7	19.7	59580	27.7	19.4	18603	27.8	17.9	253715	27.9	19.3
95443	27.5	19.4	144864	27.6	18.5	429832	27.7	19.6	260650	27.8	20.4	209300	27.8	19.2	192302	27.9	19.1
478998	27.5	20.5	452660	27.6	19.9	101931	27.7	18.0	333930	27.8	17.9	258718	27.8	20.3	438952	27.9	20.6
430439	27.5	25.5	469931	27.6	20.3	353340	27.7	20.1	167857	27.8	20.0	149664	27.8	18.3	443903	27.9	21.1
216711	27.6	21.1	175836	27.6	18.8	460720	27.7	19.6	310872	27.8	19.5	51455	27.8	19.9	95693	27.9	18.7
91315	27.6	18.4	176772	27.6	19.4	405468	27.7	19.1	331527	27.8	18.5	422198	27.8	20.3	15536	27.9	17.8
316044	27.6	20.3	454923	27.6	20.1	332482	27.7	21.3	379614	27.8	20.3	338150	27.8	20.5	18709	27.9	17.4
107822	27.6	20.1	467188	27.6	21.4	271194	27.7	19.9	472118	27.8	20.6	51475	27.8	18.5	15665	27.9	17.6
303978	27.6	19.6	529862	27.6	20.0	255695	27.7	20.3	72999	27.8	19.1	184616	27.8	19.2	77047	27.9	18.8
492302	27.6	20.4	437250	27.6	20.8	172569	27.7	19.5	63210	27.8	18.7	416750	27.8	20.9	429624	27.9	21.9
26074	27.6	18.1	211125	27.6	20.0	508581	27.7	20.4	179614	27.8	19.3	358892	27.8	20.4	49135	27.9	18.2
448042	27.6	20.5	206555	27.6	19.2	28099	27.7	18.5	488398	27.8	20.5	330345	27.8	19.1	365988	27.9	20.1
473271	27.6	20.2	517116	27.6	21.5	155507	27.7	19.8	342260	27.8	19.9	165094	27.8	19.0	509855	27.9	20.5
271682	27.6	19.5	482739	27.6	20.9	446711	27.7	20.5	542866	27.8	20.9	87235	27.8	16.4	139310	27.9	18.7
222566	27.6	19.0	386822	27.6	21.6	449010	27.7	20.2	432300	27.8	20.2	665	27.8	13.9	387546	27.9	20.5
320593	27.6	20.9	159211	27.6	20.0	389573	27.7	20.7	99464	27.8	19.6	33191	27.8	18.4	322396	27.9	20.1
91136	27.6	18.6	302791	27.6	20.0	510093	27.7	21.2	8863	27.8	15.2	59931	27.8	18.2	450941	27.9	20.8
384083	27.6	19.2	175457	27.6	20.4	338018	27.7	21.4	447081	27.8	20.7	367890	27.9	20.8	499231	27.9	19.5
26478	27.6	18.3	341295	27.6	19.1	140391	27.7	18.5	249983	27.8	19.6	230411	27.9	20.2	472323	27.9	20.0
64238	27.6	18.6	66084	27.6	18.6	297584	27.7	19.0	102823	27.8	19.2	105133	27.9	17.8	37911	27.9	18.6
199504	27.6	20.2	12211	27.6	17.1	102473	27.7	18.1	230044	27.8	19.7	247465	27.9	20.3	542789	27.9	20.4
128879	27.6	18.4	138015	27.6	19.1	305497	27.7	20.6	137120	27.8	22.1	112414	27.9	19.4	494836	27.9	19.3
531256	27.6	20.5	444088	27.6	19.1	444064	27.7	20.3	236420	27.8	20.5	315512	27.9	19.9	251587	27.9	20.5
215069	27.6	19.9	306721	27.6	18.8	26673	27.7	19.2	372787	27.8	20.8	355774	27.9	20.6	276073	27.9	21.0
358967	27.6	19.3	52135	27.6	17.6	523013	27.7	21.0	144905	27.8	19.9	134634	27.9	19.9	502006	27.9	20.3
99186	27.6	19.9	111094	27.6	18.3	306085	27.7	20.8	319789	27.8	20.7	312773	27.9	20.6	477877	27.9	21.5
481705	27.6	21.1	241582	27.6	19.7	225793	27.7	20.1	124959	27.8	19.1	482782	27.9	21.4	177967	27.9	19.2
433205	27.6	20.5	253894	27.6	20.5	281537	27.7	19.9	253787	27.8	19.3	33756	27.9	17.8	207533	27.9	20.3
288098	27.6	20.0	360385	27.6	21.0	526245	27.7	21.0	466683	27.8	21.0	291420	27.9	21.0	524176	27.9	20.8
12739	27.6	18.0	36415	27.6	18.0	418957	27.7	21.0	157616	27.8	19.4	37601	27.9	17.4	312795	27.9	19.9
101681	27.6	18.6	444174	27.6	21.1	444311	27.7	20.3	155330	27.8	19.4	213581	27.9	19.6	225825	27.9	18.6
280909	27.6	19.6	355725	27.6	21.5	137555	27.7	18.7	37592	27.8	18.6	476248	27.9	20.8	503787	27.9	20.1
319701	27.6	19.9	200279	27.6	19.7	411751	27.7	20.8	535464	27.8	21.7	474369	27.9	19.6	398994	27.9	19.9
154577	27.6	20.6	180492	27.6	20.1	512157	27.7	21.2	540841	27.8	20.3	346683	27.9	19.9	164993	27.9	20.2
131902	27.6	20.2	175808	27.6	18.4	352536	27.7	20.3	230062	27.8	18.7	481494	27.9	20.8	22222	27.9	19.0
431898	27.6	19.5	346765	27.6	20.3	249360	27.7	20.1	279633	27.8	20.0	114060	27.9	19.1	525956	27.9	21.2
247019	27.6	19.4	23227	27.6	18.5	81076	27.7	20.0	86139	27.8	18.3	263571	27.9	20.3	515934	27.9	20.3
510952	27.6	21.1	293703	27.6	20.9	362010	27.7	20.8	537536	27.8	21.6	81796	27.9	19.2	98958	27.9	18.7
20455	27.6	17.7	31893	27.6	17.9	143166	27.7	19.4	111522	27.8	19.3	222553	27.9	19.0	125697	27.9	20.0
102223	27.6	18.8	347873	27.6	19.0	208665	27.7	19.6	518400	27.8	19.7	406287	27.9	21.4	480083	27.9	20.9
475889	27.6	20.7	282737	27.6	20.1	172096	27.7	18.4	534227	27.8	20.1	264226	27.9	19.9	7324	27.9	16.9
70754	27.6	17.6	290755	27.6	19.0	349314	27.7	20.4	61776	27.8	18.9	404238	27.9	20.6	529365	27.9	21.0
468869	27.6	21.1	443743	27.6	20.2	20161	27.7	24.1	476026	27.8	20.5	269347	27.9	19.4	478670	27.9	20.3
420031	27.6	21.0	301631	27.6	20.1	453184	27.7	21.2	245413	27.8	19.2	442506	27.9	20.6	322553	27.9	20.3
315889	27.6	20.5	358187	27.6	20.2	200057	27.7	19.1	215862	27.8	19.5	236475	27.9	20.2	204125	27.9	18.9
108380	27.6	19.9	80606	27.6	17.7	168134	27.7	20.4	184856	27.8	20.0	167726	27.9	19.3	128030	27.9	19.5
58935	27.6	17.1	340469	27.7	20.6	537612	27.7	19.8	126693	27.8	20.0	56436	27.9	16.3	505488	27.9	19.8
120706	27.6	19.4	511259	27.7	20.5	392367	27.7	20.0	16074	27.8	17.9	128833	27.9	19.4	281727	27.9	19.0
116200	27.6	17.1	127162	27.7	18.9	37884	27.7	18.1	521183	27.8	21.6	163047	27.9	19.5	424144	27.9	20.0
535658	27.6	21.2	373264	27.7	20.8	342467	27.7	19.7	362518	27.8	20.0	35539	27.9	16.0	305261	27.9	20.3
519481	27.6	21.7	42045	27.7	17.9	127027	27.7	19.8	385836	27.8	20.0	423967	27.9	19.3	518979	27.9	21.4
286590	27.6	21.2	202600	27.7	20.6	165979	27.7	19.2	522649	27.8	20.7	199057	27.9	18.9	61050	27.9	17.4
310099	27.6	19.3	390165	27.7	20.4	490716	27.7	19.1	186378	27.8	18.4	473093	27.9	20.7	60189	27.9	18.3
349322	27.6	20.8	228011	27.7	19.8	93135	27.7	18.1	189330	27.8	19.7	173147	27.9	20.1	430671	27.9	20.2
63279	27.6	19.4	500972	27.7	19.6	211116	27.7	20.3	92312	27.8	19.2	408954	27.9	20.8	519761	27.9	21.3
165194	27.6	18.0	469636	27.7	19.0	183770	27.7	19.3	346966	27.8	20.8	428730	27.9	19.9	428198	27.9	20.7
534624	27.6	19.6	199150	27.7	18.8	89540	27.7	18.1	392456	27.8	20.7	465640	27.9	19.2	324979	27.9	19.4
317803	27.6	18.7	61763	27.7	19.1	231563	27.7	19.6	338528	27.8	18.1	120738	27.9	18.6	446708	27.9	21.1
289479	27.6	20.7	175345	27.7	19.8	536865	27.7	21.9	361946	27.8	20.5	358799	27.9	21.0	463411	27.9	21.2
376127	27.6	20.2	37300	27.7	18.8	6249	27.7	13.8	383587	27.8	19.5	63029	27.9	18.6	177080	27.9	20.1
371863	27.6	21.1	523962	27.7	20.1	220333	27.7	20.9	155169	27.8	20.7	277458	27.9	20.2	323076	27.9	19.5
261493	27.6	20.9	99230	27.7	20.3	395616	27.7	20.0	66796	27.8	18.3	35773	27.9	19.6	386428	27.9	20.2
312778	27.6	19.4	217242	27.7	20.3	285233	27.7	20.6	6256	27.8	17.9	72659	27.9	18.8	128903	27.9	19.3
117724	27.6	19.4	447385	27.7	20.2	2741	27.7	16.2	289500	27.8	21.0	123730	27.9	19.5	386307	27.9	20.2
444267	27.6	21.1	246338	27.7	20.2	433286	27.7	21.2	361490	27.8	20.5	63035	27.9	18.6	197955	27.9	20.1
243315	27.6	19.9	59250	27.7	18.8	78072	27.7	18.3	95953	27.8	18.4	49050	27.9	17.7	146062	27.9	18.9
354213	27.6	20.7	269118	27.7	20.5	214741	27.7	19.8	35515	27.8	19.5	98289	27.9	17.7	465625	27.9	21.3
99024	27.6	19.5	257392	27.7	20.0	384490	27.7										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
158424	27.9	18.9	210868	28.0	19.7	296738	28.1	19.5	415301	28.2	21.2	119907	28.2	19.7	359887	28.3	20.6
118657	27.9	18.5	437479	28.0	20.8	469588	28.1	19.8	282275	28.2	18.9	118406	28.3	19.3	514754	28.3	21.2
360057	27.9	20.1	195366	28.0	19.9	211126	28.1	20.0	200187	28.2	19.0	329156	28.3	20.6	457487	28.3	20.6
520569	27.9	20.9	44177	28.0	18.7	131832	28.1	19.0	92907	28.2	17.5	370451	28.3	18.8	23655	28.3	18.5
112372	27.9	19.6	470617	28.0	20.8	500857	28.1	21.4	436547	28.2	21.1	365652	28.3	20.4	67181	28.3	17.9
509444	27.9	21.8	26452	28.0	16.6	459966	28.1	20.0	439824	28.2	20.2	386845	28.3	19.5	35426	28.3	17.4
321946	27.9	19.5	338061	28.0	20.1	250107	28.1	20.4	210454	28.2	19.4	353183	28.3	20.8	505817	28.3	20.6
315097	27.9	20.7	94073	28.0	18.9	537579	28.1	21.0	468013	28.2	20.9	209135	28.3	19.7	149076	28.3	19.6
353971	27.9	19.8	421434	28.0	20.7	395672	28.1	20.0	67755	28.2	17.4	526382	28.3	21.9	254255	28.3	19.2
420475	27.9	20.1	192676	28.0	18.4	157096	28.1	17.9	8422	28.2	17.6	144201	28.3	19.3	518055	28.3	20.3
318028	27.9	21.2	141451	28.0	19.9	9755	28.1	15.5	631	28.2	12.7	188666	28.3	20.5	447279	28.3	20.7
306108	27.9	19.9	375982	28.0	20.0	119941	28.1	19.6	127967	28.2	20.5	90605	28.3	18.7	536397	28.3	21.5
276056	27.9	20.3	2970	28.0	15.6	17044	28.1	17.6	195203	28.2	20.2	393385	28.3	20.7	181911	28.3	18.4
185232	27.9	20.5	102397	28.0	18.7	337073	28.1	19.9	269095	28.2	20.5	305409	28.3	20.4	189588	28.3	18.4
15518	27.9	17.8	95736	28.0	19.1	382198	28.1	20.4	220951	28.2	19.7	5040	28.3	15.5	297269	28.3	20.5
349961	27.9	21.6	118971	28.0	19.2	222826	28.1	20.2	397766	28.2	20.3	362556	28.3	19.9	250940	28.3	18.8
72709	27.9	19.1	171497	28.0	18.6	485239	28.1	19.5	97092	28.2	19.0	469194	28.3	20.1	256806	28.3	19.5
452156	27.9	20.7	81112	28.0	19.7	276060	28.1	20.6	496997	28.2	20.8	100921	28.3	19.1	414111	28.3	20.3
123401	27.9	19.3	528910	28.0	21.6	440537	28.1	19.4	140940	28.2	18.0	344464	28.3	20.4	446226	28.3	20.9
129178	27.9	19.3	89626	28.0	19.8	204417	28.1	18.9	56449	28.2	18.7	434220	28.3	19.2	171744	28.3	17.8
505159	27.9	20.5	158371	28.0	19.6	401555	28.1	21.3	157954	28.2	19.8	99413	28.3	19.4	464588	28.3	20.7
15392	27.9	17.0	187285	28.0	19.3	50640	28.1	17.3	99421	28.2	17.9	75602	28.3	19.5	514741	28.3	21.5
255837	27.9	20.4	445507	28.0	20.5	212296	28.1	20.6	461373	28.2	18.7	296141	28.3	19.7	467942	28.3	21.3
42740	27.9	18.2	90359	28.0	19.2	130907	28.1	19.2	478852	28.2	20.5	62221	28.3	17.0	353185	28.3	19.2
186336	27.9	19.9	516021	28.0	20.1	122308	28.1	18.9	261499	28.2	20.3	528561	28.3	20.7	411747	28.3	19.3
524216	27.9	22.9	141045	28.0	19.9	413032	28.1	18.5	383243	28.2	21.4	72675	28.3	18.8	250834	28.3	20.1
448978	27.9	20.8	168642	28.0	19.5	525266	28.1	19.6	440468	28.2	20.7	63579	28.3	17.4	291963	28.3	19.9
335496	27.9	20.2	478807	28.0	19.9	397113	28.1	19.9	391710	28.2	20.6	444645	28.3	20.2	520328	28.3	20.6
280050	27.9	20.1	400498	28.0	19.6	132604	28.1	19.6	531628	28.2	19.9	345957	28.3	19.7	45322	28.3	17.8
74370	27.9	19.3	101824	28.0	17.5	475627	28.1	19.8	211188	28.2	20.0	428268	28.3	20.2	209083	28.3	20.1
416346	27.9	19.8	172763	28.0	21.1	106870	28.1	17.2	448588	28.2	21.2	391964	28.3	21.0	471565	28.3	21.0
236611	27.9	20.7	26131	28.0	18.1	133880	28.1	18.6	14073	28.2	18.3	175203	28.3	20.0	387640	28.3	20.1
506460	27.9	20.9	539483	28.0	20.2	452031	28.1	19.7	258656	28.2	20.7	345044	28.3	21.1	171003	28.3	19.7
356244	27.9	20.7	275007	28.0	19.7	355555	28.1	20.1	275318	28.2	19.8	523229	28.3	20.2	296048	28.3	20.9
383911	27.9	20.0	411799	28.0	20.3	8694	28.1	16.3	19266	28.2	17.3	475537	28.3	20.2	540288	28.3	19.1
353228	27.9	20.0	50546	28.1	17.9	355808	28.1	20.4	192386	28.2	20.1	204654	28.3	20.4	342614	28.3	20.1
107467	27.9	19.2	205699	28.1	19.2	216234	28.1	20.4	166046	28.2	19.3	169525	28.3	19.4	537071	28.3	21.3
177745	27.9	19.9	181596	28.1	19.5	506961	28.1	20.4	282959	28.2	21.7	243816	28.3	19.4	49164	28.3	17.2
440187	27.9	20.2	338643	28.1	19.7	14917	28.1	15.8	514609	28.2	20.4	1575	28.3	15.8	208588	28.3	20.8
304322	27.9	20.6	221915	28.1	19.4	243479	28.1	19.6	159633	28.2	19.1	192782	28.3	18.2	248493	28.4	19.6
439441	27.9	19.8	37766	28.1	18.7	27068	28.1	18.1	159333	28.2	19.1	304500	28.3	20.6	143360	28.4	18.1
448091	27.9	21.2	437235	28.1	20.4	22205	28.1	18.7	245087	28.2	19.9	403312	28.3	20.9	70908	28.4	18.8
538631	27.9	21.1	129370	28.1	19.4	145754	28.1	20.1	133501	28.2	19.4	346162	28.3	19.3	12816	28.4	18.7
442471	27.9	20.7	130947	28.1	19.1	32869	28.1	17.6	96781	28.2	19.4	525153	28.3	20.4	211375	28.4	20.1
24207	27.9	17.9	211962	28.1	20.5	65200	28.1	18.8	119881	28.2	19.5	330304	28.3	19.5	215035	28.4	19.5
314430	27.9	20.1	38040	28.1	17.9	289693	28.1	20.6	198032	28.2	19.2	382488	28.3	20.9	510352	28.4	20.7
499048	28.0	21.3	215213	28.1	19.3	494806	28.1	21.0	301041	28.2	20.7	36829	28.3	18.9	411174	28.4	20.7
66266	28.0	18.6	328952	28.1	21.1	399642	28.1	19.8	519205	28.2	20.7	369950	28.3	19.5	536915	28.4	22.6
250729	28.0	19.3	393564	28.1	20.7	446252	28.1	21.2	281507	28.2	19.1	403980	28.3	21.7	174855	28.4	19.9
197611	28.0	19.8	335815	28.1	19.5	465584	28.1	21.4	504037	28.2	19.8	420346	28.3	21.3	128553	28.4	19.8
360071	28.0	20.5	37260	28.1	17.3	386770	28.1	20.9	167318	28.2	19.2	85807	28.3	18.6	26505	28.4	17.5
38619	28.0	17.9	367927	28.1	20.5	130627	28.1	17.4	435633	28.2	19.9	94096	28.3	18.4	119517	28.4	18.6
385615	28.0	21.4	367954	28.1	21.2	361168	28.1	20.4	533461	28.2	20.3	116054	28.3	19.3	205266	28.4	19.7
41722	28.0	18.6	369586	28.1	19.9	175149	28.1	20.7	230282	28.2	19.7	504107	28.3	21.8	308602	28.4	20.4
404487	28.0	20.6	177438	28.1	20.1	491923	28.1	20.5	164110	28.2	18.4	288688	28.3	18.3	500224	28.4	20.9
24199	28.0	17.8	55040	28.1	18.6	137688	28.1	18.2	530445	28.2	21.7	92946	28.3	18.8	313023	28.4	20.6
176609	28.0	20.0	332847	28.1	19.5	385175	28.1	19.1	316150	28.2	19.8	507251	28.3	21.1	96576	28.4	18.7
441999	28.0	18.7	360415	28.1	20.5	40598	28.1	17.6	259577	28.2	19.5	398616	28.3	20.0	259366	28.4	20.7
390528	28.0	20.4	474058	28.1	21.3	52688	28.1	18.1	57537	28.2	17.4	31988	28.3	18.0	536820	28.4	21.2
263642	28.0	19.9	162897	28.1	19.3	534805	28.1	19.3	361880	28.2	20.8	270350	28.3	19.3	119969	28.4	18.6
71694	28.0	19.1	210311	28.1	19.2	211949	28.1	20.0	72754	28.2	19.6	109478	28.3	19.2	415096	28.4	19.9
141312	28.0	18.9	79337	28.1	18.0	247805	28.1	18.5	23726	28.2	16.3	386529	28.3	20.9	236800	28.4	19.5
164486	28.0	20.3	35086	28.1	17.1	379968	28.1	18.8	84169	28.2	18.4	83589	28.3	18.9	459581	28.4	21.2
106700	28.0	18.4	500927	28.1	20.6	229645	28.1	19.9	289486	28.2	21.0	35542	28.3	17.4	498553	28.4	21.5
314063	28.0	21.3	500184	28.1	20.4	244892	28.1	20.1	531187	28.2	20.2	395836	28.3	20.9	285399	28.4	19.0
86258	28.0	19.2	181525	28.1	20.3	392660	28.1	20.4	35820	28.2	17.9	364550	28.3	21.1	40458	28.4	18.2
199454	28.0	20.0	336894	28.1	20.5	356413	28.1	21.0	527947	28.2	21.6	329794	28.3	19.0	147734	28.4	19.0
427472	28.0	19.1	510508	28.1	20.3	510329	28.1	20.5	417958	28.2	20.3	336953	28.3	21.2	436108	28.4	21.0
436195	28.0	19.9	531765	28.1	20.8	539201	28.1										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
497777	28.4	20.9	314323	28.4	19.7	155155	28.5	19.1	482973	28.6	21.3	274514	28.7	19.7	240672	28.7	20.0
481498	28.4	21.6	328312	28.4	20.5	11252	28.5	17.4	251527	28.6	20.1	524177	28.7	21.6	192929	28.7	19.3
389347	28.4	20.6	135196	28.4	19.7	185812	28.5	18.7	360064	28.6	20.9	308721	28.7	21.3	273716	28.7	21.5
73637	28.4	18.5	374949	28.4	20.7	295884	28.5	19.3	175562	28.6	20.0	170618	28.7	18.6	139721	28.7	18.8
12132	28.4	18.1	191855	28.5	18.5	46676	28.5	19.3	473253	28.6	19.6	355705	28.7	21.5	158354	28.7	18.9
436097	28.4	19.9	361884	28.5	20.7	52160	28.5	19.6	468005	28.6	21.6	16998	28.7	17.6	236743	28.7	20.8
386486	28.4	20.7	186810	28.5	20.5	18638	28.5	16.9	254336	28.6	19.2	259834	28.7	19.9	230444	28.7	19.2
435276	28.4	20.7	342817	28.5	20.3	329376	28.5	19.3	262402	28.6	20.1	403358	28.7	20.9	291135	28.7	20.8
398278	28.4	20.2	293482	28.5	20.2	328865	28.5	20.4	477386	28.6	20.0	22565	28.7	17.7	504952	28.7	20.8
277518	28.4	20.8	459502	28.5	20.4	203659	28.5	20.3	283539	28.6	19.5	20354	28.7	18.4	187431	28.7	20.4
183291	28.4	19.6	114125	28.5	18.5	511388	28.5	20.5	283868	28.6	19.4	71087	28.7	19.1	438291	28.7	20.7
251914	28.4	20.6	36966	28.5	18.6	73186	28.5	19.1	169872	28.6	18.8	184828	28.7	19.9	505494	28.7	19.9
514650	28.4	20.8	282019	28.5	20.0	246786	28.5	21.3	63234	28.6	19.5	50515	28.7	17.6	137827	28.8	19.3
296043	28.4	19.6	503271	28.5	20.5	361916	28.5	20.2	1098	28.6	13.8	92261	28.7	17.8	22164	28.8	17.6
89166	28.4	18.3	388970	28.5	19.3	122437	28.5	18.5	63230	28.6	19.8	183343	28.7	19.3	209153	28.8	18.7
195217	28.4	20.0	254144	28.5	19.3	452541	28.5	20.3	43349	28.6	16.7	328110	28.7	20.3	64883	28.8	19.9
191753	28.4	19.8	542445	28.5	21.4	20144	28.5	18.3	443047	28.6	20.2	27189	28.7	18.0	314135	28.8	21.5
354919	28.4	21.0	510091	28.5	20.8	70063	28.5	17.2	171754	28.6	19.3	215911	28.7	20.2	356221	28.8	20.6
526467	28.4	20.9	10334	28.5	18.0	443007	28.5	20.4	90648	28.6	18.6	228597	28.7	19.9	181941	28.8	18.7
40729	28.4	17.0	361017	28.5	20.5	281666	28.5	20.4	44870	28.6	18.6	53226	28.7	19.2	396188	28.8	20.3
460127	28.4	20.5	165060	28.5	19.1	178189	28.5	20.5	35647	28.6	18.4	274129	28.7	20.2	367902	28.8	21.4
515238	28.4	21.1	125333	28.5	18.4	237272	28.5	20.4	399091	28.6	20.4	355226	28.7	21.3	392734	28.8	19.7
282287	28.4	18.8	426428	28.5	19.6	313698	28.5	20.2	315155	28.6	19.9	222056	28.7	20.4	100245	28.8	18.8
412479	28.4	20.0	374403	28.5	19.6	310694	28.5	20.1	310110	28.6	19.7	470901	28.7	20.6	33131	28.8	18.0
499003	28.4	21.3	286534	28.5	20.1	108010	28.5	19.6	480773	28.6	20.3	523939	28.7	21.9	539309	28.8	21.1
464094	28.4	20.6	313097	28.5	19.0	498439	28.5	20.7	91695	28.6	18.7	418332	28.7	20.4	33769	28.8	18.3
106992	28.4	18.9	325823	28.5	19.6	373415	28.5	20.4	436393	28.6	20.4	414096	28.7	20.3	95086	28.8	17.7
393834	28.4	20.8	120945	28.5	18.9	502432	28.5	19.5	347819	28.6	19.5	285418	28.7	18.8	241907	28.8	19.3
147674	28.4	19.4	42090	28.5	16.9	355158	28.5	20.7	465610	28.6	21.0	519878	28.7	21.7	521512	28.8	20.5
513378	28.4	21.6	132283	28.5	20.4	530466	28.5	21.7	56723	28.6	18.7	214598	28.7	20.3	385842	28.8	20.0
260789	28.4	20.3	71281	28.5	18.7	242682	28.5	20.5	510803	28.6	20.3	15866	28.7	16.9	136885	28.8	19.8
50434	28.4	18.9	213517	28.5	19.6	535945	28.5	21.0	377843	28.6	19.3	282930	28.7	19.5	180118	28.8	20.2
244939	28.4	19.2	462240	28.5	21.4	481822	28.5	19.9	204112	28.6	19.4	389169	28.7	21.4	80711	28.8	17.9
72085	28.4	18.0	189728	28.5	19.6	3985	28.5	16.1	163119	28.6	19.7	513639	28.7	20.5	404788	28.8	21.5
249768	28.4	18.0	440315	28.5	19.6	268470	28.5	19.2	515922	28.6	21.5	311937	28.7	20.2	130420	28.8	17.8
99380	28.4	17.4	198299	28.5	20.2	510683	28.6	19.9	295941	28.6	19.7	449029	28.7	20.5	232443	28.8	20.1
39692	28.4	19.2	383923	28.5	19.4	134260	28.6	20.0	516507	28.6	20.6	117160	28.7	18.5	396562	28.8	20.2
280059	28.4	20.4	11672	28.5	18.3	112169	28.6	19.9	320643	28.6	20.3	270387	28.7	19.3	197487	28.8	19.0
234138	28.4	19.5	163091	28.5	19.7	208520	28.6	19.2	540914	28.6	20.5	107352	28.7	17.6	61708	28.8	17.9
510886	28.4	21.7	384975	28.5	20.4	30596	28.6	17.7	523944	28.6	21.0	123689	28.7	18.9	205176	28.8	19.9
272590	28.4	20.5	361530	28.5	21.3	320438	28.6	20.3	129221	28.6	18.5	427954	28.7	20.0	422869	28.8	19.3
1352	28.4	14.6	355765	28.5	20.4	214159	28.6	20.4	12396	28.6	18.1	527284	28.7	20.0	496166	28.8	20.1
439823	28.4	20.2	107614	28.5	19.9	468155	28.6	21.3	93350	28.6	18.7	137483	28.7	20.4	40219	28.8	17.9
10344	28.4	17.1	255494	28.5	19.9	259840	28.6	21.0	138103	28.6	18.7	313138	28.7	20.4	322599	28.8	20.0
481321	28.4	20.3	25782	28.5	16.7	362880	28.6	20.7	12192	28.6	18.3	305944	28.7	19.7	12888	28.8	17.8
376544	28.4	20.3	90472	28.5	20.1	117220	28.6	17.7	96737	28.6	18.8	525647	28.7	21.3	53445	28.8	19.0
164675	28.4	20.0	50706	28.5	17.0	444314	28.6	20.4	384045	28.6	20.9	536311	28.7	21.6	357577	28.8	19.3
385431	28.4	21.5	102177	28.5	18.0	165157	28.6	18.7	440928	28.6	20.7	299367	28.7	20.4	336876	28.8	19.8
243908	28.4	19.5	343534	28.5	21.2	408799	28.6	20.0	476075	28.6	19.4	111910	28.7	19.6	79350	28.8	17.2
216861	28.4	19.8	367290	28.5	21.3	245471	28.6	20.3	146160	28.6	19.0	418175	28.7	21.2	281614	28.8	18.7
56892	28.4	18.5	243318	28.5	20.3	435583	28.6	21.3	97371	28.6	17.7	72092	28.7	19.4	507252	28.8	20.3
31484	28.4	18.0	387944	28.5	22.3	435666	28.6	20.3	500866	28.6	21.6	532817	28.7	20.6	244107	28.8	20.3
177613	28.4	20.0	144880	28.5	19.7	209920	28.6	19.8	382895	28.6	19.7	511474	28.7	21.4	160534	28.8	19.2
504725	28.4	20.1	350603	28.5	19.6	395545	28.6	20.1	81256	28.6	19.8	189780	28.7	19.2	322171	28.8	20.1
338594	28.4	19.1	65240	28.5	19.8	264135	28.6	19.2	400472	28.6	20.9	340374	28.7	20.8	156535	28.8	18.1
348209	28.4	19.0	214117	28.5	19.7	492496	28.6	20.4	179516	28.6	19.4	503197	28.7	20.2	180392	28.8	20.1
342754	28.4	19.4	83846	28.5	18.9	533425	28.6	21.0	533941	28.6	18.9	63251	28.7	19.8	3796	28.8	16.1
238114	28.4	20.8	12790	28.5	18.7	361676	28.6	19.4	54274	28.6	18.8	478140	28.7	19.8	312616	28.8	20.6
190264	28.4	18.6	43538	28.5	18.3	72552	28.6	19.0	245148	28.6	19.7	186897	28.7	18.9	14876	28.8	17.1
157831	28.4	18.7	540335	28.5	20.1	254440	28.6	21.2	528604	28.6	20.2	102656	28.7	19.0	77605	28.8	19.4
521635	28.4	21.3	264083	28.5	21.0	288522	28.6	19.3	95699	28.6	18.8	512410	28.7	19.9	285424	28.8	19.5
123607	28.4	19.5	223363	28.5	20.4	471602	28.6	20.0	78976	28.6	19.0	245366	28.7	20.1	532958	28.8	20.5
400741	28.4	20.5	47838	28.5	16.5	459497	28.6	21.7	439436	28.6	19.7	240289	28.7	20.2	242165	28.8	20.0
495711	28.4	21.2	379278	28.5	19.6	10443	28.6	15.9	338033	28.6	20.7	530352	28.7	22.1	335488	28.8	20.1
192488	28.4	19.8	307565	28.5	21.1	366308	28.6	20.1	281656	28.6	20.4	502786	28.7	19.5	330630	28.8	21.6
512748	28.4	20.5	106444	28.5	19.6	521178	28.6	20.8	135035	28.6	20.6	510574	28.7	20.6	96435	28.8	19.6
519327	28.4	20.4	212361	28.5	20.3	32375	28.6	18.5	149037	28.6	19.1	356946	28.7	20.2	389323	28.8	20.5
355139	28.4	20.5	516512	28.5	21.1	18060	28.6	17.6	511500	28.6	21.3	230321	28.7	19.8	3686	28.8	16.9
292159	28.4	20.9	114089	28.5	19.3	505819	28.6										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
159510	28.8	19.4	266791	28.9	19.4	387030	28.9	20.1	295835	29.0	19.8	500936	29.1	21.6	479128	29.1	20.9
510961	28.8	21.4	89646	28.9	19.6	64705	28.9	19.4	128509	29.0	19.4	315401	29.1	18.7	175572	29.1	19.7
478610	28.8	20.3	354120	28.9	20.1	274988	28.9	19.5	104627	29.0	18.6	255879	29.1	20.9	130426	29.1	18.3
500823	28.8	22.1	39111	28.9	18.5	9524	28.9	17.2	384590	29.0	20.8	394295	29.1	20.0	243890	29.1	18.7
263614	28.8	20.1	342753	28.9	19.7	92244	28.9	18.2	537118	29.0	21.0	40632	29.1	19.4	287805	29.1	19.7
435720	28.8	19.3	225986	28.9	17.8	402838	28.9	21.4	119595	29.0	18.3	503577	29.1	20.5	531945	29.1	19.8
442017	28.8	19.8	439581	28.9	20.2	56934	28.9	18.4	437099	29.0	20.9	11154	29.1	16.6	140758	29.1	19.5
404880	28.8	20.1	397754	28.9	21.3	217215	28.9	19.6	213624	29.0	20.2	310212	29.1	20.9	208838	29.1	19.5
192374	28.8	18.8	260380	28.9	20.6	324401	28.9	19.5	125050	29.0	18.8	201468	29.1	20.2	283216	29.1	19.1
272960	28.8	20.3	537598	28.9	20.5	53256	28.9	18.3	319542	29.0	20.8	513858	29.1	21.3	73187	29.1	18.5
99117	28.8	20.3	316727	28.9	20.3	185605	28.9	20.7	381186	29.0	21.0	105653	29.1	18.7	251339	29.1	19.4
388874	28.8	20.5	316203	28.9	20.1	343506	28.9	20.2	28401	29.0	17.7	72036	29.1	17.3	171559	29.1	18.7
250080	28.8	19.9	315159	28.9	20.6	477144	28.9	19.8	170248	29.0	18.7	423396	29.1	19.5	87279	29.1	17.7
395015	28.8	20.0	276463	28.9	19.8	322080	28.9	20.9	524143	29.0	18.5	382971	29.1	20.3	183544	29.1	19.6
362439	28.8	20.2	512004	28.9	21.6	267750	28.9	19.9	396305	29.0	20.4	537921	29.1	21.4	61606	29.1	18.9
521478	28.8	20.9	244532	28.9	19.6	228878	28.9	20.3	35673	29.0	18.2	469538	29.1	20.0	194062	29.2	19.7
2827	28.8	15.3	255154	28.9	20.9	165041	28.9	19.3	206361	29.0	19.5	321616	29.1	19.7	219701	29.2	17.5
381864	28.8	20.3	130707	28.9	17.4	20317	28.9	18.6	173612	29.0	19.8	431413	29.1	21.3	531208	29.2	19.7
177670	28.8	19.6	410181	28.9	19.2	491238	28.9	19.6	203913	29.0	18.6	369674	29.1	20.3	52912	29.2	17.7
69538	28.8	17.2	384049	28.9	19.0	286862	28.9	20.7	414402	29.0	20.8	502241	29.1	20.6	69656	29.2	18.7
500897	28.8	21.5	453775	28.9	20.9	318101	28.9	19.8	512358	29.0	20.4	69692	29.1	19.6	11981	29.2	18.0
474370	28.8	18.5	336135	28.9	19.0	52041	28.9	18.1	388999	29.0	20.3	338533	29.1	19.0	4551	29.2	17.1
144346	28.8	19.4	233742	28.9	18.4	335124	28.9	19.7	284807	29.0	20.3	507744	29.1	20.0	405776	29.2	20.0
472558	28.8	20.3	499494	28.9	20.4	180378	28.9	20.3	4223	29.0	14.7	136675	29.1	19.3	497630	29.2	19.2
316867	28.8	18.8	95924	28.9	18.8	433935	28.9	20.4	184739	29.0	19.3	530745	29.1	19.9	526486	29.2	21.7
316323	28.8	20.3	456759	28.9	20.1	198927	28.9	18.4	45933	29.0	20.0	322353	29.1	20.7	459487	29.2	21.2
45206	28.8	16.6	391071	28.9	19.0	125702	28.9	19.2	90294	29.0	19.9	370865	29.1	21.1	129208	29.2	20.1
152632	28.8	18.9	504920	28.9	20.5	519172	28.9	20.6	468622	29.0	21.9	392707	29.1	21.6	19950	29.2	17.8
63401	28.8	18.1	41351	28.9	18.6	445827	28.9	20.6	124035	29.0	19.6	285748	29.1	18.9	116783	29.2	19.9
41154	28.8	19.0	496467	28.9	21.0	251956	28.9	20.0	157431	29.0	19.8	387527	29.1	21.2	128982	29.2	19.6
115850	28.8	19.3	531980	28.9	21.7	540952	28.9	21.1	342047	29.0	19.3	63633	29.1	17.5	321526	29.2	20.1
389322	28.8	20.8	400943	28.9	21.1	123945	28.9	19.8	301336	29.0	20.5	295513	29.1	20.5	344476	29.2	20.7
287627	28.8	19.2	101866	28.9	17.7	511171	28.9	20.7	290469	29.0	21.2	255527	29.1	19.9	5374	29.2	16.5
232541	28.8	19.6	326175	28.9	20.9	182318	28.9	19.1	343258	29.0	19.9	523556	29.1	20.8	339527	29.2	19.7
66924	28.8	18.6	163010	28.9	18.8	21054	28.9	16.8	152629	29.0	20.0	537042	29.1	20.3	208916	29.2	19.7
245248	28.8	19.4	513864	28.9	21.5	509749	28.9	20.9	24608	29.0	16.5	457261	29.1	21.4	436305	29.2	20.6
495013	28.8	20.1	350961	28.9	21.1	145037	28.9	19.4	182009	29.0	17.9	268183	29.1	19.1	249306	29.2	20.4
195400	28.8	20.1	357949	28.9	19.8	207387	28.9	21.3	336549	29.0	20.9	137002	29.1	18.9	287600	29.2	20.7
67037	28.8	18.3	66789	28.9	18.9	438810	28.9	21.4	205383	29.0	19.5	399057	29.1	18.8	34021	29.2	17.5
63198	28.8	18.2	187712	28.9	21.0	17025	28.9	17.4	398303	29.0	19.5	148005	29.1	20.7	241239	29.2	19.6
303983	28.8	19.5	227793	28.9	19.4	398800	28.9	20.5	491786	29.0	20.5	291524	29.1	20.3	342807	29.2	19.4
457190	28.8	20.7	476054	28.9	20.0	454959	28.9	20.3	393716	29.0	21.0	449007	29.1	21.0	147164	29.2	19.4
465221	28.8	20.2	118949	28.9	18.8	430017	28.9	20.8	415736	29.0	20.2	183032	29.1	19.1	447357	29.2	20.5
308605	28.8	19.9	213877	28.9	19.2	181418	28.9	19.6	366811	29.0	20.0	384889	29.1	19.8	357954	29.2	20.9
337340	28.8	20.2	2451	28.9	15.7	356250	28.9	21.2	32962	29.0	18.7	56623	29.1	19.7	100207	29.2	18.5
525458	28.8	20.2	262966	28.9	20.1	379371	28.9	19.8	89054	29.0	18.2	321350	29.1	21.1	387610	29.2	19.7
390152	28.8	20.2	426198	28.9	20.4	510939	28.9	20.8	138301	29.0	19.6	2153	29.1	15.8	284634	29.2	20.7
357907	28.8	20.4	142698	28.9	19.4	69928	28.9	17.6	466543	29.0	20.5	344512	29.1	20.1	335144	29.2	19.4
68141	28.8	17.4	353151	28.9	19.6	383881	28.9	20.3	36076	29.0	18.9	192353	29.1	19.5	427596	29.2	19.9
47759	28.8	18.3	127629	28.9	19.7	92060	28.9	18.2	78387	29.0	19.5	39290	29.1	17.5	434129	29.2	20.5
154466	28.8	20.1	353201	28.9	19.9	414142	28.9	20.7	261893	29.0	20.8	177589	29.1	19.2	433599	29.2	20.4
266965	28.8	19.2	119920	28.9	19.2	367903	28.9	21.3	522940	29.0	20.8	383239	29.1	20.1	44856	29.2	17.7
288521	28.8	19.5	227925	28.9	19.8	443436	28.9	21.4	198377	29.0	19.5	351006	29.1	21.8	38184	29.2	16.9
130789	28.8	18.5	501823	28.9	20.7	120744	28.9	19.5	410741	29.0	20.9	207934	29.1	19.9	444671	29.2	20.2
177400	28.8	20.1	32672	28.9	18.5	437611	28.9	20.6	198040	29.0	20.1	344994	29.1	18.5	97674	29.2	19.0
428822	28.8	20.8	342258	28.9	20.1	15800	28.9	16.8	542264	29.1	21.0	23231	29.1	16.6	249223	29.2	20.0
127069	28.8	19.5	358934	28.9	20.7	255761	28.9	20.0	358057	29.1	21.0	9662	29.1	16.4	444716	29.2	20.1
99572	28.8	19.2	513704	28.9	20.7	328473	28.9	19.2	98405	29.1	18.0	44374	29.1	18.8	92116	29.2	17.7
245411	28.8	19.8	537207	28.9	20.2	222695	28.9	18.0	516148	29.1	19.6	72507	29.1	20.1	160833	29.2	19.8
376814	28.8	19.6	105534	28.9	19.1	379136	28.9	21.6	426842	29.1	19.9	536052	29.1	20.4	128849	29.2	18.8
127927	28.8	19.5	441966	28.9	19.7	385253	28.9	19.4	334035	29.1	18.5	340541	29.1	20.0	83708	29.2	18.2
380802	28.8	19.9	65850	28.9	18.7	72446	28.9	19.3	6983	29.1	16.5	355452	29.1	19.1	382303	29.2	19.8
308012	28.8	19.2	259949	28.9	20.8	231621	28.9	20.5	342394	29.1	20.1	210006	29.1	18.4	121786	29.2	19.0
280074	28.8	19.6	206650	28.9	18.5	60398	28.9	19.4	63208	29.1	19.2	433733	29.1	18.9	295765	29.2	20.7
95192	28.8	19.2	187222	28.9	20.5	374396	28.9	20.4	189189	29.1	19.2	511470	29.1	20.3	75698	29.2	19.0
362976	28.8	20.2	314582	28.9	19.5	255662	28.9	19.2	440337	29.1	20.0	101501	29.1	19.7	250750	29.2	19.6
195258	28.8	20.6	358897	28.9	19.7	445421	28.9	20.6	196216	29.1	19.6	479931	29.1	19.7	199424	29.2	19.4
245694	28.8	20.2	430938	28.9	20.9	530530	28.9	20.4	213533	29.1	20.4	398205	29.1	20.4	334382	29.2	20.3
420860	28.8	21.2	529516	28.9	20.0	399828	28.9										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
325430	29.2	20.5	314047	29.3	19.5	16628	29.3	16.3	291605	29.4	20.1	207441	29.5	19.6	324463	29.5	20.1
66745	29.2	16.7	431905	29.3	21.1	273966	29.3	19.5	18147	29.4	17.0	528650	29.5	23.1	238846	29.6	20.4
255419	29.2	19.7	355119	29.3	20.6	8378	29.3	15.9	29326	29.4	19.6	310664	29.5	20.9	510678	29.6	20.5
353227	29.2	20.2	94668	29.3	19.4	115696	29.3	18.9	49111	29.4	18.8	468572	29.5	21.9	495107	29.6	19.8
41700	29.2	18.4	123644	29.3	19.2	357922	29.3	19.9	168107	29.4	21.1	113523	29.5	18.5	437103	29.6	21.2
420400	29.2	19.8	108661	29.3	19.6	396553	29.3	18.3	316718	29.4	17.8	308206	29.5	20.6	300677	29.6	20.2
518840	29.2	20.8	394349	29.3	20.4	414126	29.3	19.0	127381	29.4	19.5	43618	29.5	19.2	245609	29.6	19.4
115777	29.2	19.1	534456	29.3	20.6	508205	29.3	21.3	392205	29.4	20.3	90922	29.5	17.9	197623	29.6	20.7
7264	29.2	18.1	437549	29.3	19.5	206091	29.3	19.1	261563	29.4	20.3	178604	29.5	18.2	388692	29.6	20.7
70361	29.2	17.7	56353	29.3	18.8	397592	29.4	19.7	185448	29.4	19.7	227120	29.5	18.6	72328	29.6	17.6
380852	29.2	20.5	256979	29.3	20.8	444069	29.4	20.0	68935	29.4	18.5	387936	29.5	19.6	445393	29.6	21.2
63191	29.2	18.5	333188	29.3	21.3	154552	29.4	20.8	16951	29.4	17.2	511222	29.5	20.8	98696	29.6	18.2
337183	29.2	20.8	475407	29.3	21.2	60390	29.4	18.4	240294	29.4	20.8	429746	29.5	23.3	438938	29.6	19.1
30488	29.2	17.9	450939	29.3	20.7	112856	29.4	20.2	335453	29.4	20.7	431949	29.5	19.7	72226	29.6	18.6
454631	29.2	20.6	167841	29.3	19.7	511495	29.4	21.9	135933	29.4	18.6	344023	29.5	20.2	452732	29.6	20.9
461853	29.2	20.8	508081	29.3	21.1	263376	29.4	20.1	398283	29.4	20.1	444962	29.5	21.1	320516	29.6	19.2
503764	29.2	20.3	235371	29.3	19.6	359647	29.4	20.1	206643	29.4	18.4	367479	29.5	21.2	89993	29.6	18.2
358866	29.2	20.5	92434	29.3	19.2	537627	29.4	21.4	95707	29.4	18.5	144875	29.5	19.4	236744	29.6	20.2
1632	29.2	14.9	472190	29.3	20.8	198575	29.4	17.7	529641	29.4	23.1	479731	29.5	20.9	9996	29.6	16.0
75361	29.2	17.5	435568	29.3	20.4	507138	29.4	20.1	4415	29.4	18.3	47086	29.5	17.0	525116	29.6	19.7
527548	29.2	20.8	35837	29.3	16.6	115581	29.4	18.7	524774	29.4	21.0	310107	29.5	19.6	195567	29.6	20.6
107330	29.2	19.6	511194	29.3	20.7	485180	29.4	20.1	95821	29.4	19.3	10577	29.5	18.6	144011	29.6	20.2
336895	29.2	20.4	254479	29.3	19.9	357519	29.4	20.2	467553	29.4	19.7	153259	29.5	20.5	404647	29.6	20.2
229138	29.2	19.2	137247	29.3	18.7	501299	29.4	18.6	335048	29.4	19.7	255128	29.5	19.8	521634	29.6	20.9
106961	29.2	18.1	507634	29.3	21.6	315842	29.4	20.1	242229	29.4	19.1	439674	29.5	19.4	345947	29.6	19.8
391588	29.2	20.5	131550	29.3	19.2	196207	29.4	18.3	71824	29.4	18.7	349277	29.5	20.2	41769	29.6	17.2
92736	29.2	17.5	188148	29.3	20.9	130632	29.4	19.0	93565	29.4	18.9	537213	29.5	21.5	193538	29.6	19.3
418282	29.2	19.8	276495	29.3	20.2	236214	29.4	19.6	465116	29.4	19.4	191733	29.5	19.5	7472	29.6	16.8
221671	29.2	19.9	40468	29.3	19.4	196221	29.4	19.6	433492	29.4	20.4	240298	29.5	19.2	9040	29.6	17.9
121858	29.2	19.1	393155	29.3	21.1	446113	29.4	20.9	509544	29.4	20.9	144305	29.5	20.4	173863	29.6	19.4
437294	29.2	21.3	126846	29.3	19.3	49306	29.4	17.8	499573	29.4	19.8	514202	29.5	20.0	431950	29.6	20.2
326199	29.2	21.3	263879	29.3	20.6	92437	29.4	19.0	258685	29.4	21.0	235889	29.5	20.8	290253	29.6	20.5
470721	29.2	20.4	4665	29.3	16.3	529692	29.4	20.3	215633	29.4	19.1	357520	29.5	20.0	264133	29.6	19.8
1123	29.2	13.2	199823	29.3	20.6	312799	29.4	20.1	39404	29.4	18.8	320362	29.5	20.2	275524	29.6	19.3
111099	29.2	19.6	521530	29.3	20.7	171478	29.4	19.4	1674	29.4	15.4	73111	29.5	17.6	282638	29.6	19.5
156329	29.2	19.9	13315	29.3	17.1	88519	29.4	18.1	59688	29.4	19.0	114582	29.5	18.1	303271	29.6	20.4
478565	29.2	20.0	361933	29.3	20.9	269777	29.4	20.2	528170	29.4	20.5	470760	29.5	20.9	292531	29.6	19.8
70449	29.2	18.0	478791	29.3	20.6	289444	29.4	20.7	417864	29.4	20.9	531811	29.5	20.4	445855	29.6	19.8
272952	29.2	20.6	74774	29.3	18.3	247438	29.4	20.0	340218	29.4	20.3	45293	29.5	18.1	128185	29.6	19.3
250366	29.2	19.5	164626	29.3	19.7	511494	29.4	21.2	400942	29.4	20.6	66527	29.5	18.5	331938	29.6	18.9
449080	29.2	19.5	243608	29.3	20.4	349147	29.4	21.0	289725	29.4	20.1	393208	29.5	21.0	14231	29.6	18.0
442865	29.2	21.0	82443	29.3	18.3	163694	29.4	22.3	302875	29.4	20.5	37541	29.5	19.2	234318	29.6	21.1
159935	29.2	19.4	323305	29.3	18.9	39606	29.4	17.4	38910	29.4	18.0	9465	29.5	17.8	27702	29.6	17.7
197215	29.2	18.9	390156	29.3	20.6	63205	29.4	19.3	118953	29.5	18.9	476792	29.5	20.0	218599	29.6	20.7
446214	29.2	21.2	42782	29.3	18.3	97526	29.4	18.4	249738	29.5	19.9	533178	29.5	21.4	436403	29.6	20.6
469573	29.2	19.6	234737	29.3	20.3	422625	29.4	20.0	127374	29.5	19.0	536008	29.5	19.7	87558	29.6	17.8
105770	29.2	18.3	106899	29.3	19.5	107873	29.4	20.0	444343	29.5	20.9	449911	29.5	20.1	231288	29.6	20.4
467400	29.2	21.2	472590	29.3	21.6	362434	29.4	19.9	192516	29.5	19.8	231613	29.5	19.4	193873	29.6	20.1
315644	29.2	20.1	485140	29.3	19.7	527130	29.4	20.8	325872	29.5	19.4	355719	29.5	20.0	95050	29.6	21.0
285991	29.2	19.7	670	29.3	12.2	480017	29.4	22.3	297554	29.5	19.9	115420	29.5	18.2	353355	29.6	21.1
144338	29.2	18.5	510753	29.3	20.4	481078	29.4	20.4	128992	29.5	19.9	243401	29.5	20.0	164026	29.6	19.2
412154	29.2	19.8	500216	29.3	20.9	47929	29.4	18.1	196364	29.5	19.8	242884	29.5	21.3	260268	29.6	19.9
444727	29.2	20.8	463740	29.3	20.1	361955	29.4	19.9	99805	29.5	19.5	506531	29.5	20.2	405420	29.6	20.6
248971	29.2	20.2	189743	29.3	19.9	3876	29.4	16.0	326303	29.5	18.2	327747	29.5	19.2	299423	29.6	19.1
516504	29.2	21.0	86937	29.3	18.4	134586	29.4	19.9	440279	29.5	19.7	295216	29.5	20.1	237246	29.6	20.1
234369	29.2	20.1	15167	29.3	17.4	345524	29.4	18.8	466122	29.5	21.6	336240	29.5	19.7	524650	29.6	21.2
161841	29.2	19.0	353846	29.3	19.3	19542	29.4	17.6	479074	29.5	20.1	469948	29.5	21.2	310621	29.6	20.1
179972	29.2	18.6	23805	29.3	17.0	191747	29.4	19.9	532916	29.5	20.8	304661	29.5	19.9	92297	29.6	17.5
377741	29.2	19.1	518409	29.3	21.4	435670	29.4	20.3	509106	29.5	21.7	536440	29.5	21.7	469546	29.6	20.4
252873	29.2	20.2	170208	29.3	19.5	214384	29.4	20.1	255079	29.5	18.9	397402	29.5	20.8	87342	29.6	19.2
95207	29.2	19.7	472156	29.3	20.0	442100	29.4	20.6	359679	29.5	21.0	478700	29.5	20.4	270248	29.6	18.7
404643	29.3	20.7	56520	29.3	18.9	306773	29.4	20.5	402444	29.5	20.6	369992	29.5	19.7	65810	29.6	19.4
488327	29.3	20.0	216264	29.3	19.9	73636	29.4	18.7	172237	29.5	19.7	338572	29.5	20.7	207897	29.6	19.2
1350	29.3	14.1	525846	29.3	20.2	482968	29.4	20.3	263013	29.5	20.9	423791	29.5	21.8	429612	29.6	21.5
200541	29.3	19.6	367485	29.3	20.8	257793	29.4	19.4	120600	29.5	19.4	205849	29.5	20.6	536816	29.6	21.4
283681	29.3	20.2	352527	29.3	20.1	356450	29.4	20.0	440984	29.5	19.7	14391	29.5	16.3	529701	29.6	21.0
333661	29.3	19.2	10661	29.3	18.4	274327	29.4	21.1	124874	29.5	18.7	296745	29.5	20.0	44958	29.6	18.9
263463	29.3	20.4	460351	29.3	20.0	126730	29.4	19.4	159980	29.5	18.8	524168	29.5	20.2	444394	29.6	21.2
254458	29.3	20.8	444365	29.3	21.1	333298	29.4	19.7	4								

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
230844	29.6	19.0	267180	29.7	18.1	401572	29.7	21.1	416323	29.8	20.2	191704	29.9	18.9	382881	29.9	18.1
86992	29.6	17.0	139935	29.7	18.9	487644	29.7	20.5	529690	29.8	21.7	538153	29.9	20.3	393558	29.9	20.6
191074	29.6	19.3	69522	29.7	19.2	342209	29.7	21.3	195273	29.8	19.6	520263	29.9	21.2	195428	29.9	20.6
249338	29.6	19.3	231338	29.7	19.9	168033	29.7	18.8	420617	29.8	20.6	483605	29.9	19.2	415311	29.9	20.0
35549	29.6	18.8	141962	29.7	20.0	106019	29.7	19.0	193584	29.8	18.8	36447	29.9	18.2	386393	29.9	20.5
178217	29.6	19.1	310625	29.7	19.9	196942	29.7	18.9	435599	29.8	20.3	265696	29.9	20.3	201040	29.9	19.3
41416	29.6	17.9	281449	29.7	19.9	93464	29.8	19.6	468576	29.8	20.9	24225	29.9	18.6	154154	29.9	18.4
336655	29.6	19.6	440952	29.7	20.0	199155	29.8	20.4	181272	29.8	20.1	526372	29.9	21.8	143236	29.9	18.7
530022	29.6	19.9	324783	29.7	19.9	524723	29.8	20.3	354211	29.8	20.8	42603	29.9	18.3	48587	29.9	18.3
154758	29.6	20.4	428342	29.7	21.0	47672	29.8	18.2	508135	29.8	20.7	437176	29.9	20.3	347865	29.9	20.4
452435	29.6	22.4	389557	29.7	20.2	518156	29.8	21.2	355782	29.8	20.9	377682	29.9	19.9	112125	29.9	19.7
312796	29.6	20.4	225817	29.7	19.1	407747	29.8	20.4	225857	29.8	19.5	526679	29.9	20.6	187555	29.9	19.5
423703	29.6	21.5	510889	29.7	21.4	305367	29.8	19.7	433323	29.8	19.4	126485	29.9	19.4	447713	29.9	21.1
389995	29.6	20.0	329756	29.7	19.9	342669	29.8	20.0	188185	29.8	19.9	293243	29.9	20.3	152501	29.9	20.4
35606	29.6	19.1	314378	29.7	19.2	400232	29.8	19.8	74357	29.8	17.4	399984	29.9	20.2	42481	29.9	18.5
390399	29.6	20.1	38045	29.7	19.1	144644	29.8	20.2	472771	29.8	20.2	121739	29.9	18.9	251814	29.9	19.7
297178	29.6	19.6	65257	29.7	18.3	459576	29.8	21.8	207695	29.8	19.6	281797	29.9	19.9	96602	29.9	19.2
463855	29.6	20.1	241283	29.7	19.4	174070	29.8	19.9	45842	29.8	17.5	177134	29.9	20.0	250864	29.9	20.2
247434	29.6	20.3	58256	29.7	19.3	529773	29.8	21.6	422436	29.8	20.4	467743	29.9	20.7	123087	29.9	18.7
427219	29.6	20.9	308098	29.7	18.7	287214	29.8	20.3	12439	29.8	17.8	257237	29.9	20.6	462542	29.9	21.1
282754	29.6	19.2	145689	29.7	18.1	198165	29.8	18.4	68901	29.8	19.4	410716	29.9	21.0	70067	29.9	18.7
348173	29.6	19.1	540415	29.7	20.3	249654	29.8	19.8	107738	29.8	19.5	96461	29.9	20.8	238294	29.9	20.2
481745	29.6	20.7	315259	29.7	18.6	75423	29.8	17.4	61591	29.8	18.2	59599	29.9	17.8	314361	29.9	19.2
316480	29.6	20.1	264116	29.7	20.3	393170	29.8	20.8	527603	29.8	22.7	314087	29.9	19.9	286425	29.9	19.5
499010	29.6	21.6	185640	29.7	19.9	387252	29.8	19.8	74836	29.8	18.8	241533	29.9	19.7	404790	29.9	20.5
331929	29.6	19.7	93951	29.7	17.4	225005	29.8	20.4	285232	29.8	20.5	534411	29.9	20.2	367944	29.9	20.7
44891	29.6	18.0	93302	29.7	19.0	429685	29.8	20.9	509663	29.8	21.2	315278	29.9	19.6	410259	29.9	20.0
93665	29.6	18.2	470870	29.7	20.0	121218	29.8	18.1	59822	29.8	17.9	140527	29.9	19.1	328290	29.9	20.1
504067	29.6	19.9	279714	29.7	21.1	431943	29.8	20.5	20239	29.8	18.0	171138	29.9	20.0	372660	29.9	19.9
318231	29.6	19.0	175986	29.7	19.2	503272	29.8	19.9	21187	29.8	17.7	525050	29.9	20.5	161047	29.9	18.4
508270	29.6	20.3	197630	29.7	19.3	257389	29.8	20.2	526103	29.8	20.4	536815	29.9	20.9	96147	29.9	19.1
136955	29.6	19.5	210060	29.7	20.3	380877	29.8	20.5	390790	29.8	21.3	508271	29.9	21.5	500812	29.9	21.4
158612	29.6	18.8	350233	29.7	20.5	255187	29.8	20.0	211649	29.8	19.8	310085	29.9	21.0	38591	29.9	17.7
94762	29.6	17.4	490448	29.7	21.0	356320	29.8	20.0	178709	29.8	19.4	339438	29.9	19.7	129521	29.9	19.8
362529	29.6	20.3	236597	29.7	19.6	12292	29.8	18.3	296667	29.8	20.4	59879	29.9	17.9	430591	29.9	19.9
424819	29.6	20.5	280108	29.7	20.7	123368	29.8	19.5	285359	29.8	20.2	440658	29.9	20.7	168166	29.9	19.8
9590	29.6	19.0	48258	29.7	18.4	137617	29.8	18.1	241094	29.8	19.7	176164	29.9	19.6	225636	29.9	19.8
291070	29.6	20.4	82505	29.7	18.0	421189	29.8	21.3	527544	29.8	20.9	428285	29.9	20.7	38685	29.9	20.1
436631	29.6	20.6	103140	29.7	17.8	431385	29.8	21.7	482382	29.8	20.0	531080	29.9	21.8	360741	29.9	19.2
186342	29.6	20.0	279387	29.7	20.3	314444	29.8	19.1	168798	29.8	19.2	186370	29.9	19.4	364554	29.9	20.5
360423	29.6	21.7	542346	29.7	20.6	320614	29.8	20.9	314485	29.8	19.8	240960	29.9	21.6	106844	29.9	19.5
387461	29.6	20.4	233690	29.7	19.2	526085	29.8	20.5	277561	29.8	19.8	443434	29.9	21.2	467838	29.9	21.1
3235039	29.6	19.4	450034	29.7	19.9	158411	29.8	19.6	106275	29.9	18.0	69314	29.9	19.0	65907	29.9	18.7
497077	29.6	20.4	276501	29.7	19.6	183928	29.8	19.8	314372	29.9	20.7	440445	29.9	20.3	463760	29.9	21.2
446219	29.6	21.4	247130	29.7	19.2	513467	29.8	20.8	237258	29.9	20.4	272285	29.9	20.4	91172	29.9	19.2
508939	29.6	19.2	87435	29.7	18.7	151369	29.8	20.4	434019	29.9	18.4	507415	29.9	20.7	391538	29.9	20.0
508193	29.6	21.0	211971	29.7	19.8	162380	29.8	19.6	158453	29.9	20.2	359349	29.9	20.6	356434	29.9	20.3
284059	29.6	20.6	81048	29.7	20.3	386910	29.8	19.7	523197	29.9	20.7	8789	29.9	17.7	266275	29.9	20.2
334740	29.6	17.7	159097	29.7	19.4	119904	29.8	20.3	131788	29.9	20.1	524585	29.9	22.1	42236	29.9	18.6
249388	29.6	20.3	345042	29.7	20.5	58998	29.8	18.9	13590	29.9	18.2	29477	29.9	18.5	497899	29.9	20.8
312621	29.7	20.3	341321	29.7	20.0	428793	29.8	20.0	225812	29.9	18.9	505951	29.9	21.3	89819	29.9	17.5
232837	29.7	19.1	233885	29.7	19.9	33446	29.8	18.8	35265	29.9	17.7	336987	29.9	20.3	325019	29.9	20.5
432362	29.7	20.6	270641	29.7	19.7	481005	29.8	20.4	236623	29.9	20.4	361959	29.9	20.5	440281	29.9	19.1
170179	29.7	19.1	319385	29.7	20.4	165330	29.8	18.7	95482	29.9	19.4	285790	29.9	19.1	447050	29.9	20.7
505870	29.7	21.0	314530	29.7	20.6	297607	29.8	19.2	539113	29.9	20.5	90336	29.9	19.7	255519	29.9	19.7
347261	29.7	20.1	366014	29.7	20.4	7594	29.8	17.5	425104	29.9	20.5	281471	29.9	19.8	183835	29.9	19.7
244668	29.7	19.5	104095	29.7	19.3	302857	29.8	20.8	419765	29.9	21.3	10946	29.9	16.5	128976	29.9	18.8
455149	29.7	25.3	249441	29.7	20.9	436566	29.8	21.0	33471	29.9	18.8	325393	29.9	19.4	527594	29.9	21.1
220738	29.7	19.1	333198	29.7	20.6	160888	29.8	19.3	160702	29.9	18.4	401411	29.9	20.7	153173	29.9	19.0
254610	29.7	20.7	505904	29.7	20.7	189229	29.8	19.7	52097	29.9	18.1	148683	29.9	19.2	494750	29.9	19.9
530764	29.7	19.9	495425	29.7	20.0	311145	29.8	19.7	173162	29.9	19.7	150593	29.9	19.1	317724	29.9	19.6
192442	29.7	19.3	75085	29.7	18.2	509710	29.8	21.0	338659	29.9	20.6	102709	29.9	18.8	444992	29.9	20.6
96517	29.7	18.1	297724	29.7	18.2	128811	29.8	18.4	198226	29.9	20.4	358788	29.9	20.3	535984	29.9	20.7
201679	29.7	19.0	515419	29.7	20.9	346564	29.8	20.1	405852	29.9	21.1	530502	29.9	22.0	522770	29.9	21.5
379249	29.7	19.3	483997	29.7	20.1	178887	29.8	19.1	19111	29.9	18.7	454525	29.9	21.9	116803	29.9	19.2
396453	29.7	20.8	444699	29.7	20.9	491728	29.8	20.0	303172	29.9	21.4	125812	29.9	19.7	315130	29.9	21.2
50548	29.7	18.9	525922	29.7	20.0	262670	29.8	19.7	72409	29.9	19.0	200069	29.9	19.4	86080	29.9	18.3
362559	29.7	21.0	151911	29.7	20.2	527866	29.8	21.8	442015	29.9	20.0	150585	29.9	19.4	352104	29.9	20.7
374808	29.7	20.0	387870	29.7	18.4	8											

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
94393	30.0	18.6	182246	30.1	20.6	320480	30.1	19.6	127571	30.2	18.7	339435	30.3	20.1	383211	30.3	19.6
152013	30.0	19.6	347405	30.1	19.7	86035	30.1	18.6	537420	30.2	21.1	440733	30.3	20.0	137764	30.3	18.9
395485	30.0	19.6	161751	30.1	17.2	35586	30.1	18.0	439666	30.2	20.2	354059	30.3	19.3	405390	30.3	21.2
471186	30.0	20.1	441995	30.1	19.9	393855	30.1	20.3	469452	30.2	19.6	87472	30.3	17.3	358831	30.3	20.4
238529	30.0	18.5	369742	30.1	20.5	472747	30.1	19.8	387237	30.2	20.1	133370	30.3	19.2	166449	30.3	19.3
145614	30.0	19.3	360093	30.1	20.8	111122	30.1	18.9	244206	30.2	18.3	292685	30.3	19.7	466381	30.3	20.5
481739	30.0	21.6	276635	30.1	19.2	416326	30.1	19.5	500087	30.2	20.8	446959	30.3	20.4	315861	30.3	19.3
298744	30.0	20.1	318420	30.1	21.1	319236	30.1	20.0	360900	30.2	20.6	534047	30.3	19.5	152810	30.3	18.8
278370	30.0	19.8	317668	30.1	20.3	372440	30.1	20.8	155700	30.2	18.0	32275	30.3	18.6	74059	30.3	19.8
6135	30.0	17.1	298171	30.1	20.0	192667	30.1	18.7	23252	30.2	18.3	261834	30.3	20.2	291788	30.3	20.6
39790	30.0	18.1	253106	30.1	20.5	220426	30.1	20.0	96047	30.2	19.4	255688	30.3	20.0	444387	30.3	20.0
482785	30.0	20.5	455724	30.1	22.0	183909	30.1	19.9	303977	30.2	20.5	126573	30.3	19.5	224463	30.3	18.7
315284	30.0	19.2	111597	30.1	19.4	521271	30.1	20.7	17331	30.2	17.7	121803	30.3	19.4	215798	30.3	19.7
45534	30.0	17.2	116620	30.1	20.0	98653	30.2	19.1	295814	30.2	19.0	213560	30.3	19.3	133177	30.3	18.8
311397	30.0	19.9	486825	30.1	20.0	107689	30.2	19.7	344136	30.2	21.1	473882	30.3	22.1	65048	30.3	19.1
220458	30.0	20.3	43747	30.1	16.9	292151	30.2	20.4	201600	30.2	19.8	459596	30.3	21.3	431854	30.3	20.5
345059	30.0	20.4	321580	30.1	20.3	509507	30.2	20.9	403677	30.2	21.2	500938	30.3	19.6	9325	30.3	16.9
88253	30.0	18.9	365885	30.1	19.2	132638	30.2	19.8	227963	30.2	20.2	115963	30.3	19.1	257201	30.4	20.0
91776	30.0	18.1	437720	30.1	20.8	50393	30.2	18.3	489974	30.2	20.3	295442	30.3	20.4	186996	30.4	18.8
531805	30.0	20.7	178038	30.1	18.6	113070	30.2	18.5	527614	30.2	21.2	293342	30.3	19.8	89927	30.4	19.8
206934	30.0	19.0	105928	30.1	18.6	436194	30.2	20.5	107680	30.2	19.6	36317	30.3	17.3	214190	30.4	19.8
329776	30.0	19.5	434379	30.1	19.7	515102	30.2	20.0	159825	30.2	19.6	445374	30.3	20.5	536745	30.4	20.3
257413	30.0	19.5	207455	30.1	20.1	40528	30.2	17.9	504775	30.2	19.5	112983	30.3	19.7	313140	30.4	18.4
34677	30.0	18.2	96892	30.1	19.2	442115	30.2	19.9	407673	30.2	19.7	394271	30.3	19.6	221493	30.4	19.7
505513	30.0	20.6	128457	30.1	19.7	371553	30.2	20.6	496142	30.2	20.0	162009	30.3	18.8	483038	30.4	19.8
391790	30.0	20.3	529916	30.1	21.3	86931	30.2	18.0	203194	30.2	19.3	254392	30.3	18.5	524031	30.4	20.3
491224	30.0	19.5	7152	30.1	16.9	58376	30.2	19.3	345454	30.2	21.0	125188	30.3	19.8	243088	30.4	19.3
249028	30.0	20.4	37523	30.1	18.9	35272	30.2	19.1	205919	30.2	20.3	255270	30.3	20.3	194974	30.4	20.1
468854	30.0	21.4	140014	30.1	19.4	257169	30.2	20.6	398297	30.2	20.6	62703	30.3	16.6	390542	30.4	18.3
163077	30.0	17.6	440450	30.1	20.6	61122	30.2	18.7	69780	30.2	16.4	468650	30.3	20.2	178252	30.4	19.1
184863	30.0	19.6	377698	30.1	20.6	194755	30.2	19.8	75045	30.2	18.4	36691	30.3	17.5	164249	30.4	19.8
5012	30.0	17.2	445375	30.1	20.7	181837	30.2	18.5	356245	30.2	20.1	260437	30.3	19.8	159964	30.4	19.7
195265	30.0	20.2	509055	30.1	20.5	444085	30.2	19.2	16733	30.2	18.3	92441	30.3	18.2	437287	30.4	20.6
522879	30.0	20.1	358981	30.1	20.6	18831	30.2	17.6	311336	30.2	20.1	150250	30.3	20.3	47471	30.4	17.5
256789	30.0	19.8	353187	30.1	20.9	422370	30.2	18.6	511460	30.2	21.0	528944	30.3	20.8	435269	30.4	20.6
309432	30.0	19.8	112310	30.1	19.7	261739	30.2	19.0	343527	30.2	20.2	380571	30.3	20.7	46695	30.4	19.2
353215	30.0	19.3	217749	30.1	20.3	323467	30.2	19.4	91416	30.2	19.0	34832	30.3	18.6	319472	30.4	20.8
13246	30.0	18.2	527384	30.1	20.8	512099	30.2	20.5	383899	30.2	20.0	512001	30.3	20.1	226307	30.4	20.0
233881	30.0	19.5	251744	30.1	20.4	399411	30.2	20.4	195462	30.2	19.9	232755	30.3	20.8	257976	30.4	20.1
264138	30.0	20.4	505512	30.1	20.5	314474	30.2	19.7	470906	30.2	20.2	477137	30.3	20.9	63232	30.4	19.0
243622	30.0	19.5	223381	30.1	19.7	541029	30.2	20.7	445354	30.2	19.9	521612	30.3	20.3	293616	30.4	20.4
511554	30.0	23.1	261257	30.1	19.9	209570	30.2	19.2	216047	30.2	18.8	430387	30.3	19.2	512204	30.4	20.8
173650	30.0	20.2	396708	30.1	19.5	531752	30.2	20.6	290867	30.2	19.8	360955	30.3	19.7	22046	30.4	17.9
472906	30.0	20.0	307001	30.1	20.1	383981	30.2	19.4	398122	30.2	20.4	61644	30.3	18.9	37488	30.4	18.5
57605	30.0	17.6	361097	30.1	19.7	214419	30.2	19.5	508879	30.2	18.6	42190	30.3	19.1	330287	30.4	20.8
522387	30.0	21.2	469482	30.1	19.9	392457	30.2	20.6	118084	30.2	18.7	35363	30.3	18.3	5545	30.4	17.0
343558	30.0	20.1	123234	30.1	19.0	250555	30.2	19.2	198270	30.2	19.5	4440	30.3	16.5	537069	30.4	21.7
161358	30.0	19.5	205768	30.1	20.3	98154	30.2	17.5	261331	30.2	20.1	169845	30.3	18.4	239961	30.4	20.7
325374	30.0	20.3	202501	30.1	20.2	535385	30.2	21.3	318608	30.2	20.1	191094	30.3	25.3	416382	30.4	19.3
362777	30.0	20.2	183954	30.1	19.7	142758	30.2	19.5	74225	30.2	19.0	122642	30.3	18.7	510676	30.4	20.3
49359	30.0	18.5	39266	30.1	18.1	428176	30.2	20.2	513996	30.2	21.2	281424	30.3	19.2	125968	30.4	19.5
52030	30.0	18.1	257412	30.1	19.0	85466	30.2	19.1	57511	30.2	18.6	2747	30.3	16.5	510922	30.4	20.3
392208	30.0	20.8	426001	30.1	21.3	358427	30.2	19.6	322095	30.3	20.5	318508	30.3	21.7	313168	30.4	21.1
363437	30.0	18.3	501286	30.1	18.7	93450	30.2	19.4	206709	30.3	19.8	528187	30.3	21.6	440518	30.4	19.7
488391	30.0	20.0	443611	30.1	20.6	210934	30.2	19.5	437286	30.3	20.4	274395	30.3	21.2	356431	30.4	20.6
532013	30.0	21.8	38596	30.1	19.1	445257	30.2	20.7	79742	30.3	18.3	113504	30.3	19.3	60585	30.4	19.0
389211	30.0	20.7	245098	30.1	20.1	96839	30.2	18.3	252849	30.3	19.4	67081	30.3	17.7	50190	30.4	18.9
229966	30.0	19.2	25314	30.1	16.7	266241	30.2	19.8	322105	30.3	20.0	508124	30.3	20.8	379351	30.4	18.6
165235	30.0	18.7	261610	30.1	19.4	222827	30.2	19.7	201613	30.3	18.7	528506	30.3	19.6	39227	30.4	17.6
263822	30.0	20.4	269968	30.1	19.7	152032	30.2	19.9	442595	30.3	20.2	51423	30.3	19.4	169477	30.4	20.0
365726	30.0	20.8	384038	30.1	20.6	488886	30.2	20.8	12316	30.3	16.5	12928	30.3	17.4	126405	30.4	19.9
338038	30.0	20.1	367503	30.1	21.4	531136	30.2	21.2	28494	30.3	17.5	340265	30.3	19.6	96783	30.4	18.4
163135	30.0	19.5	175117	30.1	19.8	41631	30.2	18.8	355674	30.3	21.0	92828	30.3	18.9	123485	30.4	19.2
509618	30.0	21.7	477901	30.1	21.5	451311	30.2	19.8	389334	30.3	20.8	122093	30.3	19.3	346437	30.4	20.7
12429	30.0	16.6	192734	30.1	18.9	395087	30.2	20.9	142072	30.3	20.3	17452	30.3	18.0	247005	30.4	19.5
165356	30.0	18.5	89386	30.1	18.9	2379	30.2	14.4	287474	30.3	20.0	431343	30.3	20.6	203891	30.4	20.1
306276	30.0	19.6	254459	30.1	21.1	95468	30.2	16.9	312085	30.3	20.0	198247	30.3	19.8	508323	30.4	20.6
290905	30.0	19.6	482955	30.1	21.2	513879	30.2	21.7	371593	30.3	19.5	529587	30.3	22.5	420405	30.4	21.4
32607	30.0	17.1	543397	30.1	20.9	446390	30.2	20									

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
182079	30.4	19.7	420461	30.5	20.1	416402	30.5	19.7	508049	30.6	19.9	404648	30.7	21.5	360985	30.8	20.6
313104	30.4	19.8	404269	30.5	20.2	68804	30.6	18.2	46858	30.6	18.0	55504	30.7	19.0	541006	30.8	20.6
289639	30.4	20.8	526048	30.5	21.1	233490	30.6	20.6	13242	30.6	17.3	158949	30.7	20.7	370693	30.8	20.7
483326	30.4	20.3	191034	30.5	18.6	64984	30.6	19.4	301403	30.6	20.3	47852	30.7	17.4	456222	30.8	21.4
362770	30.4	20.7	95685	30.5	19.3	62183	30.6	19.2	172836	30.6	20.7	530391	30.7	22.4	191115	30.8	18.7
40302	30.4	17.1	540883	30.5	21.2	229193	30.6	20.1	383977	30.6	20.4	280097	30.7	20.5	401299	30.8	20.3
307111	30.4	20.8	413143	30.5	21.3	481517	30.6	20.0	401238	30.6	20.4	4353	30.7	15.5	438978	30.8	19.3
392604	30.4	20.2	521012	30.5	20.8	536291	30.6	20.6	431045	30.6	20.0	348129	30.7	20.8	533590	30.8	20.7
296493	30.4	19.6	281015	30.5	20.2	148377	30.6	19.0	492633	30.6	21.4	204854	30.7	19.5	71524	30.8	17.5
247755	30.4	19.7	312767	30.5	21.3	462817	30.6	20.6	204264	30.6	18.8	515996	30.7	21.2	91649	30.8	18.0
44302	30.4	18.5	388675	30.5	19.9	477199	30.6	20.6	42398	30.6	19.4	180923	30.7	20.9	470269	30.8	19.7
65005	30.4	19.6	422901	30.5	19.8	320182	30.6	20.8	80242	30.6	17.9	531981	30.7	21.7	102897	30.8	18.2
314161	30.4	20.6	96058	30.5	19.0	312695	30.6	19.7	318511	30.6	19.9	520467	30.7	21.0	330607	30.8	21.2
11738	30.4	17.2	24804	30.5	18.4	505468	30.6	20.6	338586	30.6	19.6	323708	30.7	21.0	70882	30.8	18.4
112236	30.4	18.8	389570	30.5	20.9	95239	30.6	19.5	176943	30.6	19.0	359711	30.7	19.4	434671	30.8	19.3
512440	30.4	20.2	442026	30.5	20.1	380542	30.6	19.5	512624	30.6	20.9	503903	30.7	20.9	118394	30.8	18.4
518613	30.4	21.4	162547	30.5	18.2	61238	30.6	18.4	177634	30.6	20.7	309698	30.7	20.4	513452	30.8	20.2
393758	30.4	20.9	536864	30.5	21.7	77115	30.6	19.9	102191	30.6	18.9	154700	30.7	19.6	528684	30.8	20.2
186588	30.4	19.5	114679	30.5	19.8	161595	30.6	19.2	534859	30.6	20.0	533759	30.7	19.4	235580	30.8	20.2
503351	30.4	21.6	418185	30.5	19.7	501609	30.6	20.7	262884	30.6	20.5	536708	30.7	21.6	213506	30.8	19.5
117560	30.4	20.1	387154	30.5	19.9	37253	30.6	19.2	139775	30.6	21.9	404870	30.7	19.8	257592	30.8	20.7
162870	30.4	20.0	233440	30.5	20.6	373558	30.6	19.6	54744	30.6	18.3	296991	30.7	20.2	513340	30.8	19.3
97990	30.4	18.6	504764	30.5	19.9	66946	30.6	18.6	481759	30.6	20.3	299455	30.7	20.4	234786	30.8	20.3
14440	30.4	17.8	464753	30.5	18.2	313847	30.6	19.8	198414	30.6	19.5	59463	30.7	16.9	223395	30.8	19.3
264154	30.4	19.4	41926	30.5	18.5	323410	30.6	20.4	438002	30.6	19.0	115293	30.7	19.4	69261	30.8	17.5
483635	30.4	19.4	155591	30.5	19.2	236748	30.6	20.2	293695	30.6	20.9	110493	30.7	18.2	443401	30.8	22.0
513348	30.4	20.7	123610	30.5	18.8	376875	30.6	18.4	387262	30.6	20.5	84077	30.7	18.5	17512	30.8	17.0
337223	30.4	21.0	342734	30.5	20.4	130765	30.6	19.6	438104	30.6	20.9	19963	30.7	16.2	330027	30.8	18.7
256415	30.4	20.0	69751	30.5	19.7	59002	30.6	19.0	262842	30.6	19.8	4189	30.7	15.9	479261	30.8	21.4
56814	30.4	17.9	367136	30.5	20.8	348368	30.6	21.5	191089	30.6	18.9	22223	30.7	18.4	240600	30.8	19.1
255645	30.4	20.0	30962	30.5	17.0	71938	30.6	19.0	206654	30.6	19.3	76392	30.7	19.0	281625	30.8	19.3
78926	30.4	19.3	527809	30.5	21.1	386808	30.6	20.7	77068	30.6	19.0	438267	30.7	20.1	520177	30.8	20.6
79327	30.4	19.0	4307	30.5	15.9	246940	30.6	18.4	436405	30.6	21.1	146034	30.7	18.9	15957	30.8	17.5
62127	30.4	18.6	360160	30.5	20.5	532773	30.6	20.1	61060	30.6	18.1	343562	30.7	20.0	526678	30.8	21.2
44291	30.4	17.9	512962	30.5	20.3	27274	30.6	18.7	436101	30.7	20.9	360383	30.7	20.4	316041	30.8	20.2
510330	30.4	21.0	473000	30.5	20.1	58473	30.6	20.0	448074	30.7	21.7	276043	30.7	20.5	188173	30.8	19.8
257096	30.4	19.9	469959	30.5	21.4	179582	30.6	20.6	96502	30.7	19.5	5264	30.7	16.8	98817	30.8	18.2
371589	30.4	20.2	270414	30.5	20.5	78971	30.6	19.0	542316	30.7	21.1	237204	30.7	20.8	302155	30.8	18.8
274675	30.4	20.2	384395	30.5	20.8	138070	30.6	20.3	429546	30.7	20.1	272297	30.7	19.2	533340	30.8	21.7
387313	30.4	19.6	433521	30.5	19.7	115343	30.6	19.2	306268	30.7	21.3	308654	30.7	20.7	355769	30.8	21.0
482429	30.4	21.4	511320	30.5	20.5	358794	30.6	20.4	205207	30.7	20.4	393621	30.7	20.8	314399	30.8	20.6
224755	30.4	20.0	186975	30.5	19.4	25163	30.6	18.3	242257	30.7	19.3	293165	30.7	20.0	34609	30.8	18.0
144162	30.4	19.9	311137	30.5	20.0	66653	30.6	19.2	413774	30.7	21.2	525121	30.7	20.5	225617	30.8	20.2
488508	30.5	19.1	214899	30.5	18.8	502638	30.6	20.7	155916	30.7	20.2	142344	30.7	19.4	420414	30.8	20.5
330351	30.5	21.6	384077	30.5	20.5	40653	30.6	19.3	386922	30.7	19.9	103260	30.7	18.6	428082	30.8	21.6
467622	30.5	21.9	478669	30.5	20.9	523008	30.6	20.6	361058	30.7	19.7	498214	30.7	21.0	315317	30.8	19.7
7050	30.5	17.2	397784	30.5	20.6	139177	30.6	19.9	214915	30.7	20.1	497273	30.7	19.6	72931	30.8	18.7
172525	30.5	19.0	208728	30.5	20.6	169768	30.6	18.4	125604	30.7	18.4	386379	30.7	20.8	147934	30.8	19.1
364966	30.5	21.0	501684	30.5	20.4	160338	30.6	18.9	151516	30.7	20.2	497775	30.7	19.8	395676	30.8	20.8
77282	30.5	18.6	402142	30.5	19.2	138309	30.6	19.9	359004	30.7	21.0	455312	30.7	21.7	202217	30.8	18.3
415079	30.5	20.6	22326	30.5	16.7	266405	30.6	19.6	505514	30.7	19.9	320165	30.7	20.9	311970	30.8	20.4
92712	30.5	18.8	452167	30.5	20.7	46074	30.6	19.0	390329	30.7	20.8	480278	30.7	20.6	392462	30.8	20.7
512193	30.5	21.4	62774	30.5	19.2	431112	30.6	20.5	201668	30.7	18.6	505913	30.7	20.6	41153	30.8	19.3
117267	30.5	19.0	290359	30.5	20.5	193627	30.6	18.7	64675	30.7	17.0	332617	30.7	18.6	449371	30.8	20.4
349232	30.5	20.4	390233	30.5	20.2	198406	30.6	19.4	308490	30.7	19.9	302204	30.7	19.2	252147	30.8	19.9
425617	30.5	19.4	199342	30.5	20.4	330670	30.6	21.4	540662	30.7	19.7	348115	30.7	19.7	59759	30.8	18.6
242593	30.5	20.3	382280	30.5	20.3	418048	30.6	19.8	1807	30.7	13.9	384459	30.7	20.6	436265	30.8	21.6
512626	30.5	20.8	392460	30.5	21.1	301110	30.6	17.7	528779	30.7	21.4	162922	30.7	22.6	144133	30.8	20.6
292253	30.5	20.3	264220	30.5	19.4	404169	30.6	20.7	165628	30.7	20.1	376185	30.7	19.9	259939	30.8	21.1
531162	30.5	21.9	145009	30.5	19.7	133484	30.6	18.8	228071	30.7	20.3	188494	30.7	20.4	168771	30.8	19.3
507988	30.5	20.7	384057	30.5	20.6	184699	30.6	20.4	248937	30.7	19.6	445010	30.7	21.3	211317	30.8	19.6
21364	30.5	19.0	404007	30.5	21.8	312842	30.6	20.2	401230	30.7	20.0	509536	30.7	21.0	306179	30.8	20.5
42997	30.5	18.8	280105	30.5	21.5	90768	30.6	17.7	30991	30.7	18.5	361465	30.7	20.9	81420	30.8	19.7
30172	30.5	18.7	324294	30.5	20.0	62730	30.6	17.0	364513	30.7	21.6	201006	30.7	19.8	30789	30.8	17.1
336801	30.5	21.2	521709	30.5	20.7	444336	30.6	20.6	388997	30.7	20.1	178372	30.7	19.8	533647	30.8	20.5
122495	30.5	18.4	240125	30.5	19.2	33571	30.6	18.9	309660	30.7	20.4	420501	30.7	20.3	253820	30.8	19.6
127668	30.5	20.4	202758	30.5	20.2	121781	30.6	18.6	516392	30.7	19.6	459550	30.7	21.5	255223	30.8	19.7
263682	30.5	20.6	462528	30.5	21.7	507153	30.6	20.7	436939	30.7	19.6	535115	30.7	20.9	473244	30.8	20.7
217341	30.5	19.3	200414	30.5	19.0	179485	30.6										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
282569	30.8	19.3	398509	30.9	20.6	170520	30.9	20.0	241589	31.0	19.7	217244	31.1	19.9	11553	31.2	17.9
151327	30.8	19.2	480185	30.9	19.6	69162	30.9	19.4	81944	31.0	18.3	441326	31.1	20.5	387421	31.2	20.3
540660	30.8	20.5	508359	30.9	21.0	28958	30.9	18.8	390300	31.0	21.3	250738	31.1	19.1	240664	31.2	20.7
86893	30.8	18.2	17883	30.9	17.9	416558	30.9	18.9	449056	31.0	21.2	433756	31.1	19.8	284591	31.2	20.8
83979	30.8	18.8	70127	30.9	18.7	442139	30.9	19.5	293402	31.0	20.9	173623	31.1	19.7	93736	31.2	18.1
211919	30.8	20.7	480003	30.9	21.0	359481	30.9	20.5	467231	31.0	21.3	355092	31.1	19.8	378670	31.2	20.2
258025	30.8	20.7	480478	30.9	20.4	180147	30.9	20.2	539576	31.0	20.4	93111	31.1	18.9	361045	31.2	19.6
455995	30.8	20.2	335599	30.9	19.1	310649	30.9	21.4	240925	31.0	20.6	524551	31.1	19.9	521464	31.2	21.5
148138	30.8	19.1	383612	30.9	20.7	175936	30.9	20.5	263770	31.0	20.5	364213	31.1	20.4	315902	31.2	20.6
314597	30.8	20.1	523636	30.9	23.2	241302	30.9	19.7	42539	31.0	20.1	216377	31.1	20.7	433123	31.2	20.6
168478	30.8	19.5	254345	30.9	18.8	312631	30.9	19.5	401688	31.0	21.4	130054	31.1	19.2	379771	31.2	21.1
207303	30.8	19.2	410708	30.9	20.8	246660	30.9	19.7	224682	31.0	20.2	431399	31.1	21.4	205431	31.2	20.2
37872	30.8	19.5	512379	30.9	19.8	2427	30.9	15.5	361883	31.0	20.1	195022	31.1	20.0	358376	31.2	20.4
9431	30.8	17.0	66420	30.9	18.7	357042	30.9	19.6	423152	31.0	21.7	11803	31.1	17.7	123683	31.2	19.1
47513	30.8	17.3	161579	30.9	21.5	521191	30.9	21.5	276964	31.0	19.7	480496	31.1	20.8	355034	31.2	20.4
466088	30.8	21.5	270325	30.9	19.9	529558	30.9	21.5	234022	31.0	18.8	404151	31.1	22.8	35877	31.2	18.7
511142	30.8	20.3	65227	30.9	19.4	259316	30.9	20.9	285573	31.0	19.6	184769	31.1	20.2	427059	31.2	19.1
89582	30.8	19.1	371857	30.9	21.5	304699	30.9	20.5	262047	31.0	20.9	472956	31.1	20.4	120919	31.2	18.9
236753	30.8	19.9	474679	30.9	20.2	195213	30.9	20.3	184228	31.1	19.0	66891	31.1	18.1	147427	31.2	19.8
368927	30.8	19.4	289230	30.9	19.1	290821	30.9	19.0	60147	31.1	18.6	506615	31.1	20.6	434760	31.2	21.4
31089	30.8	17.9	125086	30.9	17.4	179267	30.9	19.4	285220	31.1	20.4	261491	31.1	19.9	37732	31.2	19.1
394056	30.8	19.9	271780	30.9	20.3	396395	30.9	20.9	289339	31.1	19.8	463769	31.1	19.5	183863	31.2	19.5
503391	30.8	21.7	165097	30.9	19.5	273980	30.9	20.5	15440	31.1	16.8	14965	31.1	18.2	106691	31.2	18.6
116759	30.8	17.2	107267	30.9	18.1	431436	30.9	21.8	322590	31.1	20.7	508131	31.1	20.8	382923	31.2	19.5
369496	30.8	20.0	51395	30.9	19.5	45748	30.9	18.6	445845	31.1	20.7	496221	31.1	20.3	9157	31.2	16.2
509904	30.8	21.0	221745	30.9	19.3	503381	30.9	21.5	301466	31.1	20.5	121159	31.1	19.8	26041	31.2	19.1
91900	30.8	18.5	360192	30.9	24.0	514251	30.9	20.7	236118	31.1	19.9	171312	31.1	19.6	338554	31.2	19.9
79993	30.9	19.8	102985	30.9	17.8	477032	30.9	20.7	257474	31.1	20.5	421769	31.1	19.2	342920	31.2	20.4
516699	30.9	19.2	446045	30.9	21.1	107258	30.9	19.6	469645	31.1	20.2	445008	31.1	20.7	540945	31.2	21.4
103259	30.9	18.6	522686	30.9	21.0	144954	30.9	19.6	30104	31.1	18.1	256690	31.1	19.1	219908	31.2	19.9
389313	30.9	20.9	3735	30.9	16.9	536913	30.9	21.6	166480	31.1	18.9	164029	31.1	18.9	515916	31.2	19.8
347445	30.9	19.3	223418	30.9	19.4	252907	30.9	20.9	443020	31.1	20.1	445018	31.1	20.3	254375	31.2	19.5
522516	30.9	21.1	363647	30.9	20.6	511163	30.9	20.3	40040	31.1	18.7	529740	31.1	20.4	346562	31.2	18.8
405858	30.9	21.0	261124	30.9	19.3	140344	30.9	19.5	364095	31.1	20.0	428721	31.1	20.7	443093	31.2	20.6
214744	30.9	20.1	444979	30.9	20.1	31297	30.9	17.4	389112	31.1	21.0	91381	31.1	15.9	57037	31.2	19.3
236715	30.9	20.1	113399	30.9	19.8	397731	30.9	20.9	373244	31.1	20.5	185047	31.1	18.7	72502	31.2	19.1
365719	30.9	20.7	415575	30.9	20.9	481722	30.9	21.5	187636	31.1	19.6	173665	31.1	20.6	501972	31.2	20.7
269032	30.9	20.6	447125	30.9	19.7	389119	30.9	19.5	170663	31.1	19.6	346004	31.1	21.1	350055	31.2	20.1
288845	30.9	20.3	381140	30.9	18.8	338575	31.0	19.5	274483	31.1	20.1	447191	31.1	20.4	408189	31.2	20.6
189856	30.9	19.5	166441	30.9	19.4	309239	31.0	21.6	164425	31.1	20.3	390331	31.1	20.7	195526	31.2	20.6
316369	30.9	20.4	13002	30.9	17.1	368662	31.0	21.6	57977	31.1	19.1	36265	31.1	19.0	35872	31.2	19.1
94252	30.9	18.6	421203	30.9	20.5	533042	31.0	21.1	362744	31.1	19.6	262054	31.1	20.2	275312	31.2	19.5
255294	30.9	19.6	511646	30.9	19.9	523049	31.0	21.3	363059	31.1	19.9	39274	31.1	17.9	97859	31.2	18.8
388324	30.9	20.4	149097	30.9	19.9	237103	31.0	20.1	349813	31.1	20.6	319159	31.1	21.1	537268	31.2	22.5
92211	30.9	18.3	291798	30.9	20.5	121719	31.0	19.2	209923	31.1	19.5	47215	31.1	19.0	519688	31.2	20.5
188147	30.9	20.0	410711	30.9	20.6	438901	31.0	20.6	282300	31.1	19.7	359614	31.1	20.3	299129	31.2	21.3
353569	30.9	20.0	356912	30.9	20.4	437308	31.0	21.5	60329	31.1	18.4	149082	31.1	19.6	3138	31.2	16.3
317484	30.9	21.0	308320	30.9	20.3	500873	31.0	20.9	453785	31.1	20.9	196668	31.1	19.4	115601	31.2	18.9
116186	30.9	18.3	303263	30.9	21.1	122539	31.0	18.1	118024	31.1	18.5	197887	31.1	19.9	299786	31.2	20.6
47657	30.9	18.4	105392	30.9	19.0	151196	31.0	19.5	80731	31.1	19.4	87954	31.1	17.5	501538	31.2	20.0
200635	30.9	20.2	154975	30.9	19.8	84753	31.0	18.9	481735	31.1	21.3	94524	31.1	19.1	29349	31.2	17.2
380544	30.9	20.2	380327	30.9	20.9	339387	31.0	19.1	217126	31.1	20.2	95023	31.1	17.7	501352	31.2	18.8
70282	30.9	18.6	287962	30.9	19.6	157727	31.0	20.0	166575	31.1	19.3	357542	31.2	20.5	103713	31.2	19.1
507073	30.9	20.4	150613	30.9	19.3	288304	31.0	19.9	410729	31.1	20.0	117833	31.2	19.6	113534	31.2	19.5
469911	30.9	21.1	424185	30.9	21.7	257091	31.0	19.7	244333	31.1	20.5	173630	31.2	19.6	37011	31.2	18.8
29486	30.9	17.6	326222	30.9	21.3	359571	31.0	20.0	162851	31.1	19.4	115139	31.2	18.7	381832	31.2	19.0
505788	30.9	20.0	58846	30.9	20.2	141701	31.0	20.7	89839	31.1	19.1	68879	31.2	17.5	243325	31.2	19.7
221785	30.9	20.2	205587	30.9	19.3	117223	31.0	19.2	51644	31.1	18.7	449514	31.2	22.1	36279	31.2	18.2
417486	30.9	21.1	20184	30.9	18.1	119932	31.0	19.1	49040	31.1	18.3	254110	31.2	18.1	148114	31.2	18.0
339423	30.9	20.6	311382	30.9	20.1	455861	31.0	19.3	79123	31.1	18.5	400522	31.2	19.4	117306	31.2	18.1
258716	30.9	19.6	271692	30.9	19.9	237674	31.0	20.0	295599	31.1	20.5	13454	31.2	17.5	533639	31.2	20.4
59825	30.9	17.2	66985	30.9	17.6	401297	31.0	20.2	93438	31.1	18.4	385818	31.2	20.8	503786	31.2	20.1
43451	30.9	18.7	361968	30.9	20.2	313896	31.0	19.6	325911	31.1	19.8	83216	31.2	19.2	540313	31.2	20.4
535682	30.9	21.0	392432	30.9	19.0	107348	31.0	20.1	217311	31.1	19.1	374473	31.2	20.1	512383	31.2	19.7
70423	30.9	17.9	263680	30.9	20.0	513332	31.0	21.3	490820	31.1	21.1	149179	31.2	19.7	3274	31.2	17.7
23781	30.9	18.3	239532	30.9	19.4	274970	31.0	19.7	311191	31.1	19.2	345480	31.2	20.4	227428	31.2	20.4
399153	30.9	20.0	347301	30.9	20.1	342625	31.0	20.2	309400	31.1	20.2	405815	31.2	20.4	115117	31.2	18.2
343388	30.9	20.0	164558	30.9	19.7	4525	31.0	16.5	527767	31.1	21.7	9993	31.2	17.0	214567	31.2	18.7
167363	30.9	19.2	200266	30.9	18.8	469958	31.0										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
23554	31.2	18.3	395265	31.3	21.0	33428	31.4	18.9	230390	31.4	20.3	48958	31.5	18.7	313352	31.6	20.3
23344	31.2	17.4	361950	31.3	20.2	193352	31.4	18.1	506625	31.4	22.0	109118	31.5	19.0	27527	31.6	17.9
396299	31.3	20.7	15980	31.3	17.5	11933	31.4	17.5	416102	31.4	20.8	528228	31.5	20.4	111404	31.6	19.8
376496	31.3	20.8	273704	31.3	18.6	304006	31.4	20.6	520964	31.4	21.0	143868	31.5	18.4	263812	31.6	20.5
232279	31.3	20.9	34057	31.3	16.4	281272	31.4	20.1	443610	31.4	20.5	205695	31.5	18.4	194136	31.6	19.9
22062	31.3	17.3	181196	31.3	20.4	386792	31.4	21.0	285872	31.5	19.7	240386	31.5	20.8	440503	31.6	21.0
154234	31.3	19.5	94116	31.3	18.9	23382	31.4	18.6	410790	31.5	19.9	152617	31.5	20.8	309792	31.6	20.9
442004	31.3	19.6	440240	31.3	19.9	7042	31.4	18.0	471649	31.5	20.6	542666	31.5	20.7	124784	31.6	17.7
6660	31.3	16.3	159132	31.3	20.0	79041	31.4	17.4	514553	31.5	19.2	361879	31.5	20.8	14951	31.6	15.6
492321	31.3	20.4	362372	31.3	20.4	392109	31.4	20.3	141544	31.5	19.7	221914	31.5	20.5	228095	31.6	19.8
217966	31.3	18.0	385475	31.3	19.8	28316	31.4	17.5	345487	31.5	19.4	108442	31.5	19.7	154123	31.6	19.8
166148	31.3	20.4	97996	31.3	18.8	426411	31.4	20.2	293304	31.5	20.9	286805	31.5	20.2	488476	31.6	19.6
92330	31.3	19.8	438975	31.3	19.4	481855	31.4	20.5	66315	31.5	19.3	481461	31.5	21.1	45191	31.6	18.5
529942	31.3	20.7	192218	31.3	19.9	347886	31.4	19.4	429600	31.5	21.3	345500	31.5	20.1	26279	31.6	20.3
415606	31.3	20.7	236555	31.3	19.7	223157	31.4	18.5	499643	31.5	20.3	121176	31.5	19.9	512402	31.6	20.1
158779	31.3	18.7	507175	31.3	20.8	362848	31.4	20.6	410683	31.5	21.0	165651	31.5	19.5	257991	31.6	21.1
228594	31.3	20.6	393825	31.3	20.0	140333	31.4	19.5	513139	31.5	22.2	528686	31.5	20.4	342388	31.6	19.8
525555	31.3	20.5	384876	31.3	20.8	482181	31.4	20.1	224754	31.5	19.7	519338	31.5	20.9	198275	31.6	19.0
326296	31.3	19.1	498487	31.3	21.3	407284	31.4	20.3	137524	31.5	18.4	66424	31.5	18.8	326806	31.6	20.6
434383	31.3	20.0	141560	31.3	20.6	63317	31.4	20.0	523113	31.5	21.1	169922	31.5	19.7	314453	31.6	20.6
67567	31.3	18.7	245614	31.3	18.6	340983	31.4	20.3	74872	31.5	18.1	205048	31.5	20.1	199676	31.6	19.7
249619	31.3	18.6	471574	31.3	21.4	507792	31.4	20.6	74251	31.5	18.9	381971	31.5	20.0	205674	31.6	19.6
362301	31.3	20.3	142319	31.3	20.5	473122	31.4	21.1	207026	31.5	18.5	260594	31.5	19.7	19324	31.6	18.9
38571	31.3	19.0	98761	31.3	19.3	275059	31.4	19.8	245257	31.5	20.1	475641	31.5	20.5	12378	31.6	16.5
180430	31.3	17.1	339201	31.3	20.2	536800	31.4	21.8	331427	31.5	21.3	355850	31.5	19.6	289737	31.6	20.5
460012	31.3	20.9	368387	31.3	20.9	79796	31.4	17.1	389105	31.5	20.9	294863	31.5	20.1	360378	31.6	21.1
128653	31.3	19.4	38756	31.3	18.1	137839	31.4	19.6	149528	31.5	19.9	315143	31.5	20.0	492492	31.6	20.3
321424	31.3	20.2	156206	31.3	19.4	94618	31.4	18.9	263807	31.5	20.9	338688	31.5	20.6	373224	31.6	21.5
308063	31.3	20.1	517704	31.3	20.6	319386	31.4	20.2	20738	31.5	18.5	391792	31.5	20.8	249088	31.6	19.1
491358	31.3	21.3	505385	31.3	20.1	147996	31.4	20.6	463113	31.5	20.5	22608	31.5	18.3	321865	31.6	21.2
255372	31.3	19.7	171146	31.3	19.7	481124	31.4	20.6	23179	31.5	16.2	151326	31.6	19.8	318243	31.6	19.8
147429	31.3	20.2	312628	31.3	20.7	535076	31.4	21.0	532842	31.5	19.5	463734	31.6	20.2	472616	31.6	20.7
529541	31.3	21.1	59453	31.3	19.0	10672	31.4	15.9	381138	31.5	20.7	77540	31.6	20.1	500998	31.6	19.9
362412	31.3	20.3	150629	31.3	19.6	207487	31.4	20.1	443071	31.5	20.6	521569	31.6	21.1	424750	31.6	20.2
183849	31.3	19.0	269123	31.3	20.4	260726	31.4	20.2	33462	31.5	17.9	216398	31.6	19.4	293173	31.6	20.0
209370	31.3	20.0	94770	31.3	17.7	509869	31.4	20.5	50506	31.5	17.5	121823	31.6	18.1	140039	31.6	21.9
467937	31.3	20.9	144964	31.3	19.7	310196	31.4	19.9	352288	31.5	20.4	368085	31.6	20.1	259696	31.6	20.3
480643	31.3	21.0	418058	31.3	20.1	161174	31.4	18.3	340241	31.5	21.5	316062	31.6	21.5	2318	31.6	15.6
355677	31.3	20.8	257649	31.3	20.7	385201	31.4	23.2	349729	31.5	20.8	187644	31.6	19.8	73398	31.6	19.1
126752	31.3	19.1	345523	31.3	20.2	399900	31.4	20.4	111946	31.5	18.6	207491	31.6	20.6	349804	31.6	19.4
52837	31.3	18.8	504285	31.3	21.3	377749	31.4	18.6	244658	31.5	21.1	311540	31.6	20.7	263818	31.6	20.0
89255	31.3	19.5	211600	31.3	19.5	107831	31.4	19.8	296793	31.5	19.8	181214	31.6	20.0	282313	31.6	20.0
377774	31.3	18.4	282629	31.3	20.5	304390	31.4	20.3	258859	31.5	20.0	175878	31.6	18.7	1868	31.6	16.0
205734	31.3	20.6	214847	31.3	20.0	172839	31.4	18.3	101712	31.5	18.5	141814	31.6	19.6	319328	31.6	20.6
453432	31.3	20.8	16890	31.3	17.0	260493	31.4	19.8	294161	31.5	19.8	205238	31.6	19.8	480057	31.6	21.2
508338	31.3	21.7	338551	31.3	19.9	338601	31.4	20.0	95818	31.5	18.1	221490	31.6	20.4	461443	31.6	21.9
443065	31.3	20.5	365401	31.3	20.0	86206	31.4	17.2	204096	31.5	18.6	312424	31.6	20.8	167940	31.6	19.5
463092	31.3	19.8	295625	31.3	20.1	513512	31.4	20.9	293836	31.5	20.4	498539	31.6	21.6	480235	31.6	21.7
216478	31.3	19.5	429648	31.3	20.9	253022	31.4	19.4	504950	31.5	20.3	455146	31.6	24.0	57544	31.6	18.7
322167	31.3	20.0	33827	31.3	18.3	503569	31.4	21.5	20702	31.5	18.4	127876	31.6	19.8	219298	31.6	20.8
397788	31.3	19.6	260360	31.3	19.7	151489	31.4	19.9	164180	31.5	18.6	258840	31.6	18.9	439741	31.6	20.8
294494	31.3	19.9	166455	31.3	20.4	439002	31.4	20.5	171001	31.5	20.3	473254	31.6	20.7	35544	31.6	18.2
35789	31.3	19.3	482937	31.3	21.0	140709	31.4	19.4	501854	31.5	20.2	316031	31.6	20.6	370681	31.6	19.9
503859	31.3	18.2	303668	31.3	19.9	517237	31.4	20.6	250560	31.5	18.6	158086	31.6	18.3	531416	31.6	20.5
374910	31.3	20.1	335807	31.3	20.3	511334	31.4	19.5	90844	31.5	19.7	392459	31.6	20.8	386895	31.6	20.5
263586	31.3	20.7	527368	31.3	20.4	281829	31.4	20.0	476820	31.5	21.0	271634	31.6	20.6	205433	31.6	19.4
536794	31.3	21.9	449926	31.4	20.1	224776	31.4	20.0	462546	31.5	22.3	209722	31.6	19.4	540703	31.6	21.3
433672	31.3	20.7	258570	31.4	20.0	152466	31.4	18.8	120167	31.5	19.2	292751	31.6	19.8	436555	31.6	21.7
77235	31.3	19.1	482428	31.4	20.0	333556	31.4	20.7	323709	31.5	20.9	259476	31.6	19.5	527179	31.6	19.8
237606	31.3	18.5	266433	31.4	20.5	439826	31.4	19.9	12912	31.5	18.3	22382	31.6	19.2	307877	31.7	17.3
858	31.3	14.6	407279	31.4	21.3	234792	31.4	19.4	155863	31.5	19.2	299758	31.6	20.5	158041	31.7	18.7
505992	31.3	21.0	35664	31.4	18.2	306959	31.4	19.5	124833	31.5	19.7	528864	31.6	21.8	99396	31.7	19.4
51444	31.3	19.6	507126	31.4	20.2	198260	31.4	18.8	19012	31.5	17.7	25582	31.6	17.8	351935	31.7	20.7
65645	31.3	18.6	175535	31.4	20.7	64903	31.4	17.9	99079	31.5	18.6	187318	31.6	20.1	9781	31.7	17.4
365983	31.3	21.5	196829	31.4	19.4	381853	31.4	19.9	390347	31.5	20.5	357185	31.6	21.7	354061	31.7	19.8
444680	31.3	21.6	175303	31.4	20.2	53941	31.4	19.2	191780	31.5	20.3	436228	31.6	21.1	253347	31.7	19.9
62994	31.3	18.5	16288	31.4	18.0	191682	31.4	19.3	329151	31.5	19.8	246875	31.6	19.6	175882	31.7	19.0
429206	31.3	20.1	474574	31.4	22.3	531547	31.4	20.8	202590	31.5	20.0	513810	31.6	21.4	356236	31.7	20.1
75189	31.3	18.7	529593	31.4	20.2	370925	3										

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

№	10	V	№	10	V	№	10	V	№	10	V	№	10	V	№	10	V
177733	31.7	21.0	309192	31.7	20.3	401329	31.8	21.6	422966	31.8	21.5	392227	31.9	21.1	158858	31.9	19.5
390996	31.7	20.5	210179	31.7	20.5	139639	31.8	19.1	15706	31.8	16.4	163721	31.9	19.7	113856	31.9	19.6
46450	31.7	17.4	125870	31.7	18.2	257917	31.8	19.5	327192	31.8	19.9	345507	31.9	20.6	95279	31.9	19.1
403002	31.7	19.2	316777	31.7	19.1	58223	31.8	18.6	240566	31.8	19.9	503390	31.9	20.9	243324	31.9	20.2
144028	31.7	19.0	220698	31.7	20.7	304484	31.8	20.8	408367	31.8	20.9	306267	31.9	20.1	344466	31.9	20.0
9192	31.7	17.4	382074	31.7	21.3	96353	31.8	17.7	32786	31.8	17.8	485653	31.9	19.8	228194	31.9	18.9
218963	31.7	19.0	221908	31.7	19.4	224187	31.8	20.5	471796	31.8	19.7	293182	31.9	19.9	99548	31.9	19.3
18112	31.7	18.9	329206	31.7	20.8	442567	31.8	19.7	203949	31.8	18.7	432267	31.9	20.5	97070	31.9	19.0
382484	31.7	21.7	65203	31.7	19.1	95245	31.8	19.5	345991	31.8	19.5	511147	31.9	19.6	314617	31.9	20.2
432871	31.7	19.7	441299	31.7	20.5	24552	31.8	19.3	462138	31.8	20.0	425519	31.9	19.0	124634	31.9	18.9
362825	31.7	20.3	270459	31.7	20.4	17766	31.8	17.6	307030	31.8	20.3	263827	31.9	20.6	434676	31.9	20.8
404131	31.7	21.6	294819	31.7	21.2	461662	31.8	21.2	263604	31.8	20.7	513875	31.9	20.8	218854	31.9	21.1
102280	31.7	19.9	40083	31.7	18.5	525845	31.8	19.7	235241	31.8	20.0	198322	31.9	18.5	150041	31.9	20.0
510462	31.7	20.7	265374	31.7	19.2	294569	31.8	20.2	251976	31.8	20.1	161545	31.9	19.6	18718	31.9	16.6
50345	31.7	18.7	261741	31.7	20.1	71304	31.8	18.2	257028	31.8	20.2	311951	31.9	19.7	314684	31.9	20.6
490795	31.7	19.8	46853	31.7	18.4	499303	31.8	20.2	216283	31.8	19.4	318376	31.9	19.3	356239	31.9	20.9
244932	31.7	19.8	438149	31.7	20.9	431401	31.8	21.7	535431	31.8	20.9	38960	31.9	16.9	121291	31.9	18.7
5815	31.7	17.0	5027	31.7	16.8	507157	31.8	20.3	176160	31.9	20.1	174089	31.9	20.4	40293	31.9	16.9
211129	31.7	20.1	487691	31.7	20.1	506526	31.8	20.5	82169	31.9	19.2	260288	31.9	19.6	509136	31.9	20.8
445459	31.7	19.3	418913	31.7	21.0	359433	31.8	19.7	157434	31.9	20.5	348271	31.9	19.3	270516	31.9	20.7
47524	31.7	18.7	526213	31.7	21.1	418045	31.8	19.2	324977	31.9	21.3	350907	31.9	19.5	255979	31.9	19.7
344798	31.7	18.6	13278	31.7	17.9	439545	31.8	20.7	330012	31.9	20.6	41423	31.9	18.4	108988	31.9	19.9
387317	31.7	20.9	461909	31.7	20.6	328381	31.8	20.9	258734	31.9	20.1	66364	31.9	17.8	269040	31.9	19.8
342679	31.7	20.2	508051	31.7	20.1	280132	31.8	18.9	70889	31.9	19.0	419646	31.9	19.8	280596	31.9	20.2
338134	31.7	21.1	31102	31.7	18.6	476174	31.8	20.7	72204	31.9	16.9	353358	31.9	21.1	40207	31.9	17.0
36991	31.7	19.1	205648	31.7	18.0	20096	31.8	17.2	100590	31.9	19.3	39579	31.9	18.1	48755	31.9	19.2
70471	31.7	18.7	91702	31.7	19.2	9103	31.8	16.4	364732	31.9	20.0	320249	31.9	20.1	302141	31.9	21.1
36529	31.7	18.8	399943	31.7	20.8	43551	31.8	18.3	103614	31.9	20.1	539744	31.9	21.2	215428	31.9	20.5
419696	31.7	19.2	231464	31.7	20.1	448515	31.8	20.5	514418	31.9	20.3	226349	31.9	20.0	241453	31.9	20.5
484031	31.7	20.0	536345	31.7	19.3	203014	31.8	18.0	37684	31.9	19.9	503690	31.9	21.0	315916	31.9	20.4
383968	31.7	20.3	525250	31.7	20.4	386107	31.8	20.2	29693	31.9	16.8	529659	31.9	20.5	361528	31.9	20.2
120131	31.7	20.9	237024	31.7	19.7	289996	31.8	20.2	412816	31.9	20.7	92435	31.9	19.1	476071	31.9	20.3
355740	31.7	21.6	515207	31.7	20.5	42206	31.8	19.0	314577	31.9	20.5	539549	31.9	20.9	359010	31.9	19.4
104218	31.7	19.9	149796	31.7	20.8	365784	31.8	19.2	186768	31.9	18.8	209278	31.9	19.4	358374	31.9	19.1
188817	31.7	19.9	401235	31.7	20.6	499580	31.8	20.5	475619	31.9	20.6	518947	31.9	20.6	428210	31.9	20.3
93161	31.7	18.4	513397	31.7	20.2	105524	31.8	18.6	211910	31.9	20.1	504712	31.9	20.1	243825	31.9	19.5
188476	31.7	19.6	241740	31.7	18.7	326331	31.8	20.2	76476	31.9	18.4	171045	31.9	20.6	61592	31.9	18.8
263546	31.7	19.7	255624	31.7	18.6	182231	31.8	20.5	285937	31.9	20.0	318344	31.9	20.4	20151	31.9	17.7
239804	31.7	20.7	241118	31.7	19.2	185091	31.8	19.5	517013	31.9	20.1	70512	31.9	18.1	355528	31.9	21.0
162405	31.7	19.3	414395	31.7	21.1	202206	31.8	19.4	287871	31.9	19.9	527065	31.9	20.9	16737	31.9	17.6
17178	31.7	19.2	3532	31.7	15.7	202651	31.8	20.3	359487	31.9	19.6	128114	31.9	19.0	387083	31.9	20.0
279243	31.7	19.7	372372	31.8	20.5	251835	31.8	19.2	392418	31.9	20.1	153268	31.9	19.9	40141	31.9	18.3
387608	31.7	20.2	433991	31.8	21.1	219891	31.8	19.4	351763	31.9	20.4	204723	31.9	20.0	433560	31.9	19.6
420774	31.7	20.5	108238	31.8	19.1	256468	31.8	20.6	41669	31.9	17.4	250849	31.9	19.5	87351	31.9	18.8
268298	31.7	19.4	10464	31.8	17.4	479967	31.8	20.5	49029	31.9	17.6	336949	31.9	20.4	243484	31.9	19.7
262340	31.7	19.6	395243	31.8	19.8	516955	31.8	20.8	400932	31.9	20.2	356445	31.9	19.7	294953	31.9	19.5
146807	31.7	19.7	471826	31.8	20.0	38487	31.8	18.1	42554	31.9	18.6	69809	31.9	18.3	66954	31.9	17.6
140661	31.7	19.5	509117	31.8	20.3	15663	31.8	17.6	131693	31.9	18.4	491588	31.9	19.4	202172	31.9	19.1
316121	31.7	20.0	236114	31.8	20.1	28437	31.8	17.9	16180	31.9	17.0	503275	31.9	20.3	324970	31.9	20.6
245677	31.7	19.7	315089	31.8	20.0	19107	31.8	18.0	149765	31.9	19.8	342503	31.9	20.7	237469	31.9	20.0
461483	31.7	20.7	284980	31.8	20.0	61878	31.8	18.7	9984	31.9	17.0	176817	31.9	20.3	207733	31.9	20.3
154198	31.7	19.7	155601	31.8	19.2	93029	31.8	19.4	483154	31.9	20.0	59441	31.9	17.2			
126646	31.7	19.9	437594	31.8	20.4	446263	31.8	20.4	211058	31.9	20.7	38197	31.9	17.4			
162136	31.7	18.1	508219	31.8	21.6	410400	31.8	19.3	364520	31.9	20.4	383300	31.9	21.3			
15713	31.7	17.5	407995	31.8	20.0	332804	31.8	20.1	244420	31.9	19.3	87416	31.9	17.9			
394672	31.7	20.8	482215	31.8	20.8	79297	31.8	19.2	159243	31.9	19.1	46559	31.9	17.8			
516304	31.7	21.1	339407	31.8	19.6	479847	31.8	20.8	447092	31.9	21.0	128603	31.9	19.2			
513532	31.7	20.1	219892	31.8	20.1	10892	31.8	17.6	198273	31.9	20.2	252898	31.9	20.5			
44580	31.7	19.2	437442	31.8	19.9	342564	31.8	20.3	219072	31.9	18.0	264192	31.9	20.3			
466360	31.7	21.4	393889	31.8	20.4	318159	31.8	18.4	519464	31.9	21.3	254124	31.9	20.0			
68287	31.7	19.6	16361	31.8	17.9	516946	31.8	20.6	95854	31.9	19.0	298635	31.9	20.3			
93043	31.7	17.7	57108	31.8	16.1	476244	31.8	20.4	2935	31.9	17.0	80796	31.9	18.7			
204947	31.7	19.9	494486	31.8	20.6	340555	31.8	20.1	530295	31.9	22.0	411733	31.9	20.2			
204061	31.7	19.6	481024	31.8	19.2	1499	31.8	14.8	78069	31.9	18.3	234110	31.9	19.7			
534935	31.7	20.8	419566	31.8	20.2	22149	31.8	17.6	328307	31.9	19.9	508274	31.9	21.4			