ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
12001 Gasbarini	13.2	*X*	15.78883	181.49081	156.09425	14.08116	0.0390352	0.17693044	3.1424450	21	10 8.9	17.5
12002 Suess	13.6	*X*	172.35429	99.20429	216.59496	9.42709	0.1073114	0.18791323	3.0187777	21	—	—
12003 Hideosugai	12.2	*X*	141.03044	77.44262	10.57828	9.82957	0.0905943	0.15991725	3.3615468	21	5 4.9	17.4
12004 1996 JW_1	13.1	*X*	43.29734	195.48109	175.47109	0.93752	0.1229989	0.17450985	3.1714369	21	12 31.3	17.5
12005 Delgiudice	12.6	*X*	61.19144	136.46663	132.88823	10.91843	0.1672616	0.17526303	3.1623444	21	10 1.8	17.1
12006 Hruschka	12.1	*X*	108.49277	9.78398	231.64448	10.23575	0.0836617	0.12432543	3.9758445	21	9 29.2	18.0
12007 Fermat	15.2	*X*	319.63804	154.66249	33.28854	6.36226	0.1005556	0.29010829	2.2599350	21	—	—
12008 Kandrup	13.1	*X*	21.90393	344.96002	263.31923	29.74421	0.3161137	0.34936732	1.9965546	21	7 11.5	13.8
12009 1996 *UE*	15.1	*X*	244.70712	303.45967	41.96804	4.15574	0.2789919	0.30326134	2.1941081	21	3 27.9	18.7
12010 1996 *UN*	15.2	*X*	57.23533	304.45004	199.14507	4.79378	0.1406308	0.29723311	2.2236747	21	3 15.3	17.0
12011 1996 VT_5	14.3	*X*	25.51532	326.33446	89.72162	7.56693	0.0991508	0.28220609	2.3019283	21	—	—
12012 Kitahiroshima	14.0	*X*	60.34232	11.63042	24.04887	7.15421	0.1453165	0.28557221	2.2838036	21	—	—
12013 Sibatahosimi	14.9	*X*	114.68590	216.83322	207.64488	6.13582	0.1316696	0.29412576	2.2393089	21	2 22.1	17.6
12014 Bobhawkes	13.8	*X*	99.64410	358.00172	202.62059	1.74646	0.1578136	0.26654561	2.3912319	21	8 20.7	17.2
12015 1996 *WA*	14.8	*X*	184.22047	37.61702	32.11446	4.00776	0.1356604	0.30093323	2.2054097	21	5 24.0	18.1
12016 Green	13.9	*X*	334.44450	168.48167	95.78529	6.72588	0.1943333	0.25945667	2.4345918	21	4 9.7	16.4
12017 1996 XC_1	14.7	*X*	169.87806	96.46092	197.73358	2.06446	0.0590507	0.28414945	2.2914207	21	—	—
12018 1996 XJ_{15}	14.6	*X*	317.91325	210.30342	97.07038	6.49775	0.1751147	0.26036751	2.4289106	21	5 16.0	17.2
12019 1996 XF_{19}	14.8	*X*	61.30028	143.37209	242.12206	4.11813	0.1505654	0.28198629	2.3031244	21	—	—
12020 1996 XW_{19}	14.3	*X*	284.45877	207.13110	258.07718	6.90909	0.1471153	0.27327006	2.3518413	21	11 15.9	16.5
12021 1996 XX_{19}	14.9	*X*	200.06777	251.31956	102.13387	4.01924	0.1607636	0.29401665	2.2398629	21	3 3.6	18.3
12022 Hilbert	15.5	*X*	314.83250	251.43431	199.90565	0.57766	0.1058927	0.27509722	2.3414160	21	12 26.8	17.6
12023 1996 *YJ*	14.7	*X*	51.80486	89.99289	280.64367	6.26064	0.1357478	0.27803354	2.3249017	21	—	—
12024 1996 YN_2	15.1	*X*	45.98942	152.91429	250.05777	2.51124	0.1735396	0.28189113	2.3036426	21	—	—
12025 1997 AJ_1	14.9	*X*	285.28319	189.76345	333.56283	3.19013	0.1068684	0.27810571	2.3244994	21	—	—
12026 1997 AV_1	14.2	*X*	227.54943	70.52730	316.66929	6.96174	0.1191905	0.25871483	2.4392435	21	5 13.5	18.0
12027 Masaakitanaka	14.7	*X*	195.80383	61.20753	30.67554	6.51286	0.1651950	0.26200389	2.4187866	21	7 6.4	18.6
12028 Annekinney	14.1	*X*	164.03042	156.08559	132.63669	14.33902	0.1772366	0.23616980	2.5921083	21	—	—
12029 1997 AQ_{22}	13.5	*X*	29.66165	87.30353	120.48371	8.54872	0.1572122	0.21261360	2.7801956	21	5 17.5	16.5
12030 1997 BF_3	14.8	*X*	49.10568	273.53010	129.52277	5.48857	0.2202595	0.27992616	2.3144105	21	—	—
12031 Kobaton	14.0	*X*	16.37898	309.39174	69.16523	9.92640	0.1542443	0.27554874	2.3388575	21	—	—
12032 Ivory	15.6	*X*	296.65901	291.57944	142.56029	2.70570	0.1823455	0.26961026	2.3730767	21	10 19.5	17.7
12033 Anselmo	13.5	*X*	40.49419	85.75496	112.63197	2.55519	0.1090908	0.16982640	3.2294799	21	5 20.3	17.5
12034 1997 *CR*	13.7	*X*	337.77145	209.16012	137.43654	13.47839	0.1767085	0.22185260	2.7024626	21	8 24.8	16.2
12035 Ruggieri	14.9	*X*	132.19065	204.34428	321.14518	1.28156	0.0751760	0.25957888	2.4338276	21	8 2.8	18.3
12036 1997 CR_{19}	13.3	*X*	165.53151	121.25048	19.49398	7.12291	0.0650753	0.21877320	2.7277630	21	8 9.8	17.4
12037 1997 CT_{19}	15.3	*X*	262.94919	202.52895	241.00793	1.45793	0.1719086	0.26697440	2.3886708	21	9 5.5	18.1
12038 1997 CE_{20}	14.1	*X*	133.09712	256.29825	103.88662	5.39588	0.1389054	0.24003374	2.5642155	21	1 6.3	17.3
12039 1997 CB_{22}	12.7	*X*	346.66957	282.41064	348.33139	6.72478	0.0885647	0.21183090	2.7870398	21	5 24.1	16.2
12040 Jacobi	15.3	*X*	227.15972	92.78398	354.06767	2.70628	0.2032855	0.26143238	2.4223104	21	7 27.7	18.9
12041 1997 EQ_{25}	13.5	*X*	223.14940	122.48512	174.93205	12.35237	0.1016772	0.16010496	3.3589190	21	1 30.7	18.9
12042 Laques	13.1	*X*	195.58174	96.40761	128.80990	11.86217	0.0637141	0.19028003	2.9936929	21	12 20.4	17.7
12043 1997 *FN*	13.2	*X*	81.91801	307.36154	62.03301	12.56378	0.0531235	0.19095002	2.9866861	21	—	—
12044 Fabbri	12.8	*X*	33.49650	7.64171	48.06877	13.96566	0.1378744	0.23616762	2.5921242	21	—	—
12045 Klein	13.0	*X*	123.66422	326.26814	349.92593	12.72132	0.1916712	0.23429084	2.6059486	21	—	—
12046 1997 FQ_4	12.6	*X*	61.01927	13.55875	250.42554	4.00425	0.1198395	0.17648759	3.1476995	21	9 11.9	17.0
12047 Hideomitani	13.6	*X*	119.49976	302.48841	24.66707	10.08098	0.0383170	0.19020949	2.9944330	21	—	—
12048 1997 GW_{29}	13.6	*X*	49.51909	256.83512	141.94169	11.31113	0.1181787	0.19152538	2.9807015	21	—	—
12049 1997 GT_{32}	13.3	*X*	161.85871	16.70897	350.96221	1.37718	0.0958830	0.19972983	2.8985053	21	2 18.4	17.6
12050 Humecronyn	13.1	*X*	137.23069	57.73005	312.75313	1.22767	0.0858199	0.19810411	2.9143412	21	1 25.1	17.4
12051 Pícha	14.4	*X*	304.07041	235.41522	355.52529	9.38698	0.1708739	0.28146173	2.3059850	21	1 9.7	17.7
12052 Aretaon	10.6	*X*	294.94682	86.86271	219.77290	11.47086	0.0694041	0.08242074	5.2293179	21	5 10.4	17.4
12053 Turtlestar	14.1	*X*	211.08357	10.20015	302.30110	6.10092	0.1414407	0.27041903	2.3683427	21	1 22.6	17.7
12054 1997 TT_9	11.8	*X*	325.64029	39.84206	44.53401	10.08217	0.0644189	0.08425734	5.1530486	21	11 20.2	18.4
12055 1997 YR_{11}	14.6	*X*	190.29517	11.34636	12.26121	6.47923	0.0237804	0.30253161	2.1976349	21	3 25.2	17.2
12056 Yoshigeru	14.3	*X*	168.71399	171.82928	108.60238	6.28046	0.1603276	0.28551371	2.2841155	21	—	—
12057 Alfredsturm	14.9	*X*	160.51730	135.43451	0.02961	2.35421	0.0518735	0.31127855	2.1562706	21	7 27.9	17.4
12058 1998 DV_{11}	14.8	*X*	87.49743	36.48933	166.08462	4.93196	0.1779772	0.22383790	2.6864595	21	8 9.5	18.6
12059 du Châtelet	14.2	*X*	194.97554	213.43324	61.05933	4.11352	0.1839420	0.24369821	2.5384454	21	—	—
12060 1998 FH_2	14.4	*X*	107.75167	237.45653	346.96459	22.15503	0.2567605	0.27044627	2.3681837	21	10 1.1	18.6
12061 Alena	14.2	*X*	185.26795	279.93276	23.46184	3.88308	0.1916832	0.28651639	2.2787835	21	—	—
12062 Tilmanspohn	14.4	*X*	155.22325	74.95709	207.88710	6.26417	0.1982476	0.23905307	2.5712235	21	—	—
12063 1998 FH_{11}	14.8	*X*	142.84785	98.51946	129.73199	8.77241	0.1307086	0.27446759	2.3449955	21	11 12.2	18.5
12064 Guiraudon	13.0	*X*	41.25428	203.01169	213.45779	21.51826	0.0726039	0.23883996	2.5727528	21	—	—
12065 Jaworski	15.4	*X*	36.23164	97.60423	160.70953	2.85470	0.1772713	0.26554698	2.3972232	21	8 15.4	17.5
12066 1998 FX_{39}	14.6	*X*	173.60908	81.37920	213.47231	4.28573	0.2767458	0.24257945	2.5462442	21	—	—
12067 Jeter	15.3	*X*	286.17311	304.94915	342.25954	9.02489	0.1815729	0.25554463	2.4593757	21	3 3.9	18.9
12068 Khandrika	14.7	*X*	50.04006	156.50005	223.53430	5.02865	0.1884954	0.28339027	2.2955112	21	—	—
12069 1998 FC_{59}	13.7	*X*	185.08565	156.68576	169.32232	7.13622	0.1789548	0.29033942	2.2587355	21	1 12.8	17.2
12070 Kilkis	14.6	*X*	356.51779	211.91709	46.09997	2.84674	0.1682654	0.25996744	2.4314019	21	5 15.2	16.7
12071 Davykim	14.1	*X*	123.39091	339.84801	47.42270	5.45518	0.1554676	0.29274096	2.2463653	21	1 21.6	16.7
12072 Anupamakotha	14.7	*X*	208.06741	168.04195	199.91587	4.69703	0.1225292	0.25678517	2.4514484	21	3 31.2	18.4
12073 Larimer	14.1	*X*	359.31476	73.98232	198.92850	6.24366	0.0843597	0.26240177	2.4163409	21	6 18.2	16.7
12074 Carolinelau	14.4	*X*	140.53017	83.46232	198.87401	9.43478	0.1318136	0.23697644	2.5862228	21	—	—
12075 Legg	14.4	*X*	304.08592	146.15554	133.43820	3.95870	0.1654535	0.25567461	2.4585421	21	3 18.9	17.5
12076 1998 FT_{70}	14.9	*X*	123.21589	212.61821	32.09506	3.49718	0.2350012	0.23006738	2.6377442	21	11 9.2	19.5
12077 1998 FZ_{70}	13.5	*X*	140.96455	225.31765	14.64752	14.54597	0.1416579	0.23241140	2.6199787	21	11 12.3	17.8
12078 1998 FJ_{72}	15.4	*X*	265.58046	153.74811	189.36286	3.68767	0.1124252	0.30256891	2.1974543	21	4 28.1	18.0
12079 Kaibab	14.1	*X*	28.11472	7.19244	247.01768	1.43705	0.1742118	0.26264557	2.4148454	21	7 22.7	16.2
12080 1998 FC_{111}	12.5	*X*	76.61149	25.45396	272.02553	9.02727	0.0932843	0.18891652	3.0080803	21	11 9.4	17.0

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
12081	1998 FH_{115}	14.0	X	103.06047	104.87536	270.11291	5.13909	0.2197695	0.28589794	2.2820686	21	—	—
12082	1998 FS_{118}	14.0	X	36.09366	313.86903	359.87975	12.40332	0.2891799	0.22625422	2.6672983	21	11 11.6	17.6
12083	1998 FS_{121}	14.2	X	145.52072	249.50142	333.48268	2.59518	0.0025337	0.31740632	2.1284282	21	11 11.2	16.7
12084	Unno	13.4	X	185.78288	28.22058	201.87524	13.41387	0.0943244	0.23776026	2.5805357	21	12 20.3	17.5
12085	1998 HV_{19}	15.6	X	211.75826	60.20090	4.69667	4.10215	0.0627079	0.30806051	2.1712610	21	6 20.5	18.3
12086	Joshualevine	15.2	X	58.75820	16.26114	209.67633	5.19000	0.1082929	0.26439464	2.4041835	21	7 22.9	18.1
12087	Tiffanylin	15.3	X	208.80698	302.54392	69.59615	3.48375	0.1610233	0.29982792	2.2108265	21	4 4.2	18.7
12088	Macalintal	14.0	X	140.38741	334.46818	239.32480	6.24105	0.0749489	0.27271904	2.3550081	21	10 15.9	17.3
12089	Maichin	14.7	X	112.21841	116.11514	137.29466	3.37469	0.1214105	0.27308814	2.3528857	21	11 10.9	18.2
12090	1998 HX_{36}	14.3	X	269.24752	110.80073	204.12817	7.06640	0.2230806	0.21176749	2.7875962	21	3 20.6	18.7
12091	Jesmalmquist	14.3	X	321.40779	96.07117	184.28720	5.86903	0.1056158	0.25666001	2.4522453	21	4 23.3	17.1
12092	1998 HH_{97}	14.0	X	12.89736	211.80828	212.43860	8.19270	0.1464172	0.23908446	2.5709985	21	—	—
12093	Chrimatthews	15.1	X	34.93281	102.48668	187.85288	5.38454	0.0293494	0.26705670	2.3881801	21	9 6.9	17.9
12094	Mazumder	14.7	X	27.29104	2.10256	154.81204	4.45201	0.1040872	0.29468772	2.2364611	21	2 4.3	16.8
12095	Pinel	13.6	X	11.66489	162.13374	345.37938	1.42747	0.0194166	0.20448622	2.8533826	21	1 25.9	17.5
12096	1998 HL_{120}	13.0	X	233.53456	84.29511	133.11735	13.87155	0.1378901	0.24019259	2.5630848	21	—	—
12097	1998 HG_{121}	13.7	X	340.72041	207.69888	134.84404	6.13894	0.1459955	0.26543904	2.3978730	21	8 31.3	15.7
12098	1998 HV_{122}	12.9	X	326.99559	260.57239	96.46853	10.27804	0.2132158	0.17973601	3.1096581	21	8 11.1	16.3
12099	Meigooni	14.7	X	291.98826	343.04586	117.62628	5.74446	0.0547167	0.27554856	2.3388585	21	12 4.8	17.2
12100	Amiens	15.0	X	184.05595	234.42376	9.12743	2.70559	0.0396443	0.23549736	2.5970403	21	—	—
12101	Trujillo	13.6	X	106.66493	142.31889	165.73800	10.26109	0.0933369	0.19103092	2.9858428	21	12 26.1	18.3
12102	Piazzolla	13.8	X	70.09230	28.22573	211.64018	12.21307	0.1306102	0.22170363	2.7036731	21	8 26.7	17.6
12103	1998 KL	14.3	X	42.05874	243.39796	179.82119	5.44670	0.1600577	0.28350777	2.2948770	21	—	—
12104	Chesley	12.6	X	134.57925	174.99272	78.01093	11.14438	0.0251528	0.18879788	3.0093403	21	11 18.2	17.0
12105	1998 KA_{10}	14.1	X	95.11013	247.88735	141.20385	4.74299	0.1658508	0.28531682	2.2851662	21	—	—
12106	Menghuan	15.3	X	316.77543	194.69852	202.38395	5.77468	0.1009235	0.26877380	2.3779977	21	10 8.8	17.6
12107	1998 KU_{46}	14.5	X	181.41922	276.63636	215.33627	5.03390	0.0268990	0.30630457	2.1795511	21	8 17.3	17.1
12108	1998 KJ_{48}	13.7	X	48.22740	152.58848	160.63800	5.07801	0.1675475	0.18204719	3.0832831	21	11 7.2	17.9
12109	1998 KD_{51}	12.5	X	60.37713	113.03564	129.84861	8.80257	0.1469707	0.22018138	2.7161202	21	8 25.7	15.9
12110	1998 KL_{56}	14.3	X	311.90527	261.02161	290.48769	1.43592	0.1077553	0.29357202	2.2421239	21	—	—
12111	Ulm	13.9	X	244.35179	341.63993	250.05226	3.88685	0.0661697	0.24041423	2.5615093	21	—	—
12112	Sprague	12.2	X	83.77041	101.09557	156.98606	22.92365	0.1443598	0.17982689	3.1086104	21	10 12.1	17.0
12113	Hollows	12.7	X	123.78177	237.10504	100.47175	11.71186	0.1081658	0.18899306	3.0072681	21	—	—
12114	1998 QJ_{8}	13.1	X	291.44352	275.70415	140.09086	14.76027	0.1610789	0.17282372	3.1920313	21	9 4.8	17.2
12115	Robertgrimm	12.1	X	96.54374	333.21873	187.41906	17.82074	0.0859789	0.16988991	3.2286750	21	6 14.8	17.1
12116	1999 JA_{34}	12.9	X	11.68774	250.93712	260.23258	8.73562	0.0477869	0.17055027	3.2203354	21	2 1.8	17.4
12117	Meagmessina	14.5	X	305.50495	18.98717	158.21878	3.06829	0.1767132	0.25452847	2.4659171	21	—	—
12118	Mirotsin	14.6	X	285.54196	40.48435	120.15978	6.09545	0.0934754	0.28691236	2.2766864	21	—	—
12119	Memamis	14.6	X	9.16740	109.00398	316.34437	6.63080	0.1104879	0.28315471	2.2967842	21	—	—
12120	1999 NQ_{41}	14.9	X	264.77154	356.82194	20.90381	4.30616	0.0133106	0.31007726	2.1618361	21	7 2.5	17.3
12121	1999 NX_{48}	13.8	X	215.23221	43.54161	166.40972	13.62222	0.1104590	0.24077151	2.5589747	21	12 27.3	17.6
12122	1999 NV_{55}	12.6	X	218.12233	304.70385	245.02348	11.23055	0.0261195	0.19074105	2.9888671	21	12 6.9	16.8
12123	Pazin	14.4	X	235.40687	207.42067	179.85414	2.32127	0.1970997	0.25906877	2.4370214	21	5 18.9	18.2
12124	Hvar	13.9	X	156.38913	174.58713	177.80459	1.96204	0.0745796	0.19974067	2.8984004	21	1 22.6	18.2
12125	Jamesjones	13.5	X	25.81225	233.57722	71.88983	0.21547	0.1965674	0.18060428	3.0996835	21	9 27.7	17.0
12126	1999 RM_{11}	10.1	X	318.52561	304.38212	351.00843	2.04567	0.2095009	0.08271034	5.2171040	21	5 8.7	16.4
12127	Mamiya	13.7	X	255.65456	317.98663	26.84880	3.55817	0.1872629	0.25669019	2.4520531	21	4 14.4	17.5
12128	Palermiti	13.2	X	55.90122	185.20610	177.82701	10.35269	0.0964023	0.18806463	3.0171574	21	—	—
12129	1999 RB_{138}	12.9	X	335.64337	236.55915	41.64808	1.28308	0.1579921	0.17289573	3.1911450	21	5 13.8	16.8
12130	Mousa	14.6	X	58.84996	113.02567	192.47610	5.65848	0.1081523	0.22986984	2.6392552	21	11 9.2	18.2
12131	Echternach	14.4	X	355.08379	198.92849	277.89378	1.00126	0.0254507	0.19903057	2.9052902	21	—	—
12132	Wimfröger	13.9	X	156.22263	355.08669	217.94964	3.02639	0.1373582	0.22749373	2.6576009	21	10 28.4	18.1
12133	Titulaer	13.5	X	292.59892	48.63749	18.13526	5.13758	0.1500556	0.17608062	3.1525478	21	9 21.8	17.6
12134	Hansfriedeman	13.7	X	213.59563	91.17889	12.61870	22.22818	0.0692174	0.17475747	3.1684404	21	8 23.0	18.8
12135	Terlingen	13.0	X	121.00646	258.02824	300.04896	12.22778	0.0912928	0.17524834	3.1625212	21	8 25.5	17.8
12136	Martinryle	13.3	X	89.37032	337.36390	332.34308	12.75095	0.1629497	0.22934621	2.6432709	21	12 24.0	17.6
12137	Williefowler	14.3	X	80.42987	325.80105	341.79287	5.32783	0.0252714	0.22837845	2.6507329	21	11 24.5	17.9
12138	Olinwilson	14.4	X	274.10537	61.69595	214.71985	6.35461	0.1133836	0.25223271	2.4808572	21	2 10.9	18.1
12139	Tomcowling	14.7	X	230.82259	241.47367	323.72636	3.07485	0.1227457	0.27913177	2.3187995	21	—	—
12140	Johnbolton	15.0	X	54.17388	155.95149	2.61495	2.01433	0.1101606	0.25204349	2.4820988	21	4 7.7	17.4
12141	Chushayashi	14.2	X	304.03168	131.22080	341.53523	1.90876	0.0433114	0.22929846	2.6436378	21	12 27.6	17.5
12142	Franklow	14.1	X	276.59390	283.80761	147.22082	4.10641	0.1577756	0.17527141	3.1622437	21	9 3.0	18.2
12143	Harwit	14.4	X	198.35568	182.66188	13.65653	7.21384	0.0484826	0.27733980	2.3287771	21	12 3.1	17.4
12144	Einhart	14.4	X	75.58644	19.70202	54.06210	2.69849	0.0399698	0.20102070	2.8860833	21	1 19.8	18.2
12145	Behaim	15.3	X	30.15708	290.83346	25.94085	4.74726	0.0876860	0.22664414	2.6642382	21	10 11.5	18.6
12146	Ostriker	14.2	X	72.82347	300.86081	358.95367	11.31020	0.1947871	0.22865206	2.6486179	21	11 24.9	18.3
12147	Bramante	14.7	X	110.57991	212.60714	220.63123	3.48488	0.0929183	0.25106532	2.4885416	21	3 2.8	17.9
12148	Caravaggio	14.0	X	342.47394	53.04020	116.08642	3.77113	0.0189421	0.20143974	2.8820794	21	1 15.8	18.0
12149	Begas	13.7	X	8.23527	123.29886	184.44858	12.72013	0.1239213	0.17729620	3.1381215	21	8 19.9	17.6
12150	De Ruyter	12.4	X	284.46460	149.88317	356.88644	10.51490	0.0552917	0.19041420	2.9922865	21	—	—
12151	Oranje–Nassau	14.5	X	131.10016	220.49766	288.84178	1.45713	0.1400156	0.26023786	2.4297172	21	7 16.1	17.9
12152	Aratus	15.5	X	283.14631	52.15652	215.81982	1.76886	0.0193588	0.29425338	2.2386614	21	2 16.6	18.0
12153	Conon	15.5	X	240.04101	272.75324	330.92292	3.63521	0.1282247	0.28989464	2.2610453	21	—	—
12154	Callimachus	13.8	X	102.88688	112.07015	195.39358	9.96745	0.0562622	0.18832779	3.0143461	21	12 18.1	18.4
12155	Hyginus	14.7	X	279.95709	301.51786	115.87987	3.09815	0.2057320	0.26401012	2.4065174	21	8 19.4	17.4
12156	Ubels	14.5	X	33.75988	139.64629	214.72966	1.91175	0.1190682	0.22869402	2.6482939	21	12 9.9	17.9
12157	Können	14.9	X	349.68450	82.86405	187.46372	5.82191	0.0962339	0.26311199	2.4119906	21	5 27.7	17.4
12158	Tape	13.5	X	6.77119	95.74554	333.17105	1.25341	0.0595505	0.18960963	3.0007452	21	—	—
12159	Bettybiegel	14.5	X	86.88918	274.18890	273.84098	1.34669	0.1481972	0.26298311	2.4127786	21	7 17.5	17.4
12160	Karelwakker	14.5	X	332.23128	275.79975	13.20863	4.87295	0.1978542	0.26384416	2.4075264	21	5 6.7	16.6

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
12161	Avienius	15.8	*X*	274.77821	188.70064	223.77570	1.69294	0.2059447	0.26514228	2.3996619	21	8 3.2	18.9
12162	Bilderdijk	14.5	*X*	25.21593	198.11563	187.94169	13.44205	0.1611787	0.22922751	2.6441833	21	—	—
12163	Manilius	14.2	*X*	15.20913	261.83975	161.45020	4.38578	0.0692884	0.23107355	2.6300816	21	—	—
12164	Lowellgreen	14.6	*X*	119.69029	61.31484	132.28700	2.21240	0.0674385	0.30662090	2.1780519	21	8 28.8	17.2
12165	Ringleb	13.1	*X*	325.91796	319.31389	168.73318	9.77883	0.0211752	0.19076545	2.9886122	21	—	—
12166	Oliverherrmann	14.3	*X*	301.16030	329.35554	144.01888	6.59061	0.1833722	0.22912812	2.6449479	21	12 14.6	16.9
12167	Olivermüller	14.2	*X*	9.95311	296.77777	18.31498	9.60285	0.2164433	0.26679316	2.3897525	21	9 29.7	16.0
12168	Polko	12.8	*X*	87.42415	18.10522	300.92607	9.52971	0.0980848	0.18854645	3.0120150	21	12 19.6	17.4
12169	Munsterman	15.1	*X*	9.23948	163.31297	320.75613	4.34698	0.0237677	0.29988224	2.2105595	21	—	—
12170	Vanvollenhoven	14.3	*X*	87.57298	59.23743	247.53664	2.99220	0.2996300	0.18396173	3.0618534	21	12 22.3	19.4
12171	Johannink	15.0	*X*	25.73489	274.10396	310.79206	2.37250	0.0573404	0.21750119	2.7383878	21	5 24.5	18.5
12172	Niekdekort	13.6	*X*	83.85041	225.63070	14.32380	7.60540	0.0715724	0.26712428	2.3877772	21	9 15.3	16.6
12173	Lansbergen	14.0	*X*	170.19342	262.67370	185.40468	3.43146	0.0607325	0.21748413	2.7385310	21	6 4.5	18.1
12174	van het Reve	13.6	*X*	345.44444	189.64407	195.79408	12.95892	0.1099358	0.22473776	2.6792836	21	11 5.8	16.6
12175	Wimhermans	13.3	*X*	0.97478	305.11255	70.80654	2.88196	0.1798121	0.17980802	3.1088279	21	11 14.1	16.6
12176	Hidayat	15.0	*X*	38.57067	194.45681	49.81327	2.03155	0.1437440	0.26527965	2.3988334	21	7 24.3	17.4
12177	Raharto	15.1	*X*	110.42242	94.08325	95.80095	3.31251	0.0822751	0.26519225	2.3993604	21	8 11.3	18.3
12178	Dhani	14.7	*X*	173.52240	16.08721	117.85153	4.49246	0.0251434	0.22034967	2.7147371	21	8 7.8	18.4
12179	Taufiq	13.6	*X*	34.90724	172.75575	149.76701	11.82435	0.2022155	0.18078719	3.0975924	21	11 7.9	17.7
12180	Kistemaker	13.9	*X*	8.25858	169.97363	136.89618	10.34165	0.0950458	0.17687066	3.1431529	21	8 20.4	17.8
12181	1964 VL_1	13.9	*X*	356.65363	357.06212	62.95333	5.42512	0.2560909	0.22611202	2.6684165	21	—	—
12182	Storm	14.9	*X*	339.87961	178.67710	190.59765	1.86425	0.1476893	0.26665578	2.3905732	21	10 10.9	16.9
12183	1975 SU_1	13.3	*X*	140.91290	17.25001	172.35119	1.50816	0.1329829	0.17014045	3.2255046	21	9 10.9	18.5
12184	1975 SB_2	15.1	*X*	191.56290	184.62557	190.09971	7.85940	0.1268500	0.29148429	2.2528172	21	3 19.3	18.3
12185	Gasprinskij	13.9	*X*	292.41554	29.58142	14.50444	5.54598	0.0918988	0.21694710	2.7430485	21	9 4.8	17.3
12186	Mitukurigen	13.7	*X*	103.33526	144.57485	265.36301	0.81176	0.0603912	0.19926278	2.9030327	21	1 28.4	17.5
12187	Lenagoryunova	13.8	*X*	16.49749	195.66489	193.67258	13.28642	0.2389079	0.22670292	2.6637776	21	—	—
12188	Kalaallitnunaat	14.7	*X*	87.72712	214.40082	133.23087	5.23342	0.2304876	0.28269041	2.2992984	21	—	—
12189	Dovgyj	14.5	*X*	151.71265	144.72951	176.37488	5.68267	0.1496680	0.28421281	2.2910801	21	—	—
12190	Sarkisov	13.2	*X*	194.72833	144.35124	204.21832	8.99039	0.0593415	0.24123937	2.5556650	21	2 18.8	17.0
12191	Vorontsova	13.3	*X*	114.20327	275.12116	56.10386	5.07589	0.2726216	0.23543528	2.5974968	21	—	—
12192	1978 VD_5	14.2	*X*	274.37395	290.18004	182.51235	1.26571	0.1205193	0.18184319	3.0855886	21	10 28.6	18.3
12193	1979 EL	12.2	*X*	57.64522	320.94146	90.83218	14.82036	0.1592437	0.23048473	2.6345591	21	—	—
12194	1979 KO_1	13.8	*X*	359.52342	5.45407	267.67949	7.28712	0.2293618	0.25907529	2.4369805	21	6 15.1	15.0
12195	1979 MM_4	16.0	*X*	356.92171	56.06779	202.53007	2.80109	0.1676129	0.30333915	2.1937329	21	5 12.6	17.4
12196	1979 MM_8	14.6	*X*	312.00079	154.73955	178.24218	3.65186	0.1249403	0.25700634	2.4500418	21	6 20.3	17.3
12197	Jan–Otto	14.1	*X*	128.12588	239.48105	181.43387	5.33197	0.1962816	0.24112389	2.5564809	21	3 25.7	17.9
12198	1980 PJ_1	14.6	*X*	323.93982	130.32493	278.62205	4.54762	0.2408230	0.31407698	2.1434432	21	11 26.6	15.2
12199	Sohlman	13.6	*X*	291.37970	149.39188	224.54931	6.49309	0.1102440	0.26177253	2.4202116	21	7 18.1	16.5
12200	1981 EM_7	13.5	*X*	149.83584	73.96699	221.77387	5.80405	0.2114967	0.23724867	2.5842441	21	—	—
12201	1981 ED_{12}	14.5	*X*	48.11938	340.78765	201.14401	11.43405	0.0794479	0.24811867	2.5082053	21	4 30.2	17.3
12202	1981 EM_{13}	15.8	*X*	85.43225	311.36362	232.78363	5.00541	0.0810099	0.29948701	2.2125039	21	6 28.4	18.2
12203	1981 EO_{19}	14.2	*X*	23.41372	260.62797	181.15026	8.76170	0.0715097	0.19139716	2.9820326	21	—	—
12204	1981 EK_{26}	15.1	*X*	253.98533	106.44329	163.22357	2.88203	0.1206906	0.24269737	2.5454193	21	1 15.6	19.1
12205	1981 EZ_{26}	15.1	*X*	26.69282	272.11602	260.22707	1.45179	0.0760022	0.24592319	2.5231112	21	3 9.9	17.8
12206	1981 EG_{27}	14.8	*X*	261.46872	269.34811	313.74589	2.27690	0.0590502	0.19153060	2.9806474	21	—	—
12207	1981 EU_{28}	14.3	*X*	279.23950	19.86600	296.65937	4.10985	0.1940843	0.29660391	2.2268184	21	3 26.0	17.6
12208	1981 EF_{35}	15.5	*X*	131.14701	272.02461	165.13894	3.44219	0.0778554	0.24745840	2.5126649	21	4 4.3	18.9
12209	1981 EF_{37}	13.1	*X*	219.42850	296.45868	1.71696	15.15937	0.1232604	0.24237903	2.5476476	21	1 22.0	17.3
12210	1981 EA_{42}	15.7	*X*	241.95258	219.05563	173.50272	7.59600	0.1076873	0.30048309	2.2076117	21	6 8.9	18.7
12211	Arnoschmidt	12.8	*X*	58.79633	260.70608	35.68528	15.22503	0.1581724	0.17899502	3.1182343	21	10 27.6	17.1
12212	1981 QR_2	14.8	*X*	72.40085	323.31638	346.25346	3.69254	0.2371950	0.27609675	2.3357617	21	12 20.9	18.5
12213	1981 QN_3	13.8	*X*	334.61492	200.77159	138.86841	1.98390	0.1955253	0.17173408	3.2055193	21	7 31.9	17.3
12214	Miroshnikov	11.8	*X*	13.71747	32.02111	254.57276	14.38419	0.1589307	0.17187659	3.2037472	21	7 30.9	15.8
12215	1981 US_{22}	14.5	*X*	160.85130	288.79855	76.20424	6.53462	0.1533955	0.28240462	2.3008494	21	2 9.1	17.8
12216	1981 WF_9	14.7	*X*	76.85453	142.06528	206.12851	6.24341	0.1347560	0.27565860	2.3382360	21	—	—
12217	1982 JD_2	15.0	*X*	102.96403	95.40462	106.94361	4.08519	0.0682304	0.30736129	2.1745527	21	8 20.1	17.5
12218	Fleischer	13.5	*X*	248.46817	290.47601	108.21665	4.86546	0.1411788	0.29958499	2.2120215	21	6 21.1	16.4
12219	Grigor′ev	14.3	*X*	266.42162	324.01795	343.38697	3.30219	0.1752067	0.29553623	2.2321784	21	3 4.9	17.6
12220	Semenchur	14.5	*X*	166.73253	84.70487	309.05705	3.19137	0.1482562	0.29176242	2.2513852	21	3 19.1	17.7
12221	Ogatakoan	13.9	*X*	126.41248	213.68802	106.59897	1.98452	0.0852251	0.23277553	2.6172458	21	—	—
12222	Perotto	13.7	*X*	12.43265	209.77821	254.03973	10.78582	0.1847172	0.23257683	2.6187362	21	—	—
12223	Hoskin	13.3	*X*	11.32624	231.30485	191.66677	10.28250	0.1090724	0.18628008	3.0363962	21	—	—
12224	Jimcornell	13.7	*X*	176.86130	138.05107	196.57561	1.61411	0.0499181	0.19822644	2.9131421	21	1 21.9	18.0
12225	Yanfernández	14.2	*X*	4.27426	116.41434	153.66283	4.76753	0.1941581	0.29937882	2.2130370	21	6 22.4	15.5
12226	Caseylisse	14.7	*X*	115.60231	5.26192	25.63905	4.98131	0.1603464	0.28530423	2.2852335	21	1 17.8	17.2
12227	Penney	14.8	*X*	167.82572	83.11493	275.72468	5.64468	0.1900793	0.28761697	2.2729666	21	2 7.0	18.2
12228	1985 TZ_3	14.3	*X*	209.48146	344.46646	306.66098	5.33711	0.1729651	0.28681182	2.2772184	21	—	—
12229	Paulsson	13.7	*X*	269.46647	265.58721	39.84771	4.59882	0.1557418	0.29177187	2.2513366	21	3 9.9	16.8
12230	1986 QN	13.7	*X*	143.46965	241.03969	155.08172	4.72155	0.2483839	0.24139771	2.5545473	21	3 15.8	17.8
12231	1986 QQ_1	14.2	*X*	162.63691	20.89293	27.76801	2.81044	0.2184523	0.24361932	2.5389934	21	4 13.7	18.4
12232	1986 QZ_2	13.4	*X*	228.26224	248.71944	10.73772	9.62044	0.1676549	0.23919537	2.5702037	21	—	—
12233	1986 QF_3	14.3	*X*	159.20881	261.66963	117.91524	4.95776	0.2495019	0.24080835	2.5587136	21	3 10.5	18.5
12234	Shkuratov	13.3	*X*	121.01730	208.74653	144.21924	12.36617	0.2007188	0.23620330	2.5918632	21	—	—
12235	Imranakperov	12.1	*X*	32.27745	82.22710	264.95546	14.64761	0.1075234	0.17219025	3.1998554	21	11 14.4	16.4
12236	1987 DD_6	14.8	*X*	258.38854	42.50107	155.00063	4.15697	0.0925482	0.28153876	2.3055644	21	—	—
12237	Coughlin	14.0	*X*	325.81696	14.06941	169.83344	23.43171	0.2008252	0.28393393	2.2925801	21	—	—
12238	Actor	10.9	*X*	345.84348	177.74408	227.56774	21.08960	0.1248225	0.08376153	5.1733632	21	11 2.1	17.1
12239	Carolinakou	13.9	*X*	89.21509	253.13795	219.11212	5.47269	0.1643965	0.24122226	2.5557859	21	4 8.0	16.9
12240	Droste–Hülshoff	15.4	*X*	17.92537	255.54300	133.26379	3.03964	0.2198383	0.27395176	2.3479381	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
12241	Lefort	15.5	X	95.04690	244.68339	89.80861	1.69624	0.2306589	0.27739927	2.3284442	21	—	—
12242	Koon	10.8	X	320.79635	93.22311	222.65324	29.77538	0.0682593	0.08541418	5.1064144	21	6 17.6	17.6
12243	1988 RD_1	12.9	X	110.64111	41.12685	318.14839	9.71157	0.1014180	0.18960762	3.0007664	21	—	—
12244	Werfel	13.2	X	49.77320	163.49708	188.78643	8.99731	0.1000665	0.18273728	3.0755157	21	12 15.7	17.6
12245	1988 RM_7	14.5	X	92.61484	5.45277	296.48023	1.36076	0.2015663	0.18623486	3.0368877	21	12 13.6	19.3
12246	Pliska	13.8	X	95.57203	186.87556	181.45419	5.99700	0.1156819	0.27948566	2.3168417	21	—	—
12247	1988 RO_{11}	14.1	X	48.83811	0.76454	21.76763	1.26978	0.1762006	0.18602005	3.0392252	21	—	—
12248	1988 RX_{12}	13.1	X	89.36903	166.36691	194.09516	9.79358	0.1022177	0.18819089	3.0158077	21	—	—
12249	1988 SH_2	12.7	X	132.30070	222.82860	108.67502	11.35945	0.1119463	0.18984661	2.9982475	21	—	—
12250	1988 TT	13.1	X	134.61705	336.62488	3.92849	10.79496	0.0928094	0.18899776	3.0072182	21	—	—
12251	1988 TO_1	13.8	X	27.59085	314.39234	102.90027	2.54525	0.2434479	0.18458882	3.0549149	21	—	—
12252	Gwangju	13.1	X	329.43684	245.60030	175.64454	12.31018	0.2245796	0.17865371	3.1222046	21	11 14.7	16.4
12253	1988 VG_4	12.6	X	287.61660	142.40639	273.13358	6.17702	0.1493669	0.17371823	3.1810643	21	8 26.9	16.9
12254	1988 XJ_1	12.8	X	343.20954	310.93422	73.16282	13.61201	0.0376084	0.17688947	3.1429301	21	10 25.4	17.2
12255	1988 XR_1	13.8	X	333.24610	340.34670	81.91130	7.28213	0.1045970	0.27017337	2.3697781	21	12 15.9	16.0
12256	1989 CJ_8	13.8	X	85.82075	66.67741	144.91631	8.65262	0.1980392	0.25458068	2.4655800	21	8 25.1	17.1
12257	Lassine	14.0	X	316.76390	28.66035	204.44932	13.50623	0.1260935	0.24358515	2.5392308	21	2 4.4	17.7
12258	Oscarwilde	14.5	X	226.92607	347.57638	251.79051	2.81980	0.1407578	0.23616625	2.5921343	21	—	—
12259	Szukalski	14.4	X	12.98360	102.61381	158.65963	4.17877	0.1606542	0.30315630	2.1946149	21	6 28.2	15.8
12260	1989 SP_{11}	13.4	X	106.86549	57.67567	304.81976	0.85396	0.1187253	0.19542528	2.9409133	21	—	—
12261	Ledouanier	15.2	X	275.30269	116.53518	163.79124	5.93198	0.1573153	0.29617217	2.2289820	21	2 7.7	18.3
12262	Nishio	13.2	X	294.35234	190.04591	217.61016	5.44069	0.1380483	0.21261765	2.7801603	21	9 1.2	16.8
12263	1989 YA_4	14.6	X	37.52672	254.19095	259.09167	0.33134	0.1402509	0.28720784	2.2751246	21	2 20.3	16.3
12264	1990 CD	13.9	X	297.82849	319.99544	287.11948	5.56616	0.1065481	0.28576551	2.2827736	21	1 28.0	16.7
12265	1990 FG	13.9	X	127.48520	2.63616	356.94238	25.73647	0.0304087	0.37310301	1.9109539	21	—	—
12266	1990 FL	14.2	X	158.07760	47.24094	161.79023	24.19293	0.1916274	0.26765417	2.3846247	21	11 2.9	18.6
12267	Denneau	15.9	X	319.53137	255.87598	240.08590	19.14621	0.0706729	0.36805521	1.9283864	21	—	—
12268	1990 OY_1	13.3	X	167.43016	210.22962	72.81566	5.80819	0.1752706	0.23556883	2.5965149	21	—	—
12269	1990 QR	13.2	X	130.66145	123.93413	168.71910	13.55503	0.1752148	0.23271204	2.6177217	21	—	—
12270	Bozar	14.9	X	79.11187	202.39478	145.55814	3.72777	0.1568361	0.23124079	2.6288134	21	—	—
12271	1990 RC_2	13.8	X	292.32385	165.45442	198.77159	4.31093	0.0528894	0.21869929	2.7283775	21	7 14.9	17.5
12272	Geddylee	13.4	X	7.90644	95.51451	301.27820	11.67604	0.1718004	0.22653834	2.6650677	21	—	—
12273	1990 TS_4	13.4	X	58.83029	298.34451	101.14672	10.01918	0.0626505	0.23034505	2.6356240	21	—	—
12274	1990 UJ_1	13.5	X	336.47833	198.18199	226.08453	13.05692	0.1601012	0.22488719	2.6780966	21	12 14.1	16.3
12275	Marcelgoffin	12.9	X	246.60264	314.23704	97.70923	10.46111	0.1538753	0.21461252	2.7629054	21	7 6.0	16.9
12276	IJzer	13.5	X	9.12366	230.58865	152.88432	7.02939	0.1424677	0.22397225	2.6853851	21	12 14.8	16.7
12277	Tajimasatonokai	13.3	X	12.27859	1.33978	78.84513	14.63354	0.1353953	0.22770801	2.6559334	21	—	—
12278	Kisohinoki	13.5	X	342.49071	218.66717	215.11008	6.59678	0.1678760	0.22439824	2.6819855	21	—	—
12279	Laon	12.7	X	86.85364	126.16085	88.24153	10.25139	0.0904609	0.21333328	2.7739394	21	8 15.5	16.7
12280	Reims	13.4	X	304.66018	222.14100	157.55933	3.04891	0.0850772	0.21658998	2.7460629	21	8 19.6	16.8
12281	Chaumont	12.8	X	76.39086	142.62885	119.04843	6.35499	0.0152609	0.21721596	2.7407845	21	9 22.3	16.6
12282	Crombecq	13.1	X	222.77838	66.01946	153.52381	8.12738	0.2525887	0.21970587	2.7200378	21	12 26.2	17.4
12283	1991 EC	13.3	X	90.44708	129.24333	2.05923	7.47910	0.2481619	0.20136478	2.8827946	21	5 20.3	17.5
12284	Pohl	13.1	X	87.38908	34.61243	186.94917	14.69746	0.1987787	0.17324209	3.1868903	21	8 31.9	18.0
12285	1991 FN_2	13.7	X	330.74069	335.60557	157.46857	3.81779	0.1017123	0.18987734	2.9979241	21	—	—
12286	Poiseuille	14.9	X	318.13813	197.38158	58.93309	2.07629	0.0641659	0.29412365	2.2393196	21	3 16.1	17.5
12287	Langres	13.9	X	31.78002	72.09623	212.79581	4.39029	0.1372535	0.17258734	3.1949453	21	8 30.4	17.9
12288	Verdun	14.3	X	203.23713	44.81696	26.25702	7.18280	0.1117311	0.30090744	2.2055357	21	6 15.9	17.4
12289	Carnot	14.3	X	173.48198	81.78969	328.18488	2.38906	0.0936596	0.29565401	2.2315855	21	4 13.2	17.4
12290	1991 LZ	14.3	X	6.89752	48.84366	202.56681	10.86730	0.2352695	0.26267952	2.4146373	21	5 28.8	15.9
12291	Gohnaumann	12.7	X	15.51788	215.93074	89.95053	7.13647	0.0730828	0.16946959	3.2340113	21	8 30.8	17.0
12292	Dalton	13.4	X	191.74214	116.41873	71.43982	6.19657	0.0989350	0.17723983	3.1387869	21	10 29.8	18.3
12293	1991 NV_1	13.7	X	347.13828	135.49342	252.87345	6.17736	0.1207524	0.26802849	2.3824040	21	11 21.8	16.1
12294	Avogadro	14.9	X	83.89416	278.90750	14.60824	1.97156	0.1198368	0.27009141	2.3702575	21	11 29.8	18.3
12295	Tasso	14.1	X	280.30575	294.60546	110.77956	3.29760	0.2114978	0.26251608	2.4156394	21	7 31.9	17.0
12296	1991 PL_{13}	14.7	X	295.10455	47.16044	267.44195	1.63315	0.1790286	0.25691199	2.4506416	21	4 19.2	17.8
12297	1991 PT_{14}	14.4	X	187.84181	53.61669	141.69331	2.82988	0.0495279	0.26977537	2.3721084	21	11 19.5	17.6
12298	Brecht	14.6	X	300.41243	69.51366	306.38157	8.18146	0.2406643	0.26123562	2.4235266	21	7 15.5	17.0
12299	1991 PV_{17}	14.5	X	336.66455	317.71182	74.52044	3.02317	0.1935190	0.26530566	2.3986767	21	11 11.8	16.3
12300	1991 RX_{10}	14.0	X	322.00736	345.62228	1.26743	12.76769	0.1018198	0.25927905	2.4357036	21	8 7.5	16.8
12301	Eötvös	15.0	X	15.33141	17.73721	23.69487	3.40487	0.2336861	0.27005378	2.3704777	21	—	—
12302	1991 RV_{17}	14.9	X	324.23793	17.12540	326.04523	2.02709	0.2176435	0.26082825	2.4260494	21	7 15.7	16.6
12303	1991 RB_{24}	14.4	X	48.23034	143.24813	141.85738	4.02100	0.2134896	0.26508847	2.3999866	21	10 21.5	17.4
12304	1991 SR_1	13.2	X	26.72895	157.79370	208.08506	12.77478	0.1638134	0.23412655	2.6071676	21	12 22.2	16.7
12305	1991 TE_1	13.6	X	28.74460	21.86928	89.33164	14.73859	0.1174959	0.24063471	2.5599444	21	—	—
12306	Pebronstein	14.1	X	74.07129	90.10060	119.69939	3.71064	0.1216060	0.25762711	2.4461045	21	7 26.5	16.9
12307	1991 UA	12.9	X	270.82944	27.53541	352.01019	2.34570	0.2524344	0.12404228	3.9818927	21	6 10.7	18.8
12308	1991 VB_5	13.5	X	129.81389	187.81114	194.74954	14.78736	0.1207380	0.24233364	2.5479657	21	1 24.2	17.3
12309	Tommygrav	14.4	X	280.25803	109.97805	321.17481	0.71917	0.0294088	0.21978457	2.7193885	21	9 30.7	18.0
12310	Londontario	14.3	X	321.41967	225.30446	141.32867	1.70348	0.1878571	0.21797671	2.7344039	21	8 17.6	16.9
12311	Ingemyr	14.4	X	9.03751	3.96357	52.24638	5.41115	0.1946282	0.22828255	2.6514752	21	—	—
12312	Väte	14.2	X	273.88244	284.89921	110.13714	7.04342	0.1273550	0.21676816	2.7445579	21	7 20.6	17.9
12313	1992 EX_{10}	14.6	X	37.61596	206.22297	355.62399	6.00004	0.0565162	0.20874009	2.8144842	21	5 9.9	18.2
12314	1992 EE_{14}	14.5	X	106.02695	356.14795	199.93574	3.53219	0.0379073	0.21410365	2.7672815	21	8 4.0	18.3
12315	1992 FA_2	12.9	X	289.14802	346.86422	73.82333	6.31239	0.0466038	0.21743107	2.7389766	21	9 30.4	16.5
12316	1992 HG	12.2	X	54.94806	90.35588	215.84382	7.98294	0.1247616	0.18158145	3.0885531	21	10 30.3	16.5
12317	Madicampbell	13.6	X	254.05131	201.01858	213.82554	3.77695	0.0624313	0.21123050	2.7923186	21	7 29.4	17.5
12318	Kästner	13.4	X	230.65448	71.19663	137.12871	12.26936	0.2116054	0.19020426	2.9944878	21	12 21.2	18.1
12319	1992 PC	15.0	X	281.60143	158.59269	196.61878	4.78333	0.2162568	0.30217520	2.1993626	21	5 21.1	17.8
12320	Loschmidt	15.3	X	55.32915	321.74112	305.29153	4.16579	0.1018799	0.30799918	2.1715492	21	9 18.9	17.7

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
12321	Zurakowski	15.0	*X*	255.63362	144.41148	171.83003	4.89938	0.2164431	0.29699813	2.2248474	21	3 2.6	18.5
12322	1992 *QW*	15.5	*X*	193.85585	339.94676	5.42521	5.93611	0.2041370	0.29258754	2.2471505	21	2 17.7	19.0
12323	Haeckel	14.2	*X*	42.00165	216.80006	22.48131	4.18628	0.1531460	0.30195497	2.2004319	21	7 26.9	16.1
12324	Van Rompaey	15.1	*X*	199.51365	104.19619	204.86953	2.34628	0.1407418	0.28987683	2.2611379	21	1 3.6	18.5
12325	Bogota	14.4	*X*	104.56055	76.37628	35.11401	4.75323	0.0809344	0.29430281	2.2384107	21	4 10.7	16.8
12326	Shirasaki	14.6	*X*	151.00115	17.50062	2.91811	5.83566	0.1869444	0.28940506	2.2635945	21	2 20.5	17.7
12327	Terbrüggen	15.5	*X*	32.31365	6.13470	58.71846	1.22178	0.1105692	0.28201268	2.3029807	21	—	—
12328	1992 SK_{13}	14.7	*X*	139.86482	60.04136	307.70788	4.56401	0.1806802	0.28715903	2.2753824	21	1 20.4	17.5
12329	Liebermann	13.9	*X*	334.50241	55.85459	262.77730	4.32115	0.1598207	0.26643200	2.3919116	21	7 5.8	15.8
12330	1992 UX_2	14.6	*X*	220.41328	125.08474	211.12071	5.97123	0.2208082	0.29184056	2.2509833	21	2 24.7	18.5
12331	1992 UH_6	13.9	*X*	274.50150	292.73808	64.57955	6.23849	0.1952739	0.29805125	2.2196036	21	5 18.1	16.6
12332	1992 UJ_6	14.4	*X*	118.89649	185.71019	205.29193	6.56132	0.1968068	0.28530254	2.2852425	21	1 25.2	17.2
12333	1992 WJ_2	13.9	*X*	98.36923	273.64571	51.24932	7.12531	0.1479452	0.27758441	2.3274088	21	—	—
12334	1992 WD_3	14.1	*X*	140.86206	279.05107	148.65654	5.44018	0.1393691	0.28914526	2.2649502	21	4 7.8	17.1
12335	Tatsukushi	14.0	*X*	254.60847	43.84507	173.84317	5.74918	0.0708590	0.28015021	2.3131764	21	—	—
12336	1992 WO_3	13.5	*X*	39.21245	237.91146	221.05014	20.83406	0.2622328	0.28071283	2.3100845	21	—	—
12337	1992 WV_3	14.0	*X*	29.19657	54.44535	12.36298	5.38807	0.1028563	0.27825566	2.3236642	21	—	—
12338	1992 *XE*	13.8	*X*	133.90521	6.32822	99.76084	6.21246	0.1051491	0.29077575	2.2564754	21	5 17.9	16.7
12339	Carloo	14.1	*X*	42.57136	260.70851	302.20432	3.78758	0.1111060	0.28978373	2.2616221	21	5 19.3	16.1
12340	Stalle	13.8	*X*	322.10480	289.09349	90.05472	7.55508	0.1325805	0.26672496	2.3901598	21	9 24.3	16.1
12341	Calevoet	14.9	*X*	359.29904	267.72073	118.05739	3.17902	0.2221038	0.26930183	2.3748882	21	12 25.9	17.0
12342	Kudohmichiko	14.6	*X*	331.72775	16.82127	74.56478	4.09769	0.1555705	0.27143528	2.3624277	21	—	—
12343	Martinbeech	15.2	*X*	200.21614	57.03990	199.60917	3.19306	0.2461820	0.23607747	2.5927841	21	—	—
12344	1993 FB_1	13.2	*X*	285.38104	162.62912	65.65251	8.65717	0.1483854	0.23937192	2.5689397	21	—	—
12345	1993 FT_8	14.5	*X*	244.95012	313.84657	106.40574	3.34999	0.1612314	0.25713744	2.4492090	21	7 14.6	18.1
12346	1993 FK_{25}	14.5	*X*	225.94323	187.57504	224.77980	2.12076	0.1793736	0.25403717	2.4690954	21	6 12.4	18.4
12347	1993 FW_{37}	14.0	*X*	269.27098	0.82141	183.74621	11.77016	0.1105994	0.23458850	2.6037437	21	—	—
12348	1993 FX_{40}	14.6	*X*	137.41799	71.56181	181.71436	13.65437	0.0952923	0.22791385	2.6543340	21	11 29.6	18.9
12349	1993 *GO*	13.5	*X*	1.91335	145.89281	57.52886	13.61362	0.1865208	0.24399395	2.5363938	21	3 12.4	16.2
12350	Feuchtwanger	13.8	*X*	318.56459	182.79130	42.96643	6.30206	0.1606881	0.24244339	2.5471967	21	1 29.6	17.2
12351	1993 *JD*	13.1	*X*	265.06314	1.38457	223.41163	12.49869	0.1119278	0.23536391	2.5980218	21	—	—
12352	Jepejacobsen	11.9	*X*	335.41602	325.77558	116.71285	15.93044	0.1125817	0.18706385	3.0279089	21	12 24.9	15.6
12353	Màrquez	13.5	*X*	261.34767	100.85967	149.11684	2.48927	0.0145207	0.19743597	2.9209124	21	1 16.6	17.4
12354	Hemmerechts	13.2	*X*	306.37537	307.24413	161.93135	10.00986	0.0540664	0.18363040	3.0655354	21	12 15.7	17.4
12355	Coelho	13.6	*X*	237.31082	218.07315	189.48085	1.71085	0.0712165	0.20582829	2.8409658	21	6 28.9	17.6
12356	Carlscheele	13.3	*X*	167.49487	196.45588	192.17174	1.61017	0.1041762	0.19598636	2.9352976	21	3 21.9	17.8
12357	Toyako	12.9	*X*	351.86710	211.79503	172.72389	11.25156	0.0850711	0.17762637	3.1342316	21	11 5.5	17.0
12358	Azzurra	13.7	*X*	154.66185	338.26748	207.52854	7.59674	0.1117161	0.21108514	2.7936003	21	9 20.2	18.1
12359	Cajigal	12.9	*X*	295.74757	222.97245	174.71724	0.94737	0.1520745	0.17136180	3.2101601	21	8 17.7	17.0
12360	Unilandes	13.4	*X*	302.33127	318.92422	62.82702	2.37869	0.1921839	0.17119408	3.2122565	21	8 1.6	17.5
12361	1993 *TB*	14.0	*X*	15.64756	263.81620	101.10708	2.68491	0.1799964	0.17860104	3.1228184	21	11 24.9	17.6
12362	Mumuryk	13.0	*X*	21.40382	168.24932	196.36745	13.96284	0.0930360	0.17777305	3.1325074	21	11 23.0	17.2
12363	Marinmarais	13.1	*X*	104.75680	138.07267	99.68801	2.60982	0.1353839	0.17559218	3.1583913	21	10 5.3	17.8
12364	Asadagouryu	15.0	*X*	281.45798	199.86486	204.25712	2.16167	0.0513210	0.30907623	2.1665014	21	8 30.6	17.3
12365	Yoshitoki	12.9	*X*	234.32803	74.15225	100.06125	14.83074	0.0333397	0.17458972	3.1704696	21	12 5.5	17.5
12366	Luisapla	14.3	*X*	278.39359	9.36834	219.95411	3.42543	0.1134203	0.28539018	2.2847746	21	—	—
12367	Ourinhos	14.6	*X*	125.26878	272.30234	124.31984	2.30844	0.1412880	0.29206143	2.2498483	21	2 2.6	17.2
12368	Mutsaers	14.5	*X*	143.15118	204.35770	39.44833	1.98315	0.2069000	0.27313686	2.3526058	21	11 28.0	18.4
12369	Pirandello	14.1	*X*	278.33838	83.43610	121.68264	4.96542	0.0893001	0.28393008	2.2926008	21	—	—
12370	Kageyasu	14.5	*X*	290.58534	25.83209	174.92738	2.41639	0.1292962	0.28236171	2.3010825	21	—	—
12371	1994 GL_9	14.6	*X*	327.72406	333.16837	224.62173	3.51062	0.1011411	0.28571819	2.2830256	21	1 1.4	17.4
12372	Kagesuke	14.5	*X*	4.38103	18.34931	166.51116	4.21391	0.1031856	0.28680126	2.2772743	21	2 7.0	16.6
12373	Lancearmstrong	14.2	*X*	353.57974	150.10694	118.49350	6.75223	0.1144789	0.25699365	2.4501225	21	5 31.9	16.7
12374	Rakhat	13.8	*X*	175.79026	201.96241	123.39906	8.98526	0.3062111	0.24173434	2.5521752	21	1 19.9	18.3
12375	1994 NO_1	14.1	*X*	18.06707	338.36715	260.77572	5.00299	0.1765514	0.28990321	2.2610007	21	6 1.9	15.5
12376	Cochabamba	13.4	*X*	249.35617	91.74091	131.89761	6.60982	0.2419290	0.23944418	2.5684228	21	—	—
12377	1994 *PP*	12.9	*X*	285.81356	53.57379	317.72029	33.40752	0.2981949	0.21468479	2.7622853	21	6 11.7	17.6
12378	1994 PK_1	14.2	*X*	4.45864	264.47446	69.54404	16.81790	0.3333386	0.22173360	2.7034295	21	10 31.6	16.5
12379	Thulin	14.1	*X*	151.10467	242.66634	310.83059	3.41882	0.0723626	0.22148045	2.7054890	21	9 26.4	18.1
12380	Sciascia	13.8	*X*	207.34197	322.33231	171.19739	5.35697	0.0623350	0.21994556	2.7180613	21	9 15.0	17.5
12381	Hugoclaus	13.5	*X*	134.43118	318.35378	185.39288	9.06521	0.0998132	0.21380809	2.7698312	21	7 7.4	17.8
12382	Niagara Falls	14.7	*X*	340.59084	165.40053	130.37398	1.00040	0.0423476	0.21207274	2.7849206	21	6 23.6	18.3
12383	Eboshi	13.4	*X*	8.80493	294.47876	55.95183	8.27973	0.1325030	0.18268224	3.0761334	21	10 23.1	17.1
12384	Luigimartella	12.9	*X*	107.21213	347.50541	322.46579	9.87303	0.0952456	0.19097559	2.9864195	21	12 30.1	17.6
12385	1994 *UO*	14.0	*X*	170.64208	240.66244	146.42556	2.76038	0.0850388	0.20008930	2.8950327	21	3 22.7	18.3
12386	Nikolova	14.0	*X*	186.47954	1.79453	53.36332	3.13243	0.1479255	0.20612474	2.8382412	21	5 12.6	18.6
12387	Tomokofujiwara	12.7	*X*	257.57793	234.15635	231.21308	16.98496	0.0626211	0.21760287	2.7375347	21	10 6.6	16.6
12388	Kikunokai	13.5	*X*	112.03187	330.58388	74.13201	3.05628	0.1188352	0.19658702	2.9293155	21	2 12.0	17.6
12389	1994 *WU*	12.7	*X*	211.29483	300.98927	253.59253	13.09722	0.1638959	0.18199147	3.0839124	21	11 18.9	17.6
12390	1994 WB_1	15.0	*X*	118.62064	88.23388	69.66968	24.80857	0.1515363	0.39001103	1.8553170	21	7 17.5	17.6
12391	Ecoadachi	13.0	*X*	346.85416	266.13978	96.70455	9.11544	0.2162543	0.21638454	2.7478007	21	10 13.8	15.6
12392	1994 WR_2	13.9	*X*	294.67576	319.37787	69.67830	9.01313	0.2304542	0.21253674	2.7808658	21	7 27.1	17.4
12393	1994 YC_1	13.5	*X*	284.42582	79.36320	68.84202	0.40527	0.1159933	0.18234404	3.0799358	21	12 26.0	17.3
12394	1995 *BQ*	14.1	*X*	274.91091	312.15547	128.15666	1.27530	0.2186498	0.17218096	3.1999705	21	9 3.3	18.3
12395	Richnelson	12.3	*X*	103.07776	14.98850	232.24459	21.09213	0.0518070	0.16948570	3.2338064	21	9 29.0	17.3
12396	Amyphillips	13.0	*X*	251.21062	79.14042	71.69358	20.10754	0.3132591	0.17730020	3.1380743	21	10 28.6	18.1
12397	Peterbrown	12.7	*X*	250.96352	134.92031	35.38268	8.64867	0.1126340	0.17497775	3.1657807	21	12 6.6	17.2
12398	Pickhardt	15.9	*X*	61.56295	171.83136	78.17678	1.05259	0.1293378	0.30982216	2.1630226	21	9 10.6	18.2
12399	Bartolini	15.1	*X*	172.15640	341.37823	322.91502	1.28772	0.0524649	0.28347790	2.2950382	21	—	—
12400	Katumaru	14.4	*X*	80.28856	105.82901	224.73100	5.83891	0.1695284	0.27507873	2.3415209	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
12401 Tucholsky	15.0	*X*	16.16215	152.30584	134.18883	1.93390	0.1778866	0.26619012	2.3933604	21	8 20.1	16.9
12402 1995 *PK*	14.4	*X*	241.52001	235.48977	132.15201	5.20710	0.1294268	0.29649064	2.2273855	21	5 3.9	17.6
12403 1995 QD_3	14.0	*X*	266.20352	110.37550	315.49152	1.96579	0.1918542	0.26212380	2.4180489	21	8 13.2	17.2
12404 1995 QW_3	14.8	*X*	122.45639	88.86376	245.34610	20.99563	0.1520841	0.27986321	2.3147576	21	—	—
12405 Nespoli	14.9	*X*	53.62010	58.83001	248.51366	5.19449	0.1133043	0.26969038	2.3726067	21	11 10.6	17.9
12406 Zvíkov	14.8	*X*	63.32793	121.49876	286.63814	2.69485	0.1471289	0.27760339	2.3273027	21	—	—
12407 Riccardi	14.5	*X*	294.11549	223.56523	161.18489	6.72828	0.1263925	0.26429416	2.4047928	21	8 5.8	17.1
12408 Fujioka	15.0	*X*	0.23287	266.88963	81.45751	7.78528	0.1511975	0.26570887	2.3962494	21	10 24.5	17.3
12409 Bukovanská	15.9	*X*	342.61049	53.25018	247.79191	0.62067	0.1810161	0.26089493	2.4256359	21	6 22.8	17.9
12410 Donald Duck	15.2	*X*	196.08576	140.75040	345.76836	8.12443	0.1618242	0.26021516	2.4298585	21	8 21.8	19.0
12411 Tannokayo	13.8	*X*	5.45931	186.63992	276.01917	5.71077	0.0791965	0.27791388	2.3255690	21	—	—
12412 Muchisachie	14.1	*X*	25.26753	214.20504	153.10063	6.91874	0.1500243	0.27082730	2.3659619	21	12 29.5	17.0
12413 Johnnyweir	14.9	*X*	319.63836	292.15867	40.21414	3.85609	0.1900306	0.26020569	2.4299174	21	6 22.3	17.3
12414 Bure	14.7	*X*	327.15150	267.87349	66.13818	2.26109	0.1997070	0.26116849	2.4239418	21	7 9.9	16.7
12415 Wakatatakayo	14.1	*X*	205.23015	74.44950	247.75919	4.70349	0.1651707	0.28573602	2.2829307	21	1 26.2	17.6
12416 1995 *TS*	14.8	*X*	310.33208	1.91612	356.88179	0.59596	0.1856954	0.26072896	2.4266652	21	7 16.9	17.0
12417 1995 TC_8	14.0	*X*	197.45760	234.81517	116.70844	5.43079	0.1613341	0.28720108	2.2751603	21	2 27.4	17.4
12418 Tongling	13.8	*X*	204.69183	219.96038	30.06718	11.64861	0.1297127	0.19217052	2.9740268	21	—	—
12419 1995 UP_4	13.7	*X*	314.77920	330.53565	62.78242	7.94683	0.1363724	0.26240132	2.4163437	21	9 30.5	16.1
12420 1995 UT_4	13.6	*X*	62.61786	52.18550	52.17591	14.22178	0.1413555	0.24130048	2.5552335	21	2 17.2	16.7
12421 Zhenya	14.2	*X*	293.58737	288.41183	45.92049	5.55693	0.1222514	0.25707859	2.4495827	21	5 23.9	17.3
12422 1995 US_8	13.5	*X*	76.62804	212.96319	69.29625	12.08774	0.0864645	0.26490829	2.4010748	21	11 5.5	16.7
12423 Slotin	13.9	*X*	173.82580	201.29463	84.95381	4.84279	0.1708297	0.23802176	2.5786453	21	—	—
12424 1995 *VM*	13.2	*X*	195.49577	173.94594	61.13724	14.73892	0.1227159	0.23226031	2.6211148	21	—	—
12425 1995 VG_2	14.2	*X*	165.05792	304.35261	27.30858	7.87568	0.1404133	0.27961884	2.3161060	21	—	—
12426 Racquetball	14.0	*X*	34.70524	133.46721	264.28038	3.59104	0.0702183	0.27150383	2.3620300	21	—	—
12427 1995 WM_3	15.2	*X*	123.31627	272.98019	68.78418	1.49742	0.1227472	0.23745139	2.5827730	21	—	—
12428 1995 WJ_5	12.9	*X*	216.58224	15.97922	262.55796	8.56488	0.0833178	0.23770354	2.5809462	21	—	—
12429 1995 WH_7	14.3	*X*	300.17258	293.33111	140.52484	3.10272	0.1416941	0.26278967	2.4139625	21	10 30.0	16.6
12430 1995 XB_2	14.4	*X*	97.54337	264.81166	46.70238	2.15793	0.0387287	0.27325508	2.3519273	21	—	—
12431 Webster	14.0	*X*	151.50213	286.10846	117.88597	15.64516	0.0850003	0.24131256	2.5551482	21	3 23.6	17.9
12432 Usuda	13.4	*X*	356.83554	107.25072	306.39373	9.37845	0.0365273	0.18519223	3.0482755	21	12 14.7	17.6
12433 Barbieri	15.0	*X*	28.43152	221.64938	215.26421	6.06403	0.2439534	0.23223551	2.6213014	21	—	—
12434 1996 *BM*	14.6	*X*	219.12966	175.66832	313.29428	2.74165	0.1286150	0.21704694	2.7422073	21	9 14.9	18.6
12435 Sudachi	13.5	*X*	352.62885	100.61559	90.99232	3.26555	0.0172301	0.20002882	2.8956162	21	2 27.5	17.3
12436 1996 BY_1	13.1	*X*	285.03647	25.48115	343.17442	8.86716	0.1741265	0.21211626	2.7845396	21	6 22.9	17.0
12437 Westlane	14.0	*X*	134.32124	237.30641	73.38630	4.02426	0.1679436	0.18931187	3.0038908	21	—	—
12438 1996 *CZ*	14.5	*X*	28.65165	276.14796	207.58831	5.52235	0.2610835	0.23398749	2.6082004	21	—	—
12439 Okasaki	12.7	*X*	157.45859	136.33907	80.81320	2.18736	0.1336395	0.17743198	3.1365204	21	10 29.8	17.8
12440 Koshigayaboshi	12.2	*X*	156.01873	136.39643	125.11669	12.07972	0.0414915	0.18406823	3.0606723	21	12 20.7	16.9
12441 1996 *DV*	13.4	*X*	123.11494	73.65240	153.55980	11.83933	0.0584039	0.17550415	3.1594474	21	10 6.7	18.1
12442 Beltramemass	12.5	*X*	209.51393	317.87012	292.10886	10.32005	0.1398143	0.18701391	3.0284479	21	—	—
12443 Paulsydney	12.6	*X*	319.31547	205.09635	195.78452	17.47932	0.2046882	0.17891692	3.1191417	21	9 23.0	16.0
12444 Prothoon	9.9	*X*	338.22930	65.56104	213.22460	30.83905	0.0726463	0.08218048	5.2395052	21	5 30.6	16.7
12445 Sirataka	12.6	*X*	184.37925	181.63323	72.26078	10.10083	0.0292088	0.17963846	3.1107838	21	—	—
12446 Juliabryant	14.9	*X*	40.09953	266.32453	86.63305	23.81095	0.1166098	0.36289966	1.9466073	21	—	—
12447 Yatescup	14.3	*X*	90.80578	192.69044	86.45586	5.40278	0.2089391	0.30974922	2.1633622	21	12 2.6	17.4
12448 Mr. Tompkins	14.1	*X*	183.77898	192.38404	115.26683	7.77280	0.1306947	0.28321667	2.2964492	21	—	—
12449 1996 XL_{31}	14.1	*X*	227.13012	73.95291	140.26640	3.99631	0.1082300	0.27727101	2.3291622	21	—	—
12450 1996 *YD*	14.2	*X*	57.51406	87.41441	43.53836	2.47959	0.0900777	0.29030829	2.2588970	21	2 23.9	16.4
12451 1996 *YF*	14.3	*X*	104.73445	358.36612	77.77487	5.72100	0.1208531	0.29062635	2.2572486	21	2 28.5	16.8
12452 1996 *YO*	15.3	*X*	255.77614	192.68648	251.83910	2.08238	0.0895747	0.30768892	2.1730088	21	9 13.8	17.6
12453 1996 *YY*	13.2	*X*	257.98712	320.77318	286.38305	10.30501	0.2639669	0.24253146	2.5465800	21	—	—
12454 1996 YO_1	14.8	*X*	94.81107	302.00798	273.14931	1.54320	0.1220642	0.26149068	2.4219504	21	8 29.9	18.1
12455 1997 *AR*	14.9	*X*	73.31446	323.77259	291.99335	2.08395	0.1431162	0.26355534	2.4092850	21	9 30.2	18.1
12456 Genichiaraki	14.7	*X*	282.07904	260.22612	41.23818	2.51279	0.0833321	0.25334718	2.4735764	21	3 31.7	17.9
12457 1997 AK_1	14.0	*X*	55.30246	16.00573	88.92616	5.40242	0.0803940	0.28710466	2.2756697	21	1 11.6	16.2
12458 1997 AR_1	14.6	*X*	82.58409	175.21513	78.41822	3.35916	0.1726117	0.26405070	2.4062708	21	10 14.9	17.9
12459 1997 AQ_4	15.0	*X*	311.30746	86.60060	111.05937	5.03109	0.0850749	0.28346745	2.2950946	21	—	—
12460 Mando	15.0	*X*	177.45189	234.55363	96.91934	7.55972	0.1601778	0.28616768	2.2806344	21	1 12.6	18.3
12461 1997 AM_5	14.5	*X*	290.99315	133.35463	18.52066	3.59973	0.1420904	0.27673585	2.3321641	21	—	—
12462 1997 AO_5	13.6	*X*	125.57985	295.89294	77.15965	5.75521	0.1963766	0.24524688	2.5277477	21	1 21.5	17.0
12463 1997 AL_7	13.7	*X*	109.24220	108.43494	149.38790	4.24681	0.0859920	0.26781697	2.3836582	21	11 10.5	17.1
12464 Manhattan	14.7	*X*	26.18547	338.08374	133.28921	7.36077	0.0591679	0.28340975	2.2954061	21	—	—
12465 Perth Amboy	14.9	*X*	339.52216	192.24798	145.11487	4.13060	0.1982079	0.26370797	2.4083552	21	8 15.9	16.4
12466 1997 AS_{12}	14.0	*X*	58.37958	127.82951	107.22259	9.56245	0.1793264	0.25856239	2.4402022	21	8 21.0	16.9
12467 1997 AX_{17}	14.9	*X*	98.08054	296.57723	54.02964	3.31196	0.0421866	0.31800111	2.1257734	21	—	—
12468 Zachotín	14.3	*X*	21.05570	312.07896	306.36642	6.21797	0.1338141	0.29832838	2.2182288	21	7 11.1	16.0
12469 Katsuura	14.7	*X*	354.35543	198.98221	324.80301	5.69804	0.0894433	0.28553699	2.2839914	21	—	—
12470 Pinotti	14.0	*X*	301.29769	187.33297	140.57266	4.24210	0.2339764	0.29578994	2.2309018	21	5 6.5	16.5
12471 Larryscherr	14.8	*X*	290.34510	164.99243	180.07864	2.41027	0.2101140	0.25914990	2.4365128	21	5 21.3	17.9
12472 Samadhi	16.6	*X*	358.19581	323.18717	25.46509	2.99988	0.1300218	0.26695998	2.3887568	21	10 15.1	18.6
12473 Levi–Civita	13.9	*X*	83.12957	218.14533	81.06335	13.53161	0.1694053	0.22475180	2.6791720	21	12 4.9	17.9
12474 1997 CZ_{19}	14.1	*X*	136.65062	250.56398	121.88886	3.82572	0.0799693	0.28269103	2.2992950	21	1 8.3	16.7
12475 1997 CC_{20}	14.4	*X*	100.91974	104.43170	127.98598	4.08460	0.1237822	0.22022214	2.7157851	21	9 28.0	18.4
12476 1997 EU_2	14.7	*X*	231.10301	37.39826	102.22308	2.99697	0.1451159	0.26609195	2.3939490	21	10 17.6	17.9
12477 Haiku	14.4	*X*	89.44092	29.57443	196.42307	2.10616	0.1305829	0.25923569	2.4359752	21	9 8.2	17.7
12478 Suzukiseiji	14.8	*X*	302.06900	1.19568	134.95727	2.80137	0.1609584	0.27393345	2.3480428	21	—	—
12479 Ohshimaosamu	14.8	*X*	10.10626	5.84103	178.19902	5.93937	0.0440070	0.28548818	2.2842517	21	2 21.4	17.4
12480 1997 EW_{45}	14.4	*X*	353.12732	103.83162	97.35708	7.08123	0.1852667	0.24360940	2.5390623	21	2 13.5	17.1

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
12481 Streuvels	13.4	X	33.72233	66.77246	195.81253	9.12525	0.1546818	0.21220428	2.7837696	21	8 7.3	16.7
12482 Pajka	14.2	X	172.68477	30.60028	133.36289	8.62452	0.1615386	0.26221336	2.4174983	21	9 18.1	18.0
12483 1997 FW_1	13.9	X	232.76666	229.68978	38.06930	11.99878	0.1257812	0.19827796	2.9126374	21	1 1.3	18.7
12484 1997 FO_3	14.4	X	31.53524	103.40683	166.31971	3.51011	0.1109926	0.21386496	2.7693401	21	8 10.2	17.7
12485 Jenniferharris	14.4	X	319.03556	73.97181	306.98462	1.96065	0.1946371	0.26047837	2.4282213	21	9 7.3	16.3
12486 1997 GP_6	14.1	X	187.70131	152.69965	34.17737	4.83009	0.0799229	0.26285643	2.4135537	21	11 3.4	17.3
12487 1997 GJ_8	13.2	X	276.38395	243.63027	221.89157	10.12304	0.0869229	0.18248313	3.0783705	21	10 26.4	17.3
12488 1997 GD_{15}	14.4	X	352.35425	79.18457	266.73102	1.54888	0.0841485	0.21857392	2.7294207	21	9 18.9	17.6
12489 1997 GR_{36}	14.0	X	68.58593	6.48240	73.53893	5.61929	0.1966864	0.23825009	2.5769975	21	1 25.7	16.5
12490 Leiden	14.4	X	80.00032	68.39360	146.39959	0.95848	0.1211419	0.17156880	3.2075776	21	8 6.8	18.8
12491 Musschenbroek	13.2	X	237.79079	175.46170	144.78034	2.80568	0.0471801	0.19968362	2.8989524	21	3 13.6	17.4
12492 Tanais	13.2	X	346.67101	125.62398	111.57773	3.54689	0.0412787	0.20308245	2.8665166	21	4 16.8	16.9
12493 Minkowski	13.3	X	278.95171	12.24864	125.61436	6.71714	0.1033108	0.17594681	3.1541460	21	12 6.8	17.5
12494 Doughamilton	14.6	X	149.26768	160.58845	137.98161	24.74158	0.0314709	0.36969984	1.9226632	21	—	—
12495 1998 FJ	15.3	X	54.85897	3.74921	277.46885	1.17346	0.1482259	0.31188630	2.1534685	21	10 19.0	17.7
12496 Ekholm	14.6	X	302.91414	231.37366	82.70691	3.83934	0.1877691	0.25829959	2.4418571	21	4 29.6	17.5
12497 1998 FQ_{14}	14.7	X	44.02793	78.14469	205.88897	6.88563	0.2895278	0.22449093	2.6812471	21	10 18.7	18.1
12498 Dragesco	13.7	X	51.87836	286.94981	0.07599	13.25348	0.2533351	0.22615912	2.6680460	21	10 23.0	17.4
12499 1998 FR_{47}	13.9	X	233.77381	6.58067	337.03368	6.78234	0.2285675	0.29949621	2.2124587	21	3 16.6	17.7
12500 Desngai	14.9	X	289.09615	333.50820	327.78074	2.14375	0.1770189	0.29981125	2.2109085	21	3 19.9	17.7
12501 Nord	14.3	X	122.46845	267.94717	19.92273	0.77011	0.1970713	0.27715221	2.3298278	21	—	—
12502 1998 FO_{68}	14.6	X	10.97339	328.41962	326.26294	1.84468	0.2112794	0.26430209	2.4047448	21	8 25.6	16.1
12503 1998 FC_{75}	14.2	X	329.27952	73.87393	197.57453	8.74247	0.1239423	0.21523182	2.7576030	21	4 25.1	17.6
12504 Nuest	14.2	X	335.14738	277.20600	59.43791	5.96823	0.1515588	0.26709223	2.3879682	21	8 10.6	16.3
12505 1998 FN_{77}	14.2	X	307.20427	199.52064	136.48759	5.25095	0.2125750	0.30498897	2.1858145	21	5 30.8	16.4
12506 Pariser	14.8	X	342.88346	284.68319	252.14589	6.13257	0.0382401	0.25059476	2.4916559	21	1 11.6	18.0
12507 1998 FZ_{109}	13.5	X	270.28300	25.76045	269.59460	7.00719	0.2005754	0.21069681	2.7970319	21	2 26.3	18.0
12508 1998 FZ_{113}	14.4	X	307.42609	96.61599	237.88041	6.96730	0.1639774	0.26296774	2.4128726	21	6 7.9	16.9
12509 Pathak	15.0	X	139.12625	37.92691	270.15324	3.80605	0.1711624	0.28095442	2.3087601	21	—	—
12510 1998 FM_{121}	14.8	X	316.23483	98.19690	243.41628	3.87680	0.2176726	0.26524341	2.3990519	21	6 25.1	16.9
12511 Patil	14.6	X	155.99460	55.32085	244.70491	0.20480	0.1852565	0.28297361	2.2977640	21	—	—
12512 Split	14.7	X	210.15679	84.59534	224.37178	5.06827	0.1912749	0.28819221	2.2699409	21	1 14.9	18.5
12513 Niven	14.9	X	350.01514	334.24747	27.59353	2.23664	0.1783518	0.31213732	2.1523138	21	11 4.2	16.1
12514 Schommer	14.9	X	151.76208	169.01665	176.91082	5.30535	0.1660328	0.24224710	2.5485725	21	1 11.6	18.7
12515 Suiseki	14.2	X	308.28550	163.95249	162.86987	4.95304	0.1371312	0.25897273	2.4376239	21	6 3.6	17.1
12516 1998 HB_{45}	14.8	X	357.58102	254.33157	13.38416	4.88701	0.0781597	0.30338796	2.1934976	21	6 3.9	16.9
12517 Grayzeck	15.9	X	116.37704	119.97396	155.98855	0.65876	0.1955058	0.27384808	2.3485307	21	12 14.9	19.6
12518 1998 HM_{52}	13.9	X	198.97649	236.28495	85.33676	6.11918	0.2154782	0.28672581	2.2776738	21	1 24.2	17.6
12519 Pullen	14.9	X	107.60587	31.55081	222.27692	1.45805	0.1957625	0.27141911	2.3625215	21	11 10.1	18.7
12520 1998 HV_{78}	14.6	X	203.78210	101.87060	252.51977	4.80500	0.2934308	0.29264984	2.2468316	21	3 6.5	18.8
12521 1998 HT_{95}	13.5	X	314.07643	182.20277	109.79083	3.68159	0.1767901	0.25632495	2.4543819	21	4 17.6	16.3
12522 Rara	15.1	X	160.71125	200.94613	156.86619	3.10207	0.1412454	0.28887565	2.2663593	21	1 25.4	18.3
12523 1998 HH_{100}	13.3	X	244.72165	274.22544	78.40082	5.91699	0.2166903	0.25455183	2.4657662	21	4 14.4	17.4
12524 Conscience	15.0	X	119.77575	234.25044	102.17539	0.74481	0.1954699	0.27906416	2.3191740	21	—	—
12525 1998 HT_{147}	14.5	X	62.06498	106.75170	183.48353	14.14547	0.1962237	0.22570135	2.6716524	21	11 6.8	18.4
12526 de Coninck	15.5	X	121.10094	197.97304	59.00422	0.91137	0.1853604	0.27182025	2.3601966	21	11 25.3	19.2
12527 Anneraugh	14.0	X	89.77298	109.09099	183.81533	7.18276	0.1344031	0.27201094	2.3590934	21	12 8.1	17.5
12528 1998 KL_{31}	12.9	X	92.18276	171.13506	81.47641	14.48295	0.1271125	0.22538807	2.6741274	21	10 20.3	17.1
12529 Reighard	14.3	X	160.60792	308.37256	78.46504	2.20738	0.0285715	0.29138546	2.2533266	21	2 20.5	17.0
12530 Richardson	14.2	X	169.97897	135.83010	123.63239	5.60074	0.0562156	0.23457146	2.6038698	21	—	—
12531 1998 KQ_{51}	12.9	X	327.86088	279.69921	163.21839	11.17474	0.0824064	0.19094465	2.9867420	21	12 14.5	16.8
12532 1998 KW_{54}	13.0	X	31.22659	127.91849	187.31927	16.51211	0.2378452	0.17957171	3.1115547	21	10 27.4	16.8
12533 Edmond	14.4	X	216.57547	129.10402	119.34757	5.04168	0.2142338	0.23863605	2.5742182	21	—	—
12534 Janhoet	13.5	X	295.34241	218.00381	196.64148	9.31490	0.1084261	0.22247968	2.6973822	21	9 18.6	16.8
12535 1998 MZ_{30}	13.9	X	93.15119	237.22216	144.18420	9.61078	0.1241510	0.23451064	2.6043200	21	—	—
12536 1998 MD_{33}	12.7	X	17.17286	274.49022	129.83782	9.90827	0.1838955	0.18388684	3.0626847	21	—	—
12537 Kendriddle	14.2	X	287.62959	9.72684	239.42789	5.60831	0.1402889	0.28731806	2.2745427	21	1 14.3	17.5
12538 1998 OH	15.9	X	59.18958	321.71583	220.73294	24.52454	0.4059612	0.51488725	1.5416814	21	1 2.1*	16.5
12539 Chaikin	13.7	X	86.17495	304.83286	296.66896	3.73206	0.0587371	0.21760779	2.7374935	21	9 10.3	17.5
12540 Picander	13.1	X	77.77548	215.84798	260.72095	0.89336	0.0175162	0.19979471	2.8978778	21	3 13.6	17.1
12541 Makarska	13.6	X	184.16147	101.63848	172.35317	11.21780	0.1192500	0.18862384	3.0111912	21	—	—
12542 Laver	13.7	X	9.85416	291.17239	34.13523	5.05393	0.1463451	0.17427923	3.1742342	21	9 21.3	17.5
12543 1998 QM_5	13.9	X	85.08817	98.30524	195.77328	7.02083	0.1829368	0.27126939	2.3633907	21	12 8.7	17.6
12544 1998 QX_9	14.0	X	23.51826	261.89624	116.05937	5.50497	0.2095815	0.17931524	3.1145209	21	12 27.3	17.9
12545 1998 QT_{19}	14.0	X	355.77486	116.71917	164.84435	5.58366	0.0466853	0.20965417	2.8062975	21	6 26.6	17.6
12546 1998 QJ_{21}	13.3	X	106.96591	152.62608	146.58888	1.01748	0.1664917	0.18250160	3.0781629	21	12 19.9	18.3
12547 1998 QL_{22}	13.4	X	349.96136	86.45814	280.99740	7.47883	0.1235484	0.17376555	3.1804868	21	10 5.4	17.3
12548 Erinriley	14.3	X	312.16750	332.35729	128.99361	2.88713	0.1593582	0.26664074	2.3906631	21	—	—
12549 1998 QO_{26}	13.3	X	226.05936	261.58284	210.02159	4.35994	0.1346377	0.16982059	3.2295535	21	8 27.3	18.3
12550 1998 QR_{30}	13.0	X	290.55370	16.86462	181.25071	13.23250	0.0817633	0.23464326	2.6033386	21	—	—
12551 1998 QQ_{39}	13.0	X	84.32102	256.12744	8.23033	5.49522	0.0958665	0.26141871	2.4223949	21	10 18.8	16.3
12552 1998 QQ_{45}	12.4	X	243.19307	197.24562	323.68732	13.60255	0.0876248	0.17946609	3.1127753	21	11 17.7	17.1
12553 Aaronritter	14.4	X	176.97817	53.60006	105.52091	3.51706	0.0571910	0.30122401	2.2039902	21	9 22.3	17.2
12554 1998 QA_{47}	12.8	X	71.58368	168.69929	120.49349	6.45663	0.1463690	0.17650899	3.1474451	21	11 3.2	17.4
12555 1998 QP_{47}	12.7	X	223.51506	205.54481	149.36360	2.58263	0.0805628	0.20064986	2.8896383	21	4 7.7	16.9
12556 Kyrobinson	14.4	X	320.60782	270.26038	200.30777	6.45846	0.0637089	0.26826029	2.3810314	21	—	—
12557 Caracol	12.8	X	229.04925	290.91707	227.70435	4.81591	0.0091372	0.17592805	3.1543702	21	11 12.1	17.0
12558 1998 QV_{63}	13.4	X	287.97938	201.83522	180.57272	4.27071	0.1106442	0.20866301	2.8151772	21	7 24.3	17.2
12559 1998 QB_{69}	11.6	X	113.70094	276.25461	298.96661	13.98683	0.0349275	0.17160031	3.2071850	21	8 30.7	16.4
12560 1998 RC_{58}	13.1	X	125.62610	112.19333	139.31132	1.73729	0.1307652	0.17720091	3.1392464	21	11 9.7	18.1

* The additional opposition: 7 8.4, $V = 17.3$

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
12561 Howard	12.8	*X*	212.90348	154.31448	42.91433	0.76242	0.1399071	0.18070092	3.0985783	21	11 25.9	17.5
12562 Briangrazer	11.8	*X*	169.62928	203.76442	13.12156	12.55489	0.1017529	0.17599176	3.1536088	21	11 5.9	16.8
12563 1998 SA_{43}	12.9	*X*	356.23487	255.85103	126.10380	1.65294	0.0841121	0.21704380	2.7422337	21	11 14.3	16.1
12564 Ikeller	13.7	*X*	356.14088	118.04238	179.99932	1.62033	0.0393411	0.20645623	2.8352023	21	7 19.6	17.3
12565 Khege	13.2	*X*	247.45469	275.62514	203.69181	6.26232	0.0934482	0.17364232	3.1819914	21	10 5.2	17.7
12566 Derichardson	13.3	*X*	236.85197	288.26766	198.48960	5.07130	0.1064824	0.17229655	3.1985390	21	9 30.5	18.1
12567 Herreweghe	13.0	*X*	253.86598	334.80610	149.88947	2.17702	0.1137029	0.17214344	3.2004353	21	10 17.8	17.5
12568 Kuffner	13.2	*X*	239.17136	218.48629	37.40693	1.29807	0.0541011	0.18386837	3.0628897	21	—	—
12569 1998 VC_{29}	12.6	*X*	41.34806	209.42418	137.69450	5.00327	0.1008109	0.17254948	3.1954126	21	11 28.0	17.0
12570 1998 WV_5	12.8	*X*	265.78076	349.29916	250.65537	13.51539	0.1058129	0.18639332	3.0351662	21	1 1.8	17.5
12571 1999 NM_2	14.3	*X*	141.22383	105.98408	221.76852	10.63126	0.1897842	0.24272308	2.5452396	21	—	—
12572 Sadegh	14.7	*X*	175.24619	323.81915	273.35760	4.09036	0.1076838	0.28362004	2.2942713	21	12 25.7	17.8
12573 1999 NJ_{53}	13.2	*X*	77.16235	145.16710	226.33140	11.91563	0.1116269	0.19539275	2.9412397	21	—	—
12574 LONEOS	13.0	*X*	238.59364	337.64908	116.72533	10.98629	0.0859515	0.22315963	2.6919002	21	9 2.1	16.9
12575 Palmaria	14.9	*X*	35.79913	342.37398	80.27145	2.25460	0.0912301	0.28377397	2.2934415	21	—	—
12576 Oresme	14.2	*X*	332.28536	51.99436	354.08362	3.94239	0.0671768	0.23031286	2.6358696	21	11 9.4	17.4
12577 Samra	14.5	*X*	303.76115	21.62801	302.24238	4.40899	0.0933828	0.21699494	2.7426453	21	5 31.0	18.0
12578 Bensaur	15.0	*X*	121.52558	340.46371	327.50483	7.26184	0.1265337	0.28235348	2.3011272	21	—	—
12579 Ceva	14.3	*X*	68.57188	240.76650	36.33704	1.58135	0.1867810	0.18293337	3.0733175	21	10 19.9	18.7
12580 Antonini	14.2	*X*	25.95692	307.74491	41.34587	2.55255	0.2456059	0.18398602	3.0615839	21	12 1.2	18.0
12581 Rovinj	15.1	*X*	330.77055	194.25309	351.09809	3.67772	0.0939857	0.29028728	2.2590060	21	—	—
12582 1999 RY_{34}	13.7	*X*	75.52340	62.12961	70.42845	2.65942	0.1170474	0.29193297	2.2505083	21	4 2.7	15.8
12583 Buckjean	12.4	*X*	59.80681	17.75891	26.64688	10.85442	0.0690433	0.19127225	2.9833308	21	—	—
12584 Zeljkoandreic	14.6	*X*	26.99312	299.19970	39.95809	7.35644	0.1366180	0.26993059	2.3711988	21	11 20.3	17.3
12585 Katschwarz	14.7	*X*	121.18990	220.37674	128.77256	6.73858	0.1815972	0.24178752	2.5518009	21	—	—
12586 1999 RQ_{81}	13.9	*X*	273.85490	145.26719	208.52349	3.51893	0.1803168	0.21555682	2.7548304	21	5 19.3	17.8
12587 1999 RD_{95}	13.2	*X*	298.34165	347.84040	338.75423	3.45310	0.0990090	0.21466844	2.7624256	21	5 25.9	17.0
12588 1999 RR_{98}	14.7	*X*	265.00558	198.74635	170.87832	12.63916	0.1907573	0.25995539	2.4314770	21	5 28.5	18.4
12589 1999 RR_{114}	15.1	*X*	323.82007	334.02580	338.96028	2.47700	0.1530439	0.30883380	2.1676351	21	6 2.7	17.0
12590 1999 RN_{125}	13.8	*X*	265.94893	108.14542	192.48213	5.00176	0.0396173	0.20956840	2.8070631	21	3 20.6	17.7
12591 1999 RT_{133}	13.9	*X*	12.82109	61.21859	254.20408	5.32731	0.1262494	0.27006584	2.3704072	21	9 18.5	16.3
12592 1999 RD_{134}	13.7	*X*	292.45018	33.12782	285.47369	6.62830	0.1111723	0.21539761	2.7561878	21	5 3.7	17.6
12593 Shashlov	14.6	*X*	2.00798	127.01113	158.23294	3.94438	0.0910713	0.26557952	2.3970274	21	7 11.9	17.1
12594 1999 RU_{145}	14.3	*X*	278.25354	101.73389	236.95747	3.71994	0.1850440	0.21571800	2.7534580	21	5 3.5	18.3
12595 Amandashaw	15.0	*X*	128.97291	0.44544	337.94764	3.21074	0.1717809	0.28694133	2.2765332	21	—	—
12596 Shukla	14.8	*X*	36.19559	14.88319	296.73243	2.58877	0.1927645	0.27276015	2.3547715	21	11 5.2	17.4
12597 1999 RL_{158}	13.9	*X*	273.47448	57.45244	135.64466	2.76307	0.0168517	0.19627723	2.9323970	21	—	—
12598 Sierra	14.2	*X*	102.95421	20.45578	152.59889	9.47690	0.0732419	0.21745780	2.7387521	21	7 5.9	18.1
12599 Singhal	14.9	*X*	324.54993	347.88817	132.80722	6.24273	0.0453044	0.28317472	2.2966760	21	—	—
12600 1999 RM_{177}	12.5	*X*	37.49123	78.54504	136.48954	2.21399	0.1280142	0.16929253	3.2362658	21	6 8.2	16.4
12601 Tiffanyswann	14.7	*X*	284.92145	316.31445	45.62136	3.28443	0.1813037	0.26289788	2.4133001	21	6 10.4	17.7
12602 Tammytam	14.5	*X*	150.02464	262.29825	9.77417	7.37974	0.0976639	0.28122692	2.3072684	21	—	—
12603 Tanchunghee	14.9	*X*	317.81550	353.98292	62.57205	3.21937	0.1961511	0.27140989	2.3625750	21	11 6.8	16.4
12604 Lisatate	14.6	*X*	126.33457	19.19265	215.73998	5.97340	0.0338642	0.27240547	2.3568150	21	10 27.3	17.6
12605 1999 SK	14.9	*X*	153.17840	169.94736	159.55658	1.98015	0.1058560	0.24098863	2.5574374	21	—	—
12606 Apuleius	14.9	*X*	304.45907	294.74730	353.69517	5.84469	0.2640585	0.25512522	2.4620703	21	3 15.2	18.4
12607 Alcaeus	14.7	*X*	99.38962	8.23876	277.04335	2.18782	0.0367828	0.22804666	2.6533034	21	11 21.7	18.5
12608 Aesop	15.3	*X*	56.92023	133.54461	248.34466	3.52018	0.1161760	0.27876779	2.3208175	21	—	—
12609 Apollodoros	14.1	*X*	24.74358	31.34667	299.78964	0.87632	0.1840784	0.17899988	3.1181779	21	10 27.0	17.8
12610 Hāfez	13.7	*X*	273.98170	296.39604	25.40109	1.73266	0.0997475	0.20533926	2.8454747	21	4 19.3	17.7
12611 Ingres	14.2	*X*	15.36851	195.30580	187.98985	2.44707	0.2131925	0.17889386	3.1194098	21	12 21.9	18.0
12612 Daumier	14.5	*X*	29.45129	74.23084	176.55837	5.26027	0.0899897	0.25604951	2.4561417	21	7 8.7	17.2
12613 Hogarth	14.5	*X*	63.78066	52.02094	285.93266	2.98215	0.1390390	0.22915575	2.6447353	21	12 28.8	18.3
12614 Hokusai	15.1	*X*	319.24429	139.02220	191.29141	4.45197	0.2168762	0.30535762	2.1840549	21	6 11.8	16.9
12615 Mendesdeleon	14.1	*X*	109.41813	56.96545	28.10769	1.98309	0.0561286	0.20294506	2.8678101	21	3 20.4	17.9
12616 Lochner	14.8	*X*	29.91781	342.68101	54.41231	3.37834	0.0979673	0.22962504	2.6411307	21	—	—
12617 Angelusilesius	13.5	*X*	70.87694	321.33674	30.42564	8.06475	0.1227523	0.22973946	2.6402537	21	—	—
12618 Cellarius	13.4	*X*	180.09596	12.98956	196.08481	16.09424	0.1432171	0.18061462	3.0995653	21	11 10.7	18.5
12619 Anubelshunu	14.4	*X*	137.21861	295.56745	220.66662	5.55792	0.0736998	0.25596763	2.4566655	21	7 25.1	17.8
12620 Simaqian	13.8	*X*	152.58697	59.09204	180.01706	0.91872	0.1444888	0.18106490	3.0944243	21	11 19.9	18.9
12621 Alsufi	13.9	*X*	34.41095	203.73466	147.87506	2.43424	0.1275433	0.17984583	3.1083921	21	11 28.9	18.0
12622 Doppelmayr	14.7	*X*	106.49182	186.86086	117.59946	2.78485	0.0819873	0.22990459	2.6389892	21	12 27.9	18.6
12623 Tawaddud	14.5	*X*	303.82677	170.73973	164.14179	4.86336	0.0547603	0.25607167	2.4560000	21	6 21.0	17.5
12624 Mariacunitia	14.7	*X*	144.32563	208.18260	138.79711	4.39867	0.1427188	0.28171896	2.3045811	21	—	—
12625 Koopman	12.9	*X*	308.79809	82.89231	2.42940	5.89498	0.1009985	0.17934180	3.1142134	21	11 12.6	16.8
12626 Timmerman	14.5	*X*	303.77342	125.56643	259.03019	1.66020	0.1079415	0.22362379	2.6881741	21	8 21.9	17.8
12627 Maryedwards	15.7	*X*	273.62908	302.41620	328.74393	2.20039	0.1398803	0.29313472	2.2443532	21	1 28.3	18.7
12628 Ackworthorr	15.1	*X*	83.02373	98.82304	135.74628	2.76756	0.1278418	0.26164753	2.4209823	21	9 13.3	18.2
12629 Jandeboer	14.1	*X*	316.39851	177.02042	182.49720	11.78848	0.1286225	0.26193631	2.4192027	21	8 4.6	16.7
12630 Verstappen	14.5	*X*	326.74163	301.42638	6.16240	6.36445	0.1400594	0.25907748	2.4369668	21	6 4.0	17.2
12631 Mariekebaan	13.4	*X*	164.14834	110.31004	188.95915	10.94517	0.2059791	0.19019559	2.9945789	21	—	—
12632 Mignonette	14.9	*X*	101.87929	236.04345	325.43482	1.96418	0.1134678	0.26085827	2.4258632	21	8 19.5	18.2
12633 Warmenhoven	15.2	*X*	212.78917	263.47763	251.21747	1.55467	0.1088756	0.26508744	2.3999928	21	10 18.3	18.5
12634 LOFAR	15.5	*X*	32.67724	237.60849	20.39482	2.54526	0.1516025	0.25982363	2.4322989	21	8 5.1	17.8
12635 Hennylamers	13.7	*X*	136.26338	126.01316	180.18772	10.34164	0.0977708	0.18979973	2.9987412	21	—	—
12636 Padrielli	13.3	*X*	148.59785	267.18485	31.05442	10.72031	0.0735426	0.19005750	2.9960291	21	—	—
12637 Gustavleonhardt	14.3	*X*	44.57583	224.56533	189.33930	0.93798	0.1986643	0.23161267	2.6259987	21	—	—
12638 Fransbrüggen	15.2	*X*	316.69347	256.77748	197.69490	1.81009	0.1762051	0.26988648	2.3714572	21	—	—
12639 Tonkoopman	14.6	*X*	340.23504	304.22103	184.01338	2.68857	0.1371252	0.23218621	2.6216725	21	—	—
12640 Reinbertdeleeuw	13.8	*X*	128.33513	51.98277	8.76891	1.87594	0.0528823	0.19614476	2.9337172	21	3 13.4	17.9

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
12641 Hubertushenrichs	15.4	*X*	311.00418	345.50913	45.56297	2.06607	0.1872736	0.26638091	2.3922175	21	9 9.6	17.4
12642 Davidjansen	14.6	*X*	323.21984	298.73202	189.45050	4.53013	0.1770663	0.27222431	2.3578605	21	—	—
12643 Henkolthof	13.7	*X*	268.20697	129.58876	114.31875	3.31421	0.0356546	0.19445163	2.9507222	21	1 16.0	17.7
12644 Robertwielinga	14.4	*X*	351.73367	320.53359	55.99523	3.74385	0.2305576	0.26825986	2.3810339	21	11 26.9	16.1
12645 Jacobrosales	15.0	*X*	326.33512	319.24037	85.22007	3.47641	0.1885112	0.26778814	2.3838293	21	11 7.7	16.7
12646 Avercamp	14.1	*X*	8.09892	9.02277	320.25843	8.88842	0.2296820	0.22621836	2.6675802	21	10 4.6	16.7
12647 Pauluspotter	14.9	*X*	20.35593	226.71235	238.56059	10.04283	0.0576209	0.19219749	2.9737485	21	—	—
12648 Ibarbourou	14.1	*X*	76.61231	298.99681	319.76816	6.20487	0.0832428	0.26816435	2.3815993	21	9 28.6	17.2
12649 Ascanios	11.7	*X*	314.05398	342.10559	337.60237	6.57341	0.1484793	0.08422262	5.1544643	21	6 7.3	18.2
12650 de Vries	15.0	*X*	110.06386	319.96694	305.94461	4.10499	0.2129843	0.27189695	2.3597527	21	11 27.2	18.9
12651 Frenkel	13.9	*X*	38.24579	165.30539	224.38105	10.01730	0.1193808	0.18284500	3.0743076	21	—	—
12652 Groningen	14.4	*X*	171.46198	13.70085	226.03802	9.13933	0.1449355	0.18343009	3.0677667	21	12 7.2	19.4
12653 van der Klis	15.9	*X*	293.17913	83.32862	354.97691	2.45571	0.1372894	0.26913705	2.3758575	21	10 23.1	18.0
12654 Heinofalcke	13.7	*X*	66.78658	168.87010	178.11169	11.74077	0.1025320	0.18277371	3.0751070	21	12 28.8	18.4
12655 Benferinga	12.8	*X*	188.34911	113.83407	151.92509	11.71679	0.1013281	0.18578025	3.0418399	21	—	—
12656 Gerdebruijn	13.9	*X*	296.60111	26.83206	152.93809	10.88151	0.1763671	0.23056378	2.6339569	21	—	—
12657 Bonch–Bruevich	12.6	*X*	170.64581	37.21376	321.18680	9.41690	0.1047381	0.18760522	3.0220810	21	2 17.6	17.2
12658 Peiraios	11.2	*X*	336.57919	325.50255	111.88027	1.77663	0.0576041	0.08378450	5.1724179	21	11 27.4	17.8
12659 Schlegel	14.9	*X*	357.88115	14.97895	29.84404	2.82275	0.1947581	0.26918641	2.3755671	21	—	—
12660 1975 *NC*	13.5	*X*	63.19064	358.40850	269.78023	5.76014	0.1560596	0.21630017	2.7485152	21	9 28.6	17.3
12661 Schelling	14.9	*X*	349.71319	59.26270	134.46190	4.87508	0.1173467	0.28462184	2.2888846	21	1 25.6	17.4
12662 1978 *CK*	12.8	*X*	254.69589	158.88856	309.63747	20.70331	0.0461218	0.17363181	3.1821198	21	9 25.6	17.7
12663 Björkegren	13.8	*X*	182.70241	165.56199	218.74053	1.08216	0.0721057	0.19846639	2.9107935	21	3 30.6	18.1
12664 Sonisenia	14.4	*X*	122.33474	167.06116	193.32989	2.76194	0.1571661	0.23731413	2.5837688	21	—	—
12665 1978 VE_7	14.8	*X*	23.06507	172.34584	176.35762	0.76434	0.2198629	0.27558922	2.3386285	21	12 13.6	17.2
12666 1978 *XW*	13.6	*X*	330.99348	5.98125	105.70734	1.86003	0.1879484	0.18603920	3.0390166	21	—	—
12667 1979 *DF*	13.4	*X*	275.99297	126.32437	35.95608	14.74976	0.1662340	0.22753052	2.6573144	21	—	—
12668 1979 MX_1	14.1	*X*	99.27338	298.90076	268.97079	3.50684	0.0443856	0.21212396	2.7844723	21	8 11.7	18.0
12669 1979 MY_5	13.4	*X*	186.22515	347.36513	277.64662	11.80763	0.1115547	0.22182309	2.7027023	21	—	—
12670 Passargea	14.9	*X*	255.18160	59.43086	300.71311	5.52097	0.2111063	0.29972439	2.2113356	21	4 25.9	18.4
12671 Thörnqvist	14.3	*X*	284.63126	241.46590	343.92945	6.83379	0.1143072	0.28404700	2.2919717	21	—	—
12672 Nygårdh	13.8	*X*	42.52717	98.56101	1.80439	0.75292	0.0566084	0.18921129	3.0049553	21	1 11.4	17.7
12673 Kiselman	13.4	*X*	82.65678	227.11589	179.78686	8.58894	0.0797329	0.18822952	3.0153952	21	1 2.1	17.5
12674 Rybalka	14.0	*X*	19.67180	8.60586	310.71604	1.72391	0.2106468	0.26515972	2.3995567	21	10 22.1	16.4
12675 Chabot	13.7	*X*	262.33351	89.06173	17.85799	6.31218	0.0480138	0.26562809	2.3967352	21	10 27.2	16.5
12676 1981 DU_1	13.9	*X*	165.56280	192.12115	235.26059	11.67347	0.1768487	0.20056187	2.8904834	21	5 9.4	18.6
12677 1981 EO_4	14.4	*X*	115.72154	55.27021	292.90590	9.50565	0.1130458	0.19007657	2.9958288	21	—	—
12678 1981 EQ_{20}	15.0	*X*	226.69282	122.42953	176.74314	2.46497	0.1224597	0.24310495	2.5425735	21	1 24.7	19.0
12679 1981 EK_{22}	14.5	*X*	39.38674	257.09977	268.07597	0.74273	0.0601448	0.19770954	2.9182173	21	3 27.9	18.0
12680 Bogdanovich	14.8	*X*	152.83832	170.08321	34.05413	3.51484	0.0715920	0.30363092	2.1923273	21	10 23.2	17.4
12681 1981 UL_{29}	14.6	*X*	310.09554	131.12547	213.99469	14.09661	0.2287587	0.21832452	2.7314990	21	6 17.6	18.0
12682 Kawada	14.3	*X*	121.05338	260.54395	75.58322	5.90479	0.2730700	0.23468745	2.6030118	21	—	—
12683 1983 RP_3	14.1	*X*	42.56013	195.84404	130.67432	3.10140	0.0617803	0.26300366	2.4126530	21	11 14.1	17.0
12684 1984 *DQ*	13.9	*X*	10.85797	251.36447	330.54665	11.04508	0.2304157	0.24235903	2.5477877	21	4 12.3	16.1
12685 1985 *VE*	13.6	*X*	289.33012	342.35359	164.42084	4.84102	0.1020575	0.27787929	2.3257620	21	—	—
12686 Bezuglyj	13.6	*X*	195.05596	329.14312	4.68065	13.89816	0.1872541	0.23945200	2.5683669	21	2 13.8	18.0
12687 de Valory	13.2	*X*	70.77982	305.24939	149.08992	13.01234	0.1229447	0.24117654	2.5561088	21	2 7.0	15.9
12688 Baekeland	13.5	*X*	99.80510	346.50616	290.98357	12.06481	0.1572051	0.22405174	2.6847499	21	11 21.4	17.9
12689 1988 RO_2	13.4	*X*	82.14096	55.39030	318.08759	9.77825	0.1115289	0.18778918	3.0201070	21	—	—
12690 Kochimiraikagaku	12.0	*X*	4.44650	298.50860	219.39429	11.36668	0.1188252	0.18909513	3.0061858	21	1 21.7	15.9
12691 1988 VF_2	14.3	*X*	143.73336	303.78671	33.58613	7.49137	0.1619650	0.27896178	2.3197414	21	—	—
12692 1989 BV_1	14.7	*X*	214.77355	183.78728	336.60103	1.90658	0.1386870	0.26321036	2.4113896	21	10 24.2	18.0
12693 1989 *EZ*	12.6	*X*	208.93213	258.40819	20.26211	7.05957	0.2124850	0.24160188	2.5531080	21	—	—
12694 Schleiermacher	13.8	*X*	182.84353	1.83711	136.78068	0.50036	0.0810767	0.16680195	3.2684007	21	8 20.9	18.8
12695 Utrecht	14.3	*X*	246.66974	14.32735	256.67448	3.90971	0.2522074	0.23954999	2.5676664	21	1 5.7	18.9
12696 Camus	13.6	*X*	241.99439	128.28156	160.32211	7.99333	0.1425123	0.23208932	2.6224021	21	1 26.9	17.7
12697 Verhaeren	13.4	*X*	209.70543	294.07072	178.86270	7.61312	0.1801617	0.20989754	2.8041279	21	8 11.3	18.1
12698 1989 US_4	13.5	*X*	347.17333	186.08661	222.79571	1.23833	0.0980237	0.21775121	2.7362913	21	12 6.5	16.6
12699 1990 DD_2	15.0	*X*	218.91284	48.83166	180.58680	3.14215	0.1577214	0.27614633	2.3354820	21	—	—
12700 1990 *FH*	14.3	*X*	332.30507	145.46066	50.47124	24.52128	0.2275712	0.28150562	2.3057453	21	—	—
12701 Chénier	14.6	*X*	270.23606	192.64772	356.31869	6.52074	0.1706533	0.27672204	2.3322417	21	—	—
12702 Panamarenko	13.9	*X*	189.36338	311.41391	69.41308	2.14369	0.1731842	0.24215926	2.5491888	21	4 1.8	18.0
12703 1990 SV_{13}	14.0	*X*	185.53483	20.18596	7.43932	4.41769	0.0594653	0.24369297	2.5384818	21	4 1.7	17.6
12704 Tupolev	13.6	*X*	102.93315	0.11251	320.21751	1.25022	0.1961098	0.22994643	2.6386692	21	—	—
12705 1990 *TJ*	13.7	*X*	206.32404	350.59170	56.10317	4.89925	0.0661694	0.24497951	2.5295865	21	5 21.2	17.2
12706 Tanezaki	13.9	*X*	71.59515	343.37667	19.01051	13.49458	0.2945083	0.22906214	2.6454558	21	—	—
12707 1990 *UK*	13.6	*X*	84.00671	339.33780	50.57283	15.81519	0.1089620	0.23211150	2.6222350	21	—	—
12708 Van Straten	14.0	*X*	270.73669	241.07120	185.42376	10.13860	0.1282122	0.21820794	2.7324718	21	8 25.4	17.7
12709 Bergen op Zoom	13.3	*X*	283.01348	351.54217	205.66838	12.62335	0.1164455	0.22975138	2.6401623	21	—	—
12710 Breda	13.8	*X*	338.87473	75.47058	133.08475	8.72680	0.0637629	0.23626033	2.5914461	21	2 18.5	16.9
12711 Tukmit	15.9	*X*	95.90211	322.89381	294.97911	38.48811	0.2721816	0.76276264	1.1863416	21	—	—
12712 1991 EY_3	13.8	*X*	60.67331	239.43856	316.73440	1.33391	0.1326902	0.20380076	2.8597771	21	6 18.8	17.3
12713 1991 FY_3	11.8	*X*	52.00266	300.04152	15.04572	17.23490	0.2317449	0.17618148	3.1513444	21	11 15.4	16.4
12714 Alkimos	10.2	*X*	298.29343	162.07538	298.89581	9.50603	0.0363218	0.08222444	5.2376374	21	11 5.9	17.1
12715 Godin	14.1	*X*	143.07947	295.41060	18.34629	2.20901	0.1874572	0.28236067	2.3010881	21	—	—
12716 Delft	13.7	*X*	0.45336	221.57153	218.46823	9.28633	0.0415745	0.18467172	3.0540006	21	—	—
12717 1991 *HK*	15.1	*X*	50.22809	55.05622	167.95578	5.22766	0.1635589	0.29871629	2.2163080	21	7 15.0	17.1
12718 Le Gentil	14.5	*X*	196.76943	268.86977	88.06103	4.53452	0.1726973	0.28799344	2.2709853	21	3 6.5	18.1
12719 Pingré	14.5	*X*	197.64633	194.17281	99.10280	1.99428	0.1481759	0.28279430	2.2987352	21	—	—
12720 1991 NU_3	13.7	*X*	267.67310	96.98576	286.03732	5.71871	0.1804023	0.26037726	2.4288499	21	6 17.9	16.9

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
12721 1991 PB	13.8	X	118.38182	182.72015	150.07751	2.59042	0.2460987	0.27542026	2.3395848	21	—	—
12722 Petrarca	14.8	X	259.36667	38.28955	191.15344	3.34394	0.1459688	0.28071170	2.3100908	21	—	—
12723 1991 PD_{10}	13.9	X	320.17674	119.93135	331.98687	7.27092	0.0391021	0.27038929	2.3685164	21	—	—
12724 1991 PZ_{14}	13.4	X	207.13160	73.03919	195.41735	6.53746	0.1600571	0.24553588	2.5257638	21	—	—
12725 1991 PP_{16}	13.8	X	24.75942	190.40556	151.51755	5.39838	0.1548356	0.26627604	2.3928455	21	11 25.3	16.5
12726 1991 PQ_{16}	13.8	X	25.19962	230.04267	169.67383	7.49470	0.0852631	0.27066707	2.3668956	21	—	—
12727 Cavendish	14.0	X	129.65857	344.98989	118.02965	5.90868	0.0874481	0.28785682	2.2717038	21	5 6.9	16.9
12728 1991 RP_1	13.4	X	161.82651	337.24871	348.90595	15.16492	0.1293713	0.24348709	2.5399125	21	—	—
12729 Berger	13.8	X	44.57516	116.46107	213.80180	11.55009	0.0451351	0.26440631	2.4041128	21	11 19.4	16.8
12730 1991 RU_8	14.6	X	52.12435	299.69789	3.89489	1.89892	0.1926307	0.26560414	2.3968792	21	11 14.8	17.6
12731 1991 RW_{12}	13.7	X	29.69947	102.58610	187.82596	3.74060	0.0488466	0.26141548	2.4224148	21	9 1.3	16.6
12732 1991 TN	14.1	X	253.22286	112.41157	96.75477	5.59556	0.1108227	0.27359033	2.3500055	21	—	—
12733 1991 TV_1	13.8	X	117.52783	330.69499	52.17226	8.39824	0.3044956	0.24260523	2.5460638	21	2 11.5	17.5
12734 Haruna	13.8	X	287.62462	51.59878	39.69622	13.35423	0.1875555	0.26205092	2.4184972	21	10 25.5	16.0
12735 1991 VV_1	13.8	X	299.22836	125.87104	228.71833	13.35127	0.2263205	0.25724615	2.4485189	21	6 13.1	16.8
12736 1991 VC_3	14.1	X	100.46868	5.76341	68.17038	24.13015	0.1977958	0.27631796	2.3345148	21	3 20.1	17.6
12737 1991 VW_4	13.6	X	96.88224	236.64145	98.54759	7.53674	0.1544873	0.26929900	2.3749049	21	—	—
12738 Satoshimiki	13.7	X	139.35716	274.11872	142.83161	13.29148	0.2889158	0.24334619	2.5408928	21	4 13.9	18.1
12739 1992 DY_7	14.3	X	105.58967	184.46223	75.24737	3.09311	0.0327020	0.22010262	2.7167681	21	10 27.6	18.0
12740 1992 EX_8	12.4	X	96.49560	318.60194	143.78012	15.66453	0.0515305	0.23922153	2.5700163	21	3 23.5	15.8
12741 1992 EU_{30}	14.4	X	248.77797	259.16441	243.91818	2.59383	0.0377138	0.22315983	2.6918986	21	11 20.9	18.1
12742 Delisle	12.2	X	65.36705	230.47213	124.71494	9.69907	0.2189102	0.17890706	3.1192564	21	—	—
12743 1992 PL_2	12.2	X	140.12299	270.81362	295.53413	20.38605	0.0700218	0.17334956	3.1855730	21	9 15.7	17.4
12744 1992 SQ	14.8	X	300.46826	109.26727	269.22427	3.09403	0.1310753	0.30271454	2.1967494	21	8 8.8	16.8
12745 1992 UL_2	14.3	X	309.62720	65.99199	315.75155	2.96567	0.1749935	0.30356455	2.1926468	21	8 26.6	15.7
12746 Yumeginga	13.7	X	249.47450	81.76546	265.17316	4.71384	0.1908687	0.29439701	2.2379332	21	4 5.3	17.3
12747 Michaeffert	14.5	X	12.60979	83.84384	76.41074	2.30935	0.1410114	0.28255760	2.3000188	21	1 13.6	16.7
12748 1993 BP_3	14.0	X	304.13408	137.09980	327.62913	24.19282	0.1880280	0.26963767	2.3729158	21	12 26.9	16.5
12749 Odokaigan	14.4	X	295.98663	68.79532	134.89479	5.43700	0.1313992	0.27537180	2.3398593	21	—	—
12750 Berthollet	13.0	X	177.37784	129.25831	140.57370	14.40780	0.0466648	0.23759677	2.5817194	21	—	—
12751 Kamihayashi	13.9	X	240.33674	135.22257	82.84399	3.14219	0.1671954	0.26958826	2.3732058	21	—	—
12752 Kvarnis	15.3	X	228.86258	315.24177	160.68879	3.29212	0.1238354	0.25993939	2.4315768	21	9 14.1	18.4
12753 Povenmire	12.8	X	229.72686	111.30557	93.64185	14.81885	0.1454023	0.23178556	2.6246927	21	12 31.5	16.5
12754 1993 LF_2	12.8	X	319.51540	238.35409	94.21204	10.29142	0.1586593	0.21330114	2.7742181	21	6 28.3	15.8
12755 Balmer	13.8	X	51.70099	49.95122	273.79634	4.03212	0.0239979	0.21921314	2.7241122	21	11 7.3	17.5
12756 1993 QE_1	13.0	X	188.14305	191.63023	124.06820	14.58781	0.1611256	0.22962688	2.6411166	21	1 12.4	17.3
12757 Yangtze	13.5	X	230.43092	113.35146	220.62840	1.05961	0.0786493	0.19822500	2.9131562	21	3 19.4	17.8
12758 Kabudari	14.0	X	358.26414	245.84926	138.58491	1.82656	0.1762208	0.17717553	3.1395463	21	11 19.6	17.5
12759 Joule	13.0	X	159.69032	115.24114	40.07931	4.81173	0.0694001	0.16968733	3.2312441	21	8 19.0	17.9
12760 Maxwell	13.6	X	111.30633	153.52119	183.87222	9.87424	0.0940538	0.18475061	3.0531311	21	—	—
12761 Pauwels	13.6	X	204.79078	19.35776	190.70401	18.49701	0.0596608	0.18056378	3.1001470	21	12 10.8	18.5
12762 Nadiavittor	13.3	X	356.26468	308.29480	47.41760	14.56569	0.1804317	0.17476697	3.1683256	21	10 13.1	16.9
12763 1993 UQ_2	13.2	X	103.08623	167.41210	179.98147	9.73526	0.0950807	0.18423695	3.0588034	21	—	—
12764 1993 VA_2	12.9	X	135.51831	288.44052	41.12245	11.07373	0.0856172	0.18435974	3.0574451	21	—	—
12765 1993 VA_3	12.6	X	156.16273	284.25556	53.83198	10.38855	0.1173043	0.18739548	3.0243355	21	1 13.6	17.3
12766 Paschen	12.7	X	69.82062	349.81101	83.35563	9.73509	0.0498247	0.18607277	3.0386511	21	1 15.8	16.9
12767 1994 AS	13.1	X	254.75443	199.76555	31.69893	1.80262	0.1617043	0.17944250	3.1130481	21	—	—
12768 1994 EQ_1	14.3	X	63.43597	296.60440	173.63006	3.81531	0.1105060	0.28902044	2.2656023	21	2 2.8	16.4
12769 Kandakurenai	13.9	X	356.28478	79.50682	128.95672	6.03478	0.1352607	0.29017112	2.2596088	21	2 24.9	16.1
12770 1994 GF	14.8	X	142.98503	101.85110	106.90680	3.64789	0.0585568	0.30428690	2.1891753	21	10 19.6	17.6
12771 Kimshin	14.4	X	328.36035	207.39201	85.65484	4.81784	0.1635367	0.29381057	2.2409101	21	5 11.0	16.4
12772 1994 GM_1	14.3	X	159.69368	229.21379	90.66030	4.71023	0.1228161	0.27849079	2.3223562	21	—	—
12773 Lyman	14.3	X	310.34718	92.11420	285.26424	1.47291	0.0922886	0.21850537	2.7299916	21	8 24.3	17.4
12774 Pfund	15.2	X	333.40496	242.53259	165.04183	2.43941	0.2016142	0.22213981	2.7001328	21	11 15.2	17.5
12775 Brackett	14.9	X	346.71233	327.72893	135.36124	3.74206	0.2439055	0.22888658	2.6468084	21	—	—
12776 Reynolds	14.6	X	276.12469	44.00405	210.82468	3.57203	0.0549431	0.24046046	2.5611810	21	1 26.6	18.1
12777 Manuel	14.2	X	49.98402	304.55358	151.18231	3.71791	0.1841619	0.23585822	2.5943906	21	1 7.4	16.4
12778 1994 VJ_1	13.8	X	344.23235	267.11595	82.35064	6.52973	0.0849453	0.21444174	2.7643721	21	9 14.7	17.1
12779 1994 YA_1	14.0	X	249.35236	315.44252	118.26371	4.72606	0.1846394	0.20901705	2.8119973	21	8 2.7	18.3
12780 Salamony	14.1	X	257.47967	135.26306	345.65287	5.73997	0.1160968	0.17640915	3.1486326	21	10 14.9	18.5
12781 1995 EA_8	14.6	X	88.65808	284.99914	163.46400	0.65789	0.2113603	0.19081464	2.9880986	21	3 22.1	18.5
12782 Mauersberger	13.1	X	343.81259	271.70844	160.51865	6.57534	0.1268325	0.17690933	3.1426950	21	12 22.4	16.9
12783 1995 GV	14.4	X	208.84770	53.07242	192.54662	3.22373	0.1113260	0.28735083	2.2743698	21	—	—
12784 1995 QE_3	14.7	X	33.48925	12.22670	323.66080	1.73045	0.2285134	0.26951267	2.3736495	21	12 10.4	17.6
12785 1995 ST	14.4	X	270.24525	260.89760	339.29501	7.32535	0.0805943	0.28367252	2.2939883	21	—	—
12786 1995 SU	14.6	X	236.52048	273.19887	318.11191	5.05064	0.0842822	0.27909057	2.3190277	21	—	—
12787 Abetadashi	14.0	X	227.67503	17.62482	328.62792	6.24573	0.1778309	0.29070662	2.2568331	21	3 16.6	17.7
12788 Shigeno	14.4	X	59.92133	170.57461	202.35977	6.13616	0.2400779	0.27418063	2.3466313	21	—	—
12789 Salvadoraguirre	13.2	X	285.56754	263.47584	304.70369	23.31154	0.1588385	0.27940133	2.3173079	21	—	—
12790 Cernan	15.3	X	119.29354	139.13334	99.98434	4.33856	0.0836445	0.26583752	2.3954762	21	10 28.5	18.7
12791 1995 UN_4	14.0	X	275.78322	95.78363	239.24016	5.43990	0.1647040	0.25369356	2.4713244	21	4 24.9	17.6
12792 1995 UL_6	15.0	X	337.71764	354.49510	339.98685	2.20511	0.1876367	0.26082709	2.4260566	21	8 7.2	16.7
12793 Hosinokokai	14.4	X	301.36959	291.59617	354.94650	3.36411	0.1383166	0.29003559	2.2603127	21	3 22.4	17.1
12794 1995 VL	14.5	X	47.48812	284.13469	60.42628	12.58398	0.1724949	0.23023083	2.6364957	21	12 22.2	18.2
12795 1995 VA_2	14.0	X	311.62662	141.18962	59.76833	10.10755	0.0574842	0.24148762	2.5539132	21	1 2.3	17.5
12796 Kamenrider	15.5	X	349.03216	163.18915	246.09676	10.58044	0.2049037	0.26745478	2.3858097	21	—	—
12797 1995 WL_4	15.1	X	209.71402	305.74445	137.30337	3.30337	0.1501287	0.25445832	2.4663703	21	7 8.1	18.8
12798 1995 WZ_4	14.4	X	220.69052	10.72095	104.71766	3.62925	0.1356842	0.25866143	2.4395793	21	9 3.9	17.8
12799 von Suttner	14.9	X	317.80461	231.64406	118.68279	1.65615	0.1376816	0.25894769	2.4377810	21	7 25.6	17.0
12800 Oobayashiarata	14.2	X	343.85941	44.63093	1.59102	0.88209	0.1825075	0.26582604	2.3955452	21	12 18.6	16.2

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
12801	Somekawa	14.4	*X*	239.39705	350.96834	63.78822	7.34160	0.1235766	0.25386466	2.4702138	21	7 5.3	17.9
12802	Hagino	15.0	*X*	271.68968	40.67881	64.58569	3.61351	0.1460637	0.26228501	2.4170580	21	10 25.0	17.5
12803	1995 *YF*	14.3	*X*	59.74845	206.19532	127.71148	3.15387	0.1999300	0.26698853	2.3885865	21	—	—
12804	1995 YJ_3	14.4	*X*	14.47388	27.48022	131.70152	5.32931	0.1907802	0.23697190	2.5862558	21	1 23.9	16.9
12805	1995 YL_{23}	14.3	*X*	91.50046	206.45210	61.64810	6.05896	0.1539300	0.26365978	2.4086487	21	11 9.1	17.8
12806	1996 *AN*	14.2	*X*	285.74931	7.45730	73.03721	3.07452	0.1689195	0.25995545	2.4314766	21	10 8.9	16.7
12807	1996 *AW*	14.8	*X*	115.59790	341.35580	100.28758	2.55536	0.0839850	0.24133586	2.5549838	21	3 23.7	18.1
12808	1996 AF_1	13.4	*X*	121.20742	293.98570	125.48671	8.36385	0.2889863	0.24192689	2.5508208	21	3 30.9	17.4
12809	1996 *BB*	12.9	*X*	323.64605	214.62369	119.41824	10.20712	0.1615310	0.21241503	2.7819280	21	7 7.5	15.9
12810	Okumiomote	14.3	*X*	151.38897	241.79422	110.62106	14.10330	0.2334185	0.23731360	2.5837726	21	1 28.4	18.3
12811	Rigonistern	14.8	*X*	205.41805	117.75066	338.63421	9.35451	0.1498384	0.28947908	2.2632087	21	7 24.5	18.3
12812	Cioni	14.7	*X*	174.95278	253.38274	16.79614	2.41061	0.1434043	0.26297409	2.4128338	21	—	—
12813	Paolapaolini	13.8	*X*	168.01249	155.61030	356.36665	9.02881	0.0899332	0.21204221	2.7851879	21	8 26.3	18.0
12814	Vittorio	14.0	*X*	208.96882	168.42958	194.25307	6.87354	0.1371563	0.28164684	2.3049745	21	3 22.5	17.5
12815	1996 DL_2	13.4	*X*	289.53953	189.30049	97.31347	3.44359	0.0044175	0.19969694	2.8988236	21	4 9.8	17.3
12816	1996 ES_1	13.7	*X*	101.37589	80.72441	175.26733	3.14599	0.1962203	0.17375310	3.1806387	21	10 28.4	18.7
12817	Federica	13.6	*X*	198.00104	57.14273	210.92308	3.83656	0.0130250	0.18390161	3.0625207	21	—	—
12818	Tomhanks	13.8	*X*	99.96590	227.87949	77.45763	3.85201	0.0595320	0.21754513	2.7380191	21	12 17.9	17.7
12819	Susumutakahasi	12.9	*X*	179.15353	44.55450	215.18258	7.33032	0.0411829	0.17860253	3.1228010	21	—	—
12820	Robinwilliams	13.1	*X*	214.18509	258.98353	117.20487	2.96408	0.0501252	0.19686756	2.9265319	21	4 26.1	17.3
12821	1996 RG_1	14.5	*X*	255.67378	18.49824	8.94910	5.74818	0.1655901	0.30605936	2.1807151	21	6 9.6	17.5
12822	1996 XD_1	14.5	*X*	75.52138	217.81299	93.63263	3.28161	0.1680704	0.31501325	2.1391940	21	12 26.6	17.4
12823	Pochintesta	14.7	*X*	173.06455	31.11390	293.69064	2.64058	0.1672593	0.28472963	2.2883069	21	—	—
12824	1997 AW_3	14.4	*X*	49.29893	343.70325	131.40685	5.54610	0.0535579	0.28685520	2.2769888	21	1 15.6	16.9
12825	1997 AJ_7	15.6	*X*	237.16190	266.02365	274.99991	1.30233	0.1518644	0.27282458	2.3544007	21	12 18.1	18.4
12826	1997 AO_7	14.5	*X*	20.02523	121.97152	152.18268	4.90532	0.1286702	0.29948188	2.2125292	21	8 3.1	16.4
12827	1997 AS_7	13.9	*X*	190.03153	128.60697	116.22020	7.46155	0.0884585	0.27063598	2.3670768	21	—	—
12828	Batteas	14.5	*X*	334.33711	87.63353	150.15828	3.69012	0.1331261	0.28979839	2.2615459	21	3 2.6	16.8
12829	1997 AB_{13}	14.0	*X*	166.35517	343.11292	64.72291	3.18774	0.0164782	0.29231014	2.2485720	21	3 28.7	16.6
12830	1997 BP_1	15.0	*X*	15.62729	6.66733	30.61253	1.90451	0.2001461	0.27548162	2.3392374	21	—	—
12831	1997 BS_6	14.7	*X*	140.26097	344.63927	126.67368	7.71615	0.1117128	0.29578229	2.2309402	21	6 2.6	17.8
12832	1997 CE_1	13.9	*X*	61.32968	4.05004	10.37193	7.11321	0.2388766	0.27675639	2.3320487	21	—	—
12833	Kamenný Újezd	14.9	*X*	110.00106	197.74237	110.40709	2.62881	0.1581198	0.31675149	2.1313606	21	—	—
12834	Bomben	14.4	*X*	18.87561	189.53770	128.98495	4.06317	0.1523374	0.30651894	2.1785348	21	10 20.8	16.3
12835	Stropek	14.3	*X*	161.59407	163.36683	135.29482	7.81789	0.1264516	0.27854671	2.3220453	21	—	—
12836	1997 CA_{22}	14.5	*X*	171.08648	28.29351	156.27341	1.52363	0.0686484	0.30469499	2.1872202	21	10 18.9	17.3
12837	1997 EK_{35}	14.5	*X*	220.00237	190.43580	134.82755	5.88824	0.1900418	0.28817931	2.2700087	21	2 13.9	18.2
12838	Adamsmith	13.0	*X*	116.50109	89.73504	322.00196	1.16337	0.0677338	0.20121449	2.8842299	21	2 16.9	16.8
12839	1997 FB_2	14.3	*X*	214.48920	230.18235	120.41608	8.83632	0.1996389	0.24361456	2.5390264	21	3 19.9	18.6
12840	Paolaferrari	14.4	*X*	263.37345	82.43980	110.63091	5.36127	0.1405527	0.27446279	2.3450228	21	—	—
12841	1997 GD_8	14.9	*X*	308.62688	173.37763	28.92177	0.29255	0.1609895	0.27798549	2.3251695	21	—	—
12842	1997 GQ_{23}	13.9	*X*	25.85484	331.66690	329.23878	2.02120	0.0638322	0.21481439	2.7611742	21	9 8.2	17.3
12843	Ewers	14.6	*X*	142.01690	89.84563	20.51035	3.06356	0.1212258	0.25278016	2.4772741	21	6 3.8	18.3
12844	1997 JE_{10}	12.5	*X*	315.00840	81.03029	74.90834	11.52506	0.0578127	0.19094530	2.9867353	21	—	—
12845	Crick	14.3	*X*	44.12264	153.21014	94.89954	2.97076	0.0170093	0.21081673	2.7959711	21	7 19.7	18.0
12846	Fullerton	14.2	*X*	95.46422	137.35033	208.79037	7.62170	0.0376588	0.18584136	3.0411731	21	—	—
12847	1997 NQ_2	13.6	*X*	164.26620	255.34776	281.42417	29.77488	0.1334283	0.21131659	2.7915602	21	9 1.7	18.8
12848	Agostino	13.6	*X*	152.82100	249.57426	172.82109	15.06750	0.0964868	0.23486100	2.6017293	21	4 15.9	17.5
12849	1997 QD_2	12.1	*X*	311.80363	91.48407	142.88060	10.91604	0.0664825	0.18907337	3.0064165	21	2 23.1	16.3
12850	Axelmunthe	14.1	*X*	190.12400	314.24709	349.79143	4.18091	0.2108858	0.29090262	2.2558193	21	—	—
12851	1998 DT_9	15.1	*X*	24.72264	346.13453	344.76504	2.03061	0.1188276	0.31683617	2.1309808	21	11 11.8	17.3
12852	Teply	14.4	*X*	202.42890	115.53320	163.90156	6.47182	0.1449067	0.28801195	2.2708880	21	—	—
12853	1998 FZ_{97}	13.5	*X*	155.57638	65.35949	232.01744	6.04512	0.2276406	0.24121171	2.5558604	21	—	—
12854	1998 HA_{13}	15.0	*X*	54.60515	83.52361	236.02201	5.23434	0.2952243	0.26921432	2.3754029	21	12 21.5	18.7
12855	Tewksbury	14.6	*X*	139.46788	121.57395	197.04533	2.20776	0.1772712	0.24051337	2.5608053	21	—	—
12856	1998 HH_{93}	13.9	*X*	207.98543	75.68112	355.47744	2.41337	0.0711678	0.30534075	2.1841353	21	6 24.4	16.8
12857	1998 HQ_{97}	13.5	*X*	122.68294	343.36623	8.88962	2.02199	0.0745054	0.19916930	2.9039410	21	—	—
12858	1998 JD_2	15.0	*X*	209.87604	96.79289	186.65050	4.61443	0.1838625	0.28441978	2.2899685	21	—	—
12859	Marlamoore	14.7	*X*	141.51373	306.50563	47.12965	3.41914	0.1776536	0.28461595	2.2889162	21	1 4.0	17.6
12860	Turney	14.6	*X*	23.24737	247.35944	42.04743	4.77540	0.1278086	0.26300483	2.4126458	21	9 3.5	17.0
12861	Wacker	14.7	*X*	107.37715	214.62442	144.56152	0.92953	0.1181558	0.23835415	2.5762474	21	—	—
12862	1998 KV_{37}	14.7	*X*	212.73220	195.80473	109.72102	6.75931	0.2072309	0.24343759	2.5402568	21	1 20.8	19.0
12863	Whitfield	14.7	*X*	276.38193	124.97495	125.78044	2.93335	0.0953899	0.28835611	2.2690807	21	1 9.3	17.7
12864	1998 KB_{55}	13.9	*X*	335.99797	206.76426	164.72045	8.98574	0.1400226	0.22282772	2.6945727	21	9 29.5	16.7
12865	1998 KL_{55}	13.3	*X*	83.06246	89.02108	200.90273	9.11870	0.0792279	0.18467680	3.0539446	21	11 8.1	17.7
12866	Yanamadala	14.8	*X*	41.60403	228.32000	44.65760	2.91997	0.1867878	0.26253128	2.4155462	21	9 19.3	17.4
12867	Joëloïc	13.8	*X*	135.33920	177.22246	163.33691	6.64255	0.2104744	0.27892808	2.3199283	21	—	—
12868	Onken	12.9	*X*	61.27103	92.03900	246.82099	14.15076	0.2866039	0.17998040	3.1068425	21	—	—
12869	1998 MR_{32}	13.9	*X*	136.28352	162.27883	221.51313	1.86406	0.0643378	0.19760365	2.9192597	21	2 5.8	17.9
12870	Rolandmeier	13.9	*X*	220.76858	358.39324	276.20683	7.18452	0.1757678	0.23864239	2.5741725	21	—	—
12871	Samarasinha	14.1	*X*	171.70285	296.67057	112.59601	5.32279	0.1719310	0.28821674	2.2698121	21	4 19.4	17.6
12872	Susiestevens	14.4	*X*	293.72517	57.34097	213.07127	3.21904	0.1368924	0.29046697	2.2580742	21	2 17.7	17.3
12873	Clausewitz	14.4	*X*	132.78246	26.87158	297.70614	5.33586	0.1247839	0.27439666	2.3453995	21	—	—
12874	Poisson	13.6	*X*	3.09353	92.47457	175.92107	1.76274	0.0639020	0.20527993	2.8460229	21	6 19.8	17.1
12875	1998 QA_2	14.6	*X*	9.69118	197.92141	216.54688	3.08999	0.1989177	0.22426163	2.6830745	21	—	—
12876	1998 QR_{10}	13.8	*X*	189.59676	35.67290	301.61295	0.97207	0.0815846	0.19672059	2.9279894	21	2 9.8	18.2
12877	1998 QF_{11}	13.5	*X*	313.40661	15.36768	116.09672	12.76234	0.0822366	0.27342340	2.3509619	21	—	—
12878	Erneschiller	14.3	*X*	121.53250	244.05737	94.45095	3.64023	0.0968746	0.23178468	2.6246994	21	—	—
12879	1998 QN_{18}	13.5	*X*	267.99397	223.19229	334.63512	10.20366	0.0582255	0.18969208	2.9998756	21	—	—
12880	Juliegrady	14.7	*X*	62.82737	318.65724	32.04746	2.80090	0.0064981	0.22549902	2.6732502	21	12 25.3	18.2

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
12881 Yepeiyu	14.5	*X*	156.42001	199.28316	134.60543	3.60240	0.1559980	0.23429097	2.6059476	21	1 2.8	18.4
12882 1998 QS_{31}	12.3	*X*	36.11119	295.40996	347.26956	13.89720	0.1233564	0.17193905	3.2029712	21	9 4.2	16.2
12883 1998 QY_{32}	14.1	*X*	11.98905	343.26948	211.13499	3.05911	0.0929627	0.28733446	2.2744562	21	3 7.2	16.1
12884 1998 QL_{34}	13.0	*X*	306.01281	294.77049	115.72151	2.44093	0.1450666	0.17209904	3.2009858	21	9 21.6	17.0
12885 1998 QM_{34}	13.8	*X*	53.01545	85.75025	136.44656	8.07159	0.1417459	0.21025716	2.8009295	21	7 13.9	17.3
12886 1998 QG_{35}	13.3	*X*	322.51542	29.70370	344.44975	8.69230	0.1780108	0.21429238	2.7656564	21	9 1.5	16.2
12887 1998 QP_{35}	13.4	*X*	2.36874	283.04819	86.00011	2.60206	0.2118678	0.17467211	3.1694726	21	11 9.9	16.8
12888 1998 QR_{42}	12.8	*X*	213.48514	353.33797	177.11461	15.84704	0.1379785	0.17820418	3.1274530	21	10 28.8	17.8
12889 1998 QW_{42}	13.0	*X*	178.19848	7.14152	205.08047	1.58807	0.1278316	0.18001465	3.1064484	21	11 11.8	18.0
12890 1998 QG_{43}	12.9	*X*	229.43970	44.32623	147.90799	11.92411	0.0056957	0.18235335	3.0798310	21	12 24.8	17.4
12891 1998 QH_{51}	13.6	*X*	313.53632	166.44725	189.44885	3.63999	0.1114001	0.21090578	2.7951840	21	7 26.9	16.9
12892 1998 QE_{52}	13.0	*X*	245.92837	210.25929	244.19144	5.77486	0.1415846	0.21203992	2.7852080	21	8 27.8	17.1
12893 Mommert	13.9	*X*	300.71416	183.30094	185.43992	2.32942	0.0706910	0.20695823	2.8306157	21	7 30.6	17.6
12894 1998 QN_{73}	13.3	*X*	81.67491	49.42143	269.41388	10.66092	0.2060740	0.22375723	2.6871052	21	12 29.3	17.6
12895 Balbastre	14.8	*X*	119.45441	37.37506	128.61997	6.11789	0.1039797	0.29420159	2.2389241	21	7 22.4	17.7
12896 Geoffroy	12.3	*X*	318.73526	322.02586	46.96095	6.33283	0.2882132	0.12449102	3.9723182	21	7 27.8	16.9
12897 Bougeret	14.4	*X*	159.85168	135.44061	22.40696	3.97189	0.0876932	0.29828771	2.2184304	21	8 29.5	17.4
12898 Mignard	13.2	*X*	41.17234	151.93242	151.02546	6.39232	0.1483101	0.17412962	3.1760521	21	10 12.4	17.4
12899 1998 RN_{13}	14.4	*X*	197.02292	58.32147	114.03268	3.22975	0.1240933	0.26481591	2.4016331	21	10 24.3	17.8
12900 1998 RP_{28}	14.1	*X*	95.22911	118.90584	151.26503	2.95729	0.1523011	0.17731334	3.1379194	21	11 4.7	18.9
12901 1998 RF_{50}	13.5	*X*	53.46192	320.34172	153.10639	6.60127	0.1100574	0.19223519	2.9733597	21	2 14.9	17.2
12902 1998 RW_{52}	12.6	*X*	295.72894	162.41439	13.25718	9.69372	0.0471131	0.18667957	3.0320628	21	—	—
12903 1998 RK_{57}	14.0	*X*	64.18573	127.86213	154.23794	2.61432	0.1950807	0.26061756	2.4273567	21	11 2.1	17.2
12904 1998 RB_{65}	13.3	*X*	98.68606	145.53092	92.26110	0.08326	0.1349371	0.17162093	3.2069281	21	9 27.4	18.1
12905 1998 RJ_{72}	13.2	*X*	91.67653	169.08582	88.39293	2.43917	0.1426191	0.17313068	3.1882572	21	10 15.7	17.9
12906 1998 RS_{72}	13.8	*X*	161.76211	13.62968	154.96871	4.22653	0.0321441	0.21133801	2.7913715	21	9 7.2	17.7
12907 1998 RV_{79}	13.6	*X*	209.23720	139.40871	106.91457	3.49395	0.1618771	0.22867297	2.6484564	21	—	—
12908 Yagudina	12.9	*X*	286.08794	140.99925	46.14598	13.64207	0.1136590	0.22729812	2.6591254	21	—	—
12909 Jaclifford	14.5	*X*	83.19037	126.28929	9.10883	2.65085	0.1119042	0.24085723	2.5583675	21	4 23.1	17.6
12910 Deliso	14.6	*X*	50.90564	0.94385	115.76774	3.01361	0.0540608	0.23456130	2.6039450	21	2 2.8	17.8
12911 Goodhue	13.0	*X*	148.21518	175.12955	96.88377	2.43303	0.1565540	0.18097348	3.0954663	21	12 23.4	17.9
12912 Streator	13.3	*X*	114.83374	141.97199	109.76832	2.70015	0.1373153	0.17516371	3.1635397	21	10 31.5	18.3
12913 1998 SR_{130}	13.4	*X*	31.95675	98.61654	213.33859	5.62701	0.0521576	0.21279351	2.7786283	21	9 29.3	17.0
12914 1998 SJ_{141}	12.8	*X*	277.32941	156.82121	23.02573	13.48089	0.1064836	0.22460748	2.6803195	21	—	—
12915 1998 SL_{161}	13.6	*X*	267.36700	359.45022	219.54194	1.40803	0.1624890	0.22991669	2.6388967	21	—	—
12916 Eteoneus	11.4	*X*	294.02161	215.28436	219.32471	26.41966	0.0213867	0.08453109	5.1419171	21	10 5.3	18.3
12917 1998 TG_{16}	11.4	*X*	298.52613	229.17348	204.18692	11.84895	0.0931614	0.08363743	5.1784794	21	10 2.5	18.1
12918 1998 UF_{21}	12.0	*X*	268.77464	220.41454	46.32291	11.39712	0.0598046	0.18935906	3.0033918	21	2 16.5	16.5
12919 Tomjohnson	13.9	*X*	237.24921	67.07929	256.60913	6.36785	0.2179622	0.28744499	2.2738731	21	2 22.6	17.8
12920 1998 VM_{15}	10.9	*X*	13.00835	87.47467	220.70973	6.33017	0.2069085	0.12337813	3.9961697	21	8 30.0	15.6
12921 1998 WZ_{5}	11.0	*X*	311.82622	273.58488	160.16757	12.80309	0.0937895	0.08212073	5.2420462	21	10 23.5	17.7
12922 1998 WW_{19}	13.0	*X*	41.65720	267.90790	96.24591	7.87104	0.0493575	0.17348450	3.1839208	21	12 11.3	17.5
12923 Zephyr	15.7	*X*	341.35562	147.09278	168.18774	5.30536	0.4921763	0.35872674	1.9616742	21	4 26.2	16.3
12924 1999 RK_{21}	15.5	*X*	341.79398	299.52144	24.01212	2.75206	0.1702140	0.31133427	2.1560133	21	8 4.2	16.6
12925 1999 SN_{4}	14.0	*X*	218.16050	60.87769	12.20984	10.41793	0.1290460	0.25953088	2.4341277	21	7 6.9	17.8
12926 Brianmason	13.5	*X*	315.22917	308.92227	44.88733	8.78366	0.2215543	0.22352433	2.6889714	21	7 13.1	16.5
12927 Pinocchio	15.7	*X*	66.16545	21.91671	11.70428	3.80765	0.1345327	0.28174003	2.3044662	21	—	—
12928 Nicolapozio	14.0	*X*	35.78209	124.44914	201.31765	14.12066	0.0758355	0.22528680	2.6749288	21	10 30.3	17.4
12929 1999 TZ_{1}	10.0	*X*	314.30633	128.38500	200.22178	43.42344	0.0402507	0.08206791	5.2442951	21	6 24.8	17.4
12930 1999 TJ_{6}	13.6	*X*	214.63139	61.15759	49.29807	1.45100	0.1358948	0.16924226	3.2369067	21	8 16.6	18.6
12931 Mario	13.9	*X*	253.41061	328.67968	123.87307	3.38680	0.0062126	0.22041553	2.7141963	21	9 28.5	17.5
12932 Conedera	14.8	*X*	302.14004	232.97561	114.01506	3.42098	0.2036601	0.26115950	2.4239975	21	6 11.1	17.5
12933 1999 TC_{16}	15.3	*X*	213.11904	169.31756	186.58875	2.00401	0.1570290	0.29648710	2.2274033	21	3 16.7	18.8
12934 Bisque	15.4	*X*	246.13245	267.04629	83.25156	2.21157	0.1011678	0.29844761	2.2176379	21	4 16.3	18.2
12935 Zhengzhemin	15.3	*X*	179.03808	230.32270	38.24781	5.82025	0.0982306	0.28003045	2.3138358	21	—	—
12936 2549 *P–L*	13.8	*X*	191.53704	284.24125	167.45227	2.14256	0.0371196	0.20685291	2.8315764	21	7 4.1	17.9
12937 Premadi	13.4	*X*	309.92964	253.21564	290.26988	11.11271	0.1814152	0.23253020	2.6190863	21	—	—
12938 4161 *P–L*	14.6	*X*	317.38126	157.04155	337.61582	7.22214	0.1435161	0.23038712	2.6353032	21	—	—
12939 4206 *P–L*	14.5	*X*	133.25215	328.81372	349.99786	11.77642	0.1709926	0.28015140	2.3131698	21	—	—
12940 4588 *P–L*	15.2	*X*	133.78820	143.95696	187.87292	5.68150	0.1754946	0.28067735	2.3102792	21	—	—
12941 4638 *P–L*	15.3	*X*	94.48394	198.76346	137.39001	1.67479	0.0849657	0.23028532	2.6360798	21	—	—
12942 6054 *P–L*	14.3	*X*	10.67928	182.05169	204.49084	3.85014	0.1918478	0.17911801	3.1168068	21	12 15.7	17.9
12943 6670 *P–L*	14.6	*X*	352.92761	119.71319	10.19382	3.93937	0.1305743	0.23200750	2.6230185	21	—	—
12944 6745 *P–L*	14.2	*X*	303.85960	331.25785	138.94396	2.05203	0.1498661	0.18017319	3.1046259	21	12 4.2	17.8
12945 9534 *P–L*	14.3	*X*	128.16441	62.22662	172.19668	3.22535	0.1348552	0.26055329	2.4277559	21	11 1.7	18.1
12946 1290 *T–1*	14.9	*X*	264.01426	284.92710	194.79787	6.20053	0.0667707	0.26611036	2.3938386	21	11 15.7	17.7
12947 3099 *T–1*	14.3	*X*	182.26207	102.85309	336.21276	5.45835	0.1102827	0.29885748	2.2156099	21	6 3.2	17.5
12948 4273 *T–1*	14.3	*X*	78.12540	316.07934	135.20102	5.70982	0.1167507	0.19598353	2.9353260	21	2 24.9	18.1
12949 4290 *T–1*	12.4	*X*	356.45667	227.67718	23.32479	12.44710	0.1473921	0.16160252	3.3381355	21	5 13.1	16.5
12950 4321 *T–1*	14.4	*X*	341.21049	76.07014	59.55935	2.54761	0.1493043	0.23202335	2.6228991	21	—	—
12951 1041 *T–2*	13.5	*X*	180.94071	161.36248	175.70285	2.05857	0.1132448	0.19482026	2.9469989	21	2 2.4	18.1
12952 1102 *T–2*	14.7	*X*	238.57297	75.35655	198.62439	1.59810	0.0742055	0.19471729	2.9480377	21	1 16.0	19.0
12953 1264 *T–2*	14.4	*X*	65.73874	40.02074	354.86295	2.16555	0.1239441	0.23208309	2.6224490	21	—	—
12954 2040 *T–2*	14.1	*X*	132.62246	221.65679	187.89691	7.29866	0.0154279	0.19578931	2.9372668	21	2 26.1	18.2
12955 2162 *T–2*	15.2	*X*	157.68046	85.36867	192.82777	4.44609	0.0808130	0.23151769	2.6267169	21	—	—
12956 2232 *T–2*	14.9	*X*	36.42675	178.90695	174.73371	3.89737	0.0939228	0.26975334	2.3722375	21	12 17.7	17.8
12957 2258 *T–2*	15.1	*X*	109.07732	188.28421	154.93957	2.09163	0.0838755	0.23203642	2.6228006	21	—	—
12958 2276 *T–2*	14.9	*X*	142.02157	247.55406	29.87600	2.37778	0.0664122	0.23044999	2.6348239	21	—	—
12959 3086 *T–2*	14.7	*X*	66.51548	283.91115	62.43669	4.16577	0.0768240	0.23018380	2.6368548	21	—	—
12960 4165 *T–2*	14.6	*X*	56.36441	242.54440	170.93589	4.83119	0.0941519	0.23245014	2.6196876	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
12961	4262 *T–2*	15.6	*X*	111.88577	168.00304	77.85945	3.50649	0.1347246	0.30985634	2.1628636	21	11 6.0	18.6
12962	4297 *T–2*	13.0	*X*	96.09461	80.22342	75.47097	3.43653	0.0242022	0.15841155	3.3828143	21	5 30.5	17.7
12963	5485 *T–2*	13.9	*X*	295.12892	133.62696	298.36125	5.68097	0.0869803	0.26759006	2.3850056	21	10 20.9	16.7
12964	1071 *T–3*	14.3	*X*	353.25632	0.16360	324.59514	5.93449	0.1479699	0.26740520	2.3861046	21	8 28.2	16.2
12965	1080 *T–3*	13.3	*X*	287.50214	258.11087	332.19126	11.13110	0.1109843	0.23446320	2.6046713	21	1 6.9	17.1
12966	1102 *T–3*	13.5	*X*	251.69312	270.83822	247.62004	11.57379	0.1573594	0.18192810	3.0846285	21	11 19.2	17.9
12967	3105 *T–3*	14.8	*X*	320.72205	172.70318	170.78004	2.71713	0.1803883	0.26639420	2.3921379	21	7 13.7	17.1
12968	3261 *T–3*	14.0	*X*	202.35424	193.88306	71.88888	1.29611	0.0687791	0.18632426	3.0359162	21	—	—
12969	3482 *T–3*	14.9	*X*	349.14585	77.79837	334.11138	0.33421	0.1624368	0.18054500	3.1003620	21	12 8.3	18.4
12970	4012 *T–3*	13.4	*X*	125.96622	279.07292	40.77848	10.62971	0.0643798	0.18490783	3.0514002	21	—	—
12971	4054 *T–3*	13.3	*X*	87.81786	266.08035	41.83655	10.59387	0.1047909	0.18240620	3.0792361	21	12 4.9	17.9
12972	Eumaios	11.7	*X*	10.07666	339.82366	40.50305	8.44115	0.1522019	0.08453182	5.1418875	21	11 10.9	17.9
12973	Melanthios	11.5	*X*	349.34901	37.53732	358.13579	5.74563	0.0587745	0.08512378	5.1180217	21	10 26.7	18.0
12974	Halitherses	11.3	*X*	12.24161	3.69953	15.15364	7.60618	0.0523949	0.08352198	5.1832505	21	11 4.9	17.9
12975	Efremov	13.2	*X*	138.91642	217.43762	186.28400	15.13455	0.1417501	0.23681793	2.5873767	21	3 7.9	16.9
12976	Kalinenkov	14.3	*X*	284.39197	123.37626	200.03929	2.45247	0.2010066	0.25822991	2.4422963	21	4 15.4	17.8
12977	1978 *NC*	14.3	*X*	175.51772	190.69078	114.42471	27.63488	0.1985433	0.24091277	2.5579742	21	—	—
12978	Ivashov	14.5	*X*	347.11079	97.86419	216.64588	3.74125	0.2005115	0.29630923	2.2282945	21	7 26.9	15.7
12979	Evgalvasil′ev	14.8	*X*	188.77861	354.59687	14.61602	5.35041	0.1779115	0.28851722	2.2682359	21	3 13.8	18.3
12980	1978 VO_3	15.6	*X*	126.02389	122.12838	211.23801	2.37380	0.1876587	0.28103616	2.3083124	21	—	—
12981	1978 VP_3	14.1	*X*	78.11269	20.74571	84.11188	4.04443	0.0735037	0.19228164	2.9728809	21	3 10.2	18.0
12982	1979 MS_5	15.1	*X*	194.69087	108.45135	118.88062	6.47514	0.0985427	0.26726883	2.3869162	21	—	—
12983	1979 OH_1	12.9	*X*	184.63344	106.81086	137.04067	12.30712	0.0660195	0.17343027	3.1845846	21	12 26.9	17.8
12984	Lowry	14.0	*X*	225.69665	214.22552	158.60341	2.47411	0.0795994	0.20582811	2.8409675	21	5 1.9	18.2
12985	1980 UW_1	14.9	*X*	16.12408	40.53265	309.47929	1.65509	0.1948177	0.26552634	2.3973474	21	11 27.6	17.4
12986	1981 DM_2	14.4	*X*	147.17957	82.26588	320.33804	10.17537	0.1042524	0.19651758	2.9300056	21	3 14.3	18.9
12987	1981 EF_2	13.6	*X*	143.53378	322.52784	300.31164	6.48947	0.0305906	0.26058651	2.4275495	21	12 22.4	16.7
12988	1981 EC_5	15.7	*X*	14.10189	74.64759	273.06712	6.13519	0.0587110	0.30580872	2.1819065	21	11 6.8	18.0
12989	1981 EV_9	16.1	*X*	172.06071	206.21821	286.30513	4.31975	0.0689266	0.30231678	2.1986759	21	8 5.9	18.8
12990	1981 EB_{17}	14.3	*X*	62.47211	237.74795	338.90805	3.29655	0.0547204	0.25101944	2.4888448	21	7 8.3	17.3
12991	1981 EN_{21}	14.2	*X*	2.10578	37.02398	187.33481	1.80372	0.0114695	0.19908163	2.9047935	21	4 21.9	18.1
12992	1981 EZ_{22}	15.3	*X*	340.24117	325.87468	355.44234	2.45219	0.1883425	0.30094215	2.2053661	21	7 23.9	16.6
12993	1981 EP_{27}	14.1	*X*	253.69653	163.58303	185.69803	12.50336	0.0400421	0.19988844	2.8969718	21	5 10.3	18.3
12994	1981 ET_{27}	14.5	*X*	290.90402	75.38756	167.61561	2.21876	0.0285501	0.19494790	2.9457124	21	2 11.1	18.6
12995	1981 EY_{27}	13.9	*X*	263.58382	301.23378	5.74993	11.76586	0.1821489	0.24536329	2.5269481	21	3 9.5	17.8
12996	1981 EV_{28}	14.4	*X*	154.70480	114.56667	210.50983	10.17965	0.0984447	0.19123025	2.9837675	21	—	—
12997	1981 EV_{29}	15.4	*X*	98.68999	37.76604	209.84932	12.62500	0.1469564	0.23055292	2.6340396	21	10 15.9	19.3
12998	1981 EB_{43}	15.5	*X*	317.75532	243.55983	9.01554	1.97274	0.0536657	0.24629104	2.5205983	21	3 18.6	18.5
12999	Toruń	13.9	*X*	210.55309	211.22228	152.26295	5.76918	0.1887425	0.28753506	2.2733982	21	3 26.6	17.6
13000	1981 QK_3	14.2	*X*	112.49435	10.36797	344.43753	12.24994	0.1139356	0.23095625	2.6309720	21	—	—
13001	Woodney	14.4	*X*	72.82644	4.81966	24.11555	3.75903	0.1557424	0.27768273	2.3268594	21	—	—
13002	1982 BJ_{13}	13.8	*X*	76.69088	341.69661	300.35419	5.02326	0.0861460	0.26544251	2.3978521	21	10 30.9	17.1
13003	Dickbeasley	13.9	*X*	204.81732	33.27093	177.51516	26.56713	0.2057638	0.24101839	2.5572269	21	12 8.6	18.5
13004	Aldaz	14.0	*X*	112.20649	186.96424	173.79642	14.21221	0.2968871	0.23634916	2.5907967	21	1 3.9	17.6
13005	Stankonyukhov	13.0	*X*	150.79923	301.85493	352.78056	12.40126	0.1729772	0.18517029	3.0485162	21	—	—
13006	Schwaar	13.8	*X*	72.09848	358.07696	129.23195	28.53316	0.2026768	0.28751516	2.2735031	21	4 15.0	16.8
13007	1984 *AU*	13.1	*X*	145.95490	87.69701	330.45404	3.23519	0.1336149	0.24448292	2.5330108	21	4 1.6	16.8
13008	1984 SE_6	14.0	*X*	99.71516	318.60855	6.21193	3.28276	0.2029481	0.27362566	2.3498032	21	—	—
13009	Voloshchuk	13.1	*X*	194.57655	214.62329	145.31367	14.05602	0.1990885	0.23567923	2.5957041	21	3 14.4	17.5
13010	Germantitov	12.4	*X*	18.80289	119.01413	325.60007	13.66431	0.1054323	0.17836722	3.1255469	21	—	—
13011	Loeillet	13.5	*X*	74.18586	29.68413	332.93864	10.51142	0.1262864	0.18168485	3.0873811	21	—	—
13012	1987 SO_5	12.8	*X*	98.96740	61.28394	354.51738	8.33799	0.0167812	0.18642250	3.0348495	21	1 29.4	17.1
13013	1987 SP_{12}	13.3	*X*	44.64568	187.76423	185.79042	2.71446	0.2522519	0.17838368	3.1253546	21	—	—
13014	Hasslacher	13.2	*X*	13.48216	0.38776	32.41622	7.04886	0.1245558	0.17581939	3.1556697	21	12 17.9	17.3
13015	Noradokei	13.8	*X*	128.13038	284.57492	55.39452	16.51070	0.2646062	0.24087918	2.5582120	21	—	—
13016	1988 DB_5	14.3	*X*	336.54141	13.25672	200.38882	12.86703	0.1072003	0.23857866	2.5746309	21	2 10.4	17.7
13017	Owakenoomi	13.5	*X*	20.51699	184.14364	15.05673	13.73160	0.1159393	0.24042343	2.5614439	21	4 7.8	16.0
13018	Geoffjames	12.7	*X*	283.70039	49.37942	226.99401	13.36721	0.1760986	0.23581493	2.5947081	21	2 13.7	17.0
13019	1988 *NW*	13.0	*X*	250.62710	353.84850	304.05741	13.06547	0.1766878	0.23004446	2.6379195	21	2 11.8	17.4
13020	1988 PW_2	13.5	*X*	213.33017	72.81327	175.70815	10.58624	0.0354531	0.19094558	2.9867324	21	—	—
13021	1988 RY_5	13.3	*X*	313.21832	165.20378	184.84224	1.99753	0.0923977	0.20723913	2.8280573	21	7 21.2	16.8
13022	1988 RL_9	13.8	*X*	295.86459	63.32417	327.87967	5.11574	0.1063815	0.29912730	2.2142773	21	8 25.7	15.7
13023	1988 XT_1	12.9	*X*	48.30989	9.75320	41.11484	17.91885	0.2995696	0.18435493	3.0574982	21	—	—
13024	Conradferdinand	14.2	*X*	162.49576	284.32797	317.94471	5.71016	0.1009949	0.26572739	2.3961380	21	12 15.7	17.7
13025	Zürich	13.6	*X*	294.31229	141.35995	342.58023	23.95930	0.2782347	0.26833531	2.3805876	21	12 20.0	16.0
13026	1989 *CX*	13.9	*X*	22.99491	146.71217	328.03961	24.41927	0.2310616	0.27449856	2.3448190	21	—	—
13027	Geeraerts	13.7	*X*	347.54267	286.73184	237.02349	3.76205	0.1120690	0.24125224	2.5555741	21	—	—
13028	Klaustschira	13.7	*X*	355.76055	208.33613	118.47956	13.08084	0.2148683	0.25141702	2.4862203	21	9 15.2	15.8
13029	1989 *HA*	13.2	*X*	242.16258	125.09255	142.62692	15.07557	0.1665126	0.23778137	2.5803830	21	1 1.7	17.6
13030	1989 *PF*	13.0	*X*	4.29508	190.74831	147.21914	18.73816	0.2423375	0.21692817	2.7432081	21	10 21.1	15.9
13031	Durance	13.5	*X*	14.23544	52.58560	157.17964	4.25924	0.1314266	0.23527418	2.5986824	21	4 14.4	16.2
13032	Tarn	14.4	*X*	310.31798	281.60585	171.88344	4.87452	0.0417776	0.21917103	2.7244611	21	12 9.7	18.0
13033	Gardon	14.0	*X*	189.95926	111.75096	164.65457	6.50332	0.0408996	0.22514219	2.6760740	21	—	—
13034	1989 *UN*	14.5	*X*	355.70452	6.65324	12.92656	3.47605	0.1236609	0.30971530	2.1635201	21	12 5.5	16.4
13035	1989 UA_6	11.8	*X*	102.60098	211.59264	58.12227	3.63253	0.1597037	0.12436242	3.9750562	21	11 5.1	17.7
13036	1989 YO_3	14.7	*X*	200.97296	150.36021	72.42290	1.35301	0.0680063	0.27617848	2.3353008	21	—	—
13037	Potosi	14.7	*X*	13.39448	39.32503	209.95773	5.16006	0.0869685	0.29041098	2.2583644	21	6 6.4	16.7
13038	Woolston	13.7	*X*	75.45438	144.59307	337.03283	7.97062	0.0400661	0.19137883	2.9822230	21	3 19.5	17.7
13039	Awashima	12.5	*X*	152.06365	66.44135	174.98723	11.47251	0.1749957	0.17440089	3.1727578	21	11 23.2	17.9
13040	1990 OB_4	13.7	*X*	42.85603	84.47778	271.41674	11.49602	0.2453884	0.22884684	2.6471147	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
13041	1990 OS_4	13.1	X	2.18671	235.52087	269.16451	14.08142	0.0533952	0.24075912	2.5590625	21	—	—
13042	1990 QE	13.9	X	166.81060	49.80022	307.64034	16.70963	0.2390931	0.23941118	2.5686589	21	2 12.8	18.3
13043	1990 QT_4	13.5	X	109.91011	48.52426	1.52629	15.17937	0.0968905	0.23865529	2.5740798	21	2 9.8	17.0
13044	Wannes	13.7	X	140.44775	96.85745	341.51655	12.14839	0.1448221	0.24366853	2.5386515	21	4 18.6	17.6
13045	Vermandere	14.9	X	124.81140	77.20840	334.10975	0.64969	0.0957041	0.24034430	2.5620061	21	2 24.2	18.4
13046	Aliev	15.0	X	222.69391	11.07046	313.60677	2.95088	0.2617674	0.24180461	2.5516807	21	2 19.0	19.5
13047	1990 RJ_5	14.4	X	161.10426	184.20005	266.93367	2.80614	0.1477111	0.24518544	2.5281700	21	5 31.9	18.3
13048	1990 RR_7	14.5	X	273.74746	114.50905	164.01702	6.40825	0.1315291	0.24297191	2.5435016	21	2 14.4	18.4
13049	Butov	13.3	X	120.38905	226.62050	193.06632	13.44564	0.1632282	0.23862698	2.5742834	21	3 9.2	16.9
13050	1990 SY	13.4	X	176.01448	337.25153	330.59737	8.40546	0.1865845	0.23603677	2.5930821	21	—	—
13051	1990 SF_5	15.0	X	155.55786	193.44606	153.76872	4.52909	0.1085130	0.23677768	2.5876699	21	1 12.2	18.7
13052	Las Casas	13.9	X	204.40432	144.55594	59.78952	4.12721	0.0389557	0.22870183	2.6482336	21	12 13.9	17.4
13053	Bertrandrussell	14.8	X	86.93999	307.15062	116.42119	5.44561	0.2958634	0.23546922	2.5972472	21	2 22.4	17.6
13054	1990 ST_{15}	13.7	X	219.87326	309.04350	311.82093	6.22372	0.0856866	0.26919549	2.3755136	21	—	—
13055	Kreppein	13.9	X	345.77041	17.35783	38.78443	13.69622	0.1706898	0.22376295	2.6870594	21	12 20.2	16.9
13056	1990 VN_1	13.4	X	90.45635	347.99735	45.87287	8.73185	0.1152992	0.23181534	2.6244679	21	—	—
13057	Jorgensen	13.9	X	313.23279	328.26511	24.67836	8.32336	0.1825249	0.21778434	2.7360138	21	7 15.0	17.1
13058	Alfredstevens	14.5	X	175.31401	214.78865	197.06708	6.10618	0.1165081	0.27228221	2.3575263	21	4 22.9	17.9
13059	Ducuroir	13.6	X	69.50296	53.22723	115.21551	6.56334	0.0942626	0.23683846	2.5872272	21	5 19.1	16.8
13060	1991 EJ	10.8	X	0.12916	97.37445	280.43608	22.95435	0.1240844	0.08437826	5.1481240	21	10 14.7	17.4
13061	1991 FL_2	13.1	X	278.17954	47.80694	347.32954	11.06322	0.0933799	0.20867536	2.8150661	21	8 3.9	17.0
13062	Podarkes	11.1	X	45.38184	283.13710	91.02185	8.22817	0.0116991	0.08377227	5.1729212	21	12 6.3	17.9
13063	Purifoy	14.4	X	304.06912	122.13180	218.58578	4.83575	0.1948232	0.29683218	2.2256766	21	6 4.8	16.8
13064	Haemhouts	15.0	X	352.14489	278.64486	125.67863	7.43415	0.1259379	0.26934751	2.3746197	21	12 25.4	17.4
13065	1991 PG_{11}	14.1	X	207.92443	138.20293	179.04293	6.62863	0.2369234	0.28152437	2.3056429	21	1 25.1	18.2
13066	1991 PM_{13}	14.3	X	233.00271	279.23395	357.35761	4.06631	0.2046937	0.28174468	2.3044409	21	—	—
13067	1991 PA_{15}	15.1	X	116.26246	152.48242	191.75341	5.16022	0.1675211	0.27539235	2.3397429	21	—	—
13068	1991 RL_1	14.4	X	278.38695	102.22300	192.89382	11.66296	0.1690903	0.28684269	2.2770550	21	2 28.6	17.8
13069	Umbertoeco	14.1	X	357.30332	81.36142	357.67626	7.33384	0.2473265	0.26973466	2.3723470	21	—	—
13070	Seanconnery	14.7	X	329.15434	131.75177	205.69192	5.62355	0.2794868	0.26044589	2.4284232	21	7 5.7	16.4
13071	1991 RT_5	13.8	X	99.01526	313.78101	32.90823	7.38918	0.1387141	0.27268192	2.3552218	21	—	—
13072	1991 RS_8	14.1	X	84.15129	56.18987	352.23660	8.28571	0.1059490	0.27574170	2.3377663	21	—	—
13073	1991 RE_{15}	13.9	X	300.91257	330.95589	342.96267	7.94002	0.2212657	0.28987486	2.2611481	21	4 13.2	16.9
13074	1991 RK_{15}	14.1	X	183.96779	335.27149	3.59355	5.18330	0.1557342	0.28037743	2.3119265	21	1 30.3	17.5
13075	1991 UN_1	14.4	X	40.68412	84.47989	312.78814	5.75646	0.1202097	0.26980948	2.3719084	21	—	—
13076	1991 VT_3	13.3	X	107.68538	114.11041	237.95426	12.69241	0.1830384	0.23823503	2.5771061	21	—	—
13077	Edschneider	14.8	X	143.62746	39.22114	191.66021	4.12521	0.1021047	0.26326593	2.4110503	21	11 12.3	18.2
13078	1991 WD	13.8	X	320.12509	35.43962	89.33563	13.87836	0.2199013	0.23301248	2.6154711	21	—	—
13079	Toots	14.2	X	201.53868	184.03502	153.91467	10.23296	0.1014019	0.24026243	2.5625881	21	2 16.9	17.9
13080	1992 EZ_7	14.5	X	28.31395	275.52544	162.65737	12.32454	0.2015302	0.23249069	2.6193830	21	—	—
13081	1992 EW_9	12.7	X	160.51911	210.71404	154.57517	15.15013	0.1229452	0.23654873	2.5893393	21	2 10.0	16.6
13082	Gutiérrez	13.8	X	40.85271	351.00145	344.13426	14.23531	0.1568511	0.22180490	2.7028501	21	11 24.8	17.6
13083	1992 EE_{32}	15.2	X	7.43318	310.87561	193.46555	4.34593	0.1872077	0.23466543	2.6031747	21	—	—
13084	Virchow	13.7	X	225.74284	204.60413	95.95903	5.83172	0.0488915	0.23190667	2.6237788	21	1 29.9	17.4
13085	Borlaug	14.2	X	94.32923	348.43662	273.46349	0.19295	0.0825504	0.21582496	2.7525482	21	10 20.9	18.2
13086	Sauerbruch	13.5	X	40.48168	180.97404	100.02131	9.44369	0.1904837	0.20991900	2.8039368	21	9 26.9	17.1
13087	Chastellux	13.4	X	217.81303	242.72140	198.77802	1.50877	0.0355701	0.20184259	2.8782433	21	7 22.9	17.5
13088	Filipportera	13.2	X	22.54239	219.21097	149.00448	8.04339	0.1036344	0.17614460	3.1517843	21	11 30.3	17.4
13089	1992 PH_2	13.1	X	145.15475	70.58089	270.90696	9.45031	0.1307670	0.18526665	3.0474591	21	1 6.2	17.6
13090	1992 PV_2	13.2	X	188.20501	59.37768	272.00123	8.97515	0.1160397	0.18860430	3.0113992	21	2 1.6	18.1
13091	1992 PT_3	15.4	X	232.32751	223.75639	82.68358	2.36575	0.2752369	0.29401840	2.2398540	21	1 30.8	19.3
13092	Schrödinger	15.3	X	54.39701	133.78622	207.22992	0.61874	0.0494516	0.31179187	2.1539032	21	12 27.1	17.7
13093	Wolfgangpauli	12.6	X	54.40466	304.26015	203.79629	10.12839	0.0557574	0.19079424	2.9883116	21	3 27.1	16.4
13094	Shinshuueda	14.7	X	93.97962	133.50954	239.62169	3.85315	0.1630714	0.28226957	2.3015832	21	—	—
13095	1992 WY_1	14.5	X	17.74891	97.19734	0.31278	3.28239	0.0866183	0.28064207	2.3104728	21	—	—
13096	Tigris	12.1	X	145.73900	61.09068	309.91133	2.27407	0.0365337	0.14093361	3.6570116	21	2 8.1	17.3
13097	Lamoraal	14.9	X	74.11164	186.30524	213.95032	2.58505	0.0147835	0.27563740	2.3383559	21	—	—
13098	1993 FM_6	14.7	X	60.25510	236.18368	93.03431	2.46899	0.0871373	0.26343836	2.4099981	21	12 13.7	17.7
13099	1993 FO_7	14.1	X	296.89077	12.48202	77.35323	3.43170	0.1686626	0.26554234	2.3972511	21	11 13.4	16.0
13100	1993 FB_{10}	14.4	X	315.50562	251.25158	118.86029	3.48690	0.1930007	0.25765090	2.4459539	21	8 13.8	16.7
13101	Fransson	14.5	X	349.26932	147.70195	173.13163	6.89166	0.0939785	0.25524906	2.4612739	21	8 10.9	17.2
13102	1993 FU_{11}	14.3	X	164.99643	155.31462	123.57449	4.00149	0.0801868	0.23325450	2.6136616	21	—	—
13103	1993 FR_{12}	14.8	X	141.50172	51.25419	99.20830	3.58508	0.1288698	0.25474834	2.4644980	21	7 28.4	18.4
13104	1993 FV_{24}	15.4	X	86.44537	349.72830	268.81195	1.42604	0.1735912	0.25741233	2.4474650	21	10 22.6	19.1
13105	1993 FO_{27}	15.7	X	281.78799	234.87819	241.46969	2.82052	0.1385522	0.26607511	2.3940500	21	11 27.7	18.1
13106	1993 FV_{48}	14.4	X	208.85606	70.95879	182.07502	6.77996	0.0841888	0.26993465	2.3711751	21	—	—
13107	1993 FE_{59}	13.7	X	199.86339	351.88804	1.04582	10.36949	0.3055556	0.24373541	2.5381871	21	3 9.9	18.3
13108	1993 FD_{82}	15.0	X	293.27346	91.93618	159.89525	3.92621	0.1344032	0.24282064	2.5445578	21	2 2.3	18.6
13109	Berzelius	14.6	X	253.04010	275.95733	232.64213	6.13043	0.1814346	0.26299796	2.4126878	21	11 19.6	17.5
13110	1993 LS_1	13.9	X	249.52099	24.88515	301.02897	12.78935	0.1749502	0.24223285	2.5486724	21	3 11.6	18.2
13111	Papacosmas	14.3	X	94.50406	212.71248	127.95987	27.35374	0.0963257	0.36432285	1.9415345	21	—	—
13112	Montmorency	14.1	X	185.30640	65.72136	14.02526	1.85055	0.0243990	0.20421153	2.8559408	21	6 10.9	18.1
13113	Williamyeats	13.7	X	337.12182	301.59160	183.12599	7.05833	0.0510179	0.22202328	2.7010775	21	—	—
13114	Isabelgodin	14.0	X	351.35657	344.22315	353.99239	12.08227	0.0385017	0.21070954	2.7969191	21	9 7.4	17.5
13115	Jeangodin	13.8	X	265.07043	268.06211	349.37209	0.42977	0.0917126	0.22920201	2.6443794	21	1 17.0	17.5
13116	Hortensia	13.1	X	35.12600	87.16108	36.03772	10.48057	0.0565613	0.19068540	2.9894486	21	2 2.0	17.2
13117	Pondicherry	13.6	X	226.77684	133.63481	168.29179	9.86615	0.0491234	0.19202283	2.9755515	21	2 6.1	18.0
13118	La Harpe	13.0	X	246.42013	196.80918	71.88411	11.54684	0.0764555	0.19079683	2.9882846	21	1 20.3	17.6
13119	1993 VD_4	13.3	X	204.52905	295.81035	49.35901	14.07374	0.0870374	0.19314128	2.9640531	21	3 14.3	18.1
13120	1993 VU_7	13.9	X	76.78353	260.16904	125.61971	21.83567	0.2845654	0.18559107	3.0439066	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
13121 Tisza	15.1	*X*	101.90698	312.78410	354.09223	4.88481	0.1140632	0.27691885	2.3311365	21	—	—
13122 Drava	15.0	*X*	166.30050	121.28418	141.89386	6.60154	0.1158610	0.27829370	2.3234525	21	—	—
13123 Tyson	12.5	*X*	99.47159	251.93111	68.79822	23.28483	0.2712678	0.27190869	2.3596848	21	—	—
13124 1994 *PS*	13.6	*X*	317.93667	31.22732	154.29296	11.22943	0.1084014	0.27380192	2.3487947	21	—	—
13125 Tobolsk	13.5	*X*	260.84577	142.94886	327.74232	9.16863	0.0056939	0.22414691	2.6839899	21	10 26.5	17.3
13126 Calbuco	15.1	*X*	336.40358	345.17617	263.47353	2.25588	0.0750796	0.24628877	2.5206138	21	4 5.1	18.2
13127 Jeroenbrouwers	14.9	*X*	183.17352	118.29061	101.40805	2.22640	0.1354883	0.26584050	2.3954583	21	12 6.7	18.4
13128 Aleppo	14.7	*X*	198.76675	89.74223	134.78945	6.02847	0.1747482	0.26815019	2.3816831	21	12 25.3	18.2
13129 Poseidonios	14.3	*X*	7.84633	161.61342	134.49626	8.02302	0.0971596	0.21765404	2.7371057	21	8 6.9	17.3
13130 Dylanthomas	13.8	*X*	72.85420	77.62547	175.44415	7.83747	0.1687865	0.25759313	2.4463196	21	9 30.9	17.1
13131 Palmyra	15.0	*X*	116.95532	208.43702	218.25336	3.45318	0.1936150	0.23900449	2.5715719	21	3 19.2	18.5
13132 Ortelius	14.1	*X*	290.44369	223.37603	304.26342	5.93668	0.0775064	0.26923726	2.3752680	21	—	—
13133 Jandecleir	14.7	*X*	6.98163	204.78570	216.33565	3.13097	0.1187700	0.22888023	2.6468573	21	—	—
13134 1994 *QR*	14.6	*X*	179.86134	207.76990	157.88182	5.16852	0.1660184	0.24042107	2.5614607	21	3 4.9	18.7
13135 1994 *QX*	14.0	*X*	68.93501	79.83746	315.21694	14.09907	0.1233720	0.23054952	2.6340655	21	—	—
13136 1994 UJ_1	13.9	*X*	186.24486	21.27894	347.67675	3.08934	0.1810211	0.23864204	2.5741751	21	3 14.9	18.2
13137 1994 UT_1	13.4	*X*	6.40937	331.29704	44.79197	14.60040	0.1852256	0.22062821	2.7124518	21	12 2.5	16.4
13138 1994 *VA*	13.7	*X*	260.99701	90.55550	232.00202	12.00576	0.2491802	0.24312042	2.5424656	21	3 14.1	18.2
13139 1994 VD_2	14.0	*X*	319.29165	353.01071	59.01518	8.82614	0.2186319	0.21693409	2.7431581	21	10 20.3	16.5
13140 Shinchukai	14.2	*X*	28.68451	313.87683	77.72504	5.15900	0.2931261	0.22338344	2.6901019	21	—	—
13141 1994 WW_2	13.8	*X*	112.77247	305.14978	14.24716	3.14703	0.0603382	0.22257509	2.6966113	21	—	—
13142 1994 YM_2	13.6	*X*	316.28830	214.88388	230.88396	12.49694	0.1251315	0.21882489	2.7273334	21	12 4.9	16.6
13143 1995 *AF*	12.7	*X*	151.31911	28.02949	293.92065	11.52896	0.1659741	0.22623115	2.6674797	21	—	—
13144 1995 *BJ*	13.4	*X*	22.69087	127.41566	303.76421	9.89258	0.0910119	0.18354293	3.0665092	21	—	—
13145 Cavezzo	13.1	*X*	181.31357	199.08952	78.96334	7.31969	0.1207652	0.18049278	3.1009600	21	—	—
13146 Yuriko	13.0	*X*	179.25060	144.89099	73.79677	8.91565	0.0946258	0.17370813	3.1811876	21	11 21.4	18.0
13147 Foglia	13.3	*X*	133.74544	312.21511	140.67392	2.84126	0.0423296	0.19538809	2.9412864	21	4 28.9	17.4
13148 1995 *EF*	13.8	*X*	186.86409	56.25577	127.47328	8.51538	0.1605868	0.21057490	2.7981112	21	10 22.4	18.5
13149 Heisenberg	13.9	*X*	314.10770	357.35874	110.68763	3.10732	0.1455315	0.17868094	3.1218874	21	12 18.4	17.5
13150 Paolotesi	13.2	*X*	273.78545	156.14593	356.68447	17.30415	0.1546032	0.17932927	3.1143584	21	12 7.9	17.7
13151 Polino	14.7	*X*	118.66722	48.27751	248.26575	4.45260	0.2102151	0.28009824	2.3134625	21	—	—
13152 1995 *QK*	15.3	*X*	100.30118	133.25171	230.82025	3.31559	0.1715509	0.27973951	2.3154399	21	—	—
13153 1995 QC_3	15.4	*X*	331.06007	345.16194	336.80443	5.63908	0.3672419	0.26251489	2.4156467	21	5 23.9	17.4
13154 Petermrva	14.3	*X*	290.48208	58.93141	331.57397	5.52162	0.1674310	0.30001490	2.2099078	21	8 5.2	16.3
13155 1995 SB_1	14.5	*X*	320.13676	167.82421	231.56048	24.36192	0.2544570	0.26589479	2.3951323	21	9 29.4	16.7
13156 Mannoucyo	14.8	*X*	7.44123	67.35918	251.06221	5.38693	0.2012949	0.30350610	2.1929283	21	9 29.1	16.4
13157 Searfoss	14.6	*X*	166.46257	135.26000	19.33150	3.32965	0.0459545	0.29819105	2.2189098	21	9 1.7	17.4
13158 1995 *UE*	15.0	*X*	74.16451	213.81732	344.02835	5.90790	0.0674798	0.29468173	2.2364915	21	6 30.6	17.5
13159 1995 UW_3	15.1	*X*	336.57113	22.40348	6.96872	2.45940	0.1995951	0.26548415	2.3976014	21	11 5.8	16.7
13160 1995 US_4	14.6	*X*	270.20259	259.63412	57.02671	6.26676	0.2027137	0.28995604	2.2607261	21	3 22.1	18.0
13161 1995 UK_6	14.5	*X*	344.05254	30.49035	341.41774	1.88797	0.2046404	0.26476994	2.4019111	21	10 26.5	16.1
13162 Ryokkochigaku	14.0	*X*	71.22330	93.49854	254.71722	5.76384	0.1459160	0.27277073	2.3547106	21	—	—
13163 Koyamachuya	13.6	*X*	212.77778	304.95255	41.64895	10.57216	0.0695471	0.28578098	2.2826912	21	3 11.2	16.8
13164 1995 *VF*	14.7	*X*	167.91327	114.89442	253.03742	6.13957	0.1332931	0.28253635	2.3001341	21	2 13.3	18.1
13165 1995 WS_1	14.0	*X*	282.74218	317.39170	43.83469	3.87060	0.1895121	0.29525940	2.2335734	21	6 3.6	16.8
13166 1995 WU_1	12.6	*X*	234.53598	70.57251	43.75313	11.70032	0.0603445	0.26093965	2.4253588	21	10 2.6	15.9
13167 1995 WC_5	14.1	*X*	270.72131	234.70128	225.64604	3.35249	0.0698724	0.22453246	2.6809165	21	10 20.9	17.6
13168 Danoconnell	13.8	*X*	171.00071	224.12795	54.65850	15.74943	0.0976363	0.23112122	2.6297199	21	—	—
13169 1995 XS_1	14.5	*X*	340.38738	173.41722	233.35785	1.42511	0.2088731	0.26418637	2.4054469	21	12 14.5	16.1
13170 1995 *YX*	14.6	*X*	329.33955	270.59552	89.45114	3.53625	0.2071193	0.25865537	2.4396174	21	8 29.7	16.4
13171 1996 *AA*	14.3	*X*	318.47742	207.33274	294.06660	5.86005	0.0583146	0.26856387	2.3792368	21	—	—
13172 1996 *AO*	14.3	*X*	324.31167	96.99844	302.51423	10.71475	0.1900640	0.26080321	2.4262046	21	10 14.9	16.5
13173 1996 AJ_2	14.8	*X*	279.17960	36.73142	114.16734	3.42205	0.1307621	0.26490839	2.4010742	21	—	—
13174 Timossi	14.3	*X*	23.89834	293.21170	136.71157	15.16710	0.1054464	0.22813375	2.6526280	21	—	—
13175 1996 EB_2	14.1	*X*	238.74199	72.66179	353.68623	8.18048	0.1450426	0.21032098	2.8003629	21	7 19.0	18.4
13176 Kobedaitenken	12.2	*X*	165.85500	131.61678	56.69660	18.67577	0.1418257	0.17301736	3.1896493	21	10 11.0	17.6
13177 Hansschmidt	13.5	*X*	291.12768	295.02032	26.61390	2.35007	0.0651578	0.19857143	2.9097670	21	5 16.1	17.3
13178 Catalan	13.8	*X*	282.69291	253.78565	223.81151	3.42311	0.1549785	0.17858782	3.1229725	21	11 9.5	17.9
13179 Johncochrane	13.7	*X*	217.68220	51.12242	168.24799	1.23281	0.1254402	0.18006818	3.1058328	21	12 27.9	18.4
13180 Fourcroy	13.6	*X*	276.33397	226.37437	216.23918	6.96918	0.1019874	0.17173828	3.2054670	21	9 22.8	18.2
13181 Peneleos	12.0	*X*	276.26315	103.83687	10.92272	2.54461	0.1366234	0.08265360	5.2194915	21	10 17.2	18.8
13182 1996 SO_8	10.7	*X*	8.20133	66.50408	302.91582	5.08402	0.1139477	0.08276900	5.2146388	21	10 22.7	17.2
13183 1996 *TW*	10.8	*X*	72.90652	315.29043	8.04853	17.94875	0.0906960	0.08265240	5.2195422	21	11 15.0	17.9
13184 Augeias	11.1	*X*	79.40959	98.63203	227.46638	4.51092	0.0495837	0.08372770	5.1747567	21	11 25.8	17.9
13185 Agasthenes	12.0	*X*	337.76161	53.01367	4.33600	9.10617	0.0551715	0.08322321	5.1956482	21	11 4.1	18.6
13186 1996 *UM*	14.5	*X*	27.51335	200.66294	190.41858	21.98212	0.0825473	0.36261895	1.9476118	21	—	—
13187 1997 AN_4	15.2	*X*	324.01662	311.55506	285.89782	0.97036	0.1367560	0.28851017	2.2682729	21	2 13.5	17.9
13188 Okinawa	15.2	*X*	138.66096	225.06931	334.76379	1.90474	0.0861017	0.30313401	2.1947224	21	9 29.9	18.1
13189 1997 AF_{13}	14.3	*X*	280.34637	148.52825	94.31178	10.39599	0.1772878	0.28402152	2.2921088	21	—	—
13190 1997 BN_1	14.6	*X*	122.55371	253.05116	318.96511	5.68019	0.0784004	0.30408980	2.1901212	21	9 25.3	17.4
13191 1997 BP_3	14.5	*X*	41.81582	340.48139	137.97559	7.05802	0.0564281	0.28394696	2.2925100	21	1 9.1	16.9
13192 Quine	15.2	*X*	301.05176	275.47107	323.76433	0.66627	0.1421325	0.28470055	2.2884627	21	1 18.0	18.1
13193 1997 *CW*	14.4	*X*	275.95154	145.00666	40.80766	4.21052	0.1134609	0.27676979	2.3319734	21	—	—
13194 1997 CA_1	14.6	*X*	262.67386	293.46939	323.03447	7.18841	0.0811547	0.28333135	2.2958295	21	1 4.5	17.9
13195 1997 CG_6	13.8	*X*	117.21896	147.31629	55.51527	8.09815	0.1219386	0.29816719	2.2190282	21	9 16.5	17.0
13196 Rogerssmith	14.0	*X*	124.66006	203.63537	153.74023	5.98280	0.1377088	0.28201211	2.3029838	21	—	—
13197 Pontecorvo	14.3	*X*	153.71414	85.39661	158.46691	2.54403	0.1681512	0.26682547	2.3895596	21	12 7.3	18.1
13198 Banpeiyu	15.2	*X*	331.13972	85.27960	130.27353	3.68698	0.0718100	0.28549524	2.2842140	21	2 4.8	17.9
13199 1997 EW_{25}	14.7	*X*	51.03023	205.69054	15.75052	6.94765	0.0697903	0.29364272	2.2417640	21	6 29.4	17.1
13200 Romagnani	15.5	*X*	278.77773	103.46084	150.22767	10.98482	0.1002251	0.24153040	2.5536117	21	1 23.3	19.3

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
13201	1997 EF_{41}	15.2	X	356.17249	129.96285	196.00271	4.78715	0.1051823	0.30182787	2.2010496	21	9 6.8	17.0
13202	1997 FT_3	15.6	X	348.80865	336.65635	211.70109	4.52104	0.1001405	0.28264441	2.2995479	21	1 18.7	18.1
13203	1997 FC_5	14.4	X	345.02291	193.53873	174.89392	6.15902	0.0648280	0.22125414	2.7073337	21	10 10.0	17.7
13204	1997 GR_{12}	14.8	X	208.92020	304.24422	152.37430	2.77503	0.1636106	0.25827420	2.4420171	21	7 24.3	18.7
13205	1997 GB_{19}	14.1	X	310.07305	46.85332	214.00507	7.20100	0.1158123	0.28480280	2.2879150	21	2 28.1	17.0
13206	Baer	14.6	X	214.45752	218.76333	163.33859	2.04510	0.1009642	0.20537930	2.8451048	21	4 30.3	18.9
13207	Tamagawa	15.0	X	7.80634	56.95035	149.97755	4.91756	0.0782591	0.28458245	2.2890958	21	3 23.3	17.3
13208	Fraschetti	14.2	X	10.32314	138.63728	175.71273	4.51470	0.2018136	0.25543232	2.4600965	21	9 23.4	16.0
13209	Arnhem	14.6	X	14.15717	36.30788	88.51597	2.55026	0.1262734	0.27837034	2.3230261	21	—	—
13210	1997 HP_8	14.8	X	17.04103	219.07015	187.47971	3.71631	0.0946162	0.22714782	2.6602983	21	—	—
13211	Stucky	13.8	X	277.21343	209.20822	103.21878	5.38918	0.1527144	0.20176128	2.8790166	21	4 7.5	18.0
13212	Jayleno	14.5	X	55.47322	58.18754	194.98138	3.29416	0.1560660	0.25311489	2.4750896	21	9 3.6	17.3
13213	Maclaurin	14.6	X	104.59818	92.62085	80.25985	3.72511	0.0907268	0.29192559	2.2505462	21	7 11.6	17.3
13214	Chirikov	14.3	X	79.55292	52.94650	168.38526	2.30960	0.1241782	0.25284050	2.4768800	21	8 19.1	17.5
13215	1997 JT_{16}	13.3	X	48.36943	268.32961	97.34119	10.98890	0.1347968	0.18178670	3.0862278	21	—	—
13216	1997 LH_4	14.1	X	346.02375	352.66185	185.36209	14.88207	0.0288796	0.23566552	2.5958047	21	1 20.3	17.8
13217	Alpbach	14.6	X	340.74847	297.18867	156.44215	3.56110	0.1667108	0.26835774	2.3804549	21	—	—
13218	1997 MC_3	14.1	X	346.06160	252.74242	337.39839	4.06193	0.0955037	0.24003280	2.5642222	21	3 23.8	17.1
13219	Cailletet	12.7	X	356.61681	89.89481	301.61078	21.64514	0.0951808	0.17204758	3.2016241	21	11 13.0	17.2
13220	Kashiwagura	12.5	X	202.63586	163.47871	158.23823	10.85271	0.0912964	0.18924706	3.0045767	21	2 4.9	17.3
13221	Nao	13.4	X	309.99851	150.01789	318.41479	8.22523	0.1457214	0.21821183	2.7324393	21	12 23.9	16.3
13222	Ichikawakazuo	13.3	X	223.60413	263.94970	294.49762	9.53200	0.0606959	0.21850133	2.7300252	21	12 25.4	17.0
13223	Cenaceneri	15.1	X	338.13341	200.54680	153.58036	7.71896	0.1866503	0.28793913	2.2712709	21	9 17.4	16.4
13224	Takamatsuda	12.9	X	306.80675	151.56056	322.85913	6.56037	0.0145621	0.17549584	3.1595471	21	12 22.7	17.3
13225	Manfredi	13.9	X	85.60969	3.26879	162.54258	2.47152	0.0645626	0.19784196	2.9169150	21	6 3.5	17.9
13226	Soulié	13.7	X	298.24983	356.66995	274.29417	9.06390	0.0670930	0.19252892	2.9703348	21	3 17.0	18.0
13227	Poor	13.5	X	256.85311	179.92665	356.63717	5.23985	0.1059561	0.17575046	3.1564947	21	12 23.6	17.9
13228	1997 SJ_{25}	12.9	X	143.77138	211.45914	79.77385	2.99626	0.1629601	0.17526068	3.1623727	21	—	—
13229	Echion	11.7	X	255.01607	166.56726	343.00846	3.83721	0.0744403	0.08170930	5.2596282	21	11 7.9	18.7
13230	1997 VG_1	11.3	X	316.71705	37.15776	53.83290	4.32359	0.0615638	0.08611124	5.0788200	21	11 17.9	17.8
13231	Blondelet	13.8	X	5.08985	261.44396	169.06459	0.43226	0.1571718	0.16992512	3.2282289	21	—	—
13232	1998 FM_{54}	14.1	X	317.52624	329.64436	350.99021	5.28144	0.1990303	0.26290893	2.4132325	21	5 27.7	16.6
13233	1998 FC_{66}	13.7	X	52.00100	121.72348	196.49094	10.34656	0.2210903	0.27226068	2.3576505	21	12 9.7	17.1
13234	Natashaowen	14.1	X	254.12243	279.15951	103.67383	3.67621	0.1441291	0.30665808	2.1778758	21	6 4.9	17.1
13235	Isiguroyuki	14.2	X	163.15800	100.40918	181.38610	4.02153	0.0424730	0.28101385	2.3084345	21	—	—
13236	1998 HF_{96}	14.0	X	221.95473	188.66903	149.06053	5.60338	0.2135690	0.29273893	2.2463757	21	3 2.5	17.6
13237	1998 HC_{98}	15.5	X	70.46881	287.03252	2.89186	5.16030	0.2171142	0.31165585	2.1545299	21	11 26.5	18.6
13238	Lambeaux	15.2	X	223.39804	282.92071	20.33978	3.31116	0.1789954	0.28758448	2.2731377	21	1 21.3	18.8
13239	Kana	14.9	X	127.31864	206.89215	106.67110	2.83972	0.2501835	0.27643875	2.3338348	21	—	—
13240	Thouvay	15.0	X	175.65855	352.93448	235.75545	1.10670	0.1501826	0.23359792	2.6110993	21	12 4.6	19.0
13241	Biyo	14.2	X	355.98432	93.38514	56.72628	7.29868	0.0652964	0.28747208	2.2737302	21	—	—
13242	1998 KR_{44}	14.7	X	28.23431	181.89409	131.42440	3.32850	0.2105798	0.26464839	2.4026465	21	10 30.6	17.3
13243	1998 KZ_{47}	14.0	X	219.47066	176.16340	107.37799	7.62259	0.1171813	0.28474017	2.2882504	21	—	—
13244	Dannymeyer	11.9	X	136.04072	329.57585	284.78996	19.54924	0.0121021	0.17544470	3.1601610	21	11 14.1	16.7
13245	1998 MM_{19}	14.9	X	287.66338	335.43516	196.03774	21.25040	0.0581758	0.36531021	1.9380345	21	—	—
13246	1998 MJ_{33}	13.8	X	155.39927	91.74270	121.77509	4.74027	0.1551728	0.22561196	2.6723580	21	10 30.0	18.2
13247	1998 MW_{34}	14.4	X	234.00647	52.55159	203.54291	3.58420	0.1102830	0.28136493	2.3065139	21	—	—
13248	Fornasier	14.1	X	290.76968	341.37408	47.73967	3.11124	0.2177316	0.21363941	2.7712889	21	7 22.3	17.6
13249	Marcallen	11.9	X	357.47219	135.17273	284.22048	14.06005	0.1657493	0.22549841	2.6732550	21	—	—
13250	Danieladucato	15.3	X	21.90014	358.51051	240.06609	3.94993	0.1318145	0.29597867	2.2299533	21	6 7.5	16.8
13251	Viot	14.7	X	64.93501	129.02877	161.26197	3.86005	0.1800191	0.30761171	2.1733724	21	11 18.8	17.6
13252	1998 ON_1	14.1	X	320.14069	164.31922	197.76940	7.73482	0.2328134	0.21435246	2.7651396	21	7 29.5	17.0
13253	Stejneger	14.8	X	49.50892	207.42158	316.79409	6.44812	0.1111176	0.28829221	2.2694160	21	3 29.2	16.9
13254	Kekulé	15.0	X	286.19230	272.83769	319.49067	6.73597	0.1284065	0.28285883	2.2983856	21	—	—
13255	1998 OH_{14}	13.8	X	331.17002	325.02402	131.50751	6.82533	0.2339334	0.26752968	2.3853644	21	—	—
13256	Marne	13.6	X	306.42190	239.11377	140.30996	11.98757	0.1535481	0.25639301	2.4539474	21	8 15.9	15.9
13257	1998 QT_8	13.7	X	43.96250	282.60662	64.29127	4.80620	0.1163311	0.22375438	2.6871280	21	12 11.9	17.4
13258	Bej	14.3	X	149.05145	329.65302	290.09184	5.97193	0.0929801	0.26990368	2.3713565	21	12 24.9	17.6
13259	Bhat	14.6	X	145.45890	144.24977	156.64209	7.28024	0.1196352	0.27400696	2.3476228	21	—	—
13260	Sabadell	13.6	X	250.03286	7.19834	286.92177	12.76047	0.1573231	0.24220706	2.5488534	21	2 5.4	17.7
13261	1998 QM_{16}	14.1	X	265.80468	111.68986	191.65345	4.43402	0.1491533	0.24511336	2.5286656	21	3 6.8	18.0
13262	1998 QF_{17}	13.9	X	135.88920	145.45600	122.34697	6.32421	0.1018304	0.26901544	2.3765735	21	12 21.1	17.5
13263	1998 QV_{22}	13.4	X	306.75829	77.46637	14.69535	1.92997	0.0794280	0.17986823	3.1081340	21	11 21.4	17.5
13264	1998 QD_{23}	14.0	X	82.33764	248.21873	17.59575	5.68628	0.0610319	0.26151541	2.4217977	21	10 14.4	17.0
13265	Terbunkley	14.7	X	45.58455	77.18659	349.37942	4.30401	0.1269543	0.27380718	2.3487646	21	—	—
13266	1998 QY_{30}	14.0	X	251.79604	21.74041	320.97417	1.46574	0.0838683	0.20364004	2.8612816	21	4 21.4	18.2
13267	1998 QV_{32}	13.8	X	60.53803	44.26880	302.27419	3.71677	0.1648145	0.18026336	3.1035905	21	12 29.4	18.4
13268	Trevorcorbin	14.5	X	208.28079	97.79379	194.38813	6.04526	0.0965497	0.23612887	2.5924078	21	—	—
13269	Dahlstrom	14.6	X	136.32176	305.06493	286.22455	5.49428	0.0824125	0.26360147	2.4090039	21	11 1.9	18.2
13270	1998 QX_{35}	14.2	X	149.05806	91.42726	9.96635	2.04053	0.0381202	0.20504409	2.8482048	21	5 25.9	18.3
13271	1998 QZ_{35}	13.9	X	348.17766	21.28993	337.34922	8.30885	0.1581167	0.21608714	2.7503213	21	9 29.3	16.8
13272	Ericadavid	15.0	X	219.66331	12.14984	237.54996	3.85305	0.1584747	0.27636448	2.3342528	21	—	—
13273	1998 QW_{37}	14.7	X	172.12525	203.40245	330.53643	4.67906	0.1027522	0.30313006	2.1947415	21	10 1.4	17.8
13274	Roygross	15.1	X	16.11307	318.40098	335.09080	7.60696	0.0467884	0.25557106	2.4592062	21	8 16.7	17.8
13275	1998 QT_{39}	14.0	X	173.45211	256.55131	142.64670	7.67735	0.1960423	0.24178814	2.5517966	21	4 13.2	18.3
13276	1998 QP_{40}	13.1	X	41.44805	147.62667	319.53228	12.41589	0.1147107	0.23398839	2.6081937	21	1 9.1	16.0
13277	1998 QV_{40}	13.1	X	332.91467	125.50887	223.61304	4.08553	0.0465606	0.21289410	2.7777530	21	8 22.5	16.8
13278	Grotecloss	14.5	X	72.12424	92.86930	182.50682	2.06082	0.1851360	0.26175502	2.4203195	21	10 31.7	17.9
13279	Gutman	14.7	X	266.09958	204.63780	37.29922	5.11654	0.1142073	0.28071998	2.3100453	21	—	—
13280	Christihaas	15.3	X	250.80553	97.15349	135.01870	4.19546	0.0708935	0.27669285	2.3324057	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
13281	Aliciahall	15.1	*X*	340.60958	20.84933	232.42384	2.43786	0.1256485	0.29059218	2.2574255	21	4 5.3	17.4
13282	1998 QQ_{49}	13.9	*X*	238.02819	333.70146	139.58222	8.53630	0.1153005	0.21520299	2.7578492	21	9 20.8	17.9
13283	Dahart	14.4	*X*	78.55609	9.14796	294.43607	0.37816	0.1873489	0.26481769	2.4016224	21	12 13.0	17.8
13284	1998 QB_{52}	13.3	*X*	92.50291	155.24325	182.74516	12.98059	0.1786872	0.22593049	2.6698457	21	—	—
13285	Stephicks	14.3	*X*	328.96335	174.77818	187.47398	6.86108	0.1204323	0.25632582	2.4543763	21	9 4.2	16.6
13286	Adamchauvin	13.8	*X*	233.33713	263.16911	326.01745	6.27184	0.0722551	0.27169712	2.3609096	21	—	—
13287	1998 QW_{53}	14.0	*X*	206.23385	117.26680	176.11810	6.41711	0.1162066	0.27730892	2.3289499	21	—	—
13288	1998 QV_{67}	14.2	*X*	21.59858	251.85752	189.11945	11.93140	0.2518611	0.22809473	2.6529306	21	—	—
13289	1998 QK_{75}	12.7	*X*	101.24490	155.13212	244.16205	9.11724	0.1066487	0.18979991	2.9987393	21	1 18.9	16.9
13290	1998 QN_{75}	12.1	*X*	56.34732	203.99948	187.92802	21.97084	0.0942961	0.22704832	2.6610755	21	—	—
13291	1998 QH_{77}	12.9	*X*	318.48240	88.63673	295.76734	13.67926	0.0948430	0.16950732	3.2335313	21	9 4.4	17.3
13292	1998 QT_{90}	14.0	*X*	311.76294	230.04625	53.19119	5.46246	0.1203926	0.24609377	2.5219452	21	4 12.2	17.1
13293	Mechelen	14.4	*X*	187.35572	66.85627	69.36068	5.79128	0.0333808	0.25463815	2.4652089	21	9 2.1	17.8
13294	Rockox	14.3	*X*	49.53909	148.36633	48.76570	5.73298	0.0975303	0.29056779	2.2575519	21	5 22.2	16.4
13295	1998 *RE*	12.4	*X*	280.26836	123.62138	58.15850	13.67848	0.0978825	0.17687761	3.1430706	21	—	—
13296	1998 *RV*	13.1	*X*	114.26146	6.21689	4.56411	9.81386	0.0897863	0.19067402	2.9895676	21	1 1.5	17.4
13297	1998 *RX*	12.6	*X*	324.66544	34.46933	357.68847	10.44927	0.0523574	0.17079764	3.2172253	21	10 1.9	17.0
13298	Namatjira	14.4	*X*	178.68264	168.07980	77.31122	5.92571	0.1046766	0.26755434	2.3852178	21	—	—
13299	1998 RU_{15}	14.2	*X*	299.63243	78.65854	175.49413	5.05647	0.1131040	0.28272507	2.2991105	21	2 7.9	17.1
13300	1998 RF_{16}	14.3	*X*	235.26651	145.12486	134.14057	5.17511	0.1758485	0.23594096	2.5937841	21	1 9.0	18.5
13301	1998 RP_{19}	14.4	*X*	23.73985	95.75165	291.32558	1.01966	0.0875306	0.22358247	2.6885052	21	—	—
13302	Kezmoh	14.6	*X*	112.66747	223.30701	267.95103	4.83608	0.0814025	0.28912503	2.2650559	21	5 20.4	17.3
13303	Asmitakumar	14.3	*X*	120.03475	294.43417	144.23974	2.25132	0.1943758	0.23874888	2.5734070	21	4 9.4	17.9
13304	1998 RP_{47}	13.2	*X*	172.17986	311.19467	326.08014	8.77815	0.0660840	0.18463975	3.0543531	21	—	—
13305	Danielang	14.9	*X*	104.67953	48.83296	225.43379	4.91868	0.0852726	0.26303485	2.4124622	21	11 24.6	18.2
13306	1998 RT_{58}	13.3	*X*	289.22208	291.58544	337.94564	1.37103	0.0581409	0.19753849	2.9199016	21	3 9.5	17.3
13307	1998 RE_{59}	13.9	*X*	183.30860	66.65848	227.06340	2.59163	0.0488748	0.18723127	3.0261037	21	—	—
13308	1998 RL_{59}	14.0	*X*	251.86127	224.15975	205.46640	3.43424	0.0831726	0.20992391	2.8038931	21	8 12.1	18.0
13309	1998 RA_{60}	13.3	*X*	39.28627	156.64815	343.76575	9.21180	0.0242715	0.19393044	2.9560066	21	2 24.4	17.4
13310	1998 RX_{63}	13.8	*X*	84.65133	208.20394	109.50048	3.19797	0.1982979	0.17945640	3.1128875	21	12 23.3	18.6
13311	1998 RA_{68}	12.7	*X*	323.91102	337.60577	356.94656	10.30236	0.1696877	0.20938013	2.8087456	21	7 10.1	16.0
13312	1998 RK_{68}	13.8	*X*	83.98085	271.42098	195.16759	4.70234	0.0856724	0.23722961	2.5843825	21	3 11.9	16.9
13313	1998 RU_{68}	13.9	*X*	338.88253	58.09043	9.71640	4.82677	0.1343344	0.17651987	3.1473157	21	12 7.9	17.6
13314	1998 RH_{71}	13.7	*X*	307.88660	325.40753	39.86735	4.79403	0.2167449	0.21038735	2.7997740	21	7 16.7	16.9
13315	Hilana	14.1	*X*	251.28318	107.16745	18.36283	6.85982	0.0910141	0.26012682	2.4304086	21	10 29.3	17.1
13316	Llano	14.9	*X*	102.73967	119.80385	60.05115	1.86351	0.0823432	0.29239397	2.2481422	21	7 18.2	17.5
13317	1998 RQ_{77}	13.0	*X*	321.30770	314.18612	40.52603	7.13292	0.2026712	0.12349579	3.9936312	21	7 26.5	17.9
13318	1998 RV_{77}	13.4	*X*	171.76502	313.92824	21.00858	11.22485	0.1027827	0.19043505	2.9920680	21	1 26.0	18.2
13319	Michaelmi	14.7	*X*	83.30235	187.06205	52.67148	6.17582	0.1326803	0.29906020	2.2146085	21	9 27.2	17.5
13320	Jessicamiles	14.3	*X*	183.78050	229.51400	115.07971	3.78184	0.1783446	0.27984901	2.3148359	21	2 6.7	17.7
13321	1998 RC_{80}	13.3	*X*	58.50824	248.30388	154.42478	11.12097	0.1096021	0.18348723	3.0671298	21	—	—
13322	1998 RH_{80}	13.1	*X*	77.22761	292.89382	44.77527	5.93052	0.1728645	0.17917645	3.1161290	21	—	—
13323	1998 *SQ*	11.1	*X*	298.01996	255.33709	182.51547	0.91963	0.0916079	0.08596018	5.0847682	21	10 8.5	17.6
13324	1998 SK_2	13.7	*X*	33.65513	315.63612	30.55287	1.40210	0.2181137	0.17527865	3.1621566	21	12 2.7	17.6
13325	Valérienataf	14.2	*X*	86.73671	147.56731	93.59798	4.89950	0.0781874	0.29750581	2.2223157	21	9 25.9	16.9
13326	Ferri	12.9	*X*	65.86095	166.47138	142.59847	5.69874	0.2116686	0.17686632	3.1432044	21	11 27.5	17.6
13327	Reitsema	14.1	*X*	40.33544	306.81245	85.04225	3.19386	0.1586145	0.18063980	3.0992772	21	—	—
13328	Guetter	14.2	*X*	64.06769	284.43704	136.10393	4.31651	0.1153210	0.18712102	3.0272921	21	—	—
13329	Davidhardy	13.6	*X*	204.10165	142.43936	186.78181	6.46264	0.0766383	0.19326791	2.9627583	21	2 13.9	18.2
13330	Dondavis	13.0	*X*	102.57949	24.46411	298.26463	0.26377	0.1685678	0.17959331	3.1113052	21	—	—
13331	1998 SU_{52}	11.4	*X*	316.79525	149.36429	284.78005	2.29629	0.1095496	0.08623555	5.0739381	21	10 25.6	17.7
13332	Benkhoff	14.2	*X*	236.99180	241.46840	164.48884	2.25605	0.0618754	0.20601431	2.8392554	21	6 27.5	18.2
13333	Carsenty	14.6	*X*	147.88873	60.37180	158.95083	6.60015	0.0843971	0.26016693	2.4301588	21	11 3.0	18.1
13334	Tost	14.0	*X*	138.35295	15.10650	14.17758	10.71130	0.1154463	0.19233265	2.9723552	21	2 26.2	18.5
13335	Tobiaswolf	13.6	*X*	11.45416	43.80838	344.10560	11.73246	0.1326882	0.21920398	2.7241881	21	12 21.4	17.1
13336	1998 SN_{114}	13.9	*X*	229.61516	262.12762	117.13579	3.67054	0.1768335	0.20191132	2.8775901	21	5 8.4	18.5
13337	1998 SZ_{114}	13.8	*X*	44.30201	249.93053	88.48490	1.43154	0.0619130	0.21816755	2.7328090	21	11 22.9	17.2
13338	1998 SK_{119}	12.8	*X*	258.13870	79.91159	21.94486	9.33608	0.1185100	0.21303537	2.7765249	21	9 29.4	16.6
13339	1998 SF_{123}	13.6	*X*	210.71850	308.77666	14.11777	10.36576	0.0963803	0.19280932	2.9674542	21	2 18.6	18.3
13340	1998 SM_{123}	14.3	*X*	276.55539	253.82686	21.66928	5.56707	0.2399807	0.24093310	2.5578303	21	2 6.4	18.4
13341	1998 ST_{123}	13.9	*X*	309.20254	250.33697	191.49742	9.53382	0.0789279	0.21735884	2.7395833	21	11 21.4	17.3
13342	1998 SF_{127}	13.1	*X*	286.71976	92.59022	39.39716	12.23443	0.0314241	0.17833662	3.1259044	21	12 16.5	17.5
13343	1998 SY_{127}	14.1	*X*	292.80068	269.97273	155.22108	5.76961	0.0553076	0.21372333	2.7705634	21	10 8.2	17.6
13344	1998 SD_{130}	13.8	*X*	302.38123	136.08863	191.67557	1.77361	0.0548757	0.20414100	2.8565986	21	6 10.5	17.6
13345	1998 SW_{132}	13.1	*X*	57.83214	191.19087	217.28200	9.50120	0.1042052	0.18290326	3.0736547	21	—	—
13346	Danielmiller	14.8	*X*	147.56125	44.37254	229.02700	1.37129	0.1817418	0.26733155	2.3865429	21	—	—
13347	1998 SF_{136}	15.2	*X*	215.88282	185.18220	90.42342	3.61696	0.2296885	0.27673094	2.3321917	21	—	—
13348	1998 SF_{138}	12.8	*X*	126.81450	230.32470	32.62099	1.23165	0.1428066	0.17607411	3.1526255	21	11 23.6	17.7
13349	1998 SD_{139}	14.1	*X*	81.14172	327.86476	329.06541	4.69101	0.0394383	0.21661559	2.7458464	21	11 11.4	18.1
13350	Gmelin	13.4	*X*	332.14739	201.40440	199.35974	9.19525	0.0592484	0.17148616	3.2086081	21	10 25.1	17.5
13351	Zibeline	13.5	*X*	69.54606	17.85817	201.08438	6.37713	0.1194346	0.29194076	2.2504683	21	7 31.8	16.2
13352	Gyssens	13.2	*X*	52.54086	102.40125	55.09170	13.85217	0.1101385	0.23705577	2.5856458	21	4 11.9	16.2
13353	1998 TU_{12}	11.4	*X*	276.73111	75.23626	41.92516	15.42829	0.1335707	0.08376244	5.1733257	21	10 23.3	18.1
13354	1998 TO_{15}	13.2	*X*	358.08873	243.79011	222.14364	11.73325	0.1395029	0.22416073	2.6838796	21	—	—
13355	1998 TP_{17}	11.9	*X*	180.74755	183.66317	117.43473	10.92543	0.0728547	0.18528722	3.0472335	21	—	—
13356	1998 TX_{17}	13.2	*X*	235.85044	334.42390	175.74748	7.62945	0.0353770	0.17186869	3.2038454	21	11 7.7	17.8
13357	Werkhoven	13.6	*X*	239.83351	295.37766	226.17458	6.86142	0.1650253	0.21613787	2.7498909	21	11 14.1	17.3
13358	Revelle	12.8	*X*	337.53602	314.87804	197.18203	12.75438	0.1131640	0.22658616	2.6646927	21	—	—
13359	1998 UC_4	13.2	*X*	229.95832	65.98860	209.18803	12.25856	0.1693737	0.23162684	2.6258916	21	—	—
13360	1998 UD_8	12.8	*X*	328.26361	216.64772	77.31271	3.09853	0.0387555	0.20048534	2.8912188	21	6 3.8	16.7

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
13361	1998 UM_{8}	14.0	X	34.27973	174.90716	95.18803	4.67835	0.1748016	0.29236400	2.2482958	21	9 4.7	16.0
13362	1998 UQ_{16}	11.0	X	202.86996	118.61411	57.89481	9.34080	0.0272846	0.08361365	5.1794613	21	10 22.6	18.0
13363	1998 UR_{16}	13.2	X	149.22014	201.59727	81.74192	2.68447	0.1397306	0.17871922	3.1214416	21	—	—
13364	1998 UK_{20}	12.8	X	150.32958	231.29512	20.92413	15.08917	0.1138956	0.21808550	2.7334944	21	12 4.8	17.3
13365	Tenzinyama	12.7	X	190.95788	80.64506	243.66822	8.91241	0.1023585	0.18712144	3.0272876	21	1 26.5	17.5
13366	1998 US_{24}	11.2	X	292.33492	355.56703	96.28517	6.63604	0.1050618	0.08253944	5.2243030	21	10 17.9	17.9
13367	Jiří	13.0	X	64.79148	261.90872	63.26688	16.16569	0.0711572	0.17241277	3.1971016	21	11 25.2	17.4
13368	Wlodekofman	13.9	X	178.58792	336.43729	54.18166	2.79163	0.0818571	0.19470534	2.9481584	21	4 4.9	18.4
13369	1998 UF_{37}	13.5	X	131.55172	247.95115	33.11286	1.34065	0.1476761	0.17856927	3.1231888	21	12 19.0	18.6
13370	Júliusbreza	14.4	X	46.43096	245.87913	51.20139	5.67941	0.1941570	0.30372253	2.1918864	21	11 6.1	16.8
13371	1998 VH_{5}	14.0	X	12.34275	297.98812	280.83784	6.00352	0.0815487	0.28294013	2.2979453	21	4 13.7	16.5
13372	1998 VU_{6}	11.3	X	352.65883	304.13273	96.68372	7.30353	0.0481474	0.08219137	5.2390423	21	11 8.7	18.0
13373	1998 VL_{7}	14.0	X	163.35951	173.15649	220.97569	0.99413	0.1235202	0.19448188	2.9504162	21	3 25.7	18.7
13374	1998 VT_{10}	13.5	X	115.03748	208.19212	53.02933	4.03704	0.1330619	0.30343199	2.1932853	21	11 27.2	16.6
13375	1998 VH_{26}	13.7	X	30.67022	229.69983	337.23623	1.19836	0.0501032	0.19700573	2.9251635	21	5 8.7	17.4
13376	Dunphy	13.2	X	189.99002	3.39447	304.42258	9.53985	0.1453237	0.22893242	2.6464550	21	1 4.9	17.5
13377	1998 VN_{33}	12.9	X	26.69567	11.91694	109.67060	4.29929	0.0638926	0.18279656	3.0748507	21	1 17.1	16.7
13378	1998 VF_{35}	12.3	X	50.29117	299.25412	187.94395	10.12810	0.0588770	0.18852855	3.0122058	21	2 22.6	16.4
13379	1998 WX_{9}	11.5	X	331.30457	336.31704	89.55408	4.91492	0.0655981	0.08415687	5.1571487	21	11 8.9	18.1
13380	Yamamohammed	14.2	X	98.57797	85.75763	172.84590	3.24000	0.1554180	0.29879469	2.2159203	21	11 9.0	17.4
13381	1998 WJ_{17}	12.4	X	23.88533	81.62562	233.67656	4.19987	0.2130415	0.12342049	3.9952552	21	9 29.2	17.2
13382	1998 XC_{4}	13.0	X	279.41554	127.61848	282.45017	0.97203	0.0686912	0.20525001	2.8462995	21	8 25.4	16.6
13383	1998 XS_{31}	11.3	X	352.86547	160.77618	252.22190	6.39664	0.0651114	0.08412377	5.1585015	21	11 20.3	17.9
13384	1998 XG_{79}	12.5	X	38.49849	264.37423	114.92153	12.95080	0.2220968	0.17461043	3.1702189	21	—	—
13385	1998 XO_{79}	10.9	X	66.43532	167.43412	157.12444	13.96192	0.0460505	0.08237029	5.2314529	21	11 12.6	17.9
13386	1998 XG_{80}	12.4	X	71.41730	231.72473	116.92258	15.58033	0.1408772	0.17455461	3.1708948	21	—	—
13387	Irus	12.1	X	4.56867	20.65931	355.90585	7.24653	0.0969993	0.08303953	5.2033072	21	10 25.1	18.5
13388	1999 AE_{6}	12.4	X	127.32318	178.97429	245.83859	14.17624	0.0694616	0.23622889	2.5916760	21	3 6.7	16.4
13389	Stacey	13.1	X	211.99676	338.32946	317.39761	1.77039	0.1525792	0.17786064	3.1314788	21	1 17.6	18.1
13390	Bouška	12.9	X	185.08822	250.96291	148.52978	13.24984	0.1782414	0.23776079	2.5805319	21	4 25.0	17.3
13391	1999 JF_{37}	12.8	X	205.98320	191.00500	237.84604	8.60556	0.0844767	0.18441636	3.0568192	21	6 19.7	17.5
13392	1999 KK_{15}	14.3	X	91.57864	145.58363	167.51433	13.97942	0.1725756	0.23615092	2.5922465	21	12 30.7	18.7
13393	1999 ND_{9}	14.0	X	327.02534	291.63007	118.11224	4.97174	0.0061404	0.27748908	2.3279418	21	11 18.2	16.8
13394	1999 RL_{31}	14.3	X	136.79052	26.24538	5.07042	7.55778	0.1437632	0.29105259	2.2550442	21	2 13.7	17.2
13395	Deconihout	14.9	X	156.02733	138.88648	173.33000	3.14261	0.1910704	0.28593738	2.2818588	21	—	—
13396	Midavaine	13.7	X	19.34175	256.02910	162.98413	9.21957	0.1788834	0.23618197	2.5920193	21	—	—
13397	1999 RF_{47}	14.8	X	220.41033	348.63255	23.80791	2.59929	0.2074960	0.25758541	2.4463685	21	4 15.8	19.0
13398	1999 RF_{62}	13.4	X	133.29943	110.93997	13.34187	6.55448	0.1157213	0.26041169	2.4286358	21	6 11.6	16.9
13399	1999 RJ_{88}	12.6	X	73.78263	151.78656	182.47721	10.00658	0.0989233	0.18742085	3.0240626	21	12 22.4	17.2
13400	1999 RC_{94}	14.3	X	51.31135	223.06305	144.70470	6.97417	0.1340330	0.27849658	2.3223240	21	—	—
13401	1999 RA_{133}	13.0	X	265.15122	344.82636	300.19615	9.87604	0.2431994	0.20954958	2.8072313	21	2 7.9	17.7
13402	1999 RV_{165}	11.5	X	345.38350	127.17108	160.83364	7.53165	0.1215027	0.08175221	5.2577876	21	6 19.2	17.9
13403	Sarahmousa	14.1	X	217.51550	257.19552	29.79727	5.38746	0.1817623	0.29288597	2.2456238	21	—	—
13404	Norris	14.6	X	5.69676	88.05358	10.59463	3.52947	0.1039795	0.28384467	2.2930607	21	—	—
13405	Dorisbillings	13.9	X	304.34723	190.67876	327.90828	4.83553	0.0995121	0.28361571	2.2942947	21	—	—
13406	Sekora	13.5	X	33.27667	39.22282	230.86512	12.42865	0.1664705	0.21693880	2.7431185	21	8 16.3	16.9
13407	1999 TF_{4}	13.4	X	325.71372	35.78344	56.07558	2.19341	0.2607915	0.18276231	3.0752349	21	12 16.4	16.0
13408	Deadoklestic	14.8	X	280.31426	323.13606	51.11780	3.44070	0.1798125	0.26136511	2.4227261	21	6 22.1	17.9
13409	1999 US	13.3	X	204.68637	73.22782	133.02484	3.36353	0.1177114	0.18216225	3.0819845	21	12 1.3	18.1
13410	Arhale	14.3	X	311.53874	53.22672	259.65543	4.89166	0.2168587	0.30460147	2.1876679	21	4 28.3	16.5
13411	OLRAP	14.3	X	70.58414	265.34916	36.46119	12.71854	0.1899732	0.22872563	2.6480499	21	11 25.5	18.3
13412	Guerrieri	13.9	X	141.61423	37.36999	26.43322	2.15051	0.0651838	0.20211161	2.8756888	21	4 2.6	18.0
13413	Bobpeterson	14.0	X	136.33890	21.34121	27.90651	2.55915	0.0830798	0.19961689	2.8995985	21	3 12.4	18.2
13414	Grantham	13.8	X	260.68961	24.60505	308.83047	1.21644	0.0647213	0.20649224	2.8348727	21	4 22.1	17.8
13415	Stevenbland	15.2	X	20.03333	334.27387	330.16821	1.90173	0.1888875	0.26493322	2.4009241	21	9 26.7	17.3
13416	Berryman	12.9	X	4.33155	81.72547	233.02137	4.00486	0.2303635	0.17635606	3.1492644	21	8 29.7	16.1
13417	1999 VH_{6}	13.3	X	33.79625	125.02446	213.60741	7.22797	0.0720914	0.22209622	2.7004860	21	11 11.8	16.8
13418	1999 VO_{9}	14.2	X	326.69465	148.91515	209.82231	0.61491	0.1908544	0.26374543	2.4081272	21	8 20.7	16.1
13419	1999 VJ_{10}	14.0	X	276.09479	10.09895	90.40274	0.23104	0.1456969	0.17513244	3.1639163	21	10 10.9	18.3
13420	1999 VN_{10}	13.0	X	285.74036	103.69812	265.92656	5.26090	0.0451602	0.21126444	2.7920195	21	7 14.4	16.8
13421	Holvorcem	13.3	X	26.79333	263.05238	123.69350	3.29979	0.0940857	0.22800608	2.6536182	21	—	—
13422	1999 VM_{19}	15.1	X	279.91457	213.00844	138.81854	3.13442	0.2024454	0.25836995	2.4414137	21	5 18.9	18.4
13423	Bobwoolley	13.1	X	284.44822	92.88633	285.50030	4.02708	0.0753804	0.21615451	2.7497498	21	7 20.3	16.7
13424	Margalida	14.0	X	202.46434	67.08405	259.06089	5.08782	0.1847858	0.24577939	2.5240953	21	2 3.3	18.3
13425	Waynebrown	13.6	X	11.80197	338.89857	64.44763	0.64496	0.1414400	0.18442441	3.0567302	21	—	—
13426	1999 VA_{25}	15.2	X	153.21374	325.64082	66.45754	5.53590	0.2065109	0.28973324	2.2618849	21	3 13.2	18.6
13427	1999 VM_{25}	13.7	X	278.84816	152.74653	261.41443	9.93188	0.2516268	0.21602918	2.7508132	21	7 30.4	17.6
13428	1999 VC_{35}	13.7	X	63.82155	359.32365	333.03995	0.49934	0.2858525	0.18247947	3.0784118	21	12 30.5	18.6
13429	1999 VM_{35}	13.2	X	174.09893	249.19718	133.97229	1.49583	0.0676195	0.15400601	3.4470237	21	3 25.5	18.4
13430	1999 VM_{36}	14.8	X	79.41943	135.59115	227.94154	1.24497	0.2446113	0.23275828	2.6173750	21	—	—
13431	1999 VB_{37}	14.6	X	178.37425	275.21028	72.48476	2.45539	0.1822353	0.24275383	2.5450246	21	2 11.2	18.7
13432	1999 VW_{49}	13.9	X	151.48146	42.22743	6.09260	1.70167	0.0716939	0.20123978	2.8839883	21	3 26.1	18.2
13433	Phelps	14.5	X	50.10095	243.83645	82.79910	5.21744	0.1760398	0.26925897	2.3751402	21	12 11.4	17.7
13434	Adamquade	15.1	X	24.46294	83.17327	212.06742	1.96913	0.1811436	0.26381527	2.4077022	21	9 19.6	17.4
13435	Rohret	15.1	X	213.36772	191.38332	70.23834	3.78924	0.1627683	0.28225129	2.3016826	21	—	—
13436	Enid	12.6	X	214.99086	305.20725	184.11042	0.89801	0.1172751	0.17083460	3.2167613	21	9 9.5	17.6
13437	Wellton–Persson	15.1	X	82.35321	162.20649	171.78385	1.45322	0.0883139	0.27412683	2.3469384	21	—	—
13438	Marthanalexander	15.1	X	106.53403	56.31646	86.48370	2.17287	0.1197554	0.29233292	2.2484552	21	6 4.4	17.9
13439	Frankiethomas	15.9	X	24.22308	116.82260	352.95670	6.64789	0.1465018	0.28058966	2.3107605	21	—	—
13440	2095 $P–L$	15.4	X	6.54391	118.93201	329.53289	2.52720	0.1275937	0.23033717	2.6356842	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
13441 Janmerlin	12.7	*X*	101.57148	158.18989	191.84919	11.93286	0.2614378	0.23098712	2.6307376	21	—	—
13442 2646 *P–L*	14.8	*X*	44.06506	23.35911	18.45309	5.28362	0.1580989	0.23008873	2.6375811	21	—	—
13443 2785 *P–L*	15.1	*X*	145.24036	250.99838	93.06003	2.17124	0.1006216	0.23256836	2.6187998	21	—	—
13444 3040 *P–L*	14.4	*X*	76.97663	57.43957	287.99117	8.04727	0.2199370	0.22991877	2.6388808	21	—	—
13445 3063 *P–L*	12.7	*X*	116.85207	269.26459	290.88212	6.89433	0.0302046	0.15955894	3.3665775	21	8 18.2	17.6
13446 Almarkim	12.6	*X*	130.80124	89.63764	260.93460	8.33023	0.0959947	0.18336882	3.0684501	21	—	—
13447 4115 *P–L*	15.3	*X*	75.07485	170.62041	223.19991	1.06873	0.0980409	0.23147039	2.6270747	21	—	—
13448 Edbryce	13.9	*X*	241.23676	138.57971	358.00125	2.34659	0.1436218	0.25953334	2.4341123	21	10 23.2	16.9
13449 Margaretgarland	14.1	*X*	358.22588	248.81338	171.13825	10.98197	0.1039753	0.18015825	3.1047975	21	12 28.2	18.2
13450 6077 *P–L*	14.0	*X*	15.89770	67.51181	342.34940	3.21294	0.0690367	0.18092884	3.0959755	21	—	—
13451 6103 *P–L*	14.8	*X*	349.60071	64.04580	358.96819	5.08760	0.2040569	0.17918088	3.1160776	21	12 26.9	18.2
13452 6513 *P–L*	14.0	*X*	305.19240	245.66905	2.17637	12.69117	0.1611096	0.23675350	2.5878461	21	2 13.8	17.7
13453 6538 *P–L*	13.5	*X*	44.40555	324.75178	118.49042	1.84814	0.1996924	0.18324247	3.0698603	21	—	—
13454 6594 *P–L*	14.8	*X*	349.36205	195.79978	177.56471	6.37444	0.0712405	0.25952540	2.4341620	21	10 31.2	17.5
13455 6626 *P–L*	15.3	*X*	277.02080	219.82486	1.49290	2.57656	0.0624837	0.28207741	2.3026283	21	—	—
13456 6640 *P–L*	13.9	*X*	338.86444	60.91170	3.94659	4.66659	0.1467112	0.17921888	3.1156372	21	12 5.0	17.5
13457 6761 *P–L*	13.3	*X*	342.99656	319.25318	174.38984	9.73099	0.0659413	0.18341669	3.0679161	21	—	—
13458 4214 *T–1*	14.7	*X*	24.95767	331.79181	153.74789	4.36685	0.1208271	0.23384118	2.6092883	21	1 2.9	17.6
13459 4235 *T–1*	15.3	*X*	264.32898	297.88280	135.33514	3.97140	0.1245053	0.30287370	2.1959798	21	9 5.6	17.5
13460 1083 *T–2*	14.6	*X*	31.87370	119.19698	359.91430	2.98009	0.1932670	0.23406524	2.6076228	21	1 3.6	16.9
13461 1607 *T–2*	14.7	*X*	52.79183	42.74942	344.65721	7.45143	0.1253023	0.27236917	2.3570244	21	—	—
13462 2076 *T–2*	15.4	*X*	153.62284	61.04848	180.63321	2.96574	0.1036382	0.31189459	2.1534303	21	12 13.7	18.2
13463 Antiphos	11.2	*X*	353.70915	84.87367	323.56041	10.52380	0.0076032	0.08338532	5.1889120	21	11 12.6	18.1
13464 1036 *T–3*	13.6	*X*	0.20701	128.48598	332.88835	9.16660	0.2011702	0.18437395	3.0572879	21	—	—
13465 1194 *T–3*	14.3	*X*	100.34438	9.07020	311.92960	6.17524	0.1275794	0.27377310	2.3489595	21	—	—
13466 2349 *T–3*	13.5	*X*	115.38780	194.08781	223.10941	9.47716	0.0711934	0.18957215	3.0011407	21	2 20.9	17.9
13467 2676 *T–3*	14.9	*X*	233.20058	39.49707	211.85576	3.99097	0.1144595	0.27770484	2.3267359	21	—	—
13468 3378 *T–3*	15.0	*X*	20.78743	8.42368	138.05147	0.88229	0.1621922	0.27879627	2.3206594	21	1 6.7	16.7
13469 3424 *T–3*	14.8	*X*	138.27643	172.50891	152.14226	2.29591	0.0316056	0.23085778	2.6317201	21	—	—
13470 3517 *T–3*	14.2	*X*	100.44859	354.83323	34.29220	2.04429	0.1094427	0.23217796	2.6217346	21	—	—
13471 4046 *T–3*	14.4	*X*	331.17941	167.61547	112.02453	5.13963	0.1525451	0.28621889	2.2803623	21	4 29.1	16.6
13472 4064 *T–3*	13.8	*X*	68.83870	221.44648	170.60118	10.92729	0.0988019	0.18507443	3.0495688	21	—	—
13473 Hokema	14.8	*X*	33.42445	63.42601	172.96585	4.80341	0.1708418	0.29121835	2.2541885	21	7 4.2	16.7
13474 V′yus	13.8	*X*	92.73066	36.22231	317.24111	7.81792	0.2905126	0.23203396	2.6228192	21	—	—
13475 Orestes	11.5	*X*	272.09137	122.59737	353.42079	7.94151	0.0742044	0.08365143	5.1779017	21	10 20.0	18.4
13476 1974 *QF*	15.2	*X*	186.56913	109.80464	255.68818	2.29738	0.2108612	0.28557655	2.2837805	21	3 6.4	19.0
13477 Utkin	13.7	*X*	7.66816	271.00393	67.79312	8.46040	0.1444836	0.25722516	2.4486521	21	10 21.6	16.2
13478 Fraunhofer	15.3	*X*	85.97330	83.65393	321.49978	18.72358	0.1151122	0.36970987	1.9226284	21	—	—
13479 Vet	14.4	*X*	199.10154	256.88415	84.15489	6.97443	0.1881619	0.28126379	2.3070668	21	2 18.5	18.1
13480 Potapov	15.0	*X*	309.81588	31.42116	309.33072	5.29761	0.2189229	0.29621286	2.2287778	21	6 9.7	17.1
13481 1978 VM_{11}	14.9	*X*	41.90373	95.45176	73.92812	5.62110	0.2094978	0.23901969	2.5714629	21	4 16.2	17.1
13482 Igorfedorov	12.4	*X*	234.01259	205.79779	100.70318	7.51479	0.2305679	0.18118173	3.0930940	21	2 15.6	17.7
13483 1980 *SF*	14.9	*X*	58.54558	216.73824	156.47851	2.43513	0.2131744	0.26999834	2.3708022	21	—	—
13484 1981 EA_{16}	14.9	*X*	36.20626	284.07945	332.96867	6.57828	0.1181465	0.30010874	2.2094472	21	8 7.5	16.8
13485 1981 QJ_3	13.4	*X*	90.11353	199.25533	139.69571	2.62972	0.1785860	0.17852470	3.1237086	21	—	—
13486 1981 UT_{29}	12.8	*X*	280.58755	50.44752	223.62503	9.21876	0.0861161	0.18564413	3.0433266	21	2 27.3	17.3
13487 1981 *VN*	12.8	*X*	111.94758	17.26913	39.73284	15.92525	0.1068859	0.23225547	2.6211512	21	2 27.1	16.6
13488 Savanov	12.0	*X*	123.08607	180.19254	243.73981	9.81790	0.0915389	0.18893651	3.0078681	21	3 12.4	16.5
13489 Dmitrienko	13.0	*X*	200.31916	101.61064	237.72633	9.15538	0.1144104	0.18849290	3.0125855	21	2 20.6	18.0
13490 1984 BZ_6	14.6	*X*	41.69226	264.20400	134.69468	1.51352	0.2217746	0.18210157	3.0826691	21	—	—
13491 1984 UJ_1	14.6	*X*	86.57797	351.17324	28.57401	6.25627	0.2408349	0.27449767	2.3448242	21	—	—
13492 Vitalijzakharov	14.0	*X*	58.60760	349.39165	74.32360	6.50896	0.1430276	0.27249150	2.3563190	21	—	—
13493 Lockwood	13.6	*X*	83.09395	201.04706	139.30126	12.89661	0.1995379	0.22659876	2.6645939	21	—	—
13494 Treiso	15.0	*X*	271.56207	21.93680	352.90347	3.13543	0.1876772	0.29715745	2.2240522	21	6 8.8	17.8
13495 1985 RD_3	14.6	*X*	339.51891	272.42866	117.10066	2.42865	0.1207905	0.30393847	2.1908481	21	11 19.7	16.4
13496 1985 RF_3	14.4	*X*	116.56733	213.61030	122.40279	6.03178	0.2466126	0.22860357	2.6489924	21	—	—
13497 Ronstone	13.6	*X*	42.99718	108.40965	6.20463	23.34596	0.2327667	0.27887590	2.3202177	21	1 7.7	15.9
13498 Al Chwarizmi	15.1	*X*	106.70271	152.92481	195.41549	2.76206	0.1781494	0.32036011	2.1153249	21	—	—
13499 Steinberg	13.6	*X*	37.54391	217.54474	144.68824	1.92096	0.1893247	0.17120539	3.2121150	21	12 22.4	17.8
13500 Viscardy	12.7	*X*	151.98609	22.83829	277.92016	7.50545	0.0644463	0.21319352	2.7751516	21	—	—
13501 1987 *VR*	12.6	*X*	73.56131	224.32983	212.19697	9.01644	0.0823645	0.18417957	3.0594387	21	1 25.4	16.8
13502 1987 *WD*	13.6	*X*	83.73994	308.58320	13.50054	8.95567	0.1551091	0.26516669	2.3995147	21	—	—
13503 1988 RH_6	14.2	*X*	246.09732	52.96343	318.55107	7.00387	0.1307481	0.29302661	2.2449052	21	5 9.5	17.4
13504 1988 RV_{12}	11.9	*X*	270.73489	305.54868	186.08178	16.27373	0.1712544	0.12435983	3.9751113	21	11 1.9	17.5
13505 1989 AB_3	12.9	*X*	128.35740	304.07860	113.23035	11.14302	0.1053727	0.18852324	3.0122623	21	3 21.3	17.5
13506 1989 AF_3	14.4	*X*	43.31982	29.04384	110.64498	6.73851	0.1876720	0.27803297	2.3249049	21	2 17.1	16.0
13507 1989 AN_5	13.8	*X*	68.43338	287.68740	128.52423	9.95759	0.1177145	0.18319864	3.0703501	21	—	—
13508 1989 *DC*	13.6	*X*	357.60196	156.19186	27.17977	7.22808	0.0742712	0.27587410	2.3370182	21	2 4.2	16.3
13509 Guayaquil	14.4	*X*	25.54680	19.86653	259.98851	4.11655	0.0975667	0.25300519	2.4758050	21	8 14.4	17.0
13510 1989 *OL*	13.9	*X*	324.00406	249.95642	46.61143	13.07605	0.1343110	0.24374588	2.5381144	21	5 15.7	16.9
13511 1989 RD_1	13.5	*X*	100.32097	261.33556	86.73085	13.30159	0.1903341	0.22617923	2.6678878	21	—	—
13512 1989 TH_1	13.2	*X*	27.69928	47.06184	343.42670	8.15936	0.2902678	0.21994718	2.7180479	21	—	—
13513 Manila	15.6	*X*	78.67648	359.08265	213.36175	5.69463	0.1034575	0.29298484	2.2451186	21	8 1.9	18.4
13514 Mikerudenko	14.2	*X*	256.39204	7.47534	248.25839	6.87597	0.2156970	0.27466494	2.3438720	21	—	—
13515 1990 SG_{12}	14.8	*X*	191.05159	159.72729	212.46733	4.02210	0.2116339	0.24195746	2.5506060	21	3 22.6	19.1
13516 1990 UO_1	14.1	*X*	168.79451	259.94843	126.27744	5.17552	0.1563757	0.23889258	2.5723750	21	3 21.3	18.1
13517 1990 UU_1	14.3	*X*	212.22553	175.68594	192.25731	13.61502	0.1766505	0.24163412	2.5528809	21	4 5.4	18.6
13518 1990 VL_1	14.0	*X*	216.60082	112.96925	238.66044	8.48506	0.2139448	0.24087391	2.5582494	21	3 15.9	18.6
13519 1990 VM_3	14.1	*X*	134.58167	292.60382	77.76718	18.07611	0.2945967	0.23472166	2.6027589	21	2 15.1	18.6
13520 Félicienrops	13.2	*X*	289.96723	51.20806	204.26947	12.48714	0.1714453	0.23675089	2.5878651	21	1 27.8	17.3

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
13521 1991 *BK*	13.6	*X*	51.79334	48.01385	67.04348	5.73318	0.2793810	0.23105378	2.6302316	21	2 24.8	15.6
13522 1991 *FG*	14.1	*X*	231.48032	325.89806	204.16492	13.57195	0.3413921	0.21582378	2.7525582	21	10 27.7	18.6
13523 Vanhassel	14.3	*X*	219.36877	55.25205	221.10076	5.48371	0.0515227	0.18570078	3.0427077	21	—	—
13524 1991 *OO*	14.9	*X*	203.53887	109.55634	231.28437	3.38680	0.2015099	0.28360829	2.2943347	21	2 17.9	18.6
13525 Paulledoux	13.9	*X*	300.08022	134.69309	91.33631	2.76885	0.1525716	0.18565463	3.0432119	21	1 18.2	18.2
13526 Libbrecht	15.1	*X*	270.62573	164.05033	142.31155	6.63288	0.1316718	0.28775907	2.2722182	21	3 14.9	18.3
13527 1991 PJ_{15}	14.8	*X*	249.47326	167.87209	118.73196	3.04734	0.1425116	0.28338044	2.2955643	21	1 24.9	18.3
13528 1991 PM_{16}	14.6	*X*	307.83460	143.31705	154.73035	21.84317	0.2349266	0.28963112	2.2624165	21	4 6.4	17.7
13529 Yokaboshi	13.8	*X*	178.76556	173.78261	312.64420	4.36304	0.0956421	0.29353929	2.2422905	21	8 5.6	16.7
13530 Ninnemann	13.8	*X*	98.72302	243.60775	210.05364	6.48216	0.0651808	0.28149681	2.3057934	21	3 3.5	16.6
13531 Weizsäcker	13.1	*X*	207.63299	173.97932	204.61185	8.27331	0.0759441	0.18555567	3.0442938	21	4 20.8	17.7
13532 1991 RY_8	14.5	*X*	198.76653	10.66355	8.33235	3.74871	0.1383243	0.28410654	2.2916514	21	4 2.8	17.9
13533 Junili	13.7	*X*	158.54142	187.68671	105.67657	2.42693	0.1081395	0.17764571	3.1340042	21	—	—
13534 Alain–Fournier	13.5	*X*	73.56067	320.42692	8.14039	1.25474	0.1721665	0.17180238	3.2046696	21	12 21.3	18.4
13535 1991 RS_{13}	14.3	*X*	21.09998	4.48158	287.81877	4.36128	0.1432638	0.29473366	2.2362288	21	9 4.6	16.2
13536 1991 RA_{15}	13.2	*X*	165.36345	128.30251	148.90193	0.08737	0.1493995	0.17464049	3.1698552	21	—	—
13537 1991 *SG*	12.9	*X*	98.94147	190.43797	157.03207	9.84864	0.0755685	0.17420499	3.1751360	21	—	—
13538 1991 *ST*	13.7	*X*	70.57046	229.26392	79.50727	6.84903	0.2202657	0.30196214	2.2003971	21	12 20.7	17.0
13539 1991 *TY*	14.7	*X*	0.50547	240.21282	126.66663	23.15169	0.2932843	0.26491393	2.4010407	21	12 16.1	17.3
13540 Kazukitakahashi	14.6	*X*	54.50728	10.32415	41.68788	1.92776	0.1519908	0.27133087	2.3630337	21	—	—
13541 1991 VP_3	14.1	*X*	332.13865	82.04196	49.46914	7.86627	0.0921936	0.27072105	2.3665810	21	—	—
13542 1991 VC_5	13.8	*X*	35.07408	25.88949	51.93618	7.65229	0.0957798	0.27180450	2.3602878	21	—	—
13543 Butler	13.8	*X*	208.01081	71.75589	118.02806	8.56594	0.1448522	0.25911317	2.4367430	21	11 25.1	17.4
13544 1992 DU_5	14.2	*X*	147.08789	235.39622	147.90635	10.14881	0.2161430	0.23747195	2.5826239	21	3 1.1	18.2
13545 1992 DZ_5	15.1	*X*	21.60424	313.41633	147.18815	3.48279	0.1981992	0.23312832	2.6146047	21	—	—
13546 1992 DF_8	14.8	*X*	186.55169	174.68017	200.64845	7.50506	0.0352286	0.23951440	2.5679209	21	3 16.2	18.5
13547 1992 DJ_8	15.4	*X*	68.31416	344.01588	209.86654	4.10763	0.1608778	0.24412715	2.5354711	21	6 30.9	18.5
13548 1992 ER_1	13.7	*X*	259.59207	354.41132	140.45556	12.64182	0.1503889	0.22339843	2.6899816	21	11 12.5	17.5
13549 1992 EW_7	14.0	*X*	72.36548	54.10485	238.75723	1.18175	0.1586894	0.25324707	2.4742283	21	11 18.4	17.5
13550 1992 EX_9	14.6	*X*	95.31727	241.74792	181.63623	3.71997	0.1934467	0.23736141	2.5834257	21	2 15.1	17.5
13551 Gadsden	16.4	*X*	103.51581	238.19081	317.26716	5.27466	0.4272647	0.24586801	2.5234887	21	9 8.6	21.1
13552 1992 *GA*	13.6	*X*	302.50685	249.24033	309.49200	11.64975	0.1194415	0.23024372	2.6363972	21	—	—
13553 Masaakikoyama	16.4	*X*	327.86651	110.00090	193.46679	5.87612	0.4641867	0.30438613	2.1886995	21	3 27.0	18.6
13554 Decleir	14.0	*X*	77.75700	270.24760	26.22958	2.80659	0.1620162	0.21512534	2.7585128	21	11 22.9	18.0
13555 1992 JB_2	13.2	*X*	135.78568	150.99434	218.24606	11.09821	0.0625144	0.22919756	2.6444136	21	1 10.2	17.0
13556 1992 OY_7	12.9	*X*	316.46717	52.00627	277.93984	8.73995	0.2734124	0.20265407	2.8705547	21	5 31.1	16.2
13557 Lievetruwant	13.3	*X*	122.20901	171.33076	115.70108	12.02493	0.1834533	0.21496501	2.7598842	21	12 24.7	17.9
13558 1992 PR_6	13.5	*X*	120.01612	27.76439	329.62141	9.52212	0.2872485	0.18275947	3.0752667	21	1 19.9	18.2
13559 Werth	13.2	*X*	218.85560	337.68927	359.17097	13.67008	0.0971444	0.19005619	2.9960429	21	3 12.8	17.8
13560 La Pérouse	13.0	*X*	115.38990	28.75559	7.96257	9.49293	0.0928823	0.18564004	3.0433714	21	2 6.9	17.4
13561 Kudogou	12.5	*X*	53.11717	344.67378	1.55535	17.01243	0.1582210	0.17415884	3.1756968	21	12 17.5	17.3
13562 Bobeggleton	14.0	*X*	267.36080	312.83296	174.88986	1.54889	0.1299492	0.17403716	3.1771768	21	11 4.6	18.2
13563 1992 *UW*	13.7	*X*	23.96557	19.20482	1.82588	2.87557	0.2337378	0.24197288	2.5504976	21	—	—
13564 Kodomomiraikan	14.8	*X*	183.97650	61.76019	0.28570	3.56269	0.1610292	0.29432500	2.2382982	21	5 13.7	18.3
13565 Yotakanashi	13.0	*X*	32.94704	19.32624	65.90112	14.48356	0.1077329	0.17859627	3.1228740	21	—	—
13566 1992 UM_9	13.2	*X*	46.70538	159.21300	185.96754	6.45109	0.1198693	0.17265839	3.1940687	21	12 4.7	17.6
13567 Urabe	11.9	*X*	187.75899	268.14803	101.21548	11.05771	0.1021526	0.18693538	3.0292960	21	3 25.4	16.8
13568 1992 WL_3	12.1	*X*	337.03601	220.90247	203.87138	10.86444	0.0378711	0.17054189	3.2204409	21	11 30.3	16.6
13569 Oshu	14.8	*X*	169.63043	162.76185	49.35266	7.05053	0.0787527	0.26277335	2.4140625	21	11 15.7	18.1
13570 1993 FH_7	14.8	*X*	152.04826	200.92552	88.51048	3.51209	0.2009092	0.26667500	2.3904583	21	—	—
13571 1993 FT_7	14.9	*X*	60.87802	215.92289	155.66850	6.43016	0.1175233	0.26824461	2.3811242	21	—	—
13572 1993 FS_{12}	15.4	*X*	342.61782	323.02592	117.18235	3.31103	0.1723184	0.26867424	2.3785851	21	—	—
13573 1993 FZ_{18}	14.2	*X*	254.45231	212.70444	71.37233	6.13569	0.1499243	0.27606379	2.3359476	21	1 28.7	17.7
13574 1993 FX_{79}	14.1	*X*	17.24473	122.66808	195.16645	1.83029	0.1285173	0.25680102	2.4513475	21	10 1.8	16.7
13575 1993 *GN*	14.5	*X*	7.79123	154.91980	46.17862	6.87557	0.1449787	0.27983481	2.3149142	21	3 11.8	16.6
13576 Gotoyoshi	14.1	*X*	221.23158	181.14892	82.54339	3.02816	0.1825588	0.26967835	2.3726772	21	—	—
13577 Ukawa	14.8	*X*	193.49539	115.79432	110.25076	3.04432	0.1693700	0.26457807	2.4030722	21	12 21.7	18.5
13578 1993 *MK*	13.7	*X*	72.41872	236.85541	112.33246	24.49515	0.0920490	0.36366081	1.9438901	21	—	—
13579 Allodd	13.8	*X*	83.52046	301.89583	123.29291	9.61618	0.1802806	0.23089680	2.6314237	21	1 30.8	16.6
13580 de Saussure	14.3	*X*	283.41990	78.93736	293.94076	5.82428	0.2327761	0.20913770	2.8109158	21	6 17.2	18.1
13581 1993 QX_4	12.7	*X*	144.16291	323.35585	160.25741	15.34202	0.0503889	0.24035816	2.5619076	21	6 19.8	16.6
13582 Tominari	13.1	*X*	342.24935	229.37410	38.43102	14.12792	0.1391424	0.23668149	2.5883709	21	5 5.7	16.0
13583 Bosret	13.7	*X*	152.54365	211.77467	61.41645	3.40466	0.0340629	0.21838299	2.7310114	21	—	—
13584 1993 TH_{19}	14.6	*X*	224.53584	154.96262	124.19954	0.51804	0.0760861	0.19063471	2.9899785	21	1 8.8	19.0
13585 Justinsmith	14.4	*X*	50.98945	268.03532	39.01231	4.24226	0.0855094	0.21212520	2.7844614	21	10 25.3	17.9
13586 Copenhagen	13.4	*X*	192.16760	117.41888	187.16788	9.73800	0.0744538	0.18978763	2.9988686	21	1 4.8	18.1
13587 1993 TQ_{29}	15.0	*X*	17.09743	261.47873	177.97350	5.17325	0.1939245	0.18368129	3.0649692	21	—	—
13588 1993 TU_{38}	14.3	*X*	260.57105	4.18895	98.24389	5.52452	0.0248093	0.21058774	2.7979976	21	10 17.9	18.1
13589 1993 *XM*	13.5	*X*	24.99129	36.44061	107.45563	16.72550	0.1571698	0.18516578	3.0485657	21	2 13.1	17.0
13590 1994 AC_3	13.8	*X*	269.96968	91.74848	29.59077	0.56169	0.1326525	0.17132601	3.2106073	21	10 29.9	18.2
13591 1994 BC_1	12.8	*X*	199.28533	298.71856	313.85234	12.40300	0.1828580	0.17352136	3.1834700	21	—	—
13592 1994 *JU*	14.8	*X*	211.11457	63.15550	203.88495	6.30775	0.1896798	0.27731030	2.3289422	21	—	—
13593 1994 NF_1	14.0	*X*	53.88473	199.39139	99.06710	8.19499	0.1398369	0.29853719	2.2171943	21	11 11.3	16.8
13594 1994 PC_2	14.6	*X*	184.26814	284.58492	359.62028	2.04827	0.2248495	0.27228288	2.3575224	21	—	—
13595 1994 PL_3	15.2	*X*	177.83904	92.63286	315.45856	2.22157	0.1204188	0.24485967	2.5304119	21	4 21.2	19.1
13596 1994 PD_{18}	14.4	*X*	155.49745	120.62758	158.71006	6.70144	0.1157718	0.26785748	2.3834179	21	—	—
13597 1994 PH_{18}	15.5	*X*	235.04398	72.90945	166.56878	2.53235	0.1682653	0.27265491	2.3553774	21	—	—
13598 1994 PY_{19}	14.7	*X*	153.55633	258.21534	309.28231	2.09702	0.1262290	0.26034641	2.4290418	21	10 21.6	18.5
13599 Lisbon	14.5	*X*	161.98840	220.77312	154.51614	7.42817	0.2474544	0.23885518	2.5726435	21	3 6.4	18.9
13600 1994 PL_{26}	14.7	*X*	289.67031	162.75851	107.07197	1.91250	0.0499936	0.28055182	2.3109683	21	2 27.6	17.4

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
13601	1994 PU_{29}	14.5	X	152.77368	229.22684	166.52895	11.18091	0.1830378	0.24023869	2.5627569	21	3 18.4	18.3
13602	Pierreboulez	14.9	X	159.71153	198.61729	240.71949	1.06721	0.0830994	0.24675909	2.5174099	21	5 11.1	18.5
13603	1994 PV_{37}	14.8	X	97.63643	119.13660	171.93529	2.36813	0.1807528	0.26399322	2.4066201	21	12 15.1	18.5
13604	1994 PA_{39}	15.6	X	261.00876	41.49122	217.22715	2.39093	0.1888188	0.27789666	2.3256650	21	—	—
13605	Nakamuraminoru	14.1	X	135.58434	349.90479	331.26589	5.32130	0.1334879	0.26848780	2.3796861	21	—	—
13606	Bean	15.4	X	114.62762	61.26761	199.08224	2.84574	0.1039033	0.26017480	2.4301098	21	11 18.7	18.9
13607	Vicars	14.0	X	327.19997	201.96241	21.18247	6.60859	0.0586092	0.27681430	2.3317234	21	2 16.4	16.8
13608	Andosatoru	13.9	X	230.83962	234.48268	55.30561	7.08430	0.1458035	0.27378108	2.3489139	21	1 13.6	17.6
13609	Lewicki	14.2	X	351.89714	96.08974	235.25669	2.15642	0.0704639	0.25344932	2.4729118	21	8 31.5	17.0
13610	Lilienthal	14.6	X	117.18545	148.12851	189.24415	5.97734	0.1359889	0.26634683	2.3924215	21	—	—
13611	1994 UM_1	13.8	X	234.06262	69.82747	249.98707	3.39635	0.1955621	0.23953603	2.5677662	21	2 22.6	18.2
13612	1994 UQ_1	14.1	X	212.32385	134.77077	201.69012	3.55355	0.1933363	0.23888213	2.5724500	21	2 25.1	18.3
13613	1994 UA_3	14.5	X	9.43688	201.26055	241.44121	1.19229	0.1790469	0.22597745	2.6694758	21	—	—
13614	1994 VF_2	13.3	X	35.25269	68.14200	55.38909	13.11122	0.2236267	0.23099051	2.6307119	21	1 21.1	15.7
13615	Manulis	13.5	X	140.15937	250.09554	139.37001	12.68158	0.2119073	0.23493528	2.6011809	21	3 2.8	17.5
13616	1994 XQ_4	14.2	X	353.24221	312.81541	77.55204	4.13055	0.1175444	0.21653732	2.7465081	21	11 23.1	17.1
13617	1994 YA_2	13.5	X	50.03697	97.60744	358.11022	22.04028	0.0453430	0.22803267	2.6534119	21	1 12.4	17.3
13618	1995 BF_2	12.9	X	301.92246	217.83882	341.06078	8.40053	0.0802063	0.18536315	3.0464013	21	—	—
13619	1995 DN_1	13.1	X	145.02449	258.04192	24.24889	7.08041	0.1025076	0.17670254	3.1451463	21	12 31.9	18.2
13620	Moynahan	13.8	X	174.60461	152.37592	46.84621	4.02272	0.0456883	0.17141681	3.2094734	21	10 25.9	18.4
13621	1995 GC_7	12.9	X	100.36463	76.19482	2.96308	9.93104	0.1001894	0.18775164	3.0205097	21	3 11.1	17.0
13622	McArthur	13.6	X	284.92750	337.78221	127.82745	3.30941	0.1813759	0.17228817	3.1986428	21	10 25.3	17.6
13623	1995 TD	14.9	X	297.02597	142.96152	186.51755	6.39696	0.1564733	0.29639844	2.2278474	21	5 15.5	17.5
13624	Abeosamu	14.8	X	173.75489	200.79658	257.88721	3.64334	0.0963444	0.29213386	2.2494764	21	6 21.7	17.9
13625	1995 UP_3	14.4	X	110.27458	330.91971	7.74937	4.39614	0.1568631	0.27563609	2.3383633	21	—	—
13626	1995 UD_4	14.7	X	51.46819	342.75577	28.36171	5.48795	0.1643248	0.31044120	2.1601462	21	—	—
13627	Yukitamayo	14.5	X	204.50389	276.48650	89.15796	5.93765	0.2177552	0.28740000	2.2741104	21	3 25.9	18.3
13628	1995 WE	14.0	X	104.56638	52.54880	68.82739	6.81232	0.1561247	0.28559456	2.2836845	21	5 8.9	16.7
13629	1995 WD_2	14.9	X	32.76379	263.54173	222.77442	2.32854	0.1654488	0.27757271	2.3274742	21	—	—
13630	1995 WO_3	15.0	X	1.31206	158.23640	232.25801	1.65381	0.1954677	0.26728972	2.3867919	21	12 31.1	17.4
13631	1995 WL_5	15.1	X	104.74143	118.94956	256.62122	6.92300	0.1531176	0.27578531	2.3375198	21	—	—
13632	1995 WP_8	14.4	X	90.19220	274.22989	58.94331	5.50336	0.1795630	0.30964140	2.1638644	21	—	—
13633	Ivens	15.5	X	197.91396	212.41143	21.77381	4.11915	0.0807931	0.31086513	2.1581819	21	—	—
13634	1995 WY_{41}	15.1	X	93.45658	124.39372	277.98239	3.71533	0.2075173	0.27788719	2.3257179	21	1 5.8	17.2
13635	1995 WA_{42}	15.1	X	56.95062	215.52040	206.80391	4.39340	0.0588040	0.27623441	2.3349856	21	—	—
13636	1995 YS_2	15.7	X	300.70842	222.97019	262.52701	0.51503	0.1213008	0.26616024	2.3935395	21	—	—
13637	1995 YO_3	14.6	X	335.21498	223.47709	214.43692	0.60060	0.1586965	0.26543019	2.3979264	21	—	—
13638	Fiorenza	14.1	X	278.71785	121.24251	135.62537	7.46508	0.0909994	0.27330786	2.3516244	21	1 22.9	17.4
13639	1996 EG_2	13.8	X	351.63462	113.24267	165.79209	12.32919	0.0386881	0.24370788	2.5383782	21	6 17.2	17.2
13640	Ohtateruaki	13.6	X	12.88250	101.75916	38.92745	13.24130	0.1186568	0.23003224	2.6380129	21	1 5.9	16.9
13641	de Lesseps	13.7	X	229.63974	175.20368	59.31652	0.82440	0.1589987	0.18274474	3.0754319	21	—	—
13642	Ricci	13.6	X	209.89289	317.93061	2.39618	6.20409	0.1603648	0.18724542	3.0259512	21	2 13.1	18.6
13643	Takushi	12.8	X	71.67791	87.31930	56.31313	13.83577	0.1121130	0.23600047	2.5933481	21	4 22.4	16.0
13644	Lynnanderson	13.4	X	22.74528	343.85747	38.71023	0.43422	0.2010281	0.17510562	3.1642394	21	12 29.5	17.4
13645	1996 HF_{11}	14.1	X	287.69979	180.38875	79.46366	2.58103	0.1679160	0.19065666	2.9897490	21	2 11.8	18.6
13646	1996 HC_{12}	14.8	X	137.58325	260.68927	220.26305	1.10268	0.0165346	0.20022357	2.8937383	21	6 4.6	18.9
13647	Rey	13.9	X	91.86968	222.86272	85.88182	4.59223	0.1727739	0.17316356	3.1878536	21	12 16.4	18.9
13648	1996 JJ_1	13.6	X	268.64641	123.45980	176.70340	9.34607	0.0409016	0.19300574	2.9654406	21	3 26.3	17.9
13649	1996 PM_4	12.9	X	253.18440	162.24734	34.33237	1.46284	0.1361815	0.17317245	3.1877446	21	—	—
13650	Perimedes	11.8	X	320.55813	243.83541	206.82381	10.70582	0.0975908	0.08257369	5.2228585	21	11 19.9	18.3
13651	1997 BR	17.8	X	216.36783	133.81137	116.66388	17.24844	0.3056107	0.63859840	1.3355213	21	—	—
13652	Elowitz	15.3	X	300.54324	194.65015	140.28608	6.03814	0.1898063	0.29891663	2.2153176	21	5 23.4	17.8
13653	Priscus	15.6	X	102.26155	135.53142	128.69209	4.60071	0.1680143	0.30495910	2.1859572	21	11 21.9	18.9
13654	Masuda	15.5	X	289.64258	316.25966	21.94789	4.37021	0.0120566	0.29464587	2.2366729	21	6 9.5	18.1
13655	1997 ER_2	14.5	X	39.45462	7.25932	55.75280	4.54374	0.0556646	0.27633073	2.3344429	21	—	—
13656	1997 EX_{45}	14.6	X	60.86554	19.55298	109.86760	3.30545	0.0968120	0.24467544	2.5316819	21	3 10.1	17.3
13657	Badinter	14.0	X	70.77320	298.85300	1.14718	2.30775	0.1962971	0.26169326	2.4207003	21	11 30.9	17.6
13658	Sylvester	15.4	X	142.48776	69.04308	180.97240	3.91882	0.1597305	0.30678024	2.1772976	21	12 10.7	18.8
13659	1997 FH_4	13.8	X	342.08862	325.83810	9.57015	11.51372	0.0779608	0.25685079	2.4510308	21	8 27.2	16.5
13660	1997 GE_8	15.6	X	218.72236	229.85897	254.13635	0.39889	0.1327612	0.25995323	2.4314905	21	9 11.7	19.2
13661	1997 GH_8	15.3	X	237.01830	25.98269	223.50092	4.01870	0.0605303	0.27425903	2.3461841	21	—	—
13662	1997 GL_{11}	15.0	X	299.56521	276.77189	1.55577	6.11223	0.0816971	0.28605899	2.2812120	21	3 18.4	17.5
13663	1997 GA_{14}	14.6	X	2.08290	65.11919	286.41391	1.59560	0.2005865	0.26035469	2.4289903	21	11 2.9	16.5
13664	1997 GE_{17}	15.7	X	170.39363	139.06838	357.95829	5.22531	0.0524403	0.29744286	2.2226292	21	8 12.8	18.6
13665	1997 GK_{17}	15.0	X	288.81339	119.57332	330.28268	2.22816	0.0925556	0.30620063	2.1800443	21	11 15.5	16.9
13666	1997 GX_{22}	15.1	X	144.37988	115.37145	147.53319	1.71083	0.1515890	0.26451309	2.4034658	21	12 21.8	19.0
13667	Samthurman	15.0	X	37.58331	194.02506	195.34873	2.32647	0.1765161	0.27010999	2.3701488	21	—	—
13668	Tanner	15.0	X	306.19267	243.81133	15.00734	3.94441	0.1290060	0.28433325	2.2904331	21	2 22.6	17.9
13669	Swammerdam	15.0	X	244.58321	175.12303	171.27774	2.38769	0.0831371	0.24403638	2.5360997	21	4 15.7	18.7
13670	1997 JD_{15}	14.8	X	199.90734	67.87695	84.56614	3.66490	0.0871823	0.30052624	2.2074004	21	10 9.1	17.6
13671	1997 JH_{18}	14.9	X	265.98007	173.66317	121.38942	5.03263	0.1977863	0.23882216	2.5728806	21	2 23.3	19.0
13672	Tarski	14.7	X	180.09764	119.89723	194.77218	2.03835	0.0886836	0.23173147	2.6251011	21	—	—
13673	Urysohn	14.8	X	265.93271	159.35177	186.11502	1.76825	0.0952578	0.20327138	2.8647401	21	5 11.2	18.9
13674	Bourge	14.5	X	327.58088	8.11102	94.76812	7.76069	0.0696711	0.26742244	2.3860021	21	—	—
13675	1997 MZ_2	14.3	X	177.64647	316.06316	346.49367	2.96967	0.0819679	0.22758548	2.6568866	21	—	—
13676	1997 MA_4	14.1	X	149.48279	135.29157	346.16544	1.38455	0.0155845	0.20440734	2.8541167	21	6 20.3	18.0
13677	Alvin	13.7	X	51.76105	132.44581	245.31707	2.13188	0.0813246	0.17684576	3.1434480	21	—	—
13678	Shimada	12.5	X	12.75723	58.63653	273.29693	13.92959	0.1839033	0.20950816	2.8076012	21	10 5.9	15.9
13679	Shinanogawa	13.2	X	348.62352	87.92810	155.56760	14.84360	0.0865010	0.23847969	2.5753432	21	4 23.2	16.4
13680	1997 PY	14.7	X	329.62921	62.67064	203.21081	1.50824	0.0531400	0.19683561	2.9268487	21	4 28.2	18.4

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
13681	Monty Python	14.3	*X*	288.16814	284.16557	344.67543	10.11460	0.0630926	0.19059222	2.9904229	21	3 7.5	18.3
13682	Pressberger	13.8	*X*	53.07551	196.40965	147.83743	2.84911	0.0965721	0.17315462	3.1879634	21	12 7.9	18.3
13683	1997 PV_3	13.2	*X*	190.86863	45.44909	253.31782	8.40490	0.0741174	0.18380240	3.0636226	21	—	—
13684	Borbona	12.7	*X*	285.37279	181.62599	297.60680	16.87714	0.0954909	0.17441454	3.1725923	21	11 19.7	17.3
13685	1997 QG_4	13.3	*X*	284.07084	117.35561	147.73432	12.20364	0.1383095	0.19027383	2.9937579	21	2 16.9	17.6
13686	Kongozan	14.0	*X*	108.74183	155.32254	200.46610	1.26211	0.1775547	0.17910423	3.1169666	21	—	—
13687	1997 RB_7	12.5	*X*	280.69408	39.25159	211.33926	8.92259	0.0662179	0.18769790	3.0210861	21	2 2.1	17.1
13688	Oklahoma	13.4	*X*	125.74330	350.37698	321.67206	5.67830	0.1493717	0.17628337	3.1501301	21	—	—
13689	Succi	13.7	*X*	164.68380	123.46536	138.58922	10.27409	0.0561337	0.17521130	3.1629668	21	12 27.9	18.5
13690	Lesleymartin	13.1	*X*	186.64892	326.06500	299.40765	15.57342	0.1664346	0.17834577	3.1257975	21	—	—
13691	Akie	13.6	*X*	18.14414	108.58687	147.56076	12.32609	0.1031746	0.23945662	2.5683339	21	6 28.5	16.6
13692	1997 SW_{30}	13.9	*X*	47.89145	76.84168	171.17333	9.27143	0.1777454	0.24384080	2.5374557	21	8 17.7	16.8
13693	Bondar	14.3	*X*	320.26062	44.86443	229.95266	1.73011	0.1846692	0.23646384	2.5899590	21	4 1.6	17.4
13694	1997 WW_7	10.9	*X*	6.94431	164.02811	249.77473	5.64241	0.0700991	0.08164568	5.2623601	21	12 8.7	17.5
13695	1998 FO_{52}	13.8	*X*	49.46860	278.43217	8.03694	11.03015	0.1682740	0.22726080	2.6594165	21	10 9.6	17.2
13696	1998 HU_{43}	13.9	*X*	189.61456	17.33716	37.83729	7.22017	0.1381776	0.30323447	2.1942377	21	5 9.7	17.0
13697	1998 HJ_{133}	13.8	*X*	205.94249	200.82274	153.82415	8.42015	0.2380283	0.25518430	2.4616903	21	3 14.6	18.1
13698	1998 KF_{35}	13.3	*X*	286.34067	272.55740	71.72031	7.03013	0.1525999	0.25733519	2.4479540	21	5 23.8	16.5
13699	Nickthomas	13.9	*X*	277.12844	84.83849	261.83607	4.87579	0.2045947	0.29382443	2.2408396	21	5 3.8	17.0
13700	Connors	15.0	*X*	340.64043	31.50828	307.94361	6.08963	0.1965603	0.30100006	2.2050833	21	8 25.9	16.0
13701	Roquebrune	15.3	*X*	152.01135	188.91802	232.98228	3.60591	0.1545073	0.28835380	2.2690928	21	4 11.2	18.5
13702	1998 OE_7	14.2	*X*	191.38712	88.18843	310.34773	12.02560	0.2094176	0.24410892	2.5355973	21	4 18.9	18.7
13703	Romero	14.4	*X*	14.41077	221.92201	150.08306	1.56211	0.1955053	0.26380333	2.4077748	21	12 25.7	16.9
13704	Aletesi	13.7	*X*	6.93736	202.03033	238.05323	5.62886	0.1262730	0.18546163	3.0453228	21	—	—
13705	Llapasset	14.6	*X*	303.12736	239.76110	128.69384	4.69784	0.1299270	0.29913681	2.2142304	21	7 29.5	16.6
13706	1998 QF_3	14.1	*X*	168.67204	88.13225	331.41183	20.44620	0.2217801	0.28787936	2.2715852	21	4 18.6	18.3
13707	1998 QS_9	13.2	*X*	63.95792	47.61878	324.63395	12.00119	0.1642014	0.22786236	2.6547339	21	—	—
13708	1998 QU_9	14.3	*X*	290.50029	74.90302	333.95720	6.37879	0.0371134	0.30361073	2.1924245	21	9 21.9	16.8
13709	1998 QE_{13}	14.0	*X*	75.44376	298.78255	135.00098	5.72447	0.2614235	0.27749669	2.3278992	21	1 25.2	15.5
13710	Shridhar	14.7	*X*	190.02905	79.36439	320.53523	5.83309	0.1408436	0.28874552	2.2670402	21	4 18.4	18.1
13711	1998 QB_{26}	14.7	*X*	63.46599	349.11090	337.46549	1.91832	0.2319937	0.26526316	2.3989328	21	12 31.5	18.4
13712	1998 QL_{30}	14.3	*X*	122.58740	234.22345	129.78235	4.97178	0.1367746	0.27581644	2.3373439	21	—	—
13713	1998 QN_{30}	15.0	*X*	36.92631	157.71918	164.44395	1.96177	0.2064502	0.30519141	2.1848478	21	11 30.7	17.6
13714	Stainbrook	14.5	*X*	156.52975	203.59607	248.84243	4.42197	0.1387979	0.28919595	2.2646856	21	5 26.9	17.5
13715	Steed	15.1	*X*	144.85598	250.35593	117.54229	5.87878	0.1504388	0.23570238	2.5955341	21	1 31.9	18.8
13716	Trevino	14.3	*X*	110.33429	171.18058	188.30330	6.82798	0.1345626	0.27369726	2.3493935	21	—	—
13717	Vencill	15.3	*X*	320.69973	30.26334	212.08520	2.23321	0.0456877	0.28595220	2.2817799	21	3 2.2	18.0
13718	Welcker	15.4	*X*	51.36514	250.19192	19.67226	4.94110	0.1177656	0.30124219	2.2039015	21	9 22.6	17.8
13719	1998 QU_{45}	15.0	*X*	119.54227	97.60332	198.97688	5.13184	0.1146323	0.31182225	2.1537633	21	—	—
13720	1998 QU_{50}	13.2	*X*	70.19021	276.75631	348.41257	21.33667	0.0494742	0.17194986	3.2028370	21	9 15.2	17.6
13721	Kevinwelsh	15.1	*X*	88.96207	258.72846	215.07746	4.97764	0.0633760	0.28380748	2.2932610	21	3 17.6	17.6
13722	Campobagatin	14.5	*X*	162.60153	44.85573	269.14081	2.52837	0.2124139	0.23190582	2.6237852	21	—	—
13723	Kolokolova	14.1	*X*	322.92400	168.21553	220.34100	4.16934	0.1649411	0.21365172	2.7711824	21	9 22.5	17.1
13724	Schwehm	14.1	*X*	232.59314	338.59649	262.96892	1.32590	0.1924457	0.27478486	2.3431900	21	—	—
13725	1998 QY_{55}	13.7	*X*	159.10682	274.77823	147.79536	2.58609	0.0623948	0.19955806	2.9001683	21	4 21.8	17.9
13726	1998 QV_{89}	12.8	*X*	132.62360	8.44199	299.15645	9.65090	0.0739293	0.18337681	3.0683609	21	—	—
13727	1998 QU_{90}	13.9	*X*	146.62715	53.95707	52.64391	5.96057	0.0784706	0.28896297	2.2659027	21	5 29.6	16.8
13728	1998 QC_{98}	13.9	*X*	263.51910	256.65693	152.86131	10.14808	0.1162090	0.25236696	2.4799774	21	7 28.0	17.2
13729	Nicolewen	15.1	*X*	17.04545	306.63776	171.95175	3.91265	0.0734961	0.27680331	2.3317852	21	—	—
13730	Willis	14.6	*X*	155.63283	143.88522	214.49776	6.30457	0.1524886	0.27822278	2.3238473	21	1 22.3	17.9
13731	1998 RG_{49}	15.2	*X*	55.74336	108.79320	184.10687	3.03488	0.1462579	0.30357682	2.1925877	21	11 5.6	17.7
13732	Woodall	14.4	*X*	29.79440	218.44537	204.62804	6.04312	0.0995079	0.26934792	2.3746173	21	—	—
13733	Dylanyoung	14.7	*X*	307.26056	12.32787	210.16437	4.35084	0.0778179	0.28047511	2.3113896	21	1 11.9	17.7
13734	Buklad	15.3	*X*	103.30164	19.15401	203.13643	3.72966	0.1172888	0.29896958	2.2150560	21	9 21.3	18.3
13735	1998 RZ_{67}	14.4	*X*	101.33262	221.36353	216.70304	3.47203	0.1250748	0.19247436	2.9708961	21	3 11.1	18.5
13736	1998 RF_{71}	14.4	*X*	135.31774	264.47342	99.00620	3.08470	0.1105142	0.18925167	3.0045278	21	1 19.5	18.7
13737	1998 RU_{76}	14.2	*X*	122.15409	168.69048	149.44761	6.21323	0.2523102	0.27100665	2.3649180	21	—	—
13738	1998 SF_1	15.0	*X*	63.87119	92.51805	190.89528	5.98580	0.0921499	0.25677548	2.4515101	21	10 18.9	18.1
13739	Nancyworden	12.7	*X*	359.60541	94.51901	46.25908	10.92309	0.0699536	0.18852938	3.0121969	21	1 1.3	16.8
13740	Lastrucci	13.8	*X*	196.91008	68.30448	328.48217	6.08266	0.2734468	0.24288386	2.5441162	21	4 24.7	18.5
13741	1998 SH_{10}	13.8	*X*	296.04800	351.97821	60.30226	0.94534	0.0637663	0.21119182	2.7926595	21	9 23.1	17.2
13742	1998 SX_{22}	14.5	*X*	8.03359	205.06745	145.03398	5.43294	0.1712436	0.21570495	2.7535690	21	11 1.1	17.5
13743	Rivkin	15.2	*X*	317.15244	197.13127	119.77722	4.90766	0.1431969	0.29366406	2.2416554	21	5 31.7	17.4
13744	Rickline	13.7	*X*	54.84654	342.05630	33.11695	6.04646	0.0950472	0.22328853	2.6908642	21	—	—
13745	Mikecosta	14.5	*X*	124.82152	64.52719	331.74320	1.15051	0.0817426	0.23499531	2.6007379	21	2 3.9	18.0
13746	1998 SR_{43}	13.8	*X*	125.49938	73.41824	3.74844	1.75679	0.0592210	0.19546642	2.9405006	21	3 30.9	17.9
13747	1998 SS_{43}	14.7	*X*	21.63770	175.89771	183.42814	9.73899	0.1497559	0.21790270	2.7350230	21	12 2.5	18.2
13748	Radaly	14.0	*X*	72.03614	158.09160	218.40756	2.69933	0.1023760	0.18105089	3.0945840	21	—	—
13749	1998 SG_{49}	13.0	*X*	266.99251	235.27610	213.03735	8.14011	0.1222777	0.21119904	2.7925959	21	9 18.5	16.8
13750	Mattdawson	14.2	*X*	134.43568	306.26732	11.00864	6.49131	0.1386228	0.27176353	2.3605250	21	—	—
13751	Joelparker	15.2	*X*	99.48160	3.61683	166.32887	6.55049	0.0743796	0.29176403	2.2513769	21	6 27.0	17.9
13752	Grantstokes	14.9	*X*	31.13936	314.77970	4.66841	7.11873	0.1882456	0.25974080	2.4328160	21	11 4.2	17.7
13753	Jennivirta	13.9	*X*	333.97157	291.31251	133.27825	6.14355	0.1364923	0.17521311	3.1629451	21	11 27.4	17.7
13754	1998 SB_{63}	12.3	*X*	32.96488	60.25817	22.84772	22.37129	0.0489952	0.22800033	2.6536628	21	—	—
13755	1998 SR_{70}	13.9	*X*	75.54176	340.89307	29.77956	9.35296	0.0836415	0.18122794	3.0925682	21	—	—
13756	1998 ST_{72}	14.5	*X*	150.49357	316.84479	95.33860	3.17283	0.0905699	0.19462694	2.9489500	21	4 2.8	18.9
13757	1998 ST_{73}	14.9	*X*	317.73231	89.14040	143.23113	4.13742	0.1533615	0.28148852	2.3058387	21	1 27.9	17.6
13758	1998 SN_{74}	13.9	*X*	252.17983	50.49087	96.17912	4.79607	0.0357077	0.21844435	2.7305000	21	11 29.9	17.6
13759	1998 SK_{123}	13.9	*X*	345.07816	3.67090	14.85676	1.96800	0.1907880	0.17065868	3.2189715	21	10 15.8	17.2
13760	Rodriguez	14.3	*X*	226.88871	328.28412	14.66232	2.83669	0.1708394	0.24099528	2.5573903	21	3 19.1	18.3

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
13761	Dorristaylor	14.5	X	234.13811	9.51103	167.53082	2.53138	0.1220079	0.26324800	2.4111598	21	12 11.5	17.7
13762	1998 SG_{130}	13.9	X	248.64735	355.21053	13.11027	8.71493	0.2160211	0.28930053	2.2641397	21	5 1.0	17.5
13763	1998 SO_{135}	14.2	X	298.47937	27.39403	36.82931	10.96476	0.1255678	0.16951292	3.2334602	21	10 2.4	18.4
13764	Mcalanis	15.0	X	264.47878	289.65403	75.71709	3.94284	0.0156809	0.29032528	2.2588088	21	6 12.6	17.7
13765	Nansmith	14.6	X	219.52438	128.08293	282.64738	0.96820	0.0669284	0.20292669	2.8679832	21	6 12.6	18.8
13766	Bonham	14.6	X	274.73973	325.25314	336.65241	3.73521	0.1723682	0.28574568	2.2828792	21	3 7.5	17.6
13767	1998 SF_{141}	14.1	X	277.01954	259.75708	27.21785	1.64442	0.0616133	0.23925546	2.5697733	21	3 10.9	17.5
13768	1998 SS_{143}	14.7	X	181.53535	215.87381	225.45189	1.12503	0.0551329	0.20172629	2.8793495	21	6 8.9	18.8
13769	1998 SV_{144}	14.2	X	192.50426	221.58769	29.83537	3.85836	0.1126849	0.22485083	2.6783853	21	—	—
13770	Commerson	13.8	X	92.84516	244.04863	145.70381	2.99599	0.0899236	0.18496594	3.0507611	21	—	—
13771	1998 SG_{159}	14.3	X	351.05768	108.01817	9.22580	11.89843	0.1314403	0.18240379	3.0792631	21	—	—
13772	Livius	12.9	X	336.68364	112.24018	62.56462	11.06580	0.0374950	0.18755463	3.0226244	21	1 17.8	17.1
13773	1998 TY_{17}	14.1	X	23.22000	31.82037	162.81830	3.96902	0.1233483	0.23769963	2.5809745	21	4 8.6	16.6
13774	Spurný	13.6	X	113.84088	30.21683	17.70437	9.27535	0.1006110	0.18869555	3.0104282	21	2 19.5	17.9
13775	Thébault	13.9	X	277.39296	167.89814	17.20077	7.39355	0.1554729	0.22450252	2.6811549	21	—	—
13776	1998 UK_1	14.2	X	304.10349	287.94666	190.74184	1.34245	0.1525430	0.17663584	3.1459380	21	12 13.9	17.8
13777	Cielobuio	14.3	X	160.86527	141.03704	269.14737	1.09161	0.0907016	0.19542272	2.9409389	21	4 9.2	18.7
13778	1998 US_7	14.2	X	299.99116	18.13384	211.25205	14.51084	0.0880893	0.23264616	2.6182159	21	1 17.7	18.1
13779	1998 UY_7	13.6	X	181.40075	189.81208	194.82820	9.72413	0.1099869	0.23744001	2.5828555	21	3 26.7	17.6
13780	1998 UZ_8	11.9	X	297.12745	51.49717	25.07521	8.25287	0.0973516	0.08409480	5.1596863	21	10 6.0	18.4
13781	1998 UO_{15}	14.9	X	343.71332	54.18604	282.15354	0.33775	0.1767262	0.25243970	2.4795009	21	8 24.3	16.6
13782	1998 UM_{18}	11.6	X	11.37660	232.66741	150.14038	28.59151	0.1343186	0.08353499	5.1827122	21	11 21.3	18.3
13783	1998 UJ_{20}	14.1	X	19.65377	110.54289	265.42205	5.15245	0.2130569	0.26185211	2.4197212	21	—	—
13784	1998 UN_{20}	14.4	X	245.16961	171.87496	106.34278	2.45612	0.1958048	0.27706834	2.3302979	21	1 9.8	18.1
13785	1998 UR_{20}	14.1	X	320.33044	45.50648	292.22383	0.98919	0.0095464	0.20420847	2.8559694	21	7 24.3	18.0
13786	1998 UV_{20}	13.2	X	5.03425	299.90727	223.04141	12.55758	0.0727331	0.23101348	2.6305375	21	1 22.3	16.7
13787	Nagaishi	13.3	X	322.80802	339.95579	99.67742	2.13064	0.1342226	0.17250045	3.1960181	21	11 25.9	17.0
13788	Dansolander	13.7	X	152.07818	66.66515	184.99426	8.55188	0.2327756	0.21944647	2.7221809	21	12 8.6	18.6
13789	1998 UZ_{28}	14.3	X	210.67061	253.10994	85.53755	7.76753	0.1513897	0.28024494	2.3126551	21	2 25.9	17.9
13790	1998 UF_{31}	11.7	X	269.25423	54.88952	67.23885	7.96806	0.1124016	0.08142082	5.2720446	21	10 23.1	18.6
13791	1998 VC	14.2	X	260.66085	302.37244	272.33030	1.38373	0.1539225	0.26847141	2.3797830	21	—	—
13792	Kuščynskyj	13.4	X	355.61966	0.12282	55.63278	3.76833	0.1787897	0.17504930	3.1649180	21	12 24.6	16.9
13793	Laubernasconi	14.0	X	217.64753	179.81739	122.25542	2.43683	0.1665064	0.18734452	3.0248840	21	1 27.9	18.9
13794	1998 VD_5	13.5	X	349.04140	9.78841	77.83872	2.62045	0.1612679	0.17660576	3.1462952	21	—	—
13795	1998 VP_{20}	13.4	X	174.57533	83.18226	146.10943	2.16708	0.1427316	0.17472397	3.1688455	21	11 27.2	18.5
13796	1998 VB_{26}	13.6	X	35.95312	336.81512	13.20534	1.32829	0.1660744	0.17300841	3.1897592	21	12 2.4	17.6
13797	1998 VQ_{27}	13.7	X	269.53537	344.63100	349.58923	1.59370	0.0892270	0.19918801	2.9037591	21	5 1.2	17.8
13798	Cecchini	14.3	X	336.16590	242.31975	31.83013	4.85090	0.0864359	0.19874636	2.9080594	21	5 14.3	18.0
13799	1998 VC_{34}	14.7	X	216.59361	122.57232	300.16088	1.04928	0.0508975	0.20161146	2.8804427	21	6 26.0	18.7
13800	1998 VR_{36}	12.8	X	12.56940	207.71213	241.82474	12.09252	0.1338865	0.22449810	2.6811900	21	—	—
13801	Kohlhase	13.6	X	233.12113	75.59201	103.15352	10.17793	0.0770863	0.21582125	2.7525797	21	12 10.2	17.5
13802	1998 WR_3	13.9	X	8.47937	224.39614	58.27547	7.89284	0.1532933	0.29094567	2.2555967	21	7 28.3	15.7
13803	1998 WU_{10}	14.3	X	209.02979	43.72035	234.74932	1.92513	0.2245503	0.27219553	2.3580267	21	—	—
13804	Hrazany	13.2	X	51.41826	43.23125	331.51044	5.96928	0.1423840	0.17560941	3.1581848	21	—	—
13805	1998 XN_3	13.2	X	66.70015	297.40910	34.52121	1.75393	0.1859860	0.17182296	3.2044138	21	12 19.7	18.0
13806	Darmstrong	14.2	X	292.32324	184.62848	113.73555	3.06568	0.0807567	0.19605613	2.9346012	21	4 17.3	18.2
13807	1998 XE_{13}	13.9	X	304.96386	270.08898	66.73057	3.01338	0.0739046	0.20292258	2.8680219	21	6 23.5	17.7
13808	Davewilliams	12.0	X	49.69616	101.61851	289.68907	14.67138	0.0894087	0.17263323	3.1943790	21	—	—
13809	1998 XJ_{40}	13.0	X	298.60636	212.71597	3.01749	7.26503	0.0573617	0.18222079	3.0813245	21	1 19.1	17.4
13810	1998 XU_{51}	12.6	X	204.33404	214.81202	56.88788	17.04641	0.1636796	0.17601920	3.1532811	21	—	—
13811	1998 XP_{92}	12.4	X	157.78598	149.34143	237.99737	9.69297	0.1195753	0.18752737	3.0229174	21	3 8.7	17.2
13812	1998 YR	12.3	X	289.82795	349.05819	277.46311	10.45346	0.1482449	0.18511654	3.0491063	21	2 19.8	16.9
13813	1998 YX	12.5	X	146.15167	323.26331	99.22253	11.68737	0.0876306	0.18879769	3.0093424	21	4 15.3	17.2
13814	1998 YG_3	12.8	X	235.82884	246.31830	94.10161	10.68878	0.0917704	0.18958873	3.0009658	21	4 7.9	17.5
13815	Furuya	12.4	X	66.26452	117.53084	227.90528	12.56773	0.1868390	0.17113003	3.2130580	21	—	—
13816	Stülpner	14.2	X	181.30612	239.86468	234.82604	12.89833	0.1267333	0.24258652	2.5461947	21	7 18.1	18.4
13817	Genobechetti	12.3	X	123.09534	8.48896	175.28688	16.53729	0.0335839	0.16942900	3.2345278	21	8 5.7	17.1
13818	Ullery	14.3	X	325.05500	160.24811	187.07476	6.86630	0.1319118	0.22032842	2.7149117	21	7 31.6	17.5
13819	1999 SX_5	13.6	X	51.84672	269.00391	135.97660	23.48337	0.3032156	0.27918527	2.3185033	21	—	—
13820	Schwartz	13.4	X	335.49567	252.80090	166.93340	1.23380	0.1696345	0.17926347	3.1151205	21	11 23.6	16.6
13821	1999 VE_8	15.0	X	323.37958	265.64694	111.27076	3.01005	0.2152717	0.26256104	2.4153637	21	9 11.8	16.8
13822	Stevedodson	15.1	X	72.48212	104.84604	262.42813	2.91558	0.1661146	0.27974170	2.3154278	21	—	—
13823	1999 VO_{72}	12.6	X	209.59501	10.04382	327.31738	9.70938	0.0974614	0.18934502	3.0035403	21	3 1.6	17.3
13824	Kramlik	14.3	X	276.93766	131.87888	85.71614	6.27065	0.0863500	0.28513111	2.2861584	21	—	—
13825	Booth	14.3	X	209.13376	42.48608	241.78018	6.17902	0.1837609	0.24187476	2.5511873	21	—	—
13826	1999 WM	14.7	X	331.83833	287.07154	130.67095	4.60427	0.2007728	0.26858971	2.3790841	21	12 13.2	16.4
13827	1999 WK_4	14.2	X	1.11283	234.28503	100.02217	3.41991	0.0926772	0.26212597	2.4180356	21	9 26.6	16.6
13828	1999 WL_6	14.8	X	229.97474	286.42070	86.03377	3.21342	0.0839133	0.20586021	2.8406721	21	5 5.9	19.1
13829	1999 WK_{18}	13.3	X	117.87408	147.94167	127.51667	1.92578	0.1584672	0.17876213	3.1209420	21	12 1.6	18.4
13830	ARLT	13.6	X	221.05104	323.45697	90.00793	5.45478	0.1002807	0.20934213	2.8090855	21	6 15.4	17.6
13831	1999 XD_8	14.6	X	124.37069	253.08548	108.30837	6.02716	0.1686111	0.28165087	2.3049525	21	—	—
13832	1999 XR_{13}	10.7	X	27.29829	127.46782	85.22008	16.30133	0.1123238	0.15966087	3.3651445	21	5 21.7	15.0
13833	1999 XW_{13}	12.4	X	29.53336	254.79485	188.45972	10.69956	0.0804067	0.18846341	3.0128998	21	—	—
13834	1999 XU_{18}	13.9	X	117.06121	259.58816	73.45401	3.56825	0.2013081	0.23753798	2.5821453	21	—	—
13835	1999 XJ_{20}	13.4	X	259.81018	248.55187	68.36060	3.04700	0.0556331	0.20537552	2.8451397	21	4 3.2	17.5
13836	1999 XF_{24}	12.8	X	81.39045	319.87248	52.84477	14.72190	0.1695839	0.23491794	2.6013089	21	—	—
13837	1999 XF_{25}	13.1	X	258.86410	208.14875	223.22525	11.95319	0.0990635	0.17024642	3.2241660	21	8 15.2	17.9
13838	1999 XW_{26}	14.2	X	332.99170	239.37131	118.96321	1.60207	0.1812645	0.17354404	3.1831926	21	8 25.8	17.5
13839	1999 XF_{29}	13.3	X	151.74072	56.13508	101.48339	6.28588	0.0258585	0.25854207	2.4403300	21	8 14.9	16.4
13840	Wayneanderson	14.5	X	287.23602	194.73955	252.35688	2.14282	0.1469705	0.26179546	2.4200703	21	10 22.6	17.1

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
13841 Blankenship	14.6	*X*	258.74635	339.04698	177.27917	1.09756	0.1300123	0.26624268	2.3930454	21	12 17.7	17.2
13842 1999 XR_{33}	13.1	*X*	351.72520	86.74917	306.77042	9.60488	0.1485272	0.21831410	2.7315859	21	11 25.6	16.2
13843 Cowenbrown	15.4	*X*	173.08203	253.21253	230.67057	1.38352	0.0645326	0.29725139	2.2235836	21	7 26.0	18.1
13844 1999 XW_{34}	14.1	*X*	257.01985	185.24091	109.32206	4.82622	0.1514976	0.28207575	2.3026374	21	2 11.9	17.5
13845 Jillburnett	14.5	*X*	68.69778	157.51675	127.10613	2.18534	0.1642252	0.17564374	3.1577732	21	10 26.1	19.0
13846 1999 XV_{69}	14.0	*X*	136.28095	176.57034	84.76937	3.31635	0.1837829	0.26924028	2.3752502	21	12 13.3	17.7
13847 1999 XC_{74}	14.6	*X*	152.01015	177.37527	92.80211	2.28156	0.1494048	0.31777084	2.1268002	21	—	—
13848 Cioffi	14.3	*X*	221.96618	210.97369	108.46890	4.62391	0.1646684	0.28883206	2.2665873	21	2 8.8	17.7
13849 Dunn	14.6	*X*	198.08536	223.08236	252.87513	4.62016	0.0901827	0.30101788	2.2049962	21	8 12.2	17.7
13850 Erman	14.7	*X*	9.54252	134.50111	115.43693	3.54464	0.1583312	0.29402145	2.2398385	21	5 30.7	16.2
13851 1999 XB_{94}	12.3	*X*	59.01262	244.48749	96.67687	10.94712	0.1829724	0.17574834	3.1565201	21	12 22.8	16.7
13852 Ford	14.4	*X*	296.71046	39.76098	283.39206	1.29058	0.1999605	0.30044813	2.2077830	21	4 25.9	17.2
13853 Jenniferfritz	14.8	*X*	327.24503	4.36867	345.45132	2.10903	0.1794090	0.26153753	2.4216611	21	8 8.9	16.7
13854 1999 XX_{104}	15.2	*X*	257.19816	246.74716	248.00579	1.52346	0.1065347	0.26492460	2.4009762	21	11 18.8	18.0
13855 1999 XX_{105}	14.4	*X*	296.79367	212.78265	140.45153	7.07098	0.1579489	0.25514389	2.4619502	21	6 20.1	17.4
13856 1999 XZ_{105}	13.0	*X*	32.23359	144.24387	239.93378	10.56651	0.1868125	0.22550242	2.6732233	21	—	—
13857 Stafford	14.2	*X*	99.85412	219.30142	102.94418	4.66862	0.1594788	0.23152535	2.6266589	21	—	—
13858 Ericchristensen	14.8	*X*	286.49410	30.01411	273.36118	4.84837	0.2110849	0.25371001	2.4712176	21	3 18.9	18.4
13859 Fredtreasure	12.3	*X*	175.42313	252.78566	298.66629	13.21575	0.2073101	0.21070108	2.7969940	21	10 9.7	17.4
13860 Neely	12.1	*X*	79.60842	186.50115	121.11763	17.10171	0.1989152	0.17946550	3.1127823	21	12 9.9	17.1
13861 1999 XE_{157}	14.3	*X*	324.38026	300.66876	160.58353	2.76524	0.1426280	0.18063992	3.0992758	21	12 27.8	17.9
13862 1999 XT_{160}	11.6	*X*	324.62915	279.15994	132.14348	8.40042	0.0866035	0.08143193	5.2715651	21	10 15.7	18.2
13863 1999 XE_{166}	13.8	*X*	248.52455	36.50418	316.48003	6.49779	0.2421542	0.20940784	2.8084978	21	4 13.9	18.7
13864 1999 XU_{166}	14.0	*X*	24.52807	138.17682	346.29394	5.68450	0.1000826	0.28343238	2.2952839	21	—	—
13865 1999 XA_{170}	14.2	*X*	62.71347	17.55510	316.89493	3.22761	0.2300161	0.22661650	2.6644549	21	—	—
13866 1999 XS_{174}	13.5	*X*	289.66128	278.60145	67.58614	5.35471	0.0942837	0.25115269	2.4879644	21	6 9.5	16.5
13867 1999 XR_{182}	13.9	*X*	343.67619	176.97571	0.66720	6.98642	0.0606742	0.19341031	2.9613039	21	1 26.9	17.8
13868 Catalonia	14.5	*X*	147.44129	102.52011	302.22823	4.21889	0.1231331	0.24116270	2.5562067	21	3 15.6	18.3
13869 Fruge	14.7	*X*	124.00905	187.91737	224.26921	8.70713	0.1125175	0.23800056	2.5787984	21	2 23.3	18.4
13870 2158 *P–L*	14.9	*X*	271.07230	234.94912	205.75248	6.02827	0.0988346	0.25789843	2.4443886	21	9 23.9	17.7
13871 2635 *P–L*	15.1	*X*	316.43631	73.21073	189.90864	3.15812	0.1600330	0.28609096	2.2810421	21	3 6.9	17.9
13872 2649 *P–L*	14.1	*X*	186.96849	10.30553	190.02996	10.81344	0.1211973	0.22801024	2.6535859	21	11 13.8	18.2
13873 2657 *P–L*	14.7	*X*	95.62014	190.69042	33.27722	3.68446	0.0858715	0.25754791	2.4466059	21	9 9.3	18.0
13874 3013 *P–L*	13.3	*X*	310.64476	274.23172	305.36014	12.43091	0.1044557	0.18604729	3.0389285	21	1 28.7	17.4
13875 4525 *P–L*	13.9	*X*	49.93296	186.74271	206.23729	1.17890	0.1772629	0.18104523	3.0946484	21	—	—
13876 4625 *P–L*	15.3	*X*	334.93776	191.00350	33.67931	2.22308	0.0911091	0.28476269	2.2881298	21	2 21.2	17.8
13877 6063 *P–L*	15.4	*X*	71.92584	5.27095	314.27155	2.38896	0.1449673	0.30999328	2.1622265	21	12 30.6	18.4
13878 6106 *P–L*	15.1	*X*	115.21093	57.20074	323.88982	2.50721	0.0800111	0.23290444	2.6162799	21	1 3.4	18.5
13879 6328 *P–L*	14.4	*X*	10.48354	181.83599	9.15616	3.03421	0.0916049	0.23623883	2.5916033	21	3 12.0	17.2
13880 Wayneclark	14.1	*X*	173.94433	74.39064	134.32344	3.85207	0.1441812	0.26117974	2.4238722	21	11 13.9	17.8
13881 6625 *P–L*	15.4	*X*	98.61014	148.45716	135.91225	2.63720	0.1185821	0.26121820	2.4236343	21	12 3.3	18.8
13882 6637 *P–L*	15.3	*X*	101.84112	322.07081	157.53318	4.80523	0.1134996	0.28526591	2.2854381	21	4 26.2	17.9
13883 7066 *P–L*	12.6	*X*	218.87004	111.34819	204.76937	11.76128	0.1517428	0.18638372	3.0352705	21	2 10.9	17.8
13884 1064 *T–1*	15.9	*X*	138.75951	217.65767	354.06220	4.41074	0.0854405	0.30295342	2.1955946	21	10 15.6	18.8
13885 2104 *T–1*	15.2	*X*	194.36483	204.39829	21.78176	2.53387	0.1438390	0.26747251	2.3857043	21	12 25.9	18.6
13886 2312 *T–1*	13.7	*X*	262.02293	10.84197	35.87520	2.55464	0.0537555	0.20283702	2.8688284	21	8 1.1	17.7
13887 3041 *T–1*	14.4	*X*	40.78958	338.83786	332.49747	5.44566	0.2025095	0.22374085	2.6872363	21	11 3.1	17.8
13888 3290 *T–1*	14.8	*X*	171.28636	271.82194	353.64828	6.24968	0.0888445	0.26786882	2.3833506	21	—	—
13889 4206 *T–1*	14.9	*X*	275.04292	37.45014	140.46075	2.75837	0.1785069	0.26975542	2.3722253	21	—	—
13890 1186 *T–2*	13.4	*X*	152.21831	237.45793	188.33162	5.59070	0.0458789	0.15611495	3.4159098	21	4 20.2	18.3
13891 1237 *T–2*	14.4	*X*	80.03376	133.99939	349.82586	1.42259	0.0382167	0.19706846	2.9245427	21	3 29.0	18.2
13892 1266 *T–2*	14.4	*X*	117.05578	324.16403	352.41534	6.36195	0.0622806	0.27249164	2.3563181	21	—	—
13893 1296 *T–2*	14.9	*X*	347.30514	53.38024	162.01283	2.03961	0.1465610	0.23913840	2.5706118	21	2 27.8	17.6
13894 2039 *T–2*	14.1	*X*	242.58664	189.00139	359.63239	6.59094	0.0532642	0.27208619	2.3586584	21	—	—
13895 Letkasagjonica	14.1	*X*	160.99385	188.56601	197.76863	1.64833	0.1181463	0.19591057	2.9360546	21	3 13.5	18.6
13896 3310 *T–2*	15.4	*X*	65.44271	279.49708	107.04946	2.31117	0.1182762	0.27295060	2.3536760	21	—	—
13897 Vesuvius	12.4	*X*	66.20776	142.67751	168.39329	9.24732	0.1362254	0.12391786	3.9845577	21	11 13.6	18.1
13898 4834 *T–2*	14.8	*X*	339.62426	130.44523	105.76401	4.74919	0.0926326	0.28074642	2.3099003	21	3 19.4	17.2
13899 5036 *T–2*	13.8	*X*	349.01987	183.69876	261.99116	8.49024	0.0368982	0.23076050	2.6324597	21	—	—
13900 5211 *T–2*	13.1	*X*	189.49029	208.00145	228.44564	9.21405	0.2152549	0.19966223	2.8991594	21	6 10.5	18.1
13901 1140 *T–3*	14.1	*X*	144.40592	112.81960	262.98492	6.90911	0.1294580	0.18905005	3.0066637	21	2 11.8	18.8
13902 4205 *T–3*	13.9	*X*	243.22205	218.55361	97.68442	3.55839	0.2069475	0.23773139	2.5807446	21	2 28.7	18.1
13903 1975 *ST*	14.3	*X*	231.48339	97.72677	187.10148	11.20383	0.2384440	0.22532272	2.6746444	21	1 11.4	19.2
13904 Univinnitsa	13.9	*X*	301.50047	34.42939	35.09680	8.20143	0.2978002	0.21312201	2.7757724	21	9 24.2	16.7
13905 1976 *QA*	14.6	*X*	167.05695	13.67206	324.21298	2.76236	0.1960619	0.27398684	2.3477377	21	1 15.8	18.2
13906 Shunda	14.3	*X*	200.48938	0.75363	350.03741	5.60851	0.1917167	0.28247509	2.3004667	21	3 1.5	17.9
13907 1977 RS_{17}	13.5	*X*	213.89784	214.93621	174.90949	1.93405	0.0310298	0.19560701	2.9390915	21	5 13.3	17.7
13908 Wölbern	15.2	*X*	56.80203	152.05917	149.13779	4.12794	0.1422252	0.30096236	2.2052674	21	11 17.9	17.9
13909 1978 VD_8	15.7	*X*	312.95190	254.22165	58.09491	3.26373	0.0541881	0.29066133	2.2570675	21	5 31.1	18.1
13910 1979 MH_3	15.1	*X*	318.43916	260.08080	119.30582	5.98400	0.2178365	0.25945477	2.4346037	21	9 3.2	16.9
13911 Stempels	14.7	*X*	283.66317	69.00275	169.15605	1.33651	0.1717281	0.27274663	2.3548493	21	—	—
13912 1979 QA_2	14.8	*X*	202.20210	203.30332	20.99438	1.29410	0.1426928	0.26663285	2.3907103	21	—	—
13913 1979 *SO*	13.5	*X*	10.68949	350.92159	8.35005	8.15165	0.2275847	0.21303640	2.7765159	21	11 21.3	16.6
13914 Galegant	13.4	*X*	284.16804	234.01023	98.76619	13.49295	0.2698809	0.23808866	2.5781622	21	4 26.6	17.4
13915 Yalow	12.8	*X*	143.73803	190.74475	76.39989	10.31098	0.1350487	0.21367612	2.7709715	21	12 18.4	17.2
13916 Bernolák	14.2	*X*	111.43125	6.35259	292.78251	5.79381	0.2437001	0.25914910	2.4365177	21	—	—
13917 Correggia	12.8	*X*	31.57470	99.93784	345.62982	13.65271	0.1922648	0.18341783	3.0679035	21	—	—
13918 Tsukinada	12.9	*X*	273.03652	354.79845	310.30039	10.16149	0.2152791	0.23238337	2.6201894	21	3 8.2	17.1
13919 1984 SO_4	13.8	*X*	275.93678	55.39470	286.31786	4.97860	0.1177259	0.28701737	2.2761310	21	5 7.6	16.7
13920 Montecorvino	14.7	*X*	111.32959	9.53420	308.40631	3.13755	0.2375806	0.30969128	2.1636320	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
13921 Sgarbini	14.7	*X*	88.15813	226.39977	166.68496	8.01264	0.2293225	0.28376024	2.2935155	21	—	—
13922 Kremenia	13.6	*X*	129.97870	79.48750	323.20053	3.65872	0.1420609	0.23224453	2.6212336	21	2 26.4	17.1
13923 Peterhof	12.8	*X*	71.13596	338.25812	58.85850	15.45287	0.2042383	0.22604773	2.6689224	21	—	—
13924 1986 PE_1	14.1	*X*	13.70435	245.14772	138.56366	8.40773	0.0958594	0.25933007	2.4353841	21	12 24.1	17.0
13925 1986 QS_3	12.9	*X*	286.76082	152.59646	140.78210	11.25062	0.0618562	0.18876075	3.0097350	21	4 10.1	17.2
13926 Berners–Lee	14.6	*X*	187.45485	19.62447	354.77058	3.27173	0.2956354	0.24048625	2.5609979	21	3 25.1	19.3
13927 Grundy	14.2	*X*	211.70613	332.57859	3.58447	9.22348	0.1606838	0.27855763	2.3219846	21	2 23.4	17.9
13928 Aaronrogers	14.6	*X*	181.39945	49.55992	295.94413	4.12368	0.2414211	0.27666910	2.3325391	21	2 8.6	18.4
13929 1988 PL	15.1	*X*	53.82613	136.01762	206.04096	1.97131	0.1386253	0.30517778	2.1849128	21	—	—
13930 Tashko	14.4	*X*	342.48241	288.92893	37.71414	4.92498	0.1809077	0.29680997	2.2257876	21	8 11.8	15.8
13931 1988 RF_{13}	14.0	*X*	96.96788	270.74754	31.16606	17.09422	0.1450709	0.21572126	2.7534303	21	12 15.1	18.5
13932 Rupprecht	16.0	*X*	335.50080	127.58039	215.11078	0.23145	0.1827590	0.29810539	2.2193348	21	8 19.8	17.2
13933 Charleville	13.1	*X*	104.88790	267.35690	45.31763	8.31140	0.1435304	0.21337703	2.7735603	21	—	—
13934 Kannami	13.7	*X*	2.93773	234.73199	83.04906	7.76356	0.2458595	0.29522817	2.2337309	21	10 2.0	15.1
13935 1989 EE	13.6	*X*	305.78900	323.34356	163.05583	29.45084	0.2785477	0.17769675	3.1334040	21	12 17.0	17.5
13936 1989 HC	12.1	*X*	46.67647	302.36070	82.42441	22.65944	0.0053410	0.17194154	3.2029403	21	—	—
13937 Roberthargraves	13.8	*X*	310.45427	195.17634	137.87664	29.59904	0.2440648	0.24334995	2.5408667	21	6 6.5	17.5
13938 1989 RP_1	13.6	*X*	155.19972	155.33243	162.49635	12.96230	0.2314935	0.22818846	2.6522040	21	—	—
13939 1989 SJ_2	14.2	*X*	302.85090	120.32628	172.06476	13.28898	0.1495478	0.23766359	2.5812354	21	4 9.0	17.6
13940 1989 SZ_3	13.9	*X*	181.53845	220.10737	113.32752	4.02767	0.1145326	0.22977213	2.6400034	21	1 25.0	18.0
13941 1989 TF_{14}	13.9	*X*	332.11499	200.52287	71.83878	3.34537	0.0757205	0.23911320	2.5707925	21	5 4.6	17.0
13942 Shiratakihime	13.0	*X*	169.47209	267.60222	60.67416	14.13475	0.1866478	0.22745818	2.6578778	21	1 14.0	17.4
13943 1990 HG	13.9	*X*	16.74386	166.30007	49.03835	23.73453	0.0745925	0.28608638	2.2810664	21	4 25.6	16.4
13944 1990 OX_1	13.8	*X*	83.35187	280.65128	86.82939	5.72437	0.1184214	0.26548206	2.3976140	21	—	—
13945 1990 OH_2	12.8	*X*	208.29456	278.58675	349.17468	4.75872	0.1778067	0.17419328	3.1752782	21	—	—
13946 1990 OK_3	14.6	*X*	87.33936	205.11969	127.75492	3.09027	0.2156077	0.26377333	2.4079574	21	—	—
13947 1990 QB_5	14.0	*X*	309.56045	337.05660	66.73421	5.91487	0.1814628	0.25482889	2.4639786	21	9 28.4	16.3
13948 1990 QB_6	13.9	*X*	122.00514	319.73929	358.66738	12.42048	0.2319559	0.26443957	2.4039112	21	—	—
13949 1990 RN_3	14.1	*X*	202.10308	94.96777	179.80736	5.49012	0.1991764	0.26849853	2.3796227	21	—	—
13950 1990 RP_9	13.9	*X*	218.99368	45.07350	247.22729	5.60804	0.1136374	0.27176039	2.3605431	21	1 3.9	17.5
13951 1990 SD_5	14.7	*X*	185.43175	213.40916	35.81877	3.26039	0.1610623	0.26404544	2.4063028	21	—	—
13952 Nykvist	13.7	*X*	185.72729	183.40190	122.18154	4.86577	0.0790150	0.26811610	2.3818850	21	—	—
13953 1990 TO_4	14.0	*X*	160.71803	5.47757	82.77915	10.40557	0.1648507	0.24268667	2.5454941	21	5 29.8	18.0
13954 Born	14.4	*X*	149.24415	247.85443	216.76989	13.93116	0.1365132	0.24284631	2.5443785	21	6 6.2	18.4
13955 1990 UA_2	15.3	*X*	175.21840	280.64469	113.50750	4.32925	0.2689379	0.24069121	2.5595438	21	4 10.6	19.8
13956 Banks	13.3	*X*	144.37153	350.23153	165.06654	8.09365	0.1169259	0.24512256	2.5286023	21	8 4.1	17.1
13957 NARIT	14.0	*X*	315.90957	243.71816	153.36729	14.73952	0.2995522	0.21986477	2.7187271	21	9 5.4	16.1
13958 1991 DY	13.7	*X*	331.52208	342.93967	188.62331	7.10577	0.1431258	0.22599649	2.6693258	21	—	—
13959 1991 EL_4	13.2	*X*	263.76334	85.95115	181.37601	12.83408	0.1679518	0.22554310	2.6729019	21	1 19.9	17.6
13960 1991 GF_8	13.8	*X*	273.51816	107.57983	7.54573	9.08943	0.1188521	0.21353204	2.7722178	21	11 2.0	17.3
13961 1991 PV	15.6	*X*	317.74575	95.42006	221.11575	1.85310	0.2035701	0.29278529	2.2461386	21	5 20.1	17.6
13962 Delambre	13.1	*X*	43.35578	233.72388	154.19619	2.07240	0.1809785	0.17303016	3.1894920	21	—	—
13963 Euphrates	13.8	*X*	312.05625	129.41538	227.18043	0.93556	0.2573927	0.16211190	3.3311393	21	7 3.5	17.9
13964 La Billardière	13.4	*X*	42.80588	120.81534	248.14290	0.59322	0.1541297	0.17154802	3.2078367	21	—	—
13965 1991 PL_8	14.1	*X*	200.61806	256.43253	31.02553	1.39795	0.1561226	0.18071871	3.0983750	21	—	—
13966 1991 PR_{16}	14.9	*X*	269.21314	187.90718	138.39834	1.42768	0.1956710	0.28780057	2.2719998	21	3 31.9	18.1
13967 1991 QJ	14.7	*X*	308.35059	163.03463	160.93725	5.99679	0.2061866	0.29168844	2.2517659	21	5 16.8	17.1
13968 1991 RE_7	12.1	*X*	153.55606	278.11336	7.80120	17.54072	0.1531123	0.17343775	3.1844930	21	—	—
13969 1991 RK_{26}	15.1	*X*	288.35318	297.51192	20.67992	7.24727	0.1949896	0.28792492	2.2713456	21	4 10.8	18.0
13970 1991 RH_{27}	14.4	*X*	346.26521	167.93402	149.46715	4.84450	0.1868802	0.29296960	2.2451964	21	7 31.4	15.7
13971 1991 UF_1	15.1	*X*	31.65550	308.46591	93.28445	3.40137	0.2090059	0.26876126	2.3780717	21	—	—
13972 1991 UN_3	13.9	*X*	209.70078	305.55568	84.20825	4.56370	0.0975699	0.28370079	2.2938359	21	4 30.6	17.1
13973 1991 UZ_3	15.5	*X*	3.99266	291.56150	130.62525	1.77726	0.1695225	0.26757252	2.3851098	21	—	—
13974 1991 YC	13.7	*X*	29.73480	24.54782	108.89352	14.94362	0.2101409	0.23787452	2.5797092	21	1 17.7	15.6
13975 Beatrixpotter	14.6	*X*	214.27896	244.96801	216.74278	5.54855	0.0852001	0.25249766	2.4791215	21	8 9.8	18.2
13976 1992 EZ_6	14.5	*X*	337.92231	151.49382	129.62329	11.23283	0.2303699	0.24176992	2.5519248	21	5 9.9	17.1
13977 Frisch	12.4	*X*	58.82757	133.54284	193.83510	15.72320	0.1925892	0.25361203	2.4718540	21	12 20.8	16.3
13978 Hiwasa	13.4	*X*	312.48512	53.90538	184.55135	12.35900	0.1854989	0.23292080	2.6161574	21	1 31.6	17.2
13979 1992 JH_3	13.9	*X*	299.70522	60.40831	208.70628	3.52317	0.2212359	0.23343561	2.6123096	21	2 20.7	17.7
13980 Neuhauser	13.7	*X*	240.33416	63.79831	218.08347	10.91607	0.1788144	0.22661446	2.6644709	21	1 15.3	18.4
13981 1992 OT_9	13.3	*X*	29.15036	248.59366	102.97163	7.70037	0.0523014	0.21109788	2.7934879	21	11 18.9	17.0
13982 Thunberg	13.3	*X*	211.88177	115.15614	244.74673	0.54967	0.1084254	0.19252596	2.9703652	21	3 31.4	17.9
13983 1992 RJ_5	14.2	*X*	118.77108	279.36176	80.98204	3.38275	0.1634358	0.18237230	3.0796176	21	1 5.3	18.7
13984 1992 RM_7	14.2	*X*	55.85389	351.39563	65.19916	2.25395	0.1579813	0.18117068	3.0932197	21	—	—
13985 1992 UH_3	14.4	*X*	293.99045	41.67263	12.78625	5.98209	0.1104097	0.30464410	2.1874638	21	9 29.3	16.3
13986 1992 WA_4	13.1	*X*	21.83230	310.12692	72.81011	6.36929	0.1414146	0.17135303	3.2102698	21	12 19.3	17.2
13987 1992 WK_9	13.8	*X*	50.83912	324.47290	54.14206	0.84012	0.2084326	0.17519851	3.1631208	21	—	—
13988 1992 YG_2	15.5	*X*	300.71162	84.10307	302.66881	3.41329	0.1530416	0.30015204	2.2092347	21	8 19.3	17.4
13989 Murikabushi	14.3	*X*	357.05770	234.64906	123.97919	14.59377	0.2882329	0.26865912	2.3786744	21	11 26.2	16.4
13990 1993 EK	15.0	*X*	126.17200	125.86857	338.95891	6.92580	0.1787158	0.28571113	2.2830633	21	5 11.9	18.3
13991 Kenphillips	14.9	*X*	143.97953	209.18640	69.26225	3.29605	0.1970196	0.26491735	2.4010200	21	—	—
13992 Cesarebarbieri	14.5	*X*	196.38221	229.44468	36.04808	7.32828	0.0988545	0.26979428	2.3719975	21	—	—
13993 Clemenssimmer	14.9	*X*	48.32726	51.21886	46.90993	4.04259	0.0530099	0.27569017	2.3380575	21	—	—
13994 Tuominen	14.6	*X*	41.16435	315.22815	50.28702	7.71557	0.1275675	0.26530516	2.3986796	21	—	—
13995 Tõravere	15.0	*X*	85.40379	212.57959	102.35215	2.42249	0.1702490	0.26304725	2.4123864	21	12 31.8	18.8
13996 1993 FH_{20}	15.4	*X*	35.13153	117.07845	284.70666	1.72838	0.1700425	0.26962967	2.3729628	21	—	—
13997 1993 FB_{32}	15.1	*X*	339.51452	227.10824	160.29993	3.59029	0.1845039	0.26137088	2.4226904	21	11 9.8	17.0
13998 1993 FL_{39}	15.3	*X*	237.55596	245.83088	36.68365	2.65182	0.2081143	0.27359383	2.3499855	21	1 9.4	19.1
13999 1993 FH_{43}	14.7	*X*	248.22447	253.41832	47.97108	0.51775	0.2317928	0.27666756	2.3325478	21	2 8.3	18.5
14000 1993 FZ_{55}	14.0	*X*	173.87579	177.35664	137.11553	6.12997	0.2428346	0.27058605	2.3673680	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
14001	1993 *KR*	13.7	*X*	9.15239	305.18661	229.26999	20.96974	0.2524707	0.27684886	2.3315294	21	1 6.4	16.2
14002	1993 LW_1	14.0	*X*	134.47170	205.28320	61.92261	12.30835	0.2386896	0.26045273	2.4283807	21	12 16.9	18.2
14003	1993 OO_4	15.2	*X*	227.91075	188.82705	128.45146	3.87952	0.0624975	0.23549059	2.5970901	21	2 21.0	18.9
14004	Chikama	14.3	*X*	240.04934	313.68858	359.09723	14.11399	0.2431937	0.23319295	2.6141215	21	2 23.4	18.9
14005	1993 SO_3	12.4	*X*	41.57275	319.76305	25.83504	14.11826	0.0291604	0.17864910	3.1222583	21	11 13.7	16.8
14006	Sakamotofumio	13.1	*X*	81.40730	172.89899	177.98771	8.59819	0.1806380	0.21973499	2.7197975	21	—	—
14007	1993 TH_{14}	13.5	*X*	13.73378	68.32311	157.14447	3.60593	0.1946629	0.23666678	2.5884782	21	5 6.5	15.6
14008	1993 TD_{17}	14.7	*X*	81.81465	200.21500	87.68016	1.77913	0.0408015	0.21298791	2.7769373	21	11 2.8	18.4
14009	1993 TQ_{36}	13.1	*X*	313.48590	328.83238	66.02311	10.50280	0.1379662	0.21031304	2.8004334	21	9 24.0	16.5
14010	Jomonaomori	13.8	*X*	170.50644	131.56098	196.25236	12.71979	0.1883905	0.22557328	2.6726635	21	1 11.3	18.3
14011	1993 *US*	14.5	*X*	140.20108	169.90753	166.57285	1.86389	0.0920652	0.22335903	2.6902979	21	—	—
14012	Amedee	12.5	*X*	272.40664	295.89052	98.05336	13.83527	0.1265240	0.20291050	2.8681358	21	7 17.2	16.4
14013	1993 *YF*	14.3	*X*	15.49509	313.15415	112.72874	2.58430	0.1690026	0.17897783	3.1184340	21	—	—
14014	Münchhausen	13.1	*X*	68.11408	282.97225	180.02040	9.82077	0.0709904	0.18445095	3.0564370	21	2 19.4	17.2
14015	Senancour	13.5	*X*	332.09354	312.27885	156.46096	5.96594	0.0984337	0.17636104	3.1492051	21	—	—
14016	Steller	13.4	*X*	326.30730	280.93367	275.68456	8.45365	0.0444348	0.18298672	3.0727201	21	1 27.8	17.6
14017	1994 *NS*	14.8	*X*	163.80986	79.35155	203.50455	6.48683	0.2388923	0.30886399	2.1674938	21	—	—
14018	1994 PM_{14}	15.5	*X*	50.55778	166.06028	164.50122	1.97179	0.2239842	0.26176502	2.4202579	21	12 21.8	19.0
14019	Pourbus	15.6	*X*	3.96523	136.77422	131.95557	1.07746	0.1247595	0.28839224	2.2688912	21	6 19.4	17.3
14020	1994 PE_{18}	15.2	*X*	291.93350	339.77121	316.20364	0.64393	0.1517570	0.28356470	2.2945698	21	3 22.1	18.1
14021	1994 PL_{20}	15.6	*X*	279.13304	330.13529	166.11597	2.51386	0.1149565	0.26415447	2.4056406	21	12 24.1	18.0
14022	1994 PW_{27}	14.5	*X*	261.66372	323.21044	357.24750	3.37040	0.0942788	0.28257359	2.2999320	21	3 26.1	17.7
14023	1994 PX_{31}	14.6	*X*	8.37637	257.06277	300.04200	6.18322	0.0443801	0.28040302	2.3117858	21	3 8.5	17.2
14024	Procol Harum	15.2	*X*	182.35367	45.90713	341.87701	2.42870	0.2657568	0.24180440	2.5516822	21	4 5.2	19.8
14025	Fallada	14.0	*X*	300.14368	158.05879	238.51397	7.62434	0.1641979	0.21734776	2.7396764	21	8 20.9	17.4
14026	Esquerdo	15.3	*X*	199.77116	128.88297	158.21516	2.63829	0.1601083	0.27165442	2.3611570	21	—	—
14027	1994 TJ_1	14.7	*X*	184.80760	195.71079	181.95946	6.34956	0.2466999	0.24004303	2.5641494	21	3 26.4	19.2
14028	Nakamurahiroshi	14.3	*X*	200.23519	202.09958	182.64685	5.06422	0.2075356	0.24187261	2.5512024	21	4 16.1	18.5
14029	1994 UC_1	14.0	*X*	79.46540	248.19803	34.89202	1.60921	0.1120718	0.25597441	2.4566221	21	11 8.6	17.4
14030	1994 UP_1	14.2	*X*	159.63540	50.06831	34.02224	13.80758	0.1364609	0.24172331	2.5522528	21	5 18.4	18.2
14031	Rozyo	12.6	*X*	171.38117	292.07759	86.97622	14.01776	0.1978673	0.23664032	2.5886712	21	3 22.9	17.1
14032	Mego	13.5	*X*	211.87452	157.79382	225.21084	7.32592	0.2112889	0.24111190	2.5565657	21	4 22.1	17.8
14033	1994 *YR*	14.2	*X*	173.03776	244.23570	101.81783	4.28785	0.2854357	0.23163415	2.6258364	21	2 11.9	18.8
14034	1995 *BW*	14.0	*X*	26.54326	8.72800	28.75017	2.94109	0.0845734	0.21787699	2.7352381	21	—	—
14035	1995 *CJ*	13.4	*X*	274.18143	114.00268	126.60361	14.49725	0.2115881	0.18426319	3.0585130	21	1 3.4	18.4
14036	1995 EY_7	12.9	*X*	282.37502	255.30266	206.31588	8.05986	0.0917830	0.20959619	2.8068150	21	11 3.6	16.3
14037	1995 EZ_7	13.1	*X*	171.24149	333.13504	208.88505	9.53759	0.0700744	0.20509196	2.8477616	21	10 2.6	17.5
14038	1995 *HR*	12.9	*X*	220.70109	75.74965	198.98276	11.14871	0.1793750	0.17710202	3.1404150	21	—	—
14039	1995 KZ_1	12.3	*X*	209.23100	13.38863	224.36218	16.10708	0.0884463	0.17186977	3.2038319	21	—	—
14040	Andrejka	15.5	*X*	348.82355	105.53475	289.52833	3.77614	0.1115072	0.30683155	2.1770549	21	12 14.8	17.3
14041	Dürrenmatt	14.6	*X*	133.15210	269.52219	127.48769	3.44031	0.1745171	0.28387425	2.2929014	21	2 20.3	17.5
14042	Agafonov	15.2	*X*	314.32483	327.43154	30.33095	4.18711	0.1690233	0.29971626	2.2113756	21	7 29.5	16.9
14043	1995 UA_{45}	14.8	*X*	295.63575	355.84873	70.20983	5.90945	0.1340404	0.30247865	2.1978914	21	10 19.8	16.7
14044	1995 VS_1	14.2	*X*	299.90874	328.84627	49.73249	6.86815	0.1359435	0.25987806	2.4319593	21	8 8.9	16.9
14045	1995 VW_1	14.3	*X*	32.31058	189.97632	273.24694	7.99837	0.1492399	0.27315274	2.3525147	21	—	—
14046	Keikai	15.1	*X*	167.13094	2.50609	55.45342	5.73820	0.1122885	0.28683573	2.2770919	21	4 21.4	18.2
14047	Kohichiro	14.3	*X*	328.13100	244.77344	198.18868	5.75329	0.0792984	0.26852510	2.3794657	21	—	—
14048	1995 WS_7	14.8	*X*	147.61190	86.47060	90.30043	1.13080	0.0667782	0.29534215	2.2331562	21	9 8.5	17.7
14049	1995 XH_1	14.8	*X*	253.79919	92.83552	275.25698	4.13128	0.1607846	0.29103026	2.2551596	21	5 12.4	18.0
14050	1995 YH_1	14.1	*X*	213.86170	101.53074	276.83867	3.49620	0.1314047	0.28567286	2.2832671	21	4 15.6	17.6
14051	1995 YY_1	14.6	*X*	27.77111	138.66890	105.28231	6.22080	0.1291713	0.28708654	2.2757654	21	6 29.6	16.4
14052	1995 YH_3	15.1	*X*	202.95378	264.44203	112.94499	8.75549	0.2304026	0.28534708	2.2850047	21	4 9.8	19.1
14053	1995 YS_{25}	16.5	*X*	27.99455	78.22910	50.05779	5.67694	0.0409458	0.27580276	2.3374212	21	1 5.5	19.3
14054	Dušek	15.8	*X*	282.42378	23.15532	86.73160	3.92538	0.1827389	0.26192033	2.4193010	21	11 12.8	18.0
14055	1996 *AS*	14.7	*X*	276.30262	0.73839	136.61561	5.04250	0.0508481	0.26434473	2.4044861	21	12 28.4	17.5
14056	Kainar	15.0	*X*	18.83619	326.48489	69.29373	3.91267	0.1920701	0.26634974	2.3924041	21	—	—
14057	Manfredstoll	15.5	*X*	192.91078	77.39528	123.27718	2.08824	0.1342629	0.26072071	2.4267164	21	11 22.5	18.9
14058	1996 AP_{15}	14.7	*X*	267.10236	141.80323	135.70042	3.71617	0.1760178	0.27460083	2.3442368	21	1 29.5	18.2
14059	1996 BB_2	15.0	*X*	286.08986	161.99768	318.85248	10.26619	0.1723132	0.26283153	2.4137062	21	12 5.6	17.5
14060	Patersonewen	14.1	*X*	191.49282	276.69637	357.06226	3.41027	0.0595813	0.26871648	2.3783358	21	—	—
14061	Nagincox	14.5	*X*	336.63754	192.66897	210.50307	6.14507	0.1305637	0.26084926	2.4259191	21	11 23.9	16.7
14062	Cremaschini	14.6	*X*	233.82499	133.28521	34.99151	2.65755	0.1328921	0.26012535	2.4304177	21	11 26.7	17.7
14063	1996 *DZ*	14.0	*X*	181.45353	140.02339	93.60116	2.12771	0.1623365	0.25887587	2.4382319	21	12 18.9	17.8
14064	1996 DT_3	15.0	*X*	250.95146	117.95872	316.14700	2.66228	0.0731538	0.25320920	2.4744750	21	8 21.9	18.3
14065	Flegel	15.3	*X*	133.61453	40.55738	20.39841	2.22054	0.1597712	0.23804625	2.5784685	21	3 27.8	18.8
14066	1996 FA_4	14.1	*X*	12.36918	77.39897	41.42897	13.24037	0.1118362	0.22841237	2.6504704	21	—	—
14067	1996 GY_{17}	14.4	*X*	12.61158	283.68132	19.41176	1.99726	0.0574696	0.20566467	2.8424724	21	8 22.0	18.0
14068	Hauserová	14.9	*X*	351.29880	356.51315	198.01327	11.11153	0.1211287	0.23292277	2.6161427	21	2 7.1	18.1
14069	Krasheninnikov	12.9	*X*	40.38449	330.48011	46.27002	22.63065	0.2089292	0.17542198	3.1604339	21	—	—
14070	1996 JC_1	13.1	*X*	306.28523	264.38489	64.22158	5.19684	0.0851314	0.19950019	2.9007292	21	6 12.5	16.9
14071	Gadabird	14.0	*X*	354.58209	186.73336	120.98529	3.05145	0.0527253	0.20399161	2.8579931	21	7 30.9	17.6
14072	Volterra	13.4	*X*	18.76436	11.27075	37.95753	1.85454	0.1595230	0.17599599	3.1535583	21	—	—
14073	1996 KO_1	14.5	*X*	188.33043	20.95453	163.98652	5.25165	0.1547401	0.25598843	2.4565324	21	10 28.2	18.3
14074	Riccati	13.4	*X*	256.14303	160.89424	135.43474	9.81714	0.0851220	0.18518059	3.0484032	21	3 4.6	18.0
14075	Kenwill	13.7	*X*	214.32412	158.61106	126.47295	2.15237	0.1659980	0.17909485	3.1170754	21	1 7.0	18.7
14076	1996 OO_1	13.1	*X*	333.79194	266.81241	326.50652	8.10388	0.0869948	0.18550201	3.0448808	21	3 17.5	17.1
14077	Volfango	13.7	*X*	247.82536	253.40103	359.67175	4.88147	0.1245905	0.17959729	3.1112593	21	1 1.5	18.6
14078	1997 FQ_3	15.2	*X*	295.02889	332.72010	1.63674	2.45018	0.1611450	0.29158149	2.2523165	21	5 17.0	17.6
14079	1997 FV_3	14.7	*X*	142.76164	17.05721	0.25257	7.32671	0.1298231	0.28055502	2.3109507	21	2 2.1	17.8
14080	Heppenheim	14.9	*X*	267.31061	128.84832	28.84064	6.50960	0.0855191	0.27106271	2.3645919	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
14081	1997 GT_{18}	15.1	X	304.44589	199.93680	177.03905	1.84597	0.1413779	0.29852302	2.2172645	21	8 12.6	17.1
14082	1997 GK_{21}	15.6	X	36.65505	66.31693	192.68548	2.54347	0.1708725	0.29259434	2.2471157	21	8 17.9	17.5
14083	1997 GH_{22}	14.3	X	228.53507	298.75471	33.74121	8.18469	0.2686672	0.27970690	2.3156199	21	3 4.8	18.4
14084	1997 GX_{23}	14.3	X	27.46178	260.98418	59.98810	9.54633	0.2165878	0.25612054	2.4556876	21	11 8.3	17.0
14085	1997 GA_{37}	15.4	X	221.69257	211.01176	207.15046	5.38550	0.1069612	0.29489508	2.2354126	21	6 20.1	18.5
14086	1997 GC_{38}	15.2	X	222.07082	205.80894	186.69370	5.58378	0.0446561	0.28905822	2.2654049	21	5 21.2	18.1
14087	1997 HG_{10}	15.7	X	171.43138	279.69382	54.77114	3.78085	0.0859463	0.27575811	2.3376735	21	1 4.4	18.9
14088	Ancus	15.4	X	57.98326	50.79047	115.63902	2.95285	0.0899611	0.28622235	2.2803439	21	4 20.9	17.6
14089	1997 JC_{14}	14.1	X	240.91163	154.29197	195.67837	10.13092	0.2038604	0.24183164	2.5514906	21	4 7.1	18.1
14090	1997 MS_3	14.7	X	39.34210	197.75292	136.96492	5.44986	0.1077667	0.21500281	2.7595608	21	11 19.4	18.4
14091	1997 MQ_4	13.7	X	223.37981	291.96135	89.53749	13.42225	0.1888857	0.24017503	2.5632098	21	5 6.3	18.0
14092	Gaily	15.0	X	184.43364	39.34331	223.37361	1.31670	0.0369359	0.22168406	2.7038322	21	—	—
14093	1997 OM	14.8	X	313.80089	204.64971	144.35559	2.65236	0.0799245	0.20467373	2.8516397	21	7 22.3	18.4
14094	Garneau	14.5	X	264.50062	254.68616	97.63786	3.13783	0.0510211	0.19845419	2.9109128	21	5 24.7	18.6
14095	1997 PE_2	13.3	X	223.87657	185.18511	143.10385	18.50633	0.3049375	0.23284254	2.6167435	21	2 25.7	18.1
14096	1997 PC_4	14.5	X	252.65788	142.71713	162.34741	5.33807	0.2302578	0.23404155	2.6077988	21	2 20.5	18.9
14097	Çapdepera	14.2	X	39.59324	71.21898	289.41275	4.17720	0.0572778	0.21453323	2.7635861	21	12 13.3	17.8
14098	Šimek	14.3	X	278.45993	282.64271	30.16031	2.49068	0.0768008	0.19592331	2.9359274	21	4 17.4	18.3
14099	1997 RQ_3	13.2	X	99.09563	193.54591	133.56581	2.43439	0.1743134	0.17344899	3.1843554	21	—	—
14100	Weierstrass	13.6	X	255.63933	34.54607	190.26369	0.58228	0.0939329	0.17807157	3.1290055	21	—	—
14101	1997 SD_1	14.0	X	298.34276	3.92437	223.76587	11.61643	0.1388263	0.22879793	2.6474920	21	1 9.1	18.0
14102	1997 SG_{25}	14.3	X	212.49680	198.15418	68.55651	3.03588	0.1815220	0.26390669	2.4071461	21	—	—
14103	Manzoni	13.8	X	316.89099	266.04641	21.11008	2.12590	0.0701878	0.19561731	2.9389883	21	5 5.6	17.8
14104	Delpino	13.7	X	191.80297	258.47271	358.88490	9.02654	0.0566170	0.17514224	3.1637982	21	—	—
14105	Nakadai	13.0	X	256.02332	132.08593	209.23596	9.29217	0.1076111	0.19177172	2.9781484	21	4 23.7	17.5
14106	1997 UO_{24}	14.5	X	102.40452	42.88994	275.53446	1.57290	0.0297045	0.21531074	2.7569290	21	—	—
14107	1997 VM_5	13.8	X	135.03857	225.02743	107.26990	0.62016	0.1665899	0.17314238	3.1881136	21	—	—
14108	1998 OA_{13}	14.7	X	237.43111	25.20508	319.33490	6.26087	0.1735950	0.28838302	2.2689395	21	3 22.9	18.3
14109	1998 OM_{14}	14.3	X	57.56447	251.58186	145.05090	11.51474	0.2291220	0.22751474	2.6574373	21	—	—
14110	1998 QA_{23}	15.2	X	78.57951	356.86103	60.75605	3.46218	0.2116295	0.27569702	2.3380188	21	—	—
14111	Kimamos	15.3	X	127.92739	201.71950	210.77595	5.31486	0.1247034	0.28175326	2.3043941	21	2 25.0	18.1
14112	1998 QZ_{25}	14.4	X	278.78323	37.98632	15.06170	2.81597	0.1601424	0.25505425	2.4625270	21	8 18.9	17.3
14113	1998 QD_{32}	12.9	X	56.55271	231.56402	142.87976	17.56654	0.2574071	0.18137191	3.0909314	21	—	—
14114	Randyray	15.5	X	28.87626	243.13186	141.58190	3.48534	0.1789135	0.26641475	2.3920149	21	—	—
14115	Melaas	15.1	X	318.27028	129.22091	253.39120	3.59749	0.1910803	0.25733338	2.4479655	21	9 6.6	17.2
14116	Ogea	14.8	X	279.11459	190.82929	194.30061	1.64371	0.1800329	0.25303010	2.4756425	21	7 5.7	17.8
14117	1998 QD_{42}	15.2	X	302.44507	325.66359	88.63383	4.73131	0.0837528	0.30316335	2.1945808	21	10 19.8	17.3
14118	1998 QF_{45}	14.2	X	80.01000	225.29760	183.30142	12.83985	0.1652046	0.23107117	2.6300997	21	—	—
14119	Johnprince	14.4	X	32.98891	106.36738	296.07864	5.85307	0.1246945	0.26823280	2.3811941	21	—	—
14120	Espenak	13.7	X	6.65701	213.45602	222.88268	5.98571	0.0880656	0.26782627	2.3836031	21	—	—
14121	Stüwe	14.0	X	304.61532	58.42346	301.47650	3.98887	0.1733557	0.29596567	2.2300186	21	7 10.6	16.0
14122	Josties	15.0	X	278.27142	170.74613	190.34191	5.64742	0.2240346	0.29285418	2.2457863	21	5 24.9	18.1
14123	1998 QA_{56}	15.4	X	232.10743	146.79997	186.76660	5.28972	0.1918866	0.28550403	2.2841672	21	3 5.6	19.2
14124	Kamil	14.3	X	220.07192	7.59511	19.15354	12.47111	0.1665980	0.24221798	2.5487767	21	5 3.1	18.5
14125	1998 QT_{62}	13.5	X	29.14403	141.09366	180.80557	9.58597	0.2691715	0.21678473	2.7444180	21	11 13.9	16.8
14126	1998 QZ_{90}	14.0	X	120.50197	274.11333	173.47390	14.08289	0.1566557	0.23868602	2.5738589	21	4 18.4	17.7
14127	1998 QA_{91}	12.9	X	183.27146	154.25650	166.66308	13.77988	0.1995185	0.23464272	2.6033426	21	1 14.5	17.4
14128	1998 QX_{92}	13.3	X	320.50314	218.96645	192.96725	8.98734	0.1470830	0.21347525	2.7727094	21	10 25.2	16.1
14129	Dibucci	14.7	X	62.93919	185.54537	205.94404	6.95354	0.1508391	0.27108520	2.3644611	21	—	—
14130	1998 QQ_{103}	14.7	X	205.29838	351.26246	30.81474	4.47108	0.1148003	0.28652856	2.2787190	21	4 13.7	18.0
14131	1998 QN_{105}	14.6	X	148.48995	338.23830	42.35765	4.99715	0.1523160	0.27964554	2.3159585	21	2 16.1	17.8
14132	1998 QB_{106}	15.0	X	214.44704	267.47719	105.94984	3.97850	0.1976053	0.28696005	2.2764341	21	4 12.1	18.7
14133	1998 RJ_{17}	14.3	X	297.25197	262.27877	178.62545	10.58124	0.2272250	0.26067400	2.4270063	21	10 23.3	16.3
14134	Penkala	14.5	X	151.54701	166.07583	265.18265	4.48264	0.1219398	0.24201455	2.5502049	21	4 23.3	18.4
14135	Cynthialang	15.2	X	339.22663	298.49877	54.31467	3.20021	0.1993803	0.25662727	2.4524538	21	9 12.4	17.0
14136	1998 RM_{67}	14.2	X	130.68745	170.55029	290.93800	3.26925	0.1719703	0.28438096	2.2901769	21	5 13.4	17.5
14137	1998 RB_{71}	14.5	X	239.25082	308.52163	152.45459	8.94720	0.2144744	0.20981799	2.8048366	21	8 22.9	19.0
14138	1998 RL_{71}	14.7	X	30.42923	282.02212	112.37180	3.11654	0.2023095	0.26571758	2.3961970	21	—	—
14139	1998 RX_{72}	13.7	X	67.05556	215.35030	181.98841	8.58017	0.2417913	0.18339800	3.0681246	21	—	—
14140	1998 RS_{73}	15.1	X	165.28111	115.54471	243.13938	2.57915	0.2300942	0.23545132	2.5973789	21	2 14.9	19.5
14141	Demeautis	14.7	X	170.20241	254.47367	95.76256	4.55775	0.1960467	0.27892747	2.3199316	21	2 2.9	18.2
14142	1998 SG_{10}	14.0	X	352.42866	118.21087	60.49216	6.61445	0.1409426	0.27933914	2.3176518	21	1 7.1	16.5
14143	Hadfield	14.7	X	90.95131	177.26637	169.24674	5.96905	0.1365648	0.26856499	2.3792301	21	—	—
14144	1998 SQ_{22}	14.2	X	305.32112	18.80601	0.60122	7.99461	0.2409418	0.21060799	2.7978182	21	7 30.1	17.4
14145	Sciam	15.3	X	26.90016	215.55103	153.22686	4.22904	0.2071464	0.26382945	2.4076159	21	—	—
14146	Hughmaclean	14.7	X	116.04893	72.78649	350.98852	2.09022	0.1214249	0.27974410	2.3154146	21	2 26.8	17.2
14147	Wenlingshuguang	14.0	X	146.29933	291.81289	83.90932	3.60621	0.0290723	0.27796668	2.3252745	21	1 19.6	16.8
14148	Jimchamberlin	16.0	X	331.21971	62.52143	104.65089	1.24722	0.1248943	0.27462617	2.3440926	21	—	—
14149	Yakowitz	14.3	X	79.22353	118.48069	319.35239	6.36257	0.0745800	0.27636780	2.3342342	21	1 15.8	16.9
14150	1998 SQ_{65}	14.3	X	191.44335	120.04892	78.88217	3.50268	0.1426247	0.26060039	2.4274633	21	11 18.1	17.9
14151	1998 SJ_{73}	15.0	X	317.17669	248.53444	132.66400	3.41682	0.1887374	0.25489177	2.4635734	21	9 5.2	16.9
14152	1998 SV_{73}	15.2	X	222.35976	288.19513	42.79405	7.09687	0.1595242	0.28248543	2.3004106	21	2 27.0	18.8
14153	Dianecaplain	15.8	X	336.02221	283.05233	201.73170	3.76029	0.0604300	0.27109756	2.3643892	21	—	—
14154	Negrelli	14.4	X	336.03501	241.48049	199.12841	2.75354	0.0609723	0.22119630	2.7078055	21	12 29.6	17.8
14155	Cibronen	14.5	X	175.09919	227.23821	226.90607	3.33151	0.0964394	0.28896694	2.2658819	21	6 17.1	17.5
14156	1998 SV_{131}	14.3	X	184.93215	125.77656	224.45371	12.96769	0.0637852	0.23557546	2.5964663	21	2 8.9	18.3
14157	Pamelasobey	14.2	X	325.24544	279.76515	6.18431	8.87485	0.1452580	0.28969164	2.2621014	21	4 23.4	16.6
14158	Alananderson	14.2	X	292.36822	233.72068	199.94171	5.68729	0.0955226	0.25710734	2.4494001	21	10 19.2	16.9
14159	1998 SV_{141}	15.4	X	153.29683	160.90385	98.14601	4.67141	0.0790111	0.30818808	2.1706618	21	—	—
14160	1998 SB_{144}	15.5	X	229.16070	226.81836	129.23321	1.49798	0.1714233	0.24216680	2.5491359	21	4 6.4	19.4

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
14161	1998 SO_{145}	14.9	X	103.15393	251.35864	67.96518	1.84295	0.1352152	0.26628450	2.3927948	21	—	—
14162	1998 TV_{1}	13.6	X	46.49533	341.41118	54.20943	13.61629	0.2476518	0.26593367	2.3948988	21	—	—
14163	Johnchapman	14.7	X	191.17148	145.64736	294.44048	0.79498	0.0748968	0.20197350	2.8769995	21	6 18.1	18.9
14164	Hennigar	14.1	X	134.21538	94.06091	354.68748	1.51019	0.0561164	0.19591973	2.9359632	21	4 24.1	18.4
14165	1998 UZ	13.6	X	59.91044	266.65356	214.83107	12.10010	0.1976326	0.23203964	2.6227763	21	3 5.7	16.5
14166	1998 UZ_{6}	13.7	X	314.58879	19.48479	148.55402	12.80732	0.0988070	0.22349063	2.6892417	21	—	—
14167	1998 UL_{8}	13.3	X	28.26533	5.61902	87.26126	2.55890	0.1560040	0.18112176	3.0937767	21	—	—
14168	1998 UR_{15}	13.2	X	334.56672	75.22283	7.76181	0.65058	0.1553833	0.17502014	3.1652696	21	12 20.6	16.8
14169	1998 UZ_{24}	13.9	X	13.61181	319.69704	63.13010	6.23558	0.1674133	0.21580859	2.7526874	21	12 21.6	17.2
14170	1998 VF_{6}	13.6	X	327.84282	157.90446	305.33683	4.45080	0.1093233	0.17653575	3.1471270	21	—	—
14171	1998 VO_{6}	13.6	X	310.61619	154.72789	289.49817	6.11393	0.0895524	0.21531428	2.7568989	21	11 23.1	16.9
14172	Amanolivere	14.6	X	14.28075	3.60900	341.09121	2.76662	0.1656371	0.25831654	2.4417502	21	11 9.7	17.2
14173	1998 VL_{9}	14.4	X	47.41311	322.10227	63.44674	5.35242	0.0736366	0.26580559	2.3956681	21	—	—
14174	Deborahsmall	14.4	X	190.78493	168.88027	309.57307	1.95206	0.1783133	0.20367044	2.8609969	21	8 2.6	19.2
14175	1998 VO_{18}	13.2	X	349.28115	80.19770	345.31935	5.54112	0.0876712	0.17528420	3.1620898	21	12 19.8	17.3
14176	1998 VB_{28}	13.6	X	47.92058	29.59658	333.09158	4.42905	0.1448646	0.17519757	3.1631321	21	12 30.7	18.1
14177	1998 VU_{29}	13.2	X	283.79083	169.70826	259.96330	9.09800	0.1441505	0.20937503	2.8087912	21	9 10.9	17.1
14178	1998 VK_{30}	13.8	X	276.10796	273.06049	108.42705	3.08930	0.0892806	0.20413767	2.8566297	21	7 10.9	17.7
14179	Skinner	14.3	X	349.59932	334.28517	285.40830	8.29790	0.2128480	0.28476597	2.2881122	21	4 17.3	16.2
14180	1998 WY_{5}	13.9	X	24.25861	309.16259	105.95878	2.69864	0.1108948	0.17620637	3.1510477	21	—	—
14181	Koromházi	13.3	X	4.47390	36.92124	72.74592	8.91274	0.1587556	0.22035821	2.7146669	21	—	—
14182	Alley	14.9	X	216.41238	99.42741	225.19281	5.94327	0.1432215	0.27843719	2.3226542	21	2 8.2	18.5
14183	1998 WA_{18}	13.2	X	34.64956	139.60181	292.90943	4.92247	0.0718976	0.17986530	3.1081678	21	—	—
14184	1998 WA_{32}	13.5	X	298.67264	92.27474	226.35391	1.26728	0.0397085	0.19842134	2.9112341	21	5 26.5	17.2
14185	Van Ness	13.6	X	269.30510	326.74990	18.47403	7.22387	0.1949829	0.23984972	2.5655269	21	4 28.0	17.3
14186	Virgiliofos	13.1	X	310.30381	49.20805	93.27216	1.78401	0.1012748	0.17545094	3.1600862	21	—	—
14187	1998 XS_{9}	14.3	X	323.49062	123.42084	190.44469	2.50376	0.1566975	0.28927272	2.2642849	21	6 5.1	16.2
14188	1998 XP_{11}	13.5	X	45.10370	257.60825	302.46143	8.76975	0.0445769	0.19190056	2.9768153	21	5 18.7	17.6
14189	Sèvre	14.3	X	62.82767	157.93148	191.65364	3.14059	0.1965731	0.21908116	2.7252062	21	—	—
14190	Soldán	13.2	X	76.26997	30.27295	91.93171	4.58941	0.0887008	0.18748362	3.0233876	21	4 1.7	17.2
14191	1998 XR_{28}	13.8	X	17.15208	337.56492	255.35811	5.67419	0.1239030	0.28385982	2.2929791	21	5 18.3	15.6
14192	1998 XA_{33}	13.0	X	179.86920	22.75166	359.31311	9.74656	0.1148592	0.19128508	2.9831974	21	3 26.7	17.8
14193	1998 XZ_{40}	13.0	X	59.34986	11.37442	15.52141	8.03560	0.1995745	0.17680996	3.1438723	21	—	—
14194	1998 XU_{50}	13.1	X	54.40950	310.72937	300.79980	7.22194	0.2205259	0.19709552	2.9242750	21	9 3.4	16.9
14195	1998 XD_{51}	11.9	X	269.77043	192.67339	318.20557	7.74218	0.1289343	0.12466438	3.9686347	21	11 24.8	17.5
14196	1998 XH_{59}	13.5	X	350.36665	186.27434	114.13544	7.28667	0.2193122	0.28912670	2.2650472	21	7 9.2	14.5
14197	1998 XK_{72}	13.6	X	132.26262	12.99710	25.78789	1.28433	0.1453068	0.18642238	3.0348508	21	3 3.8	18.2
14198	1998 XZ_{73}	12.7	X	81.80084	8.82411	352.10542	6.66626	0.1378921	0.21863516	2.7289110	21	—	—
14199	1998 XV_{77}	13.4	X	28.21326	286.37605	91.78628	13.17402	0.2078905	0.26101165	2.4249127	21	—	—
14200	1998 XY_{77}	13.6	X	310.23613	275.20645	160.52503	6.58831	0.0747133	0.25645611	2.4535449	21	11 23.8	16.4
14201	1998 XR_{92}	12.9	X	254.12827	57.94717	235.19277	12.17034	0.1563289	0.23030471	2.6359318	21	2 8.2	17.3
14202	1998 YF_{3}	13.5	X	233.92824	74.27211	287.02922	6.31913	0.2165899	0.23776781	2.5804811	21	4 11.4	17.9
14203	Hocking	13.0	X	251.40522	348.09155	307.95466	9.44359	0.1077835	0.18346015	3.0674316	21	2 21.5	17.8
14204	1999 AM_{20}	12.9	X	297.29250	177.76016	123.96382	11.32652	0.0845428	0.19057784	2.9905733	21	5 1.4	17.2
14205	1999 BC_{4}	12.8	X	349.40621	77.90756	127.84557	11.24373	0.0325364	0.18315642	3.0708218	21	3 16.5	17.1
14206	Sehnal	13.0	X	81.08168	233.43937	117.19927	8.43034	0.1742718	0.17042332	3.2219345	21	—	—
14207	1999 CS_{18}	12.3	X	334.75505	164.51211	100.75885	10.94603	0.0355864	0.18997416	2.9969054	21	5 10.8	16.4
14208	1999 CR_{64}	13.0	X	296.94276	135.15235	198.08790	12.80740	0.1643538	0.23656457	2.5892238	21	5 23.6	16.5
14209	1999 CV_{81}	14.7	X	267.49633	255.33815	330.41605	2.93570	0.1175580	0.30380329	2.1914980	21	—	—
14210	1999 CO_{99}	13.5	X	319.72158	250.04091	339.00565	12.82238	0.1520099	0.22246377	2.6975108	21	2 9.9	17.0
14211	1999 NT_{1}	13.9	X	66.66264	91.03255	282.08908	21.35108	0.3189464	0.28141692	2.3062298	21	—	—
14212	1999 NW_{39}	14.3	X	76.86779	261.67482	109.77225	14.00631	0.1742903	0.23962104	2.5671589	21	—	—
14213	1999 NX_{54}	12.9	X	295.67428	188.73330	158.73657	25.14982	0.0278605	0.22032782	2.7149166	21	7 2.4	17.1
14214	Hirsch	14.8	X	157.65408	270.67833	101.03773	3.18706	0.1966790	0.24713568	2.5148519	21	2 22.2	18.7
14215	1999 TV_{6}	14.1	X	308.05036	232.80559	198.26583	3.57921	0.1440453	0.27010959	2.3701512	21	11 11.1	16.2
14216	1999 VW_{1}	13.6	X	55.25634	190.97598	273.35029	9.26277	0.1230696	0.23882358	2.5728704	21	1 24.2	16.4
14217	Oaxaca	15.8	X	335.09855	218.11962	112.48425	3.69481	0.1883865	0.26264429	2.4148532	21	7 24.7	17.8
14218	1999 VS_{30}	14.3	X	311.44617	174.06277	238.19446	5.14126	0.1161872	0.26636156	2.3923333	21	10 19.2	16.7
14219	1999 VY_{77}	14.1	X	122.51798	30.07378	81.91211	6.19872	0.0573814	0.24657913	2.5186346	21	5 8.2	17.4
14220	Alexgibbs	12.5	X	93.86232	326.14848	305.15903	10.87250	0.1650075	0.22636535	2.6664252	21	11 7.2	16.8
14221	1999 WL	14.3	X	109.34371	15.47892	99.17256	6.07634	0.0993047	0.29169966	2.2517082	21	4 27.8	17.0
14222	1999 WS_{1}	14.0	X	19.02641	84.88173	229.16083	17.17886	0.5454567	0.18091884	3.0960895	21	11 26.5	17.5
14223	Dolby	14.7	X	3.43181	250.21536	105.46101	3.83499	0.3012998	0.26970594	2.3725154	21	12 3.9	16.5
14224	Gaede	14.5	X	31.74607	135.23818	284.57600	0.79942	0.1988607	0.22726877	2.6593544	21	—	—
14225	Alisahamilton	15.2	X	88.10524	236.48170	70.23287	3.29541	0.2260364	0.27331829	2.3515646	21	12 29.9	19.0
14226	Hamura	15.1	X	252.86710	273.13357	206.30003	2.91728	0.0378696	0.22131448	2.7068415	21	10 26.8	18.6
14227	1999 XW_{85}	12.5	X	235.76618	85.43238	132.89820	2.25231	0.1204009	0.18007779	3.1057223	21	—	—
14228	1999 XQ_{88}	14.2	X	163.02115	116.77688	98.24877	4.24404	0.0694084	0.21788965	2.7351321	21	11 7.7	18.2
14229	1999 XV_{94}	14.0	X	232.55506	315.00870	5.39001	4.27585	0.1769296	0.28159079	2.3052804	21	2 20.6	17.6
14230	Mariahines	14.8	X	138.11254	245.81289	290.42072	3.54111	0.0882795	0.30139680	2.2031477	21	8 26.5	17.7
14231	1999 XD_{102}	13.7	X	357.11588	285.10015	89.46122	7.93514	0.0499250	0.17176271	3.2051630	21	10 29.6	18.0
14232	Curtismiller	13.2	X	309.38585	295.02321	262.18214	11.22934	0.1135237	0.23786970	2.5797442	21	—	—
14233	1999 XM_{169}	13.1	X	126.40745	99.05961	279.30991	13.73309	0.1134062	0.23740277	2.5831256	21	1 16.4	16.5
14234	Davidhoover	14.8	X	178.02660	323.70458	31.08536	7.54170	0.1816420	0.28931056	2.2640874	21	2 15.9	18.3
14235	1999 XA_{187}	11.3	X	341.00977	25.26161	41.38985	8.66930	0.0849151	0.08463572	5.1376786	21	11 19.6	17.8
14236	1999 XZ_{200}	13.6	X	166.47861	298.26082	310.42907	10.81053	0.1492892	0.22300033	2.6931821	21	12 18.9	18.1
14237	1999 YU_{9}	12.6	X	99.71530	19.31431	342.99032	14.85400	0.0474221	0.18137521	3.0908939	21	—	—
14238	d'Artagnan	13.1	X	48.67373	257.75996	322.67475	5.30244	0.2375480	0.24095666	2.5576637	21	7 22.2	15.8
14239	2000 AL_{2}	13.3	X	321.74805	217.99531	60.73560	6.14769	0.1157681	0.19665965	2.9285942	21	4 26.9	16.9
14240	2000 AP_{2}	14.5	X	93.97287	344.68688	33.35920	7.40260	0.1170452	0.27515663	2.3410790	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
14241 2000 AO_5	12.8	X	233.80547	117.79681	113.15208	2.39105	0.1891204	0.17827442	3.1266314	21	—	—
14242 2000 AE_{25}	14.0	X	320.44206	275.60419	114.85617	0.27339	0.1808059	0.17051868	3.2207331	21	9 14.2	17.5
14243 2000 AH_{29}	14.3	X	51.06662	217.85138	312.03503	1.05954	0.0395901	0.19716446	2.9235933	21	4 18.0	18.0
14244 Labnow	14.8	X	112.36861	276.89651	47.69352	4.46216	0.0590124	0.22550968	2.6731659	21	—	—
14245 2000 AS_{31}	13.9	X	35.83142	343.14978	339.33144	6.95557	0.2551235	0.26269576	2.4145378	21	11 26.8	17.0
14246 2000 AN_{50}	13.2	X	340.87462	355.26996	302.67253	1.12338	0.0300004	0.20199097	2.8768337	21	6 27.9	16.9
14247 2000 AV_{55}	14.4	X	35.67849	245.85010	101.07759	3.26291	0.2071725	0.26555703	2.3971627	21	12 23.9	17.3
14248 2000 AF_{56}	13.3	X	50.17168	206.40618	146.52354	1.41349	0.1784162	0.17529138	3.1620034	21	12 25.9	17.7
14249 2000 AW_{57}	12.9	X	358.45063	106.54994	311.03111	10.05835	0.0363806	0.17585880	3.1551982	21	12 19.9	17.3
14250 Kathleenmartin	15.6	X	181.32169	38.54475	346.41631	5.33072	0.1737022	0.28813621	2.2702351	21	3 24.6	19.1
14251 2000 AX_{63}	13.2	X	239.78494	352.41658	314.65570	9.04258	0.0876342	0.19034915	2.9929681	21	2 23.7	17.9
14252 Audreymeyer	15.2	X	340.84407	182.67305	87.85622	2.12679	0.1176304	0.28967538	2.2621861	21	5 5.9	17.4
14253 2000 AL_{64}	14.1	X	72.19694	291.65866	55.05157	3.53243	0.0943713	0.22129780	2.7069775	21	—	—
14254 2000 AT_{64}	12.6	X	305.49047	130.11924	338.53124	9.94011	0.0923190	0.17492376	3.1664321	21	12 7.0	16.8
14255 2000 AS_{70}	13.2	X	231.06894	299.64967	118.86764	8.78318	0.2209396	0.21080163	2.7961045	21	6 22.9	17.9
14256 2000 AA_{96}	13.5	X	247.20038	351.02868	5.66303	1.56289	0.0927238	0.19774913	2.9178278	21	5 3.7	17.9
14257 2000 AR_{97}	12.8	X	238.87178	4.08586	55.25252	5.16791	0.1398582	0.29678250	2.2259250	21	7 9.6	15.8
14258 Katrinaminck	14.8	X	242.07712	100.49776	166.93428	4.47088	0.0350385	0.27927352	2.3180148	21	—	—
14259 2000 AQ_{117}	13.0	X	292.15237	277.53095	138.46149	10.72247	0.1114989	0.16773172	3.2563112	21	9 13.2	17.3
14260 2000 AF_{119}	13.1	X	48.83370	293.02032	133.62047	11.50993	0.0962560	0.18415375	3.0597246	21	—	—
14261 2000 AB_{121}	13.1	X	118.52688	134.43449	270.90588	9.71260	0.0974212	0.19008925	2.9956956	21	2 13.5	17.6
14262 Kratzer	14.3	X	77.39070	182.58475	187.55837	5.89576	0.1402975	0.27234600	2.3571581	21	—	—
14263 2000 AA_{127}	13.0	X	216.18060	166.34077	196.70756	1.40217	0.1108913	0.19642049	2.9309710	21	4 8.3	17.4
14264 2000 AH_{142}	13.3	X	339.79268	259.80996	173.52948	9.14796	0.0608503	0.17401610	3.1774332	21	12 15.1	17.6
14265 2000 AV_{142}	13.3	X	310.00180	338.25629	207.55239	4.96156	0.0926055	0.18207098	3.0830145	21	—	—
14266 2000 AG_{143}	13.6	X	342.67532	342.58370	293.46684	8.28787	0.1857997	0.24203956	2.5500292	21	5 10.9	16.2
14267 Zook	14.5	X	90.15654	11.61781	1.68039	3.72262	0.2451519	0.27546079	2.3393553	21	—	—
14268 2000 AK_{156}	10.5	X	317.40127	127.25561	284.49255	14.99661	0.0923326	0.08270213	5.2174497	21	9 25.5	17.3
14269 2000 AH_{182}	12.9	X	348.92676	167.19449	164.60330	9.62048	0.1610271	0.21090003	2.7952348	21	8 23.4	15.9
14270 2000 AB_{189}	14.1	X	8.05156	224.48506	185.16553	13.12244	0.0053337	0.22671777	2.6636614	21	12 29.5	18.0
14271 2000 AN_{233}	13.0	X	209.28583	275.49861	124.52195	2.92768	0.1261964	0.19685273	2.9266789	21	5 17.1	17.5
14272 2000 AZ_{234}	13.4	X	324.26527	182.05759	128.32369	5.20189	0.0380769	0.15879164	3.3774139	21	6 21.2	18.0
14273 2000 BY_{14}	14.0	X	175.18552	334.29804	67.76162	9.80099	0.1645987	0.24210185	2.5495917	21	4 17.8	18.1
14274 Landstreet	12.5	X	68.80590	24.28475	313.37166	16.67220	0.1286813	0.17363947	3.1820262	21	12 23.7	17.3
14275 Dianemurray	15.5	X	318.04092	197.07276	33.54210	2.90152	0.0934626	0.28129431	2.3068999	21	2 5.7	18.2
14276 2000 CF_2	13.3	X	245.28539	343.42470	31.24870	6.45209	0.1783016	0.29204048	2.2499560	21	5 10.4	16.6
14277 Parsa	14.7	X	202.63353	303.42323	187.48013	3.89104	0.0488765	0.20978399	2.8051396	21	9 5.6	18.6
14278 Perrenot	15.4	X	14.16665	344.71759	144.92248	2.21631	0.1768333	0.27695035	2.3309597	21	—	—
14279 2000 CD_{65}	13.7	X	104.52552	322.29836	37.60016	1.44555	0.1758049	0.18061796	3.0995270	21	—	—
14280 2000 CN_{72}	13.5	X	339.84072	198.70712	124.38655	3.09411	0.0085002	0.20343693	2.8631857	21	7 31.4	17.4
14281 2000 CR_{92}	13.4	X	340.98223	211.97836	131.51446	2.88185	0.0891144	0.20456482	2.8526517	21	8 27.6	16.7
14282 Cruijff	13.5	X	203.34777	138.70041	194.41037	7.71229	0.0480002	0.18600888	3.0393468	21	2 18.2	18.1
14283 2206 *P–L*	14.6	X	86.02118	286.26854	192.33196	5.29453	0.1212866	0.23524593	2.5988904	21	4 7.1	17.6
14284 2530 *P–L*	14.1	X	165.71179	36.25941	22.71330	4.67971	0.1315425	0.28508887	2.2863842	21	4 20.9	17.3
14285 2566 *P–L*	15.2	X	294.40393	239.09158	190.19356	1.95808	0.1813130	0.25822826	2.4423067	21	10 4.0	17.3
14286 2577 *P–L*	15.1	X	111.14557	293.55749	348.69472	0.53779	0.1282745	0.26131854	2.4230139	21	12 13.4	18.6
14287 2777 *P–L*	14.5	X	192.20115	100.04404	159.42401	2.92785	0.1656660	0.26391294	2.4071081	21	—	—
14288 2796 *P–L*	16.1	X	108.51405	249.12878	140.96427	3.27651	0.2237136	0.23250469	2.6192779	21	1 27.3	19.3
14289 4648 *P–L*	15.2	X	123.19780	98.19182	186.32195	0.95527	0.1732840	0.26237414	2.4165106	21	12 28.8	19.1
14290 9072 *P–L*	14.5	X	125.37377	26.70596	212.74491	5.98166	0.0579787	0.21139537	2.7908665	21	10 25.2	18.4
14291 1104 *T–1*	14.0	X	72.54580	74.49890	352.54418	11.68381	0.1276893	0.27276640	2.3547355	21	—	—
14292 1148 *T–1*	15.7	X	112.68998	260.40014	358.80634	2.30457	0.0972116	0.30385268	2.1912605	21	11 20.1	18.7
14293 2307 *T–1*	15.0	X	78.74926	102.57783	18.47110	6.56094	0.1050665	0.23669210	2.5882936	21	3 28.5	17.9
14294 3306 *T–1*	15.2	X	137.58271	137.19382	167.56374	2.47262	0.2094610	0.26731558	2.3866379	21	—	—
14295 4161 *T–1*	13.5	X	259.40703	143.91569	182.76999	14.80254	0.1409192	0.23676069	2.5877937	21	4 2.0	17.3
14296 4298 *T–1*	15.4	X	178.35447	155.77361	135.50070	3.23348	0.1620297	0.26912246	2.3759434	21	—	—
14297 2124 *T–2*	15.5	X	75.79786	96.33849	285.96515	1.60962	0.1624700	0.27315550	2.3524988	21	—	—
14298 2144 *T–2*	14.6	X	17.93168	278.78846	357.44592	4.45702	0.1303809	0.24411879	2.5355289	21	8 1.5	17.2
14299 3162 *T–2*	13.6	X	198.91201	216.40370	168.92849	13.83577	0.1850281	0.23945137	2.5683715	21	4 17.9	17.9
14300 3336 *T–2*	14.8	X	84.02486	231.41534	157.06222	4.90253	0.2059841	0.27399852	2.3476710	21	—	—
14301 5205 *T–2*	14.7	X	283.48744	218.64880	294.05724	5.79189	0.0362481	0.27205952	2.3588126	21	—	—
14302 5482 *T–2*	14.3	X	268.63495	6.71491	315.21596	6.95970	0.2007669	0.28191121	2.3035332	21	3 21.9	17.9
14303 1144 *T–3*	14.1	X	156.60772	80.59909	336.50335	8.65426	0.0624212	0.19235843	2.9720896	21	4 8.3	18.5
14304 3417 *T–3*	13.8	X	125.01542	107.09536	24.72618	16.34846	0.1198636	0.23965807	2.5668944	21	6 11.0	17.8
14305 3437 *T–3*	14.5	X	352.88905	272.44757	13.71562	2.62448	0.1428851	0.24264473	2.5457875	21	6 25.0	16.8
14306 4327 *T–3*	14.3	X	36.98900	139.63998	55.77075	9.30109	0.1120419	0.23880713	2.5729885	21	5 4.7	17.1
14307 4336 *T–3*	15.0	X	9.63314	50.20826	161.59746	7.69832	0.0466161	0.28311065	2.2970225	21	4 5.7	17.5
14308 Hardeman	12.9	X	279.03494	82.47206	151.33680	12.52903	0.2009013	0.18926931	3.0043412	21	—	—
14309 Defoy	14.3	X	325.52342	136.96401	174.89097	6.50610	0.4475769	0.23454525	2.6040638	21	4 17.9	17.1
14310 Shuttleworth	13.9	X	192.19286	164.85511	51.04832	2.61728	0.1605208	0.22099175	2.7094762	21	12 1.9	18.3
14311 1971 UK_1	15.0	X	273.84709	235.67730	205.83247	7.74651	0.2195363	0.25401780	2.4692209	21	9 7.4	18.1
14312 Polytech	14.7	X	153.71990	97.25794	257.63911	1.90164	0.1358538	0.31634492	2.1331864	21	1 7.3	17.0
14313 Dodaira	13.3	X	256.62452	138.88419	207.13642	10.51585	0.1113615	0.19026234	2.9938784	21	4 30.4	17.7
14314 Tokigawa	13.7	X	36.86530	15.17717	62.03763	2.14162	0.1681671	0.17718374	3.1394493	21	—	—
14315 Ogawamachi	12.8	X	230.50021	107.76045	178.26100	21.20813	0.1031152	0.17559358	3.1583745	21	1 21.8	18.1
14316 Higashichichibu	12.6	X	290.72895	142.71134	356.33546	15.26422	0.0859086	0.17235222	3.1978502	21	12 25.4	17.1
14317 Antonov	14.3	X	72.42134	3.50973	326.79986	6.29887	0.1709237	0.25735678	2.4478172	21	—	—
14318 Buzinov	14.7	X	99.70016	319.63686	345.99171	4.51160	0.2114687	0.30371057	2.1919440	21	—	—
14319 1978 US_5	14.1	X	94.49987	287.71478	17.82938	16.67352	0.2899152	0.21109783	2.7934884	21	12 29.3	19.3
14320 1978 UV_7	14.0	X	70.68813	129.76424	199.62434	4.76870	0.1032642	0.20961810	2.8066195	21	12 17.9	18.1

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
14321 1978 VT_9	15.6	X	348.56691	289.12149	55.32206	3.84427	0.2001706	0.29596698	2.2300120	21	10 1.4	16.8
14322 Shakura	14.1	X	309.99512	20.05095	0.62922	7.82148	0.1370124	0.29505822	2.2345885	21	9 2.3	16.1
14323 1979 MV_1	14.8	X	293.09619	137.16308	133.40505	6.76017	0.0787583	0.27606080	2.3359644	21	3 2.4	17.7
14324 1979 MK_6	14.2	X	93.23595	228.23604	162.66338	2.69519	0.0885530	0.22269710	2.6956262	21	—	—
14325 1979 MM_6	14.1	X	294.40246	336.51825	233.22776	4.26253	0.1050577	0.17832434	3.1260479	21	—	—
14326 1980 BA	14.3	X	266.28760	333.20951	108.97913	6.84429	0.1646809	0.25302749	2.4756595	21	9 12.2	17.5
14327 Lemke	13.0	X	251.61489	302.24726	343.12525	8.66022	0.1611462	0.18955928	3.0012766	21	2 8.4	17.8
14328 Granvik	13.6	X	286.34569	102.90431	260.44542	7.86568	0.2475814	0.21247730	2.7813845	21	6 5.9	17.3
14329 1981 EY_{10}	14.6	X	49.06675	171.33136	209.66923	3.09561	0.1069454	0.26205644	2.4184633	21	—	—
14330 1981 EG_{21}	13.7	X	276.03753	253.10345	159.56852	6.03043	0.0727482	0.15650349	3.4102538	21	8 20.4	18.5
14331 1981 EC_{26}	16.3	X	229.36512	184.47776	12.34918	1.25313	0.1405879	0.26132810	2.4229548	21	12 27.9	19.4
14332 1981 EX_{26}	14.5	X	173.57052	80.55202	198.58379	2.98416	0.2470933	0.26078786	2.4262998	21	—	—
14333 1981 ED_{34}	15.3	X	321.91140	94.27729	305.43069	2.16148	0.1978475	0.25810467	2.4430863	21	10 14.1	17.0
14334 1981 EE_{38}	14.7	X	290.89538	110.11412	314.16344	2.13274	0.1206666	0.20827705	2.8186541	21	9 22.0	18.3
14335 Alexosipov	14.2	X	336.29018	181.76532	170.10071	5.90281	0.2105736	0.29499171	2.2349244	21	9 6.5	15.1
14336 1981 UU_{29}	15.9	X	289.81611	110.27145	244.12467	1.29684	0.1930731	0.29154246	2.2525175	21	6 3.5	18.6
14337 1981 WJ_9	14.5	X	104.74675	254.07102	191.85403	5.27450	0.1835582	0.23292632	2.6161160	21	3 29.7	17.9
14338 Shibakoukan	12.6	X	15.81850	204.94093	61.46660	13.55025	0.0541456	0.19499415	2.9452466	21	7 6.8	16.5
14339 Knorre	12.4	X	322.75287	177.29996	115.77389	14.40244	0.1746961	0.23506744	2.6002058	21	5 10.3	15.7
14340 1983 RQ_3	14.7	X	157.81412	8.36526	329.34492	4.65352	0.2436414	0.27189775	2.3597481	21	1 12.1	18.3
14341 1983 RV_3	13.7	X	151.26342	144.62461	175.59071	5.42038	0.1663452	0.21836452	2.7311654	21	—	—
14342 Iglika	12.6	X	37.38329	229.33426	156.83670	9.70651	0.3032115	0.21798150	2.7343638	21	—	—
14343 1984 SM_5	13.9	X	11.67598	145.04069	156.15245	6.79195	0.1377467	0.29306857	2.2446909	21	9 1.6	15.8
14344 1985 CP_2	15.2	X	0.48116	145.46856	295.52311	1.79193	0.1336220	0.26679753	2.3897264	21	—	—
14345 Gritsevich	13.9	X	290.06872	202.67548	145.46355	3.41958	0.1433418	0.24310968	2.5425405	21	6 5.8	17.0
14346 Zhilyaev	13.2	X	129.09223	286.42301	66.61053	1.65779	0.1491310	0.17467026	3.1694950	21	1 7.8	17.7
14347 1985 RL_4	14.9	X	97.48758	299.66049	34.95293	3.39145	0.1567790	0.30895663	2.1670605	21	—	—
14348 Cumming	13.2	X	182.61620	333.10323	31.65039	22.68109	0.0439813	0.23337696	2.6127472	21	3 13.2	17.3
14349 Nikitamikhalkov	13.2	X	31.06651	268.91646	124.01120	2.71585	0.1176359	0.16759811	3.2580417	21	—	—
14350 1985 VA_1	12.9	X	213.23025	186.96545	87.76395	18.92126	0.0738751	0.17617721	3.1513954	21	—	—
14351 Tomaskohout	14.2	X	129.72918	143.91554	182.03121	2.45586	0.2000765	0.26345946	2.4098694	21	—	—
14352 1987 DK_6	14.6	X	200.47882	293.61215	325.94366	2.47969	0.1816245	0.30933387	2.1652983	21	—	—
14353 1987 DN_6	14.5	X	59.97826	179.92297	287.23956	2.40981	0.1683143	0.23124710	2.6287655	21	2 13.4	17.2
14354 Kolesnikov	13.9	X	17.10789	155.30456	151.29924	5.74861	0.2431922	0.20504730	2.8481750	21	9 25.0	16.6
14355 1987 SL_5	14.7	X	29.15015	212.05640	225.18216	4.47028	0.2015336	0.26873797	2.3782091	21	—	—
14356 1987 SF_6	14.9	X	311.89080	182.17644	172.79407	5.74465	0.2318671	0.25842627	2.4410590	21	7 4.6	17.5
14357 1987 UR	13.4	X	143.27093	22.46302	23.25605	5.95117	0.2727046	0.18886426	3.0086352	21	4 2.4	18.5
14358 1988 BY_3	14.3	X	157.91635	297.66782	164.10928	6.99120	0.1089871	0.24697007	2.5159760	21	6 10.4	18.1
14359 1988 CU_1	14.7	X	232.89064	198.33773	339.21525	1.65314	0.1231055	0.25890728	2.4380346	21	12 9.1	17.9
14360 Ipatov	13.3	X	145.68400	147.92287	181.86019	18.18938	0.1602278	0.17327391	3.1865000	21	—	—
14361 Boscovich	13.2	X	4.03994	174.80819	352.70892	13.24295	0.0958995	0.23749315	2.5824702	21	1 31.8	16.4
14362 1988 MH	12.4	X	267.18729	37.76055	292.36157	12.97478	0.1917345	0.23566276	2.5958250	21	4 1.3	16.7
14363 1988 RB_2	14.9	X	160.67427	173.87409	153.00925	2.73060	0.2047577	0.28270045	2.2992440	21	—	—
14364 1988 RM_2	14.7	X	200.17831	99.23342	278.37632	5.11557	0.1872352	0.28835699	2.2690761	21	3 30.9	18.4
14365 Jeanpaul	14.3	X	248.76292	263.69225	12.49023	4.97363	0.2320759	0.22506351	2.6766977	21	1 17.4	18.9
14366 Wilhelmraabe	14.7	X	41.12465	165.20868	166.65358	4.61177	0.0748439	0.21189339	2.7864918	21	11 12.4	18.3
14367 Hippokrates	14.0	X	329.00012	171.97532	171.87309	1.38172	0.2025798	0.17708539	3.1406116	21	7 25.8	17.2
14368 1988 TK	13.7	X	108.17229	308.18794	2.54494	9.55387	0.2002589	0.21597428	2.7512794	21	—	—
14369 1988 UV	15.1	X	214.18691	207.24276	212.47740	7.46395	0.0978331	0.29193487	2.2504985	21	6 14.3	18.3
14370 1988 VR_2	13.7	X	165.01652	0.58934	87.96463	13.26416	0.2773497	0.19673378	2.9278586	21	6 7.9	18.9
14371 1988 XX_2	15.1	X	142.10706	8.07527	73.65765	2.21766	0.1762464	0.28458999	2.2890554	21	5 1.0	18.3
14372 Paulgerhardt	13.5	X	108.80853	257.45781	192.14004	9.80426	0.0942369	0.19016846	2.9948637	21	3 31.7	17.7
14373 1989 LT	14.1	X	208.13270	247.61285	0.53199	1.69479	0.1412852	0.26301506	2.4125832	21	—	—
14374 1989 SA	13.4	X	216.14388	300.15970	77.83298	13.93453	0.1900529	0.23681423	2.5874037	21	4 26.4	17.8
14375 1989 SU	13.7	X	343.98088	33.54348	291.80780	4.07720	0.2359310	0.24432951	2.5340710	21	8 2.2	15.5
14376 1989 ST_{10}	13.3	X	313.48701	135.73123	175.80772	9.15596	0.2012327	0.24156165	2.5533914	21	5 12.3	16.4
14377 1989 TX_2	13.6	X	130.36347	273.92799	185.10371	15.15513	0.0774529	0.23492847	2.6012312	21	5 5.2	17.4
14378 1989 TA_{16}	14.5	X	274.62541	72.09848	232.54161	2.30072	0.1608331	0.23673101	2.5880100	21	3 17.4	18.2
14379 1989 UM_4	12.6	X	77.11692	185.72889	218.76297	12.94308	0.1647227	0.22570436	2.6716286	21	—	—
14380 1989 UC_6	13.4	X	210.55039	254.79914	37.53070	28.50411	0.2410940	0.22990112	2.6390158	21	1 6.8	18.6
14381 1990 CE	15.0	X	46.63719	335.37078	160.07083	5.38820	0.0966896	0.28658356	2.2784274	21	2 9.9	17.1
14382 Woszczyk	13.3	X	236.30105	197.28410	203.94141	1.43377	0.0596718	0.19954944	2.9002519	21	6 20.9	17.5
14383 1990 OY_3	14.1	X	157.23034	7.13991	324.68971	5.97967	0.1348526	0.26974332	2.3722962	21	—	—
14384 1990 OH_4	13.3	X	245.06828	98.28623	181.63278	7.11154	0.1161679	0.17896624	3.1185686	21	1 28.3	18.2
14385 1990 QG_1	14.1	X	186.80243	351.81042	344.08297	6.59956	0.1365717	0.27176913	2.3604925	21	1 29.4	17.6
14386 1990 QN_2	14.4	X	205.44207	336.53708	346.29803	7.09649	0.1376808	0.27230072	2.3574194	21	1 31.4	18.0
14387 1990 QE_5	14.7	X	196.86952	312.38547	359.92036	6.70464	0.1277506	0.27110016	2.3643741	21	1 9.2	18.3
14388 1990 QO_5	15.0	X	272.07860	214.52889	74.35416	1.69757	0.1234720	0.27635055	2.3343313	21	2 23.2	18.3
14389 1990 QR_5	13.2	X	179.21179	171.29573	125.58772	2.60674	0.1641764	0.17231054	3.1983659	21	—	—
14390 1990 QP_{10}	12.3	X	120.79027	311.83088	5.92324	6.55971	0.1021455	0.16859805	3.2451468	21	—	—
14391 1990 RE_2	14.5	X	335.19710	193.12643	194.88755	3.55424	0.1982669	0.25567558	2.4585359	21	10 29.5	16.3
14392 1990 RS_6	14.7	X	274.64121	211.78461	348.82030	6.21305	0.0701170	0.26796910	2.3827560	21	—	—
14393 1990 SX_6	14.8	X	283.43834	214.32565	94.59883	4.53138	0.1339658	0.24557534	2.5254933	21	4 7.8	18.2
14394 1990 SP_{15}	12.1	X	198.21397	65.61068	192.94076	15.63561	0.0692872	0.17004796	3.2266740	21	—	—
14395 Tommorgan	15.4	X	66.93578	4.79466	21.16739	20.88910	0.0937647	0.35843373	1.9627431	21	—	—
14396 1990 UX_4	13.7	X	328.18143	281.08778	82.18937	8.23868	0.0460675	0.21891775	2.7265622	21	9 10.9	17.3
14397 1990 VS_4	14.2	X	210.28818	139.52573	206.70189	11.94367	0.1901011	0.23929649	2.5694795	21	3 5.1	18.7
14398 1990 VT_6	14.3	X	43.91607	215.90061	174.59737	3.59492	0.1219436	0.22839390	2.6506134	21	—	—
14399 1990 WN_4	13.9	X	62.74402	320.50669	82.06839	16.38471	0.0988116	0.22935417	2.6432097	21	—	—
14400 Baudot	14.7	X	316.61642	271.40140	201.77945	4.62214	0.2400959	0.22443469	2.6816950	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
14401 Reikoyukawa	13.4	*X*	113.66907	103.73464	294.53559	11.79682	0.1882271	0.23199474	2.6231148	21	2 5.9	16.9
14402 1991 *DB*	18.7	*X*	158.98829	51.36479	158.22248	11.41916	0.4020180	0.43897399	1.7146554	21	11 11.8	21.8
14403 de Machault	14.3	*X*	119.69982	25.30444	264.76814	2.87049	0.0431073	0.21371967	2.7705951	21	12 19.5	18.3
14404 1991 NQ_6	14.9	*X*	215.92640	100.97242	275.78719	4.63458	0.1665319	0.28858556	2.2678778	21	4 14.0	18.6
14405 1991 PE_8	15.1	*X*	9.85525	224.11267	124.02375	2.18223	0.1981526	0.26667004	2.3904880	21	11 15.9	17.3
14406 1991 PP_8	13.8	*X*	134.60549	252.52031	78.66157	2.42587	0.1538770	0.17737009	3.1372500	21	—	—
14407 1991 PQ_8	13.9	*X*	254.62185	211.18578	118.36706	1.94562	0.0980915	0.18912935	3.0058232	21	4 9.6	18.3
14408 1991 PC_{16}	13.7	*X*	126.49574	239.94605	84.77824	0.48207	0.1971705	0.17549392	3.1595701	21	—	—
14409 1991 RM_1	12.2	*X*	119.91861	258.03586	36.53527	27.86548	0.2142346	0.17223065	3.1993549	21	12 22.9	18.0
14410 1991 RR_1	12.7	*X*	228.46095	99.60335	229.30638	9.47788	0.1348332	0.18431318	3.0579599	21	3 6.8	17.8
14411 Clérambault	14.6	*X*	198.77060	150.33820	265.35279	4.62445	0.1456899	0.28735340	2.2743562	21	5 20.8	18.0
14412 Wolflojewski	14.6	*X*	80.50566	271.16413	254.75366	4.47570	0.0921699	0.28675600	2.2775139	21	5 26.6	16.9
14413 Geiger	14.3	*X*	191.91241	177.85295	224.06187	5.01528	0.1479303	0.28494478	2.2871549	21	4 25.9	17.9
14414 1991 RF_6	14.7	*X*	312.87254	250.88349	112.28489	2.95679	0.2094687	0.29347956	2.2425948	21	7 26.3	16.1
14415 1991 RQ_7	13.3	*X*	302.56529	9.31208	305.15100	9.70817	0.2834116	0.19158197	2.9801145	21	4 14.9	17.7
14416 1991 RU_7	15.7	*X*	146.76728	223.47536	178.18935	6.73824	0.2100015	0.28115424	2.3076661	21	3 17.2	18.8
14417 1991 RN_{13}	15.1	*X*	66.22156	43.93844	273.51714	4.24255	0.1948482	0.30128162	2.2037093	21	12 25.1	18.1
14418 1991 RU_{16}	15.5	*X*	272.96188	316.36048	31.27084	6.44305	0.1320005	0.28906673	2.2653604	21	5 10.5	18.4
14419 1991 RK_{23}	14.6	*X*	67.85808	231.13838	91.90359	3.26833	0.0965125	0.30175657	2.2013963	21	12 23.7	17.2
14420 Massey	12.8	*X*	252.20305	223.33693	122.31305	11.21868	0.1182586	0.18892575	3.0079823	21	4 28.6	17.5
14421 1991 SA_1	13.9	*X*	224.34694	202.00303	143.04249	15.41069	0.1602508	0.18598023	3.0396590	21	3 28.3	19.0
14422 1991 SK_2	13.4	*X*	227.45368	356.46591	328.43852	9.43558	0.1145605	0.18459445	3.0548528	21	3 4.2	18.3
14423 1991 SM_2	14.6	*X*	195.40418	58.37555	15.67584	6.94154	0.0657860	0.28777645	2.2721267	21	6 12.3	17.8
14424 Laval	12.7	*X*	50.51579	64.31128	19.55490	21.76176	0.1266874	0.17671568	3.1449904	21	1 14.2	17.0
14425 Fujimimachi	13.8	*X*	147.80315	256.16442	53.45457	5.80834	0.2265669	0.30694338	2.1765260	21	—	—
14426 Katotsuyoshi	13.8	*X*	134.15287	290.70069	112.95044	4.74644	0.1965618	0.27813660	2.3243273	21	3 7.4	16.9
14427 1991 VJ_2	14.4	*X*	331.10528	146.35819	203.81626	4.63253	0.2279861	0.29253985	2.2473947	21	8 14.1	15.5
14428 Lazaridis	13.3	*X*	137.66074	275.21547	66.61083	1.60125	0.1812112	0.17360936	3.1823941	21	1 7.3	18.0
14429 Coyne	14.0	*X*	272.46751	92.78754	0.58382	21.41198	0.2989125	0.25811010	2.4430521	21	9 15.2	16.9
14430 1992 *CH*	13.2	*X*	350.01441	168.74967	311.44240	12.62827	0.1111545	0.23101132	2.6305539	21	—	—
14431 1992 DX_8	14.8	*X*	300.18436	13.30663	73.19766	3.30123	0.0893162	0.25695815	2.4503481	21	11 20.2	17.5
14432 1992 EA_6	14.4	*X*	303.80969	316.82257	127.72117	7.13959	0.1511393	0.25801411	2.4436580	21	11 21.0	16.8
14433 1992 EE_8	14.9	*X*	146.48039	135.20287	161.50456	6.48500	0.1231975	0.26075686	2.4264921	21	—	—
14434 1992 ER_{11}	14.0	*X*	141.39307	89.07204	148.01618	4.91965	0.1659593	0.25380186	2.4706213	21	11 17.7	18.0
14435 1992 ED_{13}	14.4	*X*	143.04437	148.99174	196.64727	6.33540	0.1421958	0.26572130	2.3961747	21	—	—
14436 Morishita	14.1	*X*	17.09652	208.29918	353.80247	1.85472	0.2233807	0.23867448	2.5739418	21	4 3.7	16.1
14437 1992 GD_3	14.1	*X*	353.82054	99.20725	211.49341	7.94880	0.0423205	0.24426838	2.5344937	21	8 1.6	17.4
14438 MacLean	13.9	*X*	187.23242	231.88069	130.05638	3.12409	0.0971514	0.19899419	2.9056443	21	3 10.1	18.3
14439 Evermeersch	13.7	*X*	180.21611	88.87489	347.76343	1.23025	0.0850738	0.19641922	2.9309836	21	6 1.7	18.2
14440 1992 RF_5	14.0	*X*	43.16737	150.70216	172.99358	2.06683	0.0480989	0.20753452	2.8253732	21	10 30.4	17.8
14441 Atakanoseki	13.5	*X*	158.43657	318.66404	2.67362	8.82185	0.2784808	0.21797749	2.7343973	21	1 5.1	18.2
14442 1992 SR_{25}	13.5	*X*	175.35945	55.14578	354.95140	9.88641	0.1164579	0.19177311	2.9781341	21	4 22.6	18.3
14443 Sekinenomatsu	13.3	*X*	323.65157	171.14677	197.36875	1.79553	0.0792661	0.20186316	2.8780478	21	9 2.1	16.9
14444 1992 TG_1	14.5	*X*	175.24182	326.74611	346.39695	6.15337	0.1882651	0.28625573	2.2801667	21	—	—
14445 Koichi	13.5	*X*	192.26056	2.89368	10.71739	2.30649	0.2186422	0.18886077	3.0086722	21	3 30.5	18.6
14446 Kinkowan	12.4	*X*	233.96747	156.96762	218.18406	12.85741	0.1647522	0.19264460	2.9691456	21	5 7.9	17.0
14447 Hosakakanai	13.5	*X*	182.71470	264.99544	109.70123	9.15248	0.3039142	0.18849355	3.0125786	21	3 30.4	19.1
14448 1992 *VQ*	13.5	*X*	83.05608	290.30595	123.49675	1.65851	0.1860531	0.18097560	3.0954422	21	1 27.9	17.2
14449 Myogizinzya	15.0	*X*	136.10162	264.32056	89.16516	4.90113	0.2015524	0.28422784	2.2909994	21	—	—
14450 1992 WZ_1	13.1	*X*	176.56678	341.10084	36.35359	10.62202	0.1030889	0.18639485	3.0351496	21	3 22.7	17.9
14451 1992 WR_5	12.5	*X*	160.61470	112.71691	261.18912	9.55263	0.1414043	0.18414523	3.0598190	21	2 25.2	17.5
14452 1992 WB_9	13.7	*X*	140.90861	76.43230	346.35644	1.83888	0.0891302	0.18632930	3.0358615	21	4 3.9	18.3
14453 1993 FV_7	14.3	*X*	297.81497	277.09492	34.66255	7.50220	0.1118695	0.28435067	2.2903396	21	4 27.4	16.8
14454 1993 FX_{17}	15.0	*X*	147.04208	335.77280	123.99429	5.92827	0.1115077	0.28585486	2.2822979	21	5 25.8	18.3
14455 1993 FB_{18}	14.3	*X*	5.50829	205.64041	95.42031	4.48373	0.1555110	0.28853309	2.2681527	21	8 22.0	16.0
14456 1993 FK_{20}	13.6	*X*	195.00134	124.00932	190.42951	17.28353	0.1471202	0.16902805	3.2396409	21	1 22.3	19.2
14457 1993 FR_{23}	14.1	*X*	217.12135	23.94285	359.59179	6.36719	0.2057006	0.28392538	2.2926261	21	4 23.4	17.9
14458 1993 FX_{25}	15.9	*X*	251.51565	312.30437	333.49893	4.11239	0.1307837	0.27630219	2.3346037	21	1 28.1	19.2
14459 1993 FY_{27}	15.1	*X*	277.40650	22.22160	295.38431	1.93452	0.1710352	0.28205309	2.3027607	21	3 30.9	18.3
14460 1993 FZ_{40}	14.4	*X*	275.07686	312.17369	42.36174	3.74223	0.1631540	0.28630248	2.2799184	21	5 19.3	17.2
14461 1993 FL_{54}	14.3	*X*	302.91920	255.71359	10.82412	21.31493	0.3267038	0.27763891	2.3271042	21	2 13.6	18.3
14462 1993 *GA*	15.7	*X*	194.50273	259.36556	15.04187	6.51475	0.1174303	0.26943866	2.3740841	21	—	—
14463 McCarter	14.8	*X*	176.99691	15.01451	7.32865	7.11415	0.1185840	0.28034638	2.3120972	21	3 16.5	18.2
14464 1993 HC_1	15.1	*X*	58.59000	158.16678	19.98026	26.59043	0.1892704	0.28375432	2.2935475	21	5 12.3	17.7
14465 1993 *NB*	12.8	*X*	93.14330	205.52447	130.02157	14.20971	0.2282681	0.25850877	2.4405396	21	—	—
14466 Hodge	14.6	*X*	242.79561	317.66967	352.21549	17.18558	0.2008044	0.23313776	2.6145340	21	2 23.9	19.0
14467 Vranckx	14.3	*X*	190.39663	137.43352	314.62782	4.05227	0.1053962	0.24477715	2.5309805	21	7 2.2	18.1
14468 Ottostern	14.6	*X*	167.62201	124.44311	137.79373	3.27556	0.1627124	0.26094203	2.4253440	21	—	—
14469 Komatsuataka	13.7	*X*	250.25235	12.83020	343.76794	12.29977	0.2682274	0.23754693	2.5820805	21	4 14.0	18.3
14470 1993 RV_7	14.1	*X*	288.14298	309.35843	357.64951	5.79645	0.0902100	0.23644104	2.5901255	21	4 14.4	17.7
14471 1993 SG_1	13.7	*X*	253.47113	176.98213	174.52556	13.90788	0.2925162	0.23749888	2.5824287	21	4 16.0	18.2
14472 1993 SQ_{14}	15.2	*X*	106.83241	156.73363	231.19035	20.61003	0.1189931	0.36746072	1.9304657	21	—	—
14473 1993 TL_{17}	13.9	*X*	278.20706	358.53720	183.44929	9.65066	0.1673754	0.22059792	2.7127001	21	—	—
14474 1993 TL_{25}	14.9	*X*	46.79236	150.21379	111.87062	3.20309	0.1062805	0.24258327	2.5462174	21	8 27.1	17.8
14475 1993 *VT*	14.4	*X*	218.61499	269.86468	63.55504	12.11981	0.2116592	0.22956573	2.6415855	21	3 6.7	19.1
14476 1993 XW_2	13.0	*X*	170.45174	227.08899	129.02071	13.66541	0.1885394	0.22333648	2.6904790	21	2 17.4	17.3
14477 1994 *CN*	13.4	*X*	175.22310	20.31792	46.55211	9.79576	0.0576909	0.19137418	2.9822714	21	5 14.2	17.9
14478 1994 CF_2	13.2	*X*	328.52917	358.03414	121.96772	2.25281	0.1681523	0.17500491	3.1654532	21	—	—
14479 Plekhanov	13.3	*X*	151.21540	289.24152	49.02815	5.90153	0.1368820	0.17602745	3.1531826	21	1 12.2	18.2
14480 1994 PU_1	14.3	*X*	237.86661	205.18819	159.45419	6.43720	0.2178959	0.28380944	2.2932505	21	4 20.9	18.0

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
14481	1994 PO_{12}	14.9	X	203.43288	335.69118	318.11842	3.04467	0.1759275	0.27451552	2.3447225	21	—	—
14482	1994 PK_{15}	14.6	X	321.50603	303.79148	294.34192	3.26541	0.1352159	0.28103606	2.3083129	21	2 12.2	17.4
14483	1994 PZ_{22}	16.0	X	36.16141	227.69275	197.14406	0.44607	0.0768911	0.26821357	2.3813079	21	—	—
14484	1994 PU_{32}	15.0	X	308.29450	82.29348	209.50522	4.43923	0.0328044	0.28388368	2.2928506	21	4 27.6	17.4
14485	1994 RK_{11}	14.5	X	88.37246	68.97140	296.91864	1.24323	0.2314421	0.26732097	2.3866058	21	—	—
14486	Tuscia	15.3	X	74.20797	260.12300	165.15272	3.26461	0.0702202	0.27140037	2.3626302	21	—	—
14487	Sakaisakae	15.6	X	121.60421	149.90933	199.71878	3.19207	0.2580978	0.26864107	2.3787809	21	—	—
14488	1994 TF_{15}	13.8	X	45.62756	3.74166	316.46999	2.54206	0.2229746	0.29587125	2.2304930	21	12 8.7	16.7
14489	1994 UW	15.0	X	87.15744	359.99076	12.87255	6.27558	0.1508416	0.26581722	2.3955982	21	—	—
14490	1994 US_{2}	14.1	X	292.74349	19.28394	55.69935	3.10213	0.1491788	0.25382634	2.4704624	21	10 14.7	16.5
14491	Hitachiomiya	14.6	X	21.69814	175.35078	257.95846	5.68131	0.3598534	0.22566844	2.6719121	21	—	—
14492	Bistar	13.7	X	328.11378	143.31312	239.54644	7.29306	0.2465054	0.21671024	2.7450468	21	9 16.2	16.1
14493	1994 WP_{3}	14.5	X	150.25078	261.26331	95.88454	9.05436	0.2580353	0.27073423	2.3665042	21	1 31.3	18.1
14494	1994 YJ_{2}	13.2	X	60.30682	104.23708	94.84231	14.04137	0.1144413	0.23711109	2.5852436	21	6 18.9	16.2
14495	1995 AK_{1}	13.1	X	70.39134	339.24024	81.27656	9.77779	0.3170091	0.22775662	2.6555555	21	1 23.4	15.3
14496	1995 BK_{4}	13.5	X	303.20336	312.40599	133.97396	14.01211	0.1770665	0.17735523	3.1374252	21	11 4.1	17.5
14497	1995 DD	12.8	X	228.84609	322.37158	357.56627	13.08313	0.1737517	0.22614644	2.6681457	21	2 25.2	17.2
14498	Bernini	13.5	X	299.56640	15.77942	118.36693	3.65835	0.1346418	0.21560141	2.7544506	21	—	—
14499	Satotoshio	14.9	X	60.22283	258.06166	107.18242	4.98700	0.1836247	0.31009567	2.1617506	21	—	—
14500	Kibo	15.6	X	256.79620	160.93786	256.35984	3.80308	0.0999332	0.29552826	2.2322185	21	8 2.9	18.4
14501	Tetsuokojima	15.2	X	319.55868	39.53205	0.45073	5.29453	0.1443457	0.30090229	2.2055609	21	10 22.1	16.9
14502	Morden	15.8	X	177.62656	39.85582	95.35262	5.14698	0.0897530	0.29525645	2.2335883	21	8 18.6	18.8
14503	1995 WW_{42}	14.9	X	99.70277	354.75623	68.71643	5.62115	0.1670100	0.27984477	2.3148592	21	2 11.8	17.4
14504	Tsujimura	14.9	X	90.14143	297.44090	125.82926	5.03721	0.1387598	0.27641572	2.3339644	21	1 20.2	17.1
14505	Barentine	14.8	X	318.06193	115.82750	75.45726	3.27393	0.1664003	0.27217923	2.3581209	21	—	—
14506	1996 BL_{2}	14.7	X	217.06096	156.59892	229.99270	3.94334	0.1704188	0.28557148	2.2838075	21	4 29.9	18.2
14507	1996 CQ_{1}	14.8	X	116.65152	41.06082	319.14301	6.21207	0.1317177	0.27083298	2.3659288	21	—	—
14508	1996 DH_{2}	14.1	X	250.48206	255.32255	4.81954	10.30563	0.1637440	0.22976351	2.6400694	21	1 2.4	18.5
14509	Lučenec	15.1	X	279.86439	217.84311	257.67352	2.70167	0.0509992	0.25946147	2.4345618	21	12 2.7	17.7
14510	1996 ES_{2}	13.8	X	300.89317	12.42215	343.30357	5.68563	0.1955791	0.28806586	2.2706046	21	6 22.9	16.3
14511	Nickel	14.2	X	161.22295	334.09554	357.31695	7.70718	0.1156607	0.26778991	2.3838188	21	—	—
14512	1996 GL_{1}	14.3	X	104.80509	58.91003	39.99174	6.68657	0.1345448	0.27858162	2.3218513	21	4 5.1	17.1
14513	Alicelindner	14.0	X	106.10893	216.48867	186.86411	4.38333	0.0595665	0.22790126	2.6544317	21	1 16.8	17.4
14514	1996 GA_{18}	14.6	X	27.64630	10.52679	205.01738	7.25994	0.1446584	0.23803151	2.5785749	21	5 19.6	17.1
14515	Koichisato	13.1	X	224.29613	259.39671	181.53913	7.55857	0.1276691	0.24458067	2.5323358	21	7 20.9	17.0
14516	1996 HM_{11}	14.4	X	251.53806	127.02683	191.45942	3.70205	0.0662250	0.23304982	2.6151917	21	3 20.3	18.0
14517	Monitoma	14.0	X	151.00832	49.41550	219.06402	14.38442	0.1285821	0.21350916	2.7724159	21	12 25.5	18.6
14518	1996 RZ_{30}	12.1	X	311.17648	254.09269	179.00191	6.48163	0.1459407	0.08154209	5.2668159	21	10 14.3	18.5
14519	Ural	13.4	X	242.61363	124.27200	98.11863	2.35889	0.1486149	0.17199919	3.2022245	21	—	—
14520	1997 GC_{11}	14.9	X	127.13107	5.92154	346.63950	2.62199	0.2138680	0.23390719	2.6087973	21	1 1.6	18.4
14521	1997 GL_{15}	14.0	X	188.68811	7.38700	8.40549	5.76966	0.2193553	0.24472641	2.5313304	21	3 26.2	18.4
14522	1997 GS_{21}	14.5	X	333.43309	293.30771	43.72713	8.01741	0.1295408	0.25318979	2.4746014	21	8 9.3	17.1
14523	1997 GV_{21}	14.1	X	70.35281	39.98980	58.66296	7.43528	0.0602285	0.28033303	2.3121706	21	1 30.6	16.7
14524	1997 GK_{23}	14.2	X	274.57478	94.08845	176.09494	2.09752	0.0235574	0.19944044	2.9013084	21	2 24.7	18.4
14525	1997 GV_{35}	15.4	X	257.90940	72.22547	210.77583	6.54654	0.1029215	0.27945213	2.3170270	21	1 29.5	18.8
14526	Xenocrates	15.3	X	101.17602	247.22478	70.33713	2.87373	0.2221972	0.26331199	2.4107692	21	—	—
14527	1997 JD_{12}	15.3	X	226.89328	149.77904	220.32989	6.38371	0.1173135	0.28597769	2.2816443	21	4 20.0	18.5
14528	1997 JN_{15}	15.0	X	200.76423	225.80408	100.69666	2.13496	0.2493566	0.27519898	2.3408388	21	2 2.5	19.0
14529	1997 NR_{2}	14.7	X	146.07141	241.16852	156.58743	1.58405	0.1202493	0.23141260	2.6275121	21	3 8.4	18.3
14530	1997 PR	14.3	X	192.76080	335.06436	319.82374	8.56067	0.2095662	0.26713882	2.3876906	21	—	—
14531	1997 PM_{2}	14.1	X	287.40489	119.04936	304.72897	4.59609	0.1510071	0.20621213	2.8374393	21	9 10.2	17.8
14532	1997 QM	14.2	X	84.35334	57.16335	169.30221	15.08495	0.0118464	0.24386078	2.5373171	21	8 12.9	17.7
14533	Roy	14.5	X	274.10662	147.67548	183.31847	9.27668	0.1836551	0.23895164	2.5719511	21	4 19.1	18.2
14534	1997 QE_{2}	13.9	X	335.16232	16.65539	30.48894	4.88334	0.1278939	0.20953966	2.8073198	21	11 12.3	16.8
14535	Kazuyukihanda	13.4	X	300.75504	300.11527	170.00070	23.55308	0.2014895	0.17118221	3.2124051	21	11 24.2	17.6
14536	1997 RY_{2}	14.6	X	61.93057	140.69174	200.52060	3.38022	0.1029377	0.21468323	2.7622987	21	12 23.1	18.4
14537	Týn nad Vltavou	14.6	X	344.20468	304.99390	358.35488	13.01758	0.1885553	0.24339847	2.5405290	21	7 2.3	17.2
14538	1997 RR_{8}	13.7	X	314.41110	69.98872	193.19784	10.06487	0.0625681	0.19134903	2.9825326	21	4 3.0	17.7
14539	Clocke Roeland	14.9	X	68.62341	30.36416	178.42060	4.24490	0.1479578	0.24015925	2.5633220	21	7 19.9	18.1
14540	1997 RJ_{10}	13.3	X	206.34393	249.72273	168.99601	2.07616	0.0424504	0.19565173	2.9386436	21	6 9.5	17.5
14541	1997 SF	14.1	X	65.11629	322.19920	86.60032	6.28203	0.1512545	0.17937177	3.1138665	21	—	—
14542	Karitskaya	13.9	X	40.67722	250.59853	237.84115	10.44821	0.1047960	0.18340583	3.0680372	21	2 11.3	17.9
14543	Sajigawasuiseki	13.8	X	33.77757	262.87221	215.44875	12.70186	0.0652462	0.18066046	3.0990409	21	1 19.9	18.1
14544	Ericjones	13.0	X	152.53887	182.42880	210.24513	9.53200	0.0963688	0.18462310	3.0545368	21	3 9.8	17.7
14545	1997 SK_{25}	13.7	X	204.80625	214.82275	172.09354	9.97851	0.0969050	0.19160157	2.9799114	21	4 29.2	18.4
14546	1997 TM_{18}	14.0	X	344.76234	246.44113	26.90933	10.68914	0.1664788	0.23818735	2.5774500	21	5 14.2	16.7
14547	1997 TF_{19}	14.3	X	122.52996	321.54710	39.94179	1.81488	0.2008463	0.17813047	3.1283157	21	1 16.6	18.8
14548	1997 TJ_{24}	13.1	X	95.22014	232.33480	227.73909	9.02400	0.0791441	0.18522695	3.0478945	21	3 23.5	17.4
14549	1997 TM_{27}	13.7	X	272.45367	313.74224	10.76583	2.59424	0.2388471	0.23530962	2.5984215	21	4 1.8	17.7
14550	Lehký	14.3	X	335.94621	123.65423	162.29016	6.60411	0.1443247	0.28107413	2.3081045	21	5 19.8	16.5
14551	Itagaki	13.6	X	141.29783	259.67216	25.51185	7.06887	0.2206715	0.21625062	2.7489351	21	—	—
14552	1997 UX_{20}	13.5	X	42.21733	319.55934	68.28496	1.70170	0.1300473	0.16988084	3.2287899	21	—	—
14553	1997 UD_{25}	13.0	X	294.12044	304.04861	93.39934	3.50217	0.0602412	0.20037129	2.8923158	21	9 1.1	16.8
14554	1997 UE_{25}	13.5	X	99.38499	282.97948	102.78700	3.36384	0.1557752	0.17753435	3.1353145	21	1 12.3	17.7
14555	Shinohara	13.0	X	170.95533	166.54667	207.29956	9.24106	0.1000364	0.18330966	3.0691102	21	3 6.6	17.9
14556	1997 VN_{1}	13.5	X	36.60055	230.21679	168.62592	1.33246	0.1388047	0.17103166	3.2142898	21	—	—
14557	1997 VG_{8}	13.8	X	262.15123	290.68487	60.30605	8.24872	0.0728198	0.19295883	2.9659213	21	5 17.1	17.9
14558	Wangganchang	13.2	X	193.87005	128.66949	241.46583	9.90243	0.1135984	0.19050877	2.9912960	21	3 22.9	18.1
14559	1997 WP_{28}	13.8	X	215.66473	105.38977	274.72969	8.86031	0.1082655	0.19214856	2.9742534	21	4 26.2	18.5
14560	1997 WB_{33}	13.5	X	298.63115	170.04533	223.83108	3.32500	0.1239781	0.15657927	3.4091534	21	8 18.8	18.0

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
14561 1997 WC_{34}	13.7	X	59.65046	232.20207	131.44620	2.24175	0.1206111	0.16862151	3.2448458	21	—	—
14562 1997 YQ_{19}	13.2	X	139.42998	180.13134	186.53151	17.36149	0.1772268	0.17817683	3.1277730	21	2 2.2	18.3
14563 1998 AV_5	14.8	X	250.67961	123.01991	130.39033	4.76869	0.1888888	0.29162430	2.2520961	21	—	—
14564 Heasley	13.3	X	69.14064	181.33138	114.16782	4.71916	0.2270255	0.20525547	2.8462490	21	11 20.6	17.6
14565 1998 EQ_{10}	14.5	X	112.18928	249.54702	69.96098	4.44800	0.1837330	0.28315085	2.2968050	21	—	—
14566 Hokule′a	13.9	X	161.74177	60.43441	255.64957	10.56524	0.2541834	0.23399557	2.6081403	21	—	—
14567 Nicovincenti	14.4	X	248.95996	75.32170	195.27966	6.05359	0.1073356	0.28708614	2.2757676	21	1 4.0	17.8
14568 Zanotta	14.3	X	109.16895	86.28468	186.13330	6.62002	0.0952597	0.26637096	2.3922770	21	11 29.1	17.8
14569 1998 QB_{32}	12.4	X	289.74287	37.65889	345.97696	10.88292	0.2839258	0.12384922	3.9860298	21	7 3.7	18.1
14570 Burkam	15.4	X	206.81226	166.57402	243.30432	1.94741	0.1262366	0.29073654	2.2566782	21	5 21.9	18.6
14571 Caralexander	14.2	X	142.85547	145.60800	235.11105	5.40016	0.1552128	0.23605603	2.5929411	21	2 12.4	18.1
14572 Armando	14.9	X	159.62159	248.90337	191.88210	7.60729	0.1065622	0.28663523	2.2781536	21	5 13.6	18.1
14573 Montebugnoli	15.5	X	137.10038	223.01200	191.21416	5.55570	0.1491954	0.28050417	2.3112300	21	3 15.6	18.7
14574 Payette	15.1	X	112.25487	78.53022	352.92451	5.58818	0.1615036	0.27988359	2.3146452	21	3 10.5	17.7
14575 Jamesblanc	14.7	X	166.52152	224.24000	182.78951	2.26896	0.1613612	0.28188927	2.3036528	21	4 8.9	18.0
14576 Jefholley	14.6	X	143.80669	263.85585	155.13221	2.42459	0.1189334	0.27998253	2.3140998	21	3 27.7	17.5
14577 1998 QN_{93}	13.7	X	90.90791	210.61916	203.21793	14.38608	0.1728660	0.22872642	2.6480438	21	1 22.4	17.2
14578 1998 QO_{93}	13.5	X	142.37881	227.76772	237.63509	12.87014	0.1259144	0.23863971	2.5741918	21	5 30.2	17.3
14579 1998 QZ_{99}	15.1	X	322.41031	322.75124	54.64402	3.42248	0.1683442	0.25678360	2.4514584	21	9 14.6	17.1
14580 1998 QW_{101}	14.3	X	153.76497	63.20236	0.55978	14.04587	0.1866491	0.24113329	2.5564145	21	4 18.2	18.5
14581 1998 RT_4	14.1	X	358.38083	245.08163	170.23078	31.63881	0.4042294	0.21885065	2.7271195	21	—	—
14582 Conlin	14.3	X	211.16873	254.90291	169.37529	5.36459	0.1715956	0.29110569	2.2547700	21	6 13.7	17.9
14583 Lester	14.9	X	166.28150	122.54705	271.60129	1.72458	0.1705634	0.23908935	2.5709634	21	3 26.6	19.1
14584 Lawson	15.0	X	344.86968	242.36068	107.93691	3.14730	0.1876794	0.30029390	2.2085389	21	10 2.1	16.3
14585 1998 RX_{64}	15.3	X	355.12692	248.40056	188.60695	2.29752	0.1496559	0.26603063	2.3943168	21	—	—
14586 1998 RN_{70}	14.2	X	107.82239	82.46073	42.81611	7.46533	0.2155465	0.24165480	2.5527352	21	5 27.3	17.8
14587 1998 RW_{70}	14.8	X	346.35834	243.74717	131.55210	4.48955	0.1469961	0.30240674	2.1982398	21	11 14.2	16.5
14588 Pharrams	15.1	X	80.27761	192.86235	198.05958	6.51748	0.1196892	0.27143639	2.3624212	21	—	—
14589 Stevenbyrnes	15.1	X	275.15033	284.39240	183.45939	5.44913	0.1900885	0.25865432	2.4396240	21	10 26.4	17.6
14590 1998 RL_{80}	14.7	X	283.72664	86.66994	55.86033	4.11830	0.0202862	0.30956167	2.1642359	21	—	—
14591 1998 SZ_{21}	15.3	X	85.85555	55.01104	18.24033	2.36895	0.0833721	0.27619483	2.3352087	21	1 20.8	17.7
14592 1998 SV_{22}	14.9	X	36.30760	207.34438	204.96326	5.91085	0.1041130	0.26713572	2.3877091	21	—	—
14593 Everett	15.3	X	111.44397	43.97408	56.30715	5.51188	0.1432565	0.28186561	2.3037817	21	4 16.9	18.0
14594 Jindrašilhán	14.1	X	205.98477	64.10093	16.90377	13.93541	0.1489198	0.24482386	2.5306586	21	7 3.3	18.4
14595 Peaker	14.8	X	135.96805	82.28529	5.25564	4.81266	0.2344813	0.24038941	2.5616856	21	5 8.6	18.9
14596 Bergstralh	14.6	X	29.18589	253.70352	172.42256	9.07773	0.2146033	0.26855661	2.3792796	21	—	—
14597 Waynerichie	15.0	X	57.39504	16.29004	99.26187	2.46474	0.1801403	0.27796321	2.3252938	21	2 9.5	16.6
14598 Larrysmith	15.8	X	126.32867	244.72632	66.43691	3.11695	0.0665784	0.31232437	2.1514543	21	—	—
14599 1998 SV_{64}	15.0	X	155.27524	73.36606	76.66270	5.03793	0.1166034	0.29237172	2.2482562	21	8 13.9	18.3
14600 Gainsbourg	15.4	X	87.58618	300.21079	160.49094	4.52359	0.2155284	0.23407343	2.6075620	21	4 1.3	18.5
14601 1998 SU_{73}	14.9	X	194.28026	266.87072	52.37550	4.25877	0.1886803	0.27817010	2.3241407	21	1 17.1	18.5
14602 1998 SW_{74}	14.5	X	45.10144	36.25471	50.67288	7.34471	0.1070231	0.27211258	2.3585059	21	—	—
14603 1998 SK_{115}	13.8	X	0.42819	107.10953	12.73687	12.68553	0.1336829	0.22725442	2.6594663	21	—	—
14604 1998 SM_{115}	13.8	X	334.30546	121.30995	330.98554	0.38874	0.1929655	0.17793358	3.1306229	21	—	—
14605 Hyeyeonchoi	14.7	X	218.34271	36.87203	13.03850	4.61622	0.1218018	0.28943262	2.2634508	21	6 3.1	18.0
14606 Hifleischer	14.9	X	73.89837	180.24686	154.98851	6.38465	0.1252206	0.26513178	2.3997253	21	—	—
14607 1998 SG_{132}	14.2	X	49.58843	256.15098	338.62250	5.42127	0.1282278	0.29238837	2.2481709	21	7 28.6	16.4
14608 1998 SN_{135}	14.4	X	60.22075	358.16751	40.21530	7.73089	0.0533943	0.26936249	2.3745317	21	—	—
14609 1998 SW_{145}	14.7	X	305.52416	40.15606	112.42835	1.78218	0.1470147	0.26722766	2.3871614	21	—	—
14610 1998 SE_{146}	13.9	X	257.40012	246.89351	203.18905	7.28010	0.2025880	0.20903428	2.8118429	21	8 27.8	18.0
14611 Elsaadawi	15.1	X	140.86517	255.60491	173.09412	4.07932	0.1513502	0.23752650	2.5822285	21	4 14.3	19.0
14612 Irtish	12.8	X	196.27519	77.15657	140.94809	7.31743	0.0975121	0.17616692	3.1515181	21	12 7.9	17.7
14613 Sanchez	13.5	X	69.62394	83.59403	282.64622	1.77215	0.2303666	0.22345824	2.6895016	21	—	—
14614 1998 TX_2	14.1	X	342.14582	146.19883	6.43777	4.19953	0.1522100	0.18398950	3.0615453	21	—	—
14615 1998 TR_5	14.6	X	113.65207	5.07278	31.92140	6.10877	0.0610985	0.27415187	2.3467955	21	1 10.1	17.4
14616 Van Gaal	14.2	X	49.62832	149.90527	208.42732	11.33347	0.1518851	0.26334200	2.4105860	21	—	—
14617 Lasvergnas	12.9	X	318.90276	245.96250	110.82107	12.14774	0.1668449	0.20094529	2.8868053	21	7 31.6	16.2
14618 1998 UK_7	13.5	X	168.78169	11.04156	45.77884	15.87119	0.0882978	0.23923472	2.5699218	21	4 24.9	17.3
14619 Plotkin	15.8	X	127.25882	162.12789	5.63156	4.70686	0.0800178	0.29422431	2.2388088	21	8 3.1	18.8
14620 1998 UP_{15}	14.7	X	236.41549	75.29974	84.47152	3.12521	0.1013354	0.25842209	2.4410853	21	11 23.9	17.7
14621 Tati	14.7	X	30.52931	328.72744	164.28786	7.79390	0.1059914	0.27356534	2.3501486	21	1 11.2	17.1
14622 Arcadiopoveda	13.3	X	349.44530	313.44987	132.56439	27.29813	0.1588401	0.17486243	3.1671724	21	—	—
14623 Kamoun	15.2	X	125.61201	314.03929	79.44748	7.66748	0.0937817	0.27618172	2.3352825	21	1 27.2	18.0
14624 Prymachenko	14.5	X	20.56671	229.11441	202.80831	6.47221	0.1260578	0.22212972	2.7002146	21	—	—
14625 1998 UH_{31}	12.2	X	127.50656	348.54691	61.85512	14.33931	0.1411453	0.23152587	2.6266550	21	3 14.1	16.2
14626 1998 UP_{39}	14.3	X	66.36829	232.28698	216.22134	11.86784	0.2671436	0.22953979	2.6417845	21	2 9.1	17.0
14627 Emilkowalski	13.6	X	121.13059	44.18461	41.42923	17.75089	0.1502401	0.23525802	2.5988014	21	4 16.9	17.3
14628 1998 VX_{18}	15.1	X	92.27644	71.34036	255.53327	4.13545	0.0608647	0.30725372	2.1750602	21	—	—
14629 1998 VT_{30}	14.8	X	36.79441	93.08996	277.59730	4.45719	0.1697091	0.30515711	2.1850115	21	—	—
14630 1998 VQ_{31}	13.2	X	97.27701	155.48556	243.13856	12.76887	0.1647613	0.22735482	2.6586833	21	1 11.9	16.6
14631 Benbryan	12.0	X	255.76694	162.46013	91.24811	15.27617	0.0796759	0.17624851	3.1505454	21	1 13.5	16.8
14632 Flensburg	14.4	X	79.07588	139.48961	269.03125	1.54973	0.2199041	0.22659181	2.6646484	21	1 6.9	16.8
14633 1998 VY_{34}	14.7	X	174.36625	275.00570	108.86347	6.65218	0.1940005	0.28001025	2.3139471	21	3 22.9	18.4
14634 1998 VE_{37}	14.1	X	291.48860	85.18133	8.45865	9.06047	0.1821363	0.21373369	2.7704739	21	10 23.4	17.2
14635 1998 VO_{38}	13.3	X	348.21470	207.03804	241.59195	7.60441	0.1992554	0.17716513	3.1396692	21	—	—
14636 1998 VD_{44}	14.5	X	19.60855	341.21438	71.08876	7.47578	0.1112856	0.26261531	2.4150309	21	—	—
14637 1998 WN_1	14.6	X	281.93269	106.97062	218.27347	4.51646	0.1580152	0.28445496	2.2897797	21	4 17.8	17.4
14638 1998 WQ_1	14.0	X	6.47500	255.67145	195.93380	1.16098	0.1489844	0.17706991	3.1407946	21	—	—
14639 1998 WK_3	14.7	X	153.37486	100.92521	269.72078	0.78829	0.2151855	0.22999200	2.6383206	21	2 19.2	18.8
14640 1998 WF_4	14.0	X	83.56286	314.38845	56.23400	2.68833	0.2150099	0.18006236	3.1058997	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
14641	1998 WC_6	14.8	X	12.27829	225.70319	96.37081	4.34095	0.1891808	0.29796595	2.2200272	21	10 18.8	16.6
14642	1998 WF_{24}	15.2	X	221.51122	66.38130	257.98235	2.46786	0.1123122	0.27864275	2.3215117	21	2 14.1	18.7
14643	Morata	13.7	X	66.23712	21.90927	335.12993	9.18416	0.2194678	0.26156714	2.4214784	21	—	—
14644	1998 XR_3	14.1	X	21.47735	124.25341	294.19531	2.71826	0.0704914	0.21863236	2.7289343	21	—	—
14645	1998 XR_9	14.1	X	181.71245	356.52278	231.64431	5.69640	0.1000083	0.25917336	2.4363657	21	12 17.4	17.6
14646	1998 XO_{28}	13.5	X	39.10334	70.06748	276.25734	3.08262	0.0119012	0.21366384	2.7710776	21	11 17.7	17.3
14647	1998 XG_{48}	12.7	X	195.11857	312.31716	66.71596	11.55036	0.1344973	0.19121874	2.9838873	21	4 12.4	17.6
14648	1998 XV_{49}	12.9	X	246.59703	193.01463	33.36430	12.44648	0.1076904	0.17541175	3.1605568	21	—	—
14649	1998 XW_{62}	12.9	X	134.53469	55.36850	26.39196	18.28560	0.0865769	0.18945868	3.0023389	21	4 19.5	17.2
14650	1998 YD_3	14.1	X	265.15884	317.46913	50.28894	3.16328	0.1381110	0.28519314	2.2858269	21	5 29.2	17.0
14651	1998 YE_5	13.0	X	250.49412	153.14498	105.12202	2.75516	0.1846771	0.17456598	3.1707571	21	1 6.6	18.0
14652	1998 YT_8	13.7	X	236.89159	271.11127	105.49168	3.34963	0.1010221	0.19880953	2.9074433	21	5 17.7	18.0
14653	1998 YV_{11}	14.3	X	331.35832	216.52731	77.74143	9.01355	0.3425262	0.28513899	2.2861162	21	4 18.4	16.4
14654	Rajivgupta	13.5	X	48.33254	264.92304	157.91214	1.46666	0.1460525	0.17637006	3.1490977	21	—	—
14655	1998 YJ_{22}	13.7	X	0.82723	301.86783	161.37222	5.77284	0.0160694	0.21795128	2.7346165	21	—	—
14656	Lijiang	13.2	X	350.44712	348.96458	136.26688	9.92261	0.0384795	0.21918963	2.7243070	21	—	—
14657	1998 YU_{27}	13.3	X	179.53474	53.63493	289.45634	11.05721	0.2749600	0.22679009	2.6630950	21	2 9.3	18.1
14658	1999 AC_{10}	12.8	X	296.95853	40.12865	278.45073	8.96664	0.0900292	0.19154430	2.9805053	21	5 15.4	17.0
14659	Gregoriana	13.0	X	355.90989	81.48832	115.11065	11.49331	0.1182863	0.22946224	2.6423797	21	2 25.1	16.1
14660	1999 BO_1	13.0	X	9.73899	174.29418	108.05045	9.09364	0.1818418	0.23912607	2.5707002	21	7 28.2	15.1
14661	1999 BH_{10}	14.0	X	122.37714	147.32598	154.21237	4.02094	0.1190152	0.21032240	2.8003503	21	—	—
14662	1999 BF_{12}	13.8	X	352.72467	215.31544	14.46565	12.50229	0.1072871	0.22912514	2.6449708	21	4 4.8	16.9
14663	1999 BP_{25}	13.4	X	239.17555	134.84643	165.09917	3.66297	0.0793595	0.22630434	2.6669045	21	2 11.2	17.4
14664	Vandervelden	12.9	X	144.98014	16.57808	332.58208	15.83916	0.0543213	0.17661095	3.1462336	21	1 12.1	17.6
14665	1999 CC_5	12.8	X	352.34327	181.11601	108.79131	15.94194	0.1705194	0.23754305	2.5821086	21	6 29.0	15.1
14666	1999 CG_{17}	12.8	X	33.13367	80.85026	115.81022	11.46056	0.0438201	0.18811210	3.0166498	21	5 4.5	17.0
14667	1999 CS_{19}	13.2	X	274.79996	13.61049	313.95185	9.74980	0.0673294	0.18984552	2.9982590	21	4 29.2	17.6
14668	1999 CB_{67}	12.5	X	280.15717	87.01169	257.55364	11.29786	0.2269710	0.23629974	2.5911579	21	5 4.9	16.5
14669	Beletic	11.5	X	345.97304	247.83893	195.55077	5.76525	0.1280824	0.12390985	3.9847294	21	12 24.7	16.5
14670	1999 JG_{53}	13.7	X	151.42444	61.45033	173.12902	5.05428	0.1478111	0.24126171	2.5555072	21	11 21.8	17.9
14671	1999 RM_{49}	13.9	X	247.40779	14.45313	13.10607	3.76249	0.1691723	0.21777755	2.7360707	21	6 3.1	18.2
14672	1999 RO_{94}	12.7	X	231.16706	162.11826	20.83476	10.64442	0.0440416	0.18756117	3.0225542	21	12 9.6	17.2
14673	1999 RK_{169}	13.8	X	233.21559	244.45393	238.04188	3.14935	0.1078544	0.17981066	3.1087975	21	9 20.9	18.5
14674	INAOE	14.4	X	105.15347	27.25955	67.56387	3.02084	0.1087077	0.24620617	2.5211775	21	3 30.7	17.5
14675	1999 VS_7	14.1	X	322.69561	265.38878	226.82772	13.86917	0.1051800	0.23126681	2.6286162	21	—	—
14676	1999 WW_7	14.8	X	140.41805	154.58893	271.06722	1.03641	0.1246291	0.24345715	2.5401207	21	4 4.9	18.5
14677	1999 XZ	14.3	X	276.65634	205.26030	301.73675	3.56172	0.1563099	0.26982713	2.3718050	21	—	—
14678	Pinney	14.6	X	316.49974	121.12164	275.82843	1.85959	0.1916071	0.26083225	2.4260245	21	9 27.7	16.5
14679	Susanreed	15.7	X	28.43821	27.14185	284.74025	1.78378	0.1801577	0.26668864	2.3903768	21	10 21.5	18.3
14680	1999 XV_{104}	14.2	X	1.29171	67.85564	119.95807	8.43823	0.1451287	0.23755084	2.5820521	21	2 15.5	16.9
14681	Estellechurch	13.9	X	78.23977	3.27072	296.78047	0.93868	0.1733645	0.18092567	3.0960116	21	11 24.3	18.5
14682	Davidhirsch	14.3	X	62.11269	318.45977	188.08625	4.63797	0.1022480	0.24583225	2.5237334	21	4 4.4	17.2
14683	Remy	14.7	X	264.34469	51.22597	222.02093	4.99756	0.1562112	0.28683943	2.2770723	21	1 19.8	18.2
14684	Reyes	14.9	X	56.15149	336.99894	5.60021	3.26384	0.2146416	0.27300380	2.3533702	21	—	—
14685	1999 XM_{172}	13.1	X	342.58990	176.62171	309.26927	10.45897	0.0762808	0.18363015	3.0655381	21	—	—
14686	1999 XA_{174}	13.5	X	149.67055	297.51051	24.90976	6.44833	0.1294032	0.27626076	2.3348371	21	—	—
14687	1999 YR_{13}	14.0	X	261.78836	332.74427	282.46504	3.12924	0.2114041	0.27571282	2.3379295	21	—	—
14688	2000 AJ_2	13.6	X	271.16630	47.98606	329.88889	13.10297	0.1174211	0.25289589	2.4765182	21	6 26.3	17.1
14689	2000 AM_2	14.2	X	44.35834	1.72709	36.47117	5.47069	0.1024903	0.27134053	2.3629776	21	—	—
14690	2000 AR_{25}	10.6	X	27.82257	6.30068	1.46866	4.44672	0.0319776	0.08290210	5.2090560	21	11 10.0	17.4
14691	2000 AK_{119}	11.9	X	221.78410	19.96856	270.09973	12.21635	0.1504973	0.23289014	2.6163870	21	1 9.9	16.1
14692	2000 AG_{133}	12.5	X	63.78145	112.58457	353.03864	9.61334	0.0596170	0.18899943	3.0072005	21	2 18.7	16.4
14693	Selwyn	14.6	X	273.01493	43.43788	197.25333	1.81817	0.1944584	0.27326989	2.3518423	21	—	—
14694	Skurat	15.2	X	192.26365	160.30485	209.71903	5.33317	0.1878686	0.28681253	2.2772146	21	3 15.8	18.9
14695	2000 AR_{200}	13.0	X	97.15927	248.09488	142.36126	13.61665	0.1705494	0.23836858	2.5761435	21	1 1.9	16.1
14696	Lindawilliams	14.4	X	19.51790	259.58802	250.56276	10.46622	0.0835026	0.23167993	2.6254904	21	1 26.9	17.6
14697	Ronsawyer	15.5	X	344.47970	76.46484	250.57356	0.51183	0.1256612	0.29971306	2.2113914	21	8 15.9	17.0
14698	Scottyoung	15.1	X	165.93723	58.06625	172.42257	1.11246	0.1457243	0.26196871	2.4190031	21	12 2.1	18.6
14699	Klarasmi	13.2	X	292.54222	107.26938	291.31651	6.11216	0.2548642	0.21070312	2.7969760	21	7 30.1	16.7
14700	Johnreid	13.2	X	306.62213	299.56691	162.87270	10.07968	0.1252958	0.21794454	2.7346729	21	12 11.5	16.5
14701	Aizu	13.8	X	308.51256	185.31765	195.15365	13.10726	0.1897717	0.21744588	2.7388522	21	8 8.5	17.2
14702	Benclark	13.0	X	256.91418	109.48862	199.38914	10.06897	0.1000371	0.19130451	2.9829954	21	3 14.8	17.6
14703	2000 AX_{243}	13.8	X	28.21358	110.18912	101.96493	7.56364	0.1092212	0.23937870	2.5688912	21	5 14.6	16.6
14704	2000 CE_2	14.2	X	82.88833	36.70782	1.78265	12.75595	0.2954233	0.23041995	2.6350528	21	1 15.1	17.0
14705	2000 CG_2	12.9	X	62.59311	318.68245	5.07493	13.02385	0.1727149	0.21356689	2.7719162	21	12 9.4	17.2
14706	2000 CQ_2	12.8	X	251.82784	284.47395	28.25351	13.90250	0.1767891	0.23535521	2.5980859	21	3 10.6	17.1
14707	2000 CC_{20}	11.3	X	337.95041	286.34287	156.04854	13.65489	0.0412766	0.08225103	5.2365084	21	12 6.3	18.2
14708	Slaven	14.7	X	267.76307	188.42725	169.76514	3.30929	0.2325536	0.29464151	2.2366950	21	5 7.9	17.8
14709	2000 CO_{29}	13.9	X	241.58272	65.94835	175.49291	4.61988	0.0857608	0.22600013	2.6692972	21	—	—
14710	2000 CC_{33}	16.6	X	277.64922	296.03195	201.09934	0.79136	0.0547138	0.31071768	2.1588646	21	—	—
14711	2000 CG_{36}	14.0	X	205.87253	299.04915	307.20150	6.66050	0.0555289	0.22171250	2.7036010	21	—	—
14712	2000 CO_{51}	13.1	X	171.38272	62.20735	309.43211	10.20204	0.1316109	0.18874072	3.0099479	21	3 4.5	18.0
14713	2000 CS_{63}	12.9	X	73.83657	111.18025	325.21475	12.63249	0.0089465	0.22819493	2.6521539	21	1 13.6	16.5
14714	2000 CQ_{65}	14.3	X	113.06655	296.62018	346.34848	1.76131	0.1757301	0.25955179	2.4339970	21	12 17.8	18.2
14715	2000 CD_{71}	13.1	X	216.80516	285.77120	317.29685	8.20834	0.0528835	0.17482692	3.1676013	21	—	—
14716	2000 CX_{81}	13.0	X	91.05963	206.93855	119.14612	2.39129	0.1611379	0.17261337	3.1946241	21	—	—
14717	2000 CJ_{82}	12.6	X	239.65964	76.42425	133.03663	8.46197	0.1483650	0.17497899	3.1657658	21	—	—
14718	2000 CX_{83}	14.5	X	275.22726	99.78532	342.89307	2.05836	0.1760290	0.25914916	2.4365174	21	9 21.3	17.4
14719	Sobey	14.7	X	201.50440	73.36820	357.55526	3.36251	0.1103374	0.29383625	2.2407796	21	6 14.3	18.0
14720	2000 CQ_{85}	12.1	X	269.50155	284.24315	340.41407	12.46746	0.1579997	0.23094585	2.6310511	21	1 27.3	16.2

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
14721	2000 CW_{91}	13.5	*X*	215.82696	203.96674	159.75990	13.97444	0.1745910	0.23876944	2.5732593	21	4 6.4	17.8
14722	2000 CK_{92}	13.1	*X*	148.17290	320.83333	347.21705	8.92850	0.0701415	0.17472310	3.1688560	21	—	—
14723	2000 CB_{93}	13.1	*X*	7.79271	95.73203	351.85997	16.77050	0.1913860	0.17789369	3.1310910	21	—	—
14724	SNO	14.6	*X*	291.29529	193.86623	123.44845	3.13791	0.0730544	0.19827554	2.9126611	21	5 10.9	18.5
14725	2000 DC_3	12.9	*X*	15.04655	351.83470	51.77401	11.63275	0.0540401	0.17104913	3.2140711	21	12 24.1	17.3
14726	2000 DD_3	12.7	*X*	62.60135	332.03007	112.69713	8.65403	0.0264695	0.18157067	3.0886753	21	1 18.9	16.8
14727	Suggs	15.7	*X*	144.67170	273.16214	172.59581	3.67888	0.1030396	0.28568223	2.2832172	21	5 2.3	18.7
14728	Schuchardt	14.1	*X*	11.40954	187.22859	139.92560	4.56399	0.1549408	0.29799100	2.2199028	21	10 19.2	16.0
14729	2000 DK_{16}	13.7	*X*	303.32752	132.83856	7.86083	4.29703	0.0860681	0.21867773	2.7285569	21	—	—
14730	2000 DS_{19}	13.9	*X*	53.63592	340.04630	19.86646	1.46732	0.2086477	0.17490990	3.1665993	21	—	—
14731	2000 DY_{68}	13.4	*X*	207.40581	103.52403	180.56536	10.47863	0.1067253	0.17822240	3.1272399	21	—	—
14732	2000 DX_{71}	13.4	*X*	98.05015	313.64708	24.61585	1.11975	0.1863581	0.17172545	3.2056266	21	—	—
14733	2000 DV_{74}	13.6	*X*	332.28944	273.40400	178.57385	15.23430	0.1700300	0.21978764	2.7193632	21	—	—
14734	Susanstoker	15.3	*X*	237.47366	139.93910	190.83764	5.57691	0.2032830	0.28046913	2.3114225	21	3 6.7	19.2
14735	2000 DV_{86}	13.9	*X*	46.89439	249.26266	33.47776	5.26861	0.1587038	0.29741057	2.2227901	21	10 11.1	16.3
14736	2000 DW_{97}	13.2	*X*	118.98516	8.66491	9.89037	9.22201	0.1405441	0.18435077	3.0575442	21	1 26.6	17.7
14737	2000 DU_{99}	14.1	*X*	79.75209	131.20833	0.06009	13.87216	0.1127792	0.23858100	2.5746141	21	4 9.5	17.3
14738	2000 DW_{106}	12.8	*X*	78.59706	28.26625	24.80957	11.18656	0.1590534	0.18257545	3.0773328	21	1 19.3	16.8
14739	Edgarchavez	12.8	*X*	178.33224	139.87030	241.63657	9.62585	0.1213264	0.19090048	2.9872028	21	3 21.8	17.7
14740	2000 ED_{32}	13.4	*X*	205.87546	302.95675	13.13315	5.49330	0.1445500	0.18443868	3.0565726	21	2 5.2	18.4
14741	Teamequinox	14.4	*X*	156.48209	160.62258	271.14687	7.23173	0.1991067	0.28740582	2.2740797	21	5 1.4	18.0
14742	2000 EQ_{56}	13.8	*X*	212.57330	216.38813	114.54466	2.22322	0.1332413	0.18457891	3.0550242	21	2 27.1	18.6
14743	2016 *P–L*	13.7	*X*	41.93742	136.30236	197.72822	6.61300	0.1459540	0.21171171	2.7880857	21	11 26.2	17.4
14744	2092 *P–L*	14.1	*X*	70.55180	10.78523	323.45607	5.14470	0.1240907	0.22912526	2.6449699	21	12 30.2	18.0
14745	2154 *P–L*	14.5	*X*	286.74597	257.43717	202.37960	12.99999	0.1054920	0.21105837	2.7938365	21	11 6.7	17.9
14746	2164 *P–L*	15.0	*X*	99.40934	51.06598	290.37714	2.18358	0.1864359	0.26304257	2.4124150	21	—	—
14747	2541 *P–L*	15.0	*X*	75.79776	321.61733	29.59973	1.02362	0.2167796	0.26243233	2.4161533	21	—	—
14748	2620 *P–L*	14.4	*X*	59.24123	162.85900	29.28089	1.63851	0.1171077	0.23821427	2.5772558	21	6 6.9	17.2
14749	2626 *P–L*	13.9	*X*	358.30585	76.66029	153.85322	1.93400	0.0899247	0.18864621	3.0109531	21	4 22.7	17.6
14750	2654 *P–L*	15.0	*X*	55.68932	309.06145	139.77574	1.63846	0.1819260	0.18386780	3.0628961	21	1 26.7	18.2
14751	2688 *P–L*	15.0	*X*	250.75570	201.51461	125.97423	1.63922	0.0990870	0.18825447	3.0151287	21	4 2.7	19.5
14752	3005 *P–L*	13.6	*X*	297.82955	346.63100	279.67395	9.33808	0.0573933	0.18763560	3.0217548	21	3 12.7	18.0
14753	4592 *P–L*	14.2	*X*	127.45128	160.49183	159.76543	5.32765	0.1740196	0.21515399	2.7582679	21	—	—
14754	4806 *P–L*	15.1	*X*	29.82661	338.69981	160.27871	2.63872	0.1092876	0.23393658	2.6085788	21	1 30.4	17.9
14755	6069 *P–L*	14.1	*X*	123.08912	291.45861	330.98095	1.64304	0.1607170	0.21300645	2.7767762	21	11 24.9	18.5
14756	6232 *P–L*	14.5	*X*	40.50818	231.48171	227.35421	4.81856	0.1777460	0.18384095	3.0631943	21	1 10.4	17.8
14757	6309 *P–L*	15.0	*X*	337.11271	102.52458	192.17261	6.99690	0.1519639	0.23977418	2.5660657	21	6 5.8	17.7
14758	6519 *P–L*	13.3	*X*	67.30286	93.32941	29.20394	3.42079	0.1855789	0.18629912	3.0361893	21	4 1.2	16.9
14759	6520 *P–L*	15.1	*X*	178.99357	240.19323	169.22176	4.87804	0.1346920	0.28553409	2.2840069	21	4 24.1	18.5
14760	6595 *P–L*	15.0	*X*	187.12739	102.26166	168.48404	1.32030	0.1547873	0.26459871	2.4029472	21	—	—
14761	6608 *P–L*	15.9	*X*	100.59629	44.72922	12.60526	6.02442	0.3132409	0.23323142	2.6138341	21	3 8.3	19.3
14762	6647 *P–L*	14.4	*X*	108.76790	306.66050	34.43446	3.02299	0.2267834	0.26378155	2.4079074	21	—	—
14763	6793 *P–L*	15.4	*X*	1.82813	225.15267	44.86578	3.81505	0.1375100	0.28864999	2.2675403	21	6 16.4	17.0
14764	Kilauea	14.7	*X*	0.05697	298.85596	196.77275	21.21787	0.0783013	0.36228461	1.9488098	21	—	—
14765	9519 *P–L*	14.7	*X*	107.41932	290.11554	29.85125	4.67770	0.0713969	0.21432037	2.7654157	21	—	—
14766	9594 *P–L*	13.7	*X*	171.21935	111.33019	50.37507	2.08094	0.0231874	0.16076887	3.3496653	21	9 6.6	18.5
14767	1137 *T–1*	14.4	*X*	98.17301	45.59078	285.08400	3.13917	0.1711610	0.30670652	2.1776465	21	—	—
14768	1238 *T–1*	14.5	*X*	350.74389	344.93738	339.49783	1.58025	0.0713792	0.20267335	2.8703726	21	8 16.9	17.9
14769	2175 *T–1*	15.1	*X*	12.56325	303.91650	176.85074	5.80271	0.0910265	0.27223962	2.3577721	21	—	—
14770	2198 *T–1*	14.2	*X*	295.88545	32.30755	83.42935	2.85603	0.1613857	0.17203044	3.2018367	21	11 25.1	18.0
14771	4105 *T–1*	13.5	*X*	184.60407	133.07343	147.65222	1.29941	0.1509642	0.17020087	3.2247413	21	—	—
14772	4195 *T–1*	14.0	*X*	90.64355	142.21278	95.62513	3.18322	0.0164212	0.20339053	2.8636211	21	9 7.3	17.9
14773	4264 *T–1*	14.2	*X*	84.97229	253.93781	29.13552	8.33056	0.1844293	0.20529811	2.8458549	21	11 14.3	18.5
14774	4845 *T–1*	13.2	*X*	46.57695	359.12985	97.17905	3.31864	0.1274476	0.19443873	2.9508527	21	1 13.7	16.6
14775	1139 *T–2*	14.5	*X*	122.89169	96.37601	183.72352	6.76529	0.1793854	0.21016657	2.8017344	21	12 16.3	19.2
14776	1282 *T–2*	13.4	*X*	334.78430	124.62634	250.72778	1.15723	0.0777066	0.20531455	2.8457029	21	9 29.4	16.9
14777	2078 *T–2*	15.4	*X*	183.57823	178.32614	185.85920	4.51656	0.1663348	0.27870107	2.3211879	21	3 1.1	18.9
14778	2216 *T–2*	13.6	*X*	176.02968	274.95457	31.73559	0.82946	0.2046830	0.17148253	3.2086533	21	1 3.0	19.0
14779	3072 *T–2*	13.2	*X*	27.08202	241.03739	83.49554	3.19681	0.0708467	0.20612080	2.8382774	21	10 13.3	16.8
14780	1078 *T–3*	14.2	*X*	14.34686	268.88777	237.24936	14.08928	0.0699141	0.23381276	2.6094997	21	1 13.8	17.7
14781	1107 *T–3*	13.0	*X*	23.41056	67.99807	241.03992	13.00405	0.1549727	0.20102174	2.8860734	21	9 19.5	16.7
14782	3149 *T–3*	15.9	*X*	75.62445	285.65096	173.53890	1.92464	0.1594815	0.27912209	2.3188531	21	2 18.1	17.8
14783	3152 *T–3*	13.7	*X*	342.54065	254.39033	50.61820	2.81601	0.0999605	0.19775832	2.9177374	21	7 6.3	17.1
14784	3268 *T–3*	16.0	*X*	29.14148	318.55504	205.34559	5.88347	0.0437688	0.28111320	2.3078906	21	2 21.9	18.7
14785	3508 *T–3*	14.6	*X*	301.88232	270.39765	205.35011	5.47450	0.0880642	0.27237580	2.3569862	21	—	—
14786	4052 *T–3*	14.9	*X*	59.42457	151.59907	54.88768	7.68030	0.0516442	0.28605906	2.2812117	21	6 16.4	17.4
14787	5038 *T–3*	13.5	*X*	280.98146	163.93001	126.34289	10.35038	0.0309649	0.19268406	2.9687402	21	4 3.3	17.8
14788	5172 *T–3*	13.1	*X*	231.28792	125.72295	121.12045	9.99345	0.0378367	0.18655122	3.0334533	21	—	—
14789	GAISH	12.9	*X*	155.70919	161.87406	200.19093	5.81687	0.0935788	0.17844288	3.1246633	21	2 6.3	17.6
14790	Beletskij	13.4	*X*	161.46430	31.57846	321.12767	6.25053	0.3115083	0.22245729	2.6975632	21	2 12.6	18.2
14791	Atreus	11.9	*X*	15.42381	185.90527	194.77393	2.93656	0.1617903	0.08443840	5.1456793	21	11 20.9	18.1
14792	Thyestes	12.1	*X*	2.70195	245.04732	154.76574	11.36637	0.0836143	0.08367074	5.1771051	21	11 21.6	18.7
14793	1975 SE_2	15.2	*X*	54.76606	332.37750	40.29137	6.84688	0.1385229	0.26163085	2.4210852	21	—	—
14794	Konetskiy	13.3	*X*	176.59569	183.17095	213.06843	9.65982	0.1156846	0.18793415	3.0185538	21	4 9.8	18.0
14795	Syoyou	13.3	*X*	29.77947	301.18697	346.55096	2.75440	0.2368938	0.18543341	3.0456317	21	9 17.1	16.7
14796	1977 XF_2	13.1	*X*	283.13264	334.89423	81.78896	8.18581	0.1312770	0.17395746	3.1781472	21	8 31.8	17.5
14797	1977 XZ_2	13.3	*X*	349.84163	315.97804	343.45127	1.25402	0.0890928	0.19494433	2.9457484	21	7 11.2	16.9
14798	1978 UW_4	14.1	*X*	318.59371	291.47923	230.32110	5.83119	0.0531806	0.28306198	2.2972858	21	—	—
14799	1979 MS_2	16.1	*X*	298.30990	36.29596	216.25550	2.32983	0.1378641	0.27553929	2.3389110	21	2 2.5	19.3
14800	1979 MP_4	15.7	*X*	247.37975	80.98622	213.97710	3.88972	0.0762865	0.22729384	2.6591588	21	2 12.9	19.7

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
14801 1980 PE_3	13.7	X	31.48025	209.37337	64.87240	15.64651	0.1584136	0.24072176	2.5593272	21	9 4.9	16.9
14802 1981 DJ_2	13.8	X	64.45297	151.41686	213.56262	14.76799	0.1453245	0.21227971	2.7831101	21	—	—
14803 1981 EL_7	15.0	X	259.50015	231.00843	200.00246	12.25897	0.1926717	0.25627344	2.4547107	21	8 7.5	18.6
14804 1981 EW_{13}	15.2	X	253.98513	244.94649	270.97675	1.76482	0.0804904	0.26067244	2.4270160	21	12 16.2	18.0
14805 1981 ED_{15}	14.8	X	347.28313	126.48466	288.53131	3.08270	0.0801480	0.26013355	2.4303667	21	12 24.4	17.3
14806 1981 EV_{25}	13.9	X	107.61078	198.96402	173.68273	8.61035	0.1632836	0.21624221	2.7490063	21	—	—
14807 1981 EN_{26}	14.5	X	235.63238	359.18413	186.10738	8.13682	0.1530979	0.21188987	2.7865227	21	12 9.9	18.6
14808 1981 EV_{27}	14.4	X	50.78270	180.90846	178.26969	4.89530	0.0623059	0.21128273	2.7918583	21	12 25.5	18.2
14809 1981 ES_{28}	14.5	X	301.92904	134.52102	4.04833	5.80696	0.1381608	0.26315162	2.4117485	21	—	—
14810 1981 EM_{31}	15.6	X	172.14082	140.96867	162.36306	1.31747	0.1097617	0.26374855	2.4081082	21	—	—
14811 1981 ED_{43}	13.9	X	132.87883	293.74380	10.01785	7.62121	0.2172371	0.21147972	2.7901244	21	—	—
14812 Rosario	14.1	X	167.00455	225.36702	28.20106	13.96003	0.2073471	0.25753055	2.4467159	21	12 27.2	18.4
14813 1981 QW_2	15.0	X	66.18400	271.95461	40.53512	3.72528	0.1770810	0.29987876	2.2105766	21	12 16.3	18.0
14814 Gurij	14.0	X	36.34196	88.09162	289.59538	10.73464	0.2469806	0.22635316	2.6665210	21	—	—
14815 Rutberg	14.3	X	114.41303	164.02582	171.27020	4.47733	0.2354079	0.30320525	2.1943787	21	—	—
14816 1981 UQ_{22}	14.6	X	123.92760	165.84901	130.70284	3.65017	0.0840977	0.27511995	2.3412870	21	—	—
14817 1982 FJ_3	15.2	X	335.12935	226.74272	1.41479	1.74311	0.1778053	0.27631013	2.3345589	21	2 13.5	17.8
14818 Mindeli	12.9	X	320.35050	147.79109	217.74549	8.23352	0.1689311	0.19851559	2.9103126	21	8 11.0	16.4
14819 Nikolaylaverov	14.6	X	257.57036	134.58305	243.27682	3.43368	0.2112616	0.24659393	2.5185339	21	5 27.2	18.2
14820 Aizuyaichi	15.2	X	91.69694	165.76501	205.96101	3.31278	0.2053948	0.31062806	2.1592798	21	—	—
14821 Motaeno	15.0	X	342.94431	301.36195	208.85680	3.57632	0.1145572	0.28536465	2.2849109	21	—	—
14822 1984 SR_5	13.0	X	88.21241	351.88915	17.13555	5.42891	0.1037658	0.16863400	3.2446856	21	—	—
14823 1984 ST_5	14.7	X	313.22721	35.85699	342.38959	1.75040	0.1893528	0.26533468	2.3985017	21	8 23.0	16.8
14824 1985 CF_2	14.3	X	302.48222	359.18568	175.54789	9.33491	0.1664573	0.26763532	2.3847367	21	—	—
14825 Fieber–Beyer	14.8	X	339.60966	331.02376	17.95103	6.41691	0.3006835	0.24623454	2.5209839	21	9 1.9	16.0
14826 Nicollier	13.6	X	250.25730	311.85927	10.27542	2.33550	0.2617246	0.18266636	3.0763117	21	3 14.2	18.9
14827 Hypnos	18.3	X	134.95825	238.15363	57.95458	1.97991	0.6660697	0.20568519	2.8422833	21	—	—
14828 1986 QT_1	14.8	X	45.93172	21.12810	17.13469	2.49818	0.2154043	0.26156818	2.4214720	21	—	—
14829 Povalyaeva	13.7	X	211.06748	73.46095	238.46162	8.77295	0.2792740	0.26863242	2.3788320	21	1 22.3	18.1
14830 1986 XR_5	13.5	X	173.76076	342.07506	31.17982	4.15598	0.2989543	0.18322844	3.0700171	21	3 20.3	19.0
14831 Gentileschi	13.3	X	133.73955	150.74215	294.75096	12.24304	0.1275009	0.23720288	2.5845767	21	4 18.8	17.3
14832 Alechinsky	14.2	X	227.95462	78.18965	307.38325	5.72960	0.1244958	0.28406290	2.2918861	21	5 10.2	17.6
14833 Vilenius	14.4	X	269.82148	355.98526	352.13732	5.29601	0.1792771	0.28379884	2.2933076	21	4 30.5	17.6
14834 Isaev	15.0	X	294.00455	135.94007	216.67624	4.51216	0.2360860	0.28594677	2.2818088	21	5 31.3	17.7
14835 Holdridge	13.1	X	143.24231	133.32576	233.33909	22.99145	0.2773680	0.27284872	2.3542619	21	1 27.9	17.2
14836 Maxfrisch	13.0	X	257.08670	78.80587	143.88569	15.23501	0.1079033	0.17314095	3.1881312	21	—	—
14837 1988 RN_2	13.7	X	308.89364	194.40938	263.07586	5.93648	0.1607099	0.21298049	2.7770018	21	12 3.5	16.4
14838 1988 RK_6	14.8	X	172.62906	176.46421	180.18632	6.67152	0.1407729	0.28525769	2.2854820	21	2 5.3	18.0
14839 1988 RH_8	14.8	X	355.24567	27.92810	340.98092	4.94041	0.1835734	0.27105285	2.3646492	21	11 14.7	16.8
14840 1988 RR_{11}	16.0	X	94.75635	293.08327	44.46999	1.07692	0.1907848	0.30783641	2.1723146	21	—	—
14841 1988 TU	14.4	X	25.54051	180.69076	223.84151	2.97138	0.2204172	0.27444573	2.3451200	21	—	—
14842 1988 TN_1	13.2	X	154.41796	343.71871	20.79877	13.51949	0.1695429	0.22252978	2.6969773	21	2 16.1	17.6
14843 Tanna	15.2	X	284.10900	17.74471	33.98488	6.05008	0.1252193	0.29557623	2.2319770	21	9 6.3	17.4
14844 1988 VT_3	14.5	X	196.91829	216.85819	245.74959	3.98840	0.1151748	0.29152241	2.2526208	21	7 22.4	17.8
14845 Hegel	13.0	X	37.15579	210.21168	209.11822	4.90075	0.2405029	0.12541149	3.9528575	21	—	—
14846 Lampedusa	13.9	X	320.74168	47.76161	109.22218	10.03383	0.1752455	0.27189607	2.3597578	21	—	—
14847 1989 CY_2	15.4	X	103.23070	217.89259	220.18429	5.15940	0.1367205	0.27861315	2.3216761	21	2 28.3	18.1
14848 1989 GK_1	13.9	X	237.01167	303.48266	2.82812	9.23288	0.0646102	0.18072181	3.0983395	21	2 26.9	18.5
14849 1989 GQ_1	14.9	X	200.95251	73.67423	248.59380	2.08963	0.1934974	0.26995039	2.3710829	21	1 26.5	18.6
14850 Nagashimacho	15.1	X	347.55268	28.83034	306.61056	2.78145	0.1506639	0.30787260	2.1721444	21	9 7.5	16.4
14851 1989 SD	14.7	X	17.60619	343.74595	30.06331	2.35538	0.1487061	0.31222624	2.1519051	21	—	—
14852 1989 SE	14.4	X	299.02097	348.43773	7.80177	7.65607	0.2938730	0.24291408	2.5439052	21	6 2.9	17.8
14853 Shimokawa	14.0	X	276.16487	355.11649	27.60696	6.70363	0.3060904	0.24139543	2.5545634	21	6 10.0	17.8
14854 1989 SO_1	14.4	X	47.73919	53.35917	80.79316	5.09558	0.1221580	0.23048216	2.6345787	21	2 28.6	17.2
14855 1989 SP_9	13.6	X	225.90883	240.51617	184.46591	5.77465	0.0817607	0.21010429	2.8022880	21	7 6.5	17.7
14856 1989 SY_{13}	14.2	X	2.51997	217.16501	296.21315	12.03896	0.1089160	0.22778550	2.6553310	21	1 7.5	17.2
14857 1989 TT	14.3	X	210.69813	221.47310	173.23963	16.98425	0.2840322	0.23601546	2.5932383	21	5 7.9	19.2
14858 1989 UW_3	13.8	X	268.99734	120.68006	234.46584	12.37199	0.1958719	0.23809029	2.5781505	21	5 11.7	17.6
14859 1989 WU_1	13.7	X	264.51258	112.78721	226.35803	9.98473	0.2771114	0.23630927	2.5910883	21	4 7.1	18.0
14860 1989 WD_3	14.0	X	323.32385	228.30122	241.72187	5.08534	0.1511657	0.21811328	2.7332623	21	—	—
14861 1990 DA_2	13.7	X	46.88520	235.08286	164.82289	6.13630	0.0546588	0.21525979	2.7573641	21	—	—
14862 1990 EQ_2	15.0	X	291.84606	216.72682	254.36387	3.53115	0.0888533	0.30435338	2.1888565	21	12 24.1	16.8
14863 1990 OK	14.4	X	210.88914	95.93634	249.61661	6.77297	0.1984448	0.27589803	2.3368831	21	2 28.8	18.4
14864 1990 QK_4	15.0	X	127.18030	203.73071	157.08745	2.66074	0.2193167	0.26802704	2.3824126	21	1 4.9	18.0
14865 1990 QE_7	14.1	X	127.46365	319.02438	142.88133	2.13781	0.1208626	0.24429936	2.5342794	21	5 8.5	17.6
14866 1990 RF_1	13.4	X	218.86386	56.85451	224.48818	0.86759	0.1951275	0.17420003	3.1751961	21	1 6.9	18.6
14867 1990 RW_4	13.0	X	210.38865	345.19245	302.42895	4.15815	0.1369317	0.17349256	3.1838223	21	1 7.8	18.0
14868 1990 RA_7	14.6	X	27.04466	52.34052	164.06423	10.07534	0.2229653	0.28063333	2.3105208	21	5 23.6	16.2
14869 1990 ST_8	15.0	X	223.40035	278.93253	51.77351	3.51404	0.1919917	0.27428400	2.3460417	21	2 26.4	18.7
14870 1990 SM_{14}	13.8	X	147.27760	187.05421	142.67786	4.24592	0.2236265	0.26690226	2.3891012	21	—	—
14871 Pyramus	13.9	X	103.82899	314.43823	5.71590	0.98424	0.2192879	0.16430593	3.3014183	21	—	—
14872 Hoher List	14.3	X	69.87096	27.60282	337.59769	1.97230	0.2086608	0.26152409	2.4217441	21	—	—
14873 Shoyo	13.8	X	130.99072	325.85587	43.52107	8.45844	0.2249336	0.26647003	2.3916840	21	1 24.5	17.1
14874 1990 US_4	13.8	X	303.86456	218.91392	76.39569	7.06736	0.1962543	0.27709243	2.3301629	21	4 3.9	16.8
14875 1990 WZ_1	14.4	X	202.67103	147.19423	159.94168	5.33145	0.1951925	0.26769584	2.3843773	21	1 10.1	18.3
14876 Dampier	13.9	X	258.19450	10.97902	103.13461	7.30759	0.0794503	0.25290903	2.4764325	21	10 28.8	17.1
14877 Zauberflote	12.6	X	291.34803	331.03554	65.57862	12.30256	0.0630254	0.18532533	3.0468157	21	8 30.4	16.9
14878 1990 WE_9	14.9	X	85.15346	198.28717	155.41993	2.70212	0.1859534	0.26132648	2.4229648	21	—	—
14879 1991 AL_2	14.0	X	177.34027	297.62768	194.28313	12.48807	0.1704496	0.24516668	2.5282989	21	8 5.5	18.3
14880 Moa	14.3	X	240.35862	279.55553	126.45466	10.89811	0.0721175	0.24094552	2.5577424	21	6 30.5	17.9

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
14881	1991 PK	15.6	X	21.95784	211.89260	153.75146	2.69827	0.1972000	0.30147575	2.2027631	21	—	—
14882	1991 PP_{11}	13.8	X	47.99598	122.66325	185.06059	9.60367	0.3030927	0.20095690	2.8866941	21	11 22.4	18.0
14883	1991 PT_{11}	13.4	X	123.60190	208.58006	180.15236	3.69016	0.2282421	0.17999579	3.1066654	21	2 20.1	18.2
14884	1991 PH_{16}	14.4	X	40.31435	355.06109	335.11446	6.60532	0.1243612	0.29969808	2.2114650	21	11 30.5	17.1
14885	Paskoff	12.3	X	97.72803	104.95821	328.80542	10.00766	0.0701879	0.18096344	3.0955809	21	2 23.8	16.6
14886	1991 RL_9	14.9	X	301.87203	150.82163	212.11154	2.01349	0.1779982	0.25915822	2.4364606	21	7 8.6	17.5
14887	1991 RQ_{14}	13.8	X	106.98321	286.63898	58.70583	1.93710	0.1636851	0.17382218	3.1797960	21	—	—
14888	Kanazawashi	14.9	X	6.30574	160.60240	203.14770	5.79845	0.1673747	0.29803725	2.2196731	21	12 5.5	16.9
14889	1991 VX_2	12.8	X	111.63423	74.88994	301.30768	4.37513	0.1495648	0.17380213	3.1800405	21	1 15.7	17.4
14890	1991 VG_3	14.3	X	240.45269	179.21982	218.87803	25.83609	0.1690917	0.28905535	2.2654199	21	6 6.5	18.0
14891	1991 VY_4	14.2	X	228.72663	333.92166	98.40463	3.73171	0.1501812	0.25529343	2.4609887	21	7 14.1	17.9
14892	1991 VE_5	14.1	X	69.66307	222.23908	110.15179	3.75145	0.2009118	0.30100881	2.2050405	21	—	—
14893	1992 DN_6	13.6	X	236.88942	185.56347	136.75157	3.13392	0.2423284	0.27094977	2.3652490	21	2 25.1	17.4
14894	1992 EA_8	14.3	X	86.95690	285.31083	192.94082	1.61328	0.0358013	0.20632642	2.8363913	21	3 29.7	18.0
14895	1992 EJ_{24}	14.5	X	77.60912	251.22920	132.03934	9.87011	0.2401705	0.26527599	2.3988555	21	—	—
14896	1992 EB_{26}	15.6	X	242.07887	122.02247	348.45341	9.07997	0.1799789	0.25404001	2.4690770	21	9 14.1	18.9
14897	1992 GE_5	13.9	X	186.93410	286.53905	49.21076	2.82932	0.0737082	0.19695957	2.9256205	21	2 6.1	18.2
14898	1992 JR_3	14.3	X	89.52465	338.48438	265.10879	2.10879	0.1033235	0.24588599	2.5233657	21	9 26.5	17.7
14899	1992 LS	14.1	X	35.84011	101.05260	202.96430	4.06480	0.1641034	0.24461708	2.5320845	21	10 16.6	16.9
14900	1992 RH_5	14.2	X	212.81680	295.49776	66.17468	3.32501	0.1000472	0.19213409	2.9744027	21	4 5.4	18.9
14901	Hidatakayama	13.1	X	234.22633	107.07330	188.44245	12.32513	0.1714942	0.22269687	2.6956281	21	1 26.9	17.7
14902	Miyairi	12.3	X	260.68444	272.38247	97.24896	11.99178	0.1218872	0.18911793	3.0059442	21	6 3.3	16.8
14903	1993 DF_2	14.7	X	89.91359	70.93891	151.17670	4.70684	0.0588962	0.29162173	2.2521093	21	8 27.4	17.3
14904	1993 FM_{14}	15.4	X	224.26665	57.55965	41.91909	6.14780	0.0815713	0.29286822	2.2457145	21	8 27.5	18.3
14905	1993 FV_{27}	15.6	X	133.77033	214.86530	293.07029	1.77259	0.0565272	0.28844131	2.2686339	21	7 9.8	18.4
14906	1993 NJ_1	15.5	X	195.04715	171.22662	132.79152	3.29367	0.1719115	0.26646935	2.3916881	21	—	—
14907	1993 OF_3	15.6	X	186.51864	319.64656	326.06584	1.20925	0.1255145	0.26411980	2.4058511	21	—	—
14908	1993 OQ_4	15.3	X	267.98755	98.37742	143.97615	2.66054	0.1719890	0.26886927	2.3774348	21	—	—
14909	Kamchatka	13.5	X	282.85979	142.45769	157.75389	13.44472	0.1599642	0.23826866	2.5768636	21	3 23.9	17.2
14910	1993 QR_4	14.1	X	160.49162	98.91820	12.18116	3.53586	0.0788362	0.23977396	2.5660672	21	6 23.6	17.9
14911	Fukamatsu	14.2	X	330.09749	350.15404	3.11262	14.15928	0.2041302	0.24477213	2.5310151	21	8 23.3	16.5
14912	1993 RP_3	13.1	X	86.88152	165.82446	262.29438	12.14262	0.2519966	0.22791502	2.6543249	21	2 14.9	16.5
14913	1993 RP_7	14.6	X	327.40741	316.09782	191.82995	5.85908	0.0493300	0.22330895	2.6907001	21	—	—
14914	Moreux	14.6	X	22.23984	322.37663	177.66494	8.65135	0.0364428	0.22675425	2.6633757	21	1 22.9	18.2
14915	1993 UM_8	14.0	X	187.25600	259.36659	185.31557	14.83740	0.1033036	0.23624186	2.5915811	21	6 18.8	18.2
14916	1993 VV_7	13.7	X	33.52787	301.65599	110.12602	33.61009	0.3329241	0.21767506	2.7369294	21	—	—
14917	Taco	12.7	X	347.41059	57.85694	324.20089	12.37540	0.2076904	0.20587781	2.8405102	21	10 28.1	15.8
14918	1994 BP_4	13.1	X	63.58029	62.66099	138.98056	10.21928	0.1598247	0.19002935	2.9963251	21	7 4.8	17.1
14919	Robertohaver	14.2	X	254.36850	14.49803	157.52555	12.47987	0.0951303	0.26660431	2.3908809	21	—	—
14920	1994 PE_{33}	13.9	X	134.69492	254.06761	293.16657	3.94878	0.0853252	0.29212223	2.2495362	21	9 5.6	16.9
14921	1994 QA	13.9	X	7.65148	121.26378	69.33054	25.10744	0.2231536	0.27676504	2.3320001	21	2 23.4	16.6
14922	Ohyama	14.6	X	268.88744	354.94729	9.00119	5.44947	0.2099158	0.28448390	2.2896244	21	5 17.7	17.8
14923	1994 TU_3	14.2	X	197.75173	141.12574	211.53343	22.62425	0.2683265	0.27705242	2.3303872	21	2 25.7	18.7
14924	1994 VZ	15.1	X	247.34247	114.02179	221.76687	5.88352	0.1514719	0.27900434	2.3195055	21	3 24.4	18.7
14925	Naoko	14.5	X	347.81236	313.70619	27.06936	6.76871	0.1945464	0.28952343	2.2629775	21	9 21.3	15.9
14926	Hoshide	14.9	X	253.97563	161.49577	190.83404	3.98857	0.2279287	0.28086220	2.3092654	21	4 17.5	18.3
14927	Satoshi	13.9	X	26.82160	246.41561	68.47659	7.12673	0.1922279	0.29136748	2.2534192	21	11 1.9	16.2
14928	1994 WN_1	14.4	X	100.26615	266.26938	70.86097	2.53500	0.1926817	0.26223769	2.4173488	21	—	—
14929	1994 WP_1	14.6	X	156.45335	200.08195	277.01310	3.84791	0.1642138	0.24182591	2.5515309	21	7 1.0	18.6
14930	1994 WL_3	14.7	X	227.89993	299.30914	139.43831	4.30595	0.1485619	0.24661952	2.5183596	21	7 21.3	18.5
14931	1994 WR_3	12.9	X	157.66989	339.22948	78.37513	14.87916	0.1605998	0.23743587	2.5828855	21	4 23.5	17.1
14932	1994 YC	14.8	X	50.15017	183.09172	315.12407	4.89653	0.1622774	0.23153716	2.6265696	21	3 9.3	17.4
14933	1994 YX	14.3	X	188.28665	141.36998	287.90623	4.37296	0.1321208	0.23980227	2.5658653	21	5 30.2	18.3
14934	1995 BP	13.6	X	324.81794	309.84815	315.72365	13.18953	0.2562179	0.23118746	2.6292176	21	3 10.8	17.0
14935	1995 BP_1	14.0	X	155.26537	307.57427	88.98170	13.52508	0.2598281	0.23127369	2.6285640	21	4 3.5	18.7
14936	1995 BU_2	13.0	X	27.89319	310.43297	299.16438	14.07478	0.0954639	0.23811856	2.5779464	21	7 6.7	15.8
14937	Thirsk	15.5	X	305.35675	125.41352	175.33797	2.87568	0.1708586	0.23464325	2.6033387	21	4 19.2	18.7
14938	1995 DN	12.5	X	131.01404	116.15988	165.64406	9.32957	0.1369954	0.21167786	2.7883830	21	12 24.2	17.1
14939	Norikura	15.2	X	304.25447	272.68495	211.13863	4.30399	0.1129999	0.21521700	2.7577295	21	—	—
14940	Freiligrath	13.7	X	156.78675	0.99297	130.67391	5.12078	0.0398457	0.23742706	2.5829495	21	7 14.6	17.4
14941	Tomswift	14.4	X	333.07356	76.50513	9.16743	9.02253	0.1300785	0.21491250	2.7603338	21	—	—
14942	Stevebaker	13.4	X	34.91131	229.59266	202.17686	15.78984	0.0924274	0.17362135	3.1822476	21	—	—
14943	1995 VD_{19}	14.7	X	57.16443	296.81951	272.09492	4.95163	0.1401984	0.28576703	2.2827655	21	7 1.6	16.9
14944	1995 YV	15.3	X	142.66787	333.08864	102.22193	6.19419	0.1315816	0.28377659	2.2934275	21	4 20.9	18.5
14945	1995 YM_3	14.4	X	155.57001	204.25079	114.35741	6.06922	0.0856285	0.31008761	2.1617880	21	—	—
14946	1996 AN_2	15.1	X	81.58160	0.41690	119.52876	6.10313	0.1319613	0.27929044	2.3179212	21	3 31.5	17.5
14947	Luigibussolino	15.0	X	125.68788	250.17118	218.52070	4.24588	0.1055175	0.28307335	2.2972243	21	5 10.4	17.9
14948	Bartuška	14.6	X	303.03045	17.59124	316.77656	6.07143	0.2095990	0.28690513	2.2767246	21	5 19.9	17.2
14949	1996 BA_2	14.5	X	330.54086	177.85672	103.73725	7.10347	0.1100552	0.28240514	2.3008466	21	5 8.6	16.9
14950	1996 BE_2	13.8	X	135.35673	86.88929	84.80556	6.37563	0.0974133	0.29018102	2.2595574	21	8 20.9	16.9
14951	1996 BS_2	13.8	X	0.28185	218.10231	125.81251	7.48083	0.2018836	0.29374744	2.2412312	21	10 31.6	15.6
14952	1996 CQ	14.1	X	140.47927	222.89725	33.53956	5.98682	0.1251306	0.25752657	2.4467411	21	12 8.7	17.9
14953	Bevilacqua	15.3	X	71.38839	272.13213	239.25536	5.72338	0.1354870	0.28083732	2.3094018	21	4 26.4	17.5
14954	1996 DL	15.3	X	20.29833	329.94455	151.36789	4.63602	0.1083748	0.27152930	2.3618823	21	—	—
14955	1996 DX	14.7	X	359.02428	9.55394	101.30635	3.06433	0.1697129	0.26841159	2.3801365	21	—	—
14956	1996 DB_1	14.2	X	162.77653	300.55979	343.07851	6.58684	0.0974206	0.26299931	2.4126795	21	—	—
14957	1996 HQ_{22}	14.6	X	178.03860	142.27074	214.94134	4.62439	0.2083162	0.22716175	2.6601895	21	2 22.7	19.2
14958	1996 JK_1	13.5	X	357.56881	55.25335	224.87977	12.61854	0.0300316	0.24005757	2.5640458	21	6 25.9	16.9
14959	TRIUMF	14.6	X	96.96471	167.99001	177.95719	4.94753	0.2273741	0.25667953	2.4521210	21	—	—
14960	Yule	14.4	X	348.47436	278.14081	21.31615	0.96807	0.0635096	0.23944635	2.5684073	21	7 10.2	17.3

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
14961	d′Auteroche	14.5	*X*	113.70842	242.05671	72.48425	3.47509	0.1629905	0.25579749	2.4577547	21	—	—
14962	Masanoriabe	12.3	*X*	314.53607	340.52752	207.59395	21.25116	0.0224293	0.17229949	3.1985027	21	1 6.4	17.2
14963	Toshikazu	13.6	*X*	196.32956	193.23974	140.46439	1.60090	0.1700554	0.17708146	3.1406581	21	2 16.6	18.7
14964	Robertobacci	13.7	*X*	233.87472	53.38056	193.70332	9.53925	0.0676227	0.17112562	3.2131132	21	—	—
14965	Bonk	14.0	*X*	112.39978	140.00414	97.80483	14.44460	0.2028190	0.25857624	2.4401150	21	10 31.1	18.2
14966	Jurijvega	15.0	*X*	305.98687	179.31631	150.28646	8.82366	0.2108075	0.28365057	2.2941067	21	5 22.2	17.7
14967	Madrid	14.6	*X*	268.66827	61.05881	303.83333	6.03478	0.1445149	0.24073190	2.5592553	21	5 30.2	18.2
14968	Kubáček	14.1	*X*	177.23615	296.26631	150.31004	5.44348	0.0961080	0.23980969	2.5658124	21	6 10.9	18.0
14969	Willacather	14.7	*X*	0.54415	120.76305	169.57088	3.41535	0.1414919	0.28501980	2.2867535	21	7 18.4	16.4
14970	1997 QA_2	14.6	*X*	161.55218	351.76628	266.09445	4.04523	0.0308765	0.21397150	2.7684207	21	12 27.7	18.5
14971	1997 QN_3	13.8	*X*	96.36124	357.50813	23.25824	7.27224	0.1292132	0.21781382	2.7357669	21	—	—
14972	Olihainaut	14.8	*X*	119.99667	131.02729	187.61141	3.50220	0.1946753	0.25706960	2.4496398	21	—	—
14973	Rossirosina	13.8	*X*	311.82289	152.14270	302.39731	4.49252	0.0675320	0.21367740	2.7709604	21	12 9.9	17.3
14974	Počátky	14.2	*X*	64.16701	157.57197	338.38941	3.87047	0.0858094	0.23098666	2.6307412	21	3 22.9	17.3
14975	Serasin	14.4	*X*	148.90342	107.07630	201.89030	3.53536	0.0643986	0.21817852	2.7327174	21	—	—
14976	Josefčapek	14.4	*X*	118.99579	166.06082	206.19124	4.73217	0.1571379	0.17855443	3.1233618	21	1 18.3	18.9
14977	Bressler	14.0	*X*	222.20780	55.35131	4.46364	1.72064	0.0911191	0.19765297	2.9187741	21	6 25.7	18.2
14978	1997 SD_{25}	13.3	*X*	118.73292	252.36424	195.02826	10.41467	0.0771137	0.18641688	3.0349105	21	4 8.3	17.5
14979	1997 TK_1	14.1	*X*	43.18022	153.51194	329.39289	4.00553	0.0951761	0.22876947	2.6477115	21	2 2.2	17.1
14980	Gustavbrom	14.5	*X*	151.76212	294.20207	89.39931	2.92794	0.1310148	0.18395679	3.0619083	21	3 5.2	19.3
14981	Uenoiwakura	13.5	*X*	294.12661	327.74361	72.29609	2.82162	0.0677057	0.20123028	2.8840791	21	9 3.5	17.2
14982	1997 TH_{19}	14.4	*X*	274.63572	324.97058	1.01599	3.31398	0.3209076	0.27713541	2.3299220	21	3 25.1	18.3
14983	1997 TE_{25}	14.8	*X*	283.61142	158.92951	193.72180	3.93758	0.2959350	0.23808328	2.5782011	21	5 12.6	18.6
14984	1997 TN_{26}	13.7	*X*	266.09898	309.72656	27.96309	13.06863	0.1911526	0.23433027	2.6056562	21	4 17.3	17.4
14985	1997 UU_2	13.5	*X*	285.79325	87.14460	313.22071	1.58699	0.0234172	0.19960248	2.8997380	21	8 27.5	17.3
14986	1997 UJ_3	13.5	*X*	182.13862	359.87377	304.34494	2.83173	0.0819677	0.21839918	2.7308764	21	—	—
14987	1997 UT_3	13.9	*X*	33.30723	210.88648	213.19103	0.68824	0.1454950	0.17247871	3.1962867	21	—	—
14988	Tryggvason	13.5	*X*	200.51953	319.23374	52.12706	8.42624	0.3436505	0.18884506	3.0088391	21	4 5.5	19.2
14989	Tutte	13.0	*X*	69.79071	307.59904	48.05529	16.51948	0.2838206	0.21301718	2.7766830	21	—	—
14990	Zermelo	13.9	*X*	191.95858	252.29911	189.07540	1.52804	0.0772552	0.19209452	2.9748112	21	6 20.7	18.4
14991	1997 UV_{14}	13.1	*X*	8.86070	139.13275	201.12732	8.10991	0.0308876	0.20146568	2.8818321	21	10 1.1	17.0
14992	1997 UY_{14}	13.6	*X*	255.35226	320.67670	62.53673	2.93912	0.1236535	0.19480482	2.9471546	21	6 12.5	18.0
14993	1997 UC_{15}	13.7	*X*	124.03342	254.25017	124.50650	1.08821	0.2036151	0.17940088	3.1135296	21	2 7.0	18.3
14994	Uppenkamp	12.6	*X*	147.66439	118.59136	62.00114	9.17056	0.0256720	0.15660667	3.4087558	21	9 5.7	17.7
14995	Archytas	13.0	*X*	177.93013	155.45439	224.28945	3.24754	0.0933189	0.18324992	3.0697772	21	3 21.7	17.7
14996	1997 VY_2	14.4	*X*	232.62206	247.08879	108.92741	2.37559	0.1509040	0.23273240	2.6175691	21	4 11.9	18.5
14997	1997 VD_4	12.8	*X*	110.35022	63.31943	208.43745	1.37393	0.0306267	0.20653225	2.8345065	21	11 14.3	16.7
14998	Ogosemachi	13.9	*X*	45.17704	173.72731	157.89652	2.36385	0.0699679	0.20559266	2.8431360	21	11 15.0	17.6
14999	1997 VX_8	12.6	*X*	212.06241	304.80615	66.55980	13.96165	0.1889778	0.23020489	2.6366937	21	4 15.7	17.2
15000	CCD	14.3	*X*	215.58317	338.08741	247.06040	8.26685	0.1081977	0.21438569	2.7648539	21	—	—
15001	Fuzhou	13.4	*X*	232.83202	339.27118	48.52029	11.47616	0.1339962	0.19227971	2.9729007	21	5 23.2	18.1
15002	1997 WN_{38}	13.9	*X*	50.35529	314.50897	69.26789	2.31216	0.1419047	0.16935629	3.2354535	21	—	—
15003	Midori	12.8	*X*	305.98000	91.21527	233.17763	9.22840	0.1112857	0.19114162	2.9846898	21	6 3.3	16.8
15004	Vallerani	12.8	*X*	238.43849	330.63501	71.66363	11.47226	0.1139410	0.19211575	2.9745919	21	6 18.7	17.3
15005	Guerriero	13.5	*X*	115.53336	307.27934	57.72621	5.87637	0.1545992	0.17461142	3.1702069	21	1 7.9	18.0
15006	Samcristoforetti	13.5	*X*	70.67182	28.67047	90.60314	12.82593	0.0335762	0.17472919	3.1687824	21	3 20.6	18.1
15007	Edoardopozio	13.3	*X*	171.45210	39.41327	333.71439	9.14408	0.1766448	0.23794424	2.5792053	21	3 5.8	17.5
15008	Delahodde	15.0	*X*	173.42590	53.38843	24.72233	5.60559	0.2107090	0.24126708	2.5554693	21	5 28.2	19.3
15009	1998 QF_{27}	16.1	*X*	70.14048	247.53360	174.94354	22.88391	0.1146052	0.36187770	1.9502704	21	—	—
15010	1998 QL_{92}	14.0	*X*	69.00371	226.97478	177.39986	2.02080	0.2111450	0.26926371	2.3751124	21	—	—
15011	1998 QM_{92}	14.3	*X*	190.38430	103.42772	279.71970	3.62501	0.2547162	0.23910232	2.5708704	21	4 4.4	19.0
15012	1998 QS_{92}	13.8	*X*	259.44820	252.38291	91.76717	6.54534	0.2220113	0.28786368	2.2716677	21	4 14.8	17.4
15013	1998 QH_{93}	13.5	*X*	48.54777	212.16626	244.93924	11.23011	0.2278135	0.22681430	2.6629056	21	1 9.6	15.8
15014	Annagekker	15.5	*X*	252.70504	135.16205	317.41095	3.58193	0.1141058	0.29828561	2.2184408	21	9 15.9	18.0
15015	1998 RG_{75}	13.8	*X*	56.31891	279.17198	182.20322	13.03230	0.1302891	0.23246949	2.6195423	21	1 23.7	16.9
15016	1998 SO_1	15.0	*X*	342.28284	321.21162	148.82485	1.49304	0.1411828	0.26636941	2.3922863	21	—	—
15017	Cuppy	15.6	*X*	122.60035	348.40846	63.80309	6.21038	0.1614092	0.27776958	2.3263743	21	3 1.5	18.6
15018	1998 SM_{34}	14.4	*X*	83.23862	51.87574	14.75489	10.56823	0.2232530	0.27466903	2.3438488	21	1 31.0	16.6
15019	Gingold	15.1	*X*	113.50958	101.60971	134.32432	3.09814	0.1295858	0.30071489	2.2064771	21	10 24.7	18.1
15020	Brandonimber	14.8	*X*	290.22754	14.02513	104.08071	2.24533	0.1360774	0.26279237	2.4139460	21	12 15.0	17.0
15021	Alexkardon	15.3	*X*	74.35929	26.20945	38.74379	2.63921	0.1802593	0.27301232	2.3533213	21	—	—
15022	1998 SM_{144}	15.5	*X*	341.77274	245.28424	209.49309	2.23589	0.1790420	0.26427811	2.4048902	21	—	—
15023	Ketover	15.6	*X*	105.30329	147.97934	269.76896	1.83862	0.1491319	0.27642566	2.3339084	21	2 7.1	18.0
15024	1998 TB	14.0	*X*	313.97087	354.38798	110.19922	5.95204	0.1162343	0.25938787	2.4350223	21	—	—
15025	Uwontario	13.7	*X*	288.91339	72.00650	31.18289	7.27936	0.1070940	0.17259587	3.1948400	21	11 5.1	17.8
15026	Davidscott	14.3	*X*	102.08669	26.30188	73.08205	5.49340	0.1691039	0.23541767	2.5976263	21	4 13.2	17.8
15027	1998 UF_8	13.8	*X*	103.56589	141.55346	50.53342	7.28771	0.0865971	0.29004333	2.2602725	21	8 9.6	16.8
15028	Soushiyou	14.9	*X*	320.22153	14.54418	59.63112	3.76161	0.1455610	0.25799342	2.4437885	21	12 6.3	17.0
15029	1998 VC_5	14.8	*X*	323.92463	23.38004	119.20390	1.17579	0.0668146	0.26653454	2.3912981	21	—	—
15030	Matthewkroll	14.9	*X*	79.45900	214.99964	244.77685	1.79780	0.1620342	0.23247253	2.6195194	21	3 7.9	17.8
15031	Lemus	14.2	*X*	40.53694	40.40154	69.55122	5.44102	0.1279110	0.27189779	2.3597479	21	—	—
15032	Alexlevin	14.5	*X*	70.97376	126.36585	286.72537	5.51008	0.1183102	0.26971830	2.3724429	21	—	—
15033	1998 VY_{29}	10.7	*X*	329.25316	164.99613	258.39622	12.02286	0.2035098	0.08367042	5.1771181	21	10 21.2	16.8
15034	Décines	14.3	*X*	245.26429	129.54769	77.85163	5.78955	0.1508689	0.26306770	2.4122614	21	—	—
15035	1998 WS_3	14.3	*X*	252.73974	125.73141	57.86271	4.54099	0.0815350	0.30608706	2.1805836	21	—	—
15036	Giovannianselmi	14.2	*X*	260.16395	126.43780	329.55274	5.82605	0.0885176	0.25475401	2.4644614	21	9 29.7	17.4
15037	Chassagne	13.1	*X*	339.53799	66.77701	179.20119	10.09512	0.0570894	0.18780682	3.0199180	21	4 18.5	17.0
15038	1998 WQ_6	14.9	*X*	57.62954	71.45336	347.48729	1.93945	0.1920952	0.26710305	2.3879038	21	—	—
15039	1998 WN_{16}	14.0	*X*	51.88689	245.20475	190.11744	1.82967	0.1825572	0.26907633	2.3762149	21	—	—
15040	1998 XC	13.7	*X*	321.87575	95.12033	260.67097	3.51161	0.1474191	0.29057405	2.2575194	21	8 10.8	15.6

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15041 Paperetti	15.0	*X*	330.51390	147.33678	181.47298	5.77512	0.1649994	0.29072091	2.2567591	21	7 12.8	16.9
15042 Anndavgui	13.5	*X*	69.99783	81.68004	309.11571	16.92456	0.3136211	0.17925049	3.1152709	21	—	—
15043 1998 XW_9	13.6	*X*	278.94030	264.00761	174.60490	2.25894	0.0519845	0.20520681	2.8466989	21	10 4.5	17.2
15044 1998 XY_{16}	13.6	*X*	136.59430	205.20437	166.52040	5.49227	0.0557496	0.18024293	3.1038250	21	1 24.5	18.2
15045 Walesdymond	14.7	*X*	120.96794	185.39341	115.11495	1.57740	0.0510875	0.21298161	2.7769921	21	—	—
15046 1998 XY_{41}	13.7	*X*	76.48100	22.39713	31.16474	2.66621	0.1983706	0.26864693	2.3787463	21	—	—
15047 1998 XG_{49}	14.1	*X*	352.18391	338.51790	68.05907	7.78389	0.1180218	0.25649806	2.4532774	21	12 23.6	16.6
15048 1998 XQ_{63}	14.4	*X*	354.17818	91.58017	326.90979	8.38095	0.1061301	0.26035866	2.4289656	21	—	—
15049 1998 XA_{90}	13.8	*X*	205.69618	222.95053	219.97894	12.21955	0.1445434	0.24282813	2.5445055	21	7 2.6	18.0
15050 Heddal	13.3	*X*	180.61128	335.49125	315.13734	3.90363	0.1228473	0.17179751	3.2047302	21	—	—
15051 1998 YK_1	14.1	*X*	292.60553	259.64586	125.80696	3.60689	0.0692049	0.20202612	2.8764999	21	8 11.5	17.9
15052 Emileschweitzer	13.8	*X*	76.58159	90.44900	313.15704	4.08897	0.1429130	0.17653746	3.1471067	21	1 1.2	17.7
15053 Bochníček	15.5	*X*	140.38100	35.27163	179.32525	3.16962	0.0424523	0.29666304	2.2265225	21	10 21.9	18.3
15054 1998 YS_5	12.7	*X*	187.44714	288.31672	110.28569	11.53798	0.1081988	0.19037613	2.9926853	21	4 28.8	17.6
15055 1998 YS_9	13.9	*X*	293.82474	18.77803	137.26222	3.01386	0.1356078	0.17125463	3.2114993	21	—	—
15056 Barbaradixon	13.2	*X*	223.51163	63.64652	299.62186	1.83314	0.0897856	0.18961668	3.0006708	21	4 16.6	17.7
15057 Whitson	14.2	*X*	0.87019	301.77105	152.25381	2.10547	0.1513012	0.17366982	3.1816554	21	—	—
15058 Billcooke	13.7	*X*	107.86613	283.57429	123.82300	5.82843	0.1768560	0.18211113	3.0825613	21	2 20.6	18.0
15059 1998 YL_{27}	13.5	*X*	116.36532	119.76677	202.24996	2.32051	0.0734338	0.21502119	2.7594035	21	—	—
15060 1999 AD	14.4	*X*	225.73365	237.51153	190.75190	3.67542	0.1052537	0.28917059	2.2648180	21	7 8.9	17.5
15061 1999 AL	13.3	*X*	101.96122	246.62948	147.54051	7.28475	0.2303583	0.18085619	3.0968046	21	2 3.9	17.7
15062 1999 AL_2	13.2	*X*	163.56309	78.13836	331.75094	8.94649	0.1044077	0.18838513	3.0137344	21	4 9.7	18.0
15063 1999 AQ_3	14.0	*X*	342.48638	274.79631	68.52149	3.51825	0.0688023	0.19932199	2.9024578	21	8 31.2	17.6
15064 1999 AC_4	13.7	*X*	318.58178	146.67652	25.20378	1.91358	0.1726982	0.17552378	3.1592118	21	—	—
15065 1999 AJ_4	15.5	*X*	106.60150	161.57293	217.00817	1.52421	0.2235326	0.26819675	2.3814075	21	—	—
15066 1999 AX_7	12.5	*X*	258.82616	230.47456	359.75136	9.06859	0.0454280	0.17498725	3.1656662	21	—	—
15067 1999 AM_9	13.4	*X*	14.02410	256.26289	58.59704	9.73640	0.1565957	0.21039726	2.7996861	21	9 24.2	16.6
15068 Wiegert	13.9	*X*	337.61429	93.52067	346.54942	1.74331	0.2270278	0.12496351	3.9622989	21	12 7.2	18.2
15069 1999 AU_{21}	13.7	*X*	207.87908	237.44664	157.00048	2.01507	0.0897550	0.18984413	2.9982737	21	5 10.2	18.2
15070 1999 BK_8	13.9	*X*	325.21863	322.43793	58.00483	5.55800	0.1792858	0.29235607	2.2483364	21	10 3.6	15.3
15071 Hallerstein	13.1	*X*	235.22624	49.78744	35.34111	6.26454	0.1776007	0.24470365	2.5314873	21	8 6.5	16.9
15072 Landolt	15.3	*X*	152.03618	123.64260	221.38660	5.09980	0.1385054	0.26686480	2.3893248	21	1 2.9	18.6
15073 1999 BK_{13}	13.1	*X*	67.40949	253.62259	165.31031	15.69128	0.1413272	0.17329443	3.1862486	21	1 6.0	17.3
15074 1999 BN_{14}	13.4	*X*	3.63377	106.53501	52.05779	1.99271	0.1218252	0.18015767	3.1048042	21	1 27.4	17.0
15075 1999 BF_{15}	14.1	*X*	93.17193	183.08916	206.82511	1.86659	0.2026291	0.26549186	2.3975550	21	—	—
15076 Joellewis	14.2	*X*	97.11425	124.16381	168.79395	6.65762	0.1335486	0.25197606	2.4825416	21	12 12.2	18.0
15077 Edyalge	13.1	*X*	149.86317	75.40207	52.19660	2.78176	0.0450525	0.19505862	2.9445976	21	7 1.3	17.4
15078 1999 CW	12.5	*X*	10.56458	8.57263	120.76022	7.92390	0.1125438	0.17578170	3.1561207	21	1 2.6	16.4
15079 1999 CO_{16}	13.8	*X*	328.72894	294.53231	27.29366	2.16904	0.0275617	0.19455285	2.9496987	21	7 13.4	17.8
15080 1999 CR_{20}	13.7	*X*	359.61604	19.16220	70.56243	4.88559	0.0964685	0.21575866	2.7531121	21	—	—
15081 1999 CU_{25}	13.3	*X*	301.12085	312.29784	84.78158	3.11023	0.0748048	0.20123838	2.8840016	21	9 8.9	17.0
15082 1999 CT_{30}	12.4	*X*	39.99787	122.48951	339.27826	9.06166	0.0075483	0.17597071	3.1538604	21	1 13.3	16.9
15083 Tianhuili	14.2	*X*	14.39059	215.12507	124.80407	3.54974	0.1812587	0.24633287	2.5203130	21	11 5.5	16.7
15084 1999 CH_{38}	13.8	*X*	162.37591	234.21254	131.21324	3.60726	0.1861980	0.18051489	3.1007068	21	2 25.5	18.7
15085 1999 CB_{43}	12.9	*X*	277.66701	192.91609	91.29871	1.96202	0.1332459	0.18066323	3.0990092	21	3 7.7	17.4
15086 1999 CH_{60}	14.2	*X*	0.96866	276.86312	174.20310	1.37790	0.1412467	0.17120846	3.2120766	21	—	—
15087 1999 CZ_{61}	13.3	*X*	34.73194	302.79042	180.74638	11.44494	0.0782108	0.17911077	3.1168908	21	1 29.5	17.4
15088 Licitra	14.9	*X*	191.29390	265.52647	98.43502	7.09016	0.1432119	0.27482323	2.3429720	21	3 11.9	18.5
15089 1999 CQ_{82}	13.2	*X*	313.25947	259.79449	38.95853	10.22405	0.1651348	0.23623064	2.5916632	21	4 28.2	16.1
15090 1999 CA_{97}	13.1	*X*	335.40329	151.95040	162.58492	2.11518	0.0845165	0.19301828	2.9653122	21	7 8.3	16.7
15091 Howell	13.8	*X*	187.42097	312.60931	305.08502	7.27327	0.0758029	0.16990158	3.2285272	21	—	—
15092 Beegees	12.1	*X*	169.20086	123.22051	355.98561	9.69860	0.0278722	0.18868628	3.0105268	21	7 15.1	16.5
15093 Lestermackey	14.8	*X*	359.75541	210.07904	221.82257	3.29779	0.1571825	0.27734338	2.3287570	21	—	—
15094 Polymele	11.8	*X*	354.52176	4.31039	50.32824	12.98588	0.0958800	0.08374792	5.1739239	21	11 23.9	18.1
15095 1999 WO_3	14.5	*X*	10.55472	264.20919	233.60670	5.13223	0.0864541	0.28200117	2.3030433	21	—	—
15096 1999 XH_{12}	13.0	*X*	256.38860	236.38659	163.06668	5.39936	0.0660575	0.20868082	2.8150171	21	7 11.9	17.0
15097 1999 XP_{38}	12.7	*X*	16.31109	118.54473	99.82072	11.10210	0.0781902	0.19496321	2.9455582	21	5 8.1	16.5
15098 2000 AY_2	14.9	*X*	236.28903	322.25935	105.07922	3.07384	0.1577237	0.25482558	2.4640000	21	7 14.8	18.6
15099 Janestrohm	14.7	*X*	9.29110	195.83844	259.31184	6.26348	0.1931184	0.22753907	2.6572478	21	—	—
15100 2000 AP_{144}	13.1	*X*	206.14427	336.09395	328.16311	21.75027	0.0140783	0.22924187	2.6440729	21	1 16.6	17.0
15101 2000 AY_{150}	13.2	*X*	51.54460	54.55031	148.27704	27.14386	0.1971005	0.19628034	2.9323660	21	6 26.8	17.3
15102 2000 AA_{202}	11.9	*X*	339.92815	108.43617	301.48755	20.82666	0.0360196	0.16965502	3.2316543	21	11 9.3	16.8
15103 2000 AN_{204}	13.9	*X*	108.23595	238.82615	189.94822	12.71746	0.1542026	0.23940406	2.5687098	21	3 4.4	17.4
15104 2000 BV_3	12.8	*X*	320.15043	286.46446	113.76150	9.79833	0.0496956	0.21226188	2.7832660	21	10 18.2	16.5
15105 2000 BJ_4	12.4	*X*	209.50919	112.84783	41.26816	16.31370	0.0567551	0.17165666	3.2064830	21	10 13.4	17.2
15106 Swanson	14.6	*X*	56.00138	248.94843	209.00318	4.08424	0.2077877	0.23348052	2.6119746	21	1 25.5	17.0
15107 Toepperwein	14.5	*X*	336.20593	14.50057	266.02558	4.59658	0.1766982	0.28780564	2.2719731	21	5 1.7	16.5
15108 2000 CT_{61}	13.3	*X*	124.99868	108.13217	200.40474	6.98946	0.0183840	0.17304866	3.1892646	21	—	—
15109 Wilber	14.9	*X*	232.08425	33.47379	218.31902	6.65439	0.0806173	0.27088248	2.3656406	21	—	—
15110 2000 CE_{62}	12.9	*X*	276.12425	316.49753	301.34849	8.62797	0.0538533	0.18479726	3.0526174	21	2 9.0	17.3
15111 Winters	14.8	*X*	80.01500	9.47875	29.87588	5.35941	0.2459147	0.27370289	2.3493612	21	—	—
15112 Arlenewolfe	14.3	*X*	17.02762	144.11522	72.07102	3.80088	0.1450872	0.28247020	2.3004932	21	4 22.2	16.1
15113 2000 CO_{96}	13.8	*X*	172.21515	59.17961	174.80072	6.69881	0.1245184	0.26112568	2.4242068	21	12 13.8	17.5
15114 2000 CY_{101}	12.9	*X*	303.61195	19.87993	186.28651	6.87121	0.1010454	0.17856964	3.1231844	21	1 5.8	17.5
15115 Yvonneroe	14.3	*X*	239.49970	228.83076	343.22040	0.82969	0.1314301	0.26604847	2.3942098	21	—	—
15116 Jaytate	15.0	*X*	119.63228	235.13784	122.22166	1.43105	0.2357135	0.26862015	2.3789044	21	—	—
15117 2000 DA_{79}	13.0	*X*	324.88242	154.98525	183.09518	5.81650	0.1567893	0.20101522	2.8861358	21	7 15.1	16.3
15118 Elizabethsears	15.2	*X*	8.16099	343.80562	77.37391	3.35221	0.0973702	0.26837682	2.3803421	21	—	—
15119 2000 DU_{97}	13.6	*X*	82.04863	31.42556	349.93764	16.10233	0.1126767	0.17964127	3.1107514	21	—	—
15120 Mariafélix	15.2	*X*	54.95508	340.20535	239.19022	2.88083	0.1662580	0.28850468	2.2683016	21	7 18.4	17.4

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15121 2000 EN_{14}	15.0	X	130.21494	200.59243	168.12771	3.56521	0.1631719	0.27347758	2.3506514	21	1 9.3	17.9
15122 2000 EE_{17}	14.3	X	335.41040	277.38657	205.32329	0.28202	0.1695962	0.17736163	3.1373497	21	—	—
15123 2000 EP_{36}	12.9	X	256.41851	162.69709	53.17510	1.65919	0.1309373	0.17523653	3.1626633	21	—	—
15124 2000 EZ_{39}	13.6	X	314.48308	166.56117	37.55201	2.55235	0.1402625	0.22769628	2.6560246	21	1 1.2	17.2
15125 2000 EZ_{41}	14.1	X	44.50190	243.02873	148.45751	0.37396	0.1583139	0.17255077	3.1953967	21	—	—
15126 Brittanyanderson	15.7	X	303.77901	151.31574	178.37350	4.18743	0.1733644	0.28793720	2.2712810	21	5 23.4	18.2
15127 2000 EN_{45}	12.3	X	210.18150	6.07686	1.33726	20.49350	0.2761410	0.18967076	3.0001004	21	4 1.7	17.8
15128 Patrickjones	14.8	X	190.69960	214.48186	359.75156	8.61102	0.0714830	0.21284257	2.7782013	21	12 2.7	19.0
15129 Sparks	14.3	X	73.78576	27.91240	352.27639	4.63366	0.2054037	0.26606652	2.3941015	21	—	—
15130 2000 EU_{49}	13.8	X	161.07653	202.93913	339.38470	2.28332	0.1526405	0.20496651	2.8489235	21	9 23.2	18.3
15131 Alanalda	13.8	X	293.72116	225.31983	61.28678	6.62598	0.1159633	0.23288256	2.6164438	21	3 27.2	17.4
15132 Steigmeyer	15.7	X	29.71781	243.36584	194.76356	6.39014	0.0996815	0.26888732	2.3773284	21	—	—
15133 Sullivan	14.3	X	101.20883	343.08215	271.51409	3.45054	0.1213472	0.29897928	2.2150081	21	11 1.8	17.5
15134 2000 ED_{92}	13.2	X	314.83794	231.68517	227.99381	3.95410	0.1098490	0.17109194	3.2135348	21	12 9.2	17.2
15135 2000 EG_{92}	13.5	X	323.91072	94.95826	191.94803	12.12537	0.1661752	0.23802401	2.5786291	21	4 29.8	16.4
15136 2000 EE_{93}	12.7	X	241.61141	45.67441	128.82764	15.93529	0.0484526	0.16990638	3.2284663	21	12 11.9	17.5
15137 2000 EL_{93}	13.3	X	21.10387	267.39791	323.79857	14.32458	0.0581220	0.24046524	2.5611470	21	5 21.0	16.7
15138 2000 EQ_{93}	13.4	X	103.95533	33.92231	315.90999	11.90439	0.1837685	0.22015321	2.7163519	21	—	—
15139 Connormcarty	14.9	X	346.76894	292.38691	205.12638	10.80110	0.1345075	0.22555129	2.6728372	21	—	—
15140 2000 EB_{97}	14.1	X	177.00719	237.97157	349.53279	5.64545	0.1127939	0.25713837	2.4492031	21	12 9.6	17.8
15141 2000 EP_{106}	13.7	X	347.30758	248.45153	348.99614	13.68908	0.1484684	0.23720259	2.5845787	21	3 27.6	16.5
15142 2000 EF_{108}	13.2	X	162.92442	115.39313	146.64842	9.70468	0.1149505	0.21399629	2.7682069	21	12 30.8	17.7
15143 2000 EX_{108}	12.9	X	148.48142	281.33072	153.88647	10.72575	0.0903499	0.19030833	2.9933961	21	5 1.2	17.5
15144 Araas	14.3	X	316.50782	268.55028	5.56012	6.02884	0.1492377	0.28041160	2.3117386	21	3 26.1	17.0
15145 Ritageorge	15.0	X	159.67349	211.81965	24.77874	4.31361	0.1330237	0.30155111	2.2023961	21	12 9.5	18.2
15146 Halpov	14.0	X	8.18355	197.60486	132.79629	2.98010	0.0728332	0.20579966	2.8412293	21	9 22.8	17.6
15147 Siegfried	12.8	X	53.37871	307.92267	57.92464	8.93983	0.0066174	0.16864247	3.2445770	21	12 19.9	17.5
15148 Michaelmaryott	15.6	X	311.47762	332.49624	2.68980	6.17848	0.1144270	0.29165884	2.2519182	21	6 23.9	18.0
15149 Loufaix	13.5	X	331.53933	42.73714	131.12228	13.86393	0.1176405	0.22544541	2.6736740	21	—	—
15150 Salsa	14.4	X	356.07923	275.07561	37.88349	3.92515	0.1547893	0.29078664	2.2564190	21	8 20.9	16.0
15151 Wilmacherup	14.3	X	210.91905	302.05317	18.16214	2.22689	0.2324050	0.27196674	2.3593490	21	2 3.1	18.4
15152 2000 FJ_5	13.8	X	300.43087	348.94242	136.13592	11.04903	0.2937879	0.21838352	2.7310070	21	12 13.9	16.2
15153 2000 FD_{17}	12.8	X	120.96411	228.23092	147.39583	10.42958	0.1496816	0.18010558	3.1054028	21	1 23.6	17.4
15154 2000 FW_{30}	13.3	X	276.94956	173.94741	73.06751	15.29444	0.1277458	0.22804589	2.6533094	21	1 14.5	17.4
15155 Ahn	14.6	X	55.03190	288.99866	156.92043	5.61340	0.0644764	0.27221576	2.3579099	21	—	—
15156 2000 FK_{38}	13.7	X	206.79630	269.83798	80.36562	3.51298	0.1960852	0.18438406	3.0571762	21	3 16.8	19.0
15157 2000 FV_{39}	13.9	X	299.08807	282.13984	31.27961	15.07459	0.1360146	0.23729390	2.5839157	21	4 30.6	17.2
15158 2000 FH_{40}	13.6	X	236.99890	256.94291	41.40326	13.81133	0.2067406	0.22599042	2.6693736	21	2 7.9	18.4
15159 2000 FN_{41}	13.8	X	180.39500	268.36496	95.65864	6.76388	0.2615763	0.22866644	2.6485068	21	3 11.4	18.5
15160 Wygoda	15.0	X	69.10604	50.36286	48.26552	5.17052	0.2364361	0.23309777	2.6148331	21	3 3.7	17.6
15161 2000 FQ_{48}	11.6	X	138.42997	99.75652	230.62977	18.22160	0.2021007	0.17086419	3.2163898	21	—	—
15162 2000 GN_2	14.3	X	67.55601	251.23203	189.99352	6.32917	0.0797998	0.27220369	2.3579796	21	1 1.6	16.9
15163 2000 GB_4	13.6	X	4.98737	350.30635	145.30535	12.69628	0.1364739	0.22493543	2.6777137	21	—	—
15164 2000 GA_{89}	14.1	X	169.79923	114.72019	160.19773	6.72282	0.0995201	0.26180432	2.4200157	21	—	—
15165 2000 GR_{89}	13.0	X	51.47814	127.81672	52.20522	13.84253	0.0923700	0.23636789	2.5906598	21	5 5.7	16.1
15166 2000 GX_{90}	12.8	X	211.41501	161.06118	170.37229	13.68975	0.1723878	0.22648745	2.6654669	21	2 19.5	17.3
15167 2000 GS_{135}	13.9	X	205.08807	23.53325	142.99179	7.25260	0.0869904	0.25400606	2.4692970	21	10 29.3	17.4
15168 Marijnfranx	13.8	X	156.28406	295.64639	351.84895	5.06896	0.0420693	0.21443282	2.7644487	21	—	—
15169 Wilfriedboland	14.7	X	194.21314	14.00438	13.23468	1.85206	0.0759835	0.18814774	3.0162688	21	4 16.5	19.1
15170 Erikdeul	15.4	X	4.21814	23.47083	40.67695	1.83540	0.1608181	0.26144954	2.4222044	21	—	—
15171 Xandertielens	15.2	X	8.17264	228.22452	84.67982	2.53014	0.1415259	0.29029068	2.2589883	21	9 15.4	16.9
15172 3086 *P–L*	12.9	X	319.48542	64.85343	245.56636	9.15623	0.0841235	0.19064205	2.9899018	21	6 8.3	16.7
15173 3520 *P–L*	13.4	X	208.28545	144.34610	242.78208	9.53800	0.1307534	0.18870942	3.0102807	21	4 28.6	18.2
15174 4649 *P–L*	13.2	X	160.04673	253.23799	183.46077	10.85919	0.0337893	0.18901621	3.0070225	21	5 10.5	17.6
15175 6113 *P–L*	14.8	X	359.41736	320.14524	331.03682	1.17428	0.1385056	0.24058404	2.5603038	21	7 17.0	17.1
15176 6299 *P–L*	14.6	X	285.59894	284.82458	194.95646	13.31576	0.1579580	0.21220697	2.7837461	21	11 24.7	18.0
15177 6599 *P–L*	14.1	X	122.70008	14.99989	110.35023	1.67747	0.0783781	0.23803030	2.5785836	21	5 28.7	17.5
15178 7075 *P–L*	13.7	X	279.10510	138.23747	203.23265	9.47544	0.1835654	0.19073539	2.9889262	21	5 11.3	18.0
15179 9062 *P–L*	13.9	X	240.34312	142.41180	240.00674	2.48257	0.1932696	0.23877986	2.5731844	21	5 18.0	17.8
15180 9094 *P–L*	15.1	X	122.08951	167.14303	196.51412	9.41940	0.2575119	0.26504845	2.4002282	21	1 7.3	18.3
15181 9525 *P–L*	15.1	X	250.39474	337.23094	57.10334	3.49640	0.1288807	0.28834113	2.2691593	21	6 18.8	18.0
15182 9538 *P–L*	14.9	X	13.12854	131.49594	158.09195	1.57492	0.0362878	0.28946114	2.2633021	21	8 5.9	17.1
15183 3074 *T–1*	14.5	X	297.34486	156.97189	359.33726	5.33686	0.1399926	0.17243131	3.1968724	21	—	—
15184 3232 *T–1*	13.8	X	5.30145	242.39454	190.15830	10.75217	0.1019564	0.19066075	2.9897063	21	—	—
15185 4104 *T–1*	13.6	X	343.65783	170.76235	168.06297	10.51959	0.0968246	0.24227527	2.5483749	21	8 27.2	16.3
15186 2058 *T–2*	15.6	X	138.38333	266.66058	174.60991	1.92373	0.0373937	0.28034571	2.3121008	21	4 9.5	18.3
15187 2112 *T–2*	13.9	X	98.97457	273.44924	78.64579	0.16257	0.1515919	0.16918780	3.2376012	21	—	—
15188 3044 *T–2*	13.4	X	330.84134	344.43903	123.02606	2.75048	0.1073694	0.16984466	3.2292484	21	—	—
15189 3071 *T–2*	14.7	X	0.49928	240.67919	47.15697	5.27447	0.0797893	0.24389814	2.5370579	21	7 14.3	17.6
15190 3353 *T–2*	13.7	X	183.12485	291.39606	25.98878	5.21186	0.1837964	0.17268331	3.1937614	21	1 20.7	19.0
15191 4234 *T–2*	13.1	X	198.70755	258.92515	29.68823	5.24938	0.1151349	0.17203376	3.2017955	21	—	—
15192 5049 *T–2*	15.0	X	27.75322	282.57534	280.81161	8.26128	0.1028209	0.28136775	2.3064985	21	4 17.8	17.3
15193 5148 *T–2*	14.7	X	271.07156	40.06990	308.69550	6.34402	0.2176390	0.28322514	2.2964034	21	4 27.2	18.1
15194 2272 *T–3*	15.0	X	156.75391	67.12045	2.19114	4.77868	0.1492602	0.28278673	2.2987763	21	4 25.7	18.5
15195 2407 *T–3*	14.6	X	327.17176	359.90710	355.83419	1.34278	0.0786593	0.19924587	2.9031969	21	8 21.9	18.2
15196 3178 *T–3*	15.1	X	168.93616	351.68789	61.40823	0.69176	0.1513544	0.19271696	2.9684023	21	4 24.9	19.9
15197 4203 *T–3*	14.2	X	353.95750	6.33195	185.47156	13.01710	0.1054904	0.23567374	2.5957443	21	2 9.4	17.4
15198 1940 *GJ*	13.6	X	263.02251	229.16603	35.14452	24.98143	0.2247551	0.27711626	2.3300293	21	1 8.6	18.0
15199 Rodnyanskaya	14.0	X	28.62898	91.90147	283.00987	2.87423	0.1565404	0.29740929	2.2227965	21	—	—
15200 1975 *SU*	12.6	X	286.22870	339.39366	187.92402	12.90031	0.0968798	0.17710329	3.1404000	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15201 1976 UY	13.9	X	194.26920	154.01117	237.69990	11.18460	0.2135811	0.22967881	2.6407184	21	4 17.8	18.4
15202 Yamada-Houkoku	14.3	X	103.32436	224.35572	177.65964	9.57434	0.2096551	0.26633233	2.3925083	21	1 24.1	17.1
15203 Grishanin	14.1	X	93.58645	38.07331	331.24283	2.67281	0.1905936	0.25941969	2.4348232	21	—	—
15204 1978 UG	14.3	X	103.81493	317.02541	45.92664	3.27006	0.2022964	0.25933344	2.4353630	21	—	—
15205 1978 VC_4	14.7	X	293.68233	55.98279	3.27482	1.45624	0.0629187	0.20326871	2.8647651	21	9 27.6	18.4
15206 1978 VJ_6	14.6	X	339.92658	343.55299	28.85307	2.93973	0.0801066	0.22683654	2.6627315	21	10 7.8	17.6
15207 1979 KD	13.0	X	38.15611	101.31034	150.03148	7.85611	0.1508243	0.23585614	2.5944059	21	8 1.7	15.9
15208 1979 MW_1	14.4	X	217.72340	127.24454	244.48013	4.65091	0.1810045	0.22941237	2.6427626	21	4 14.1	18.9
15209 1979 ML_2	13.3	X	319.46722	150.28134	130.15902	12.90897	0.1913872	0.18411522	3.0601514	21	4 20.3	17.4
15210 1979 MU_2	14.5	X	210.77788	153.31931	161.21248	5.74100	0.1416620	0.17830296	3.1262978	21	2 5.9	19.5
15211 1979 MW_3	15.6	X	331.72711	35.44502	234.03232	2.65423	0.2138519	0.27890177	2.3200741	21	3 31.7	17.9
15212 Yaroslavl′	13.1	X	336.30264	343.58138	89.23718	10.31453	0.1358119	0.21172063	2.7880075	21	12 20.7	16.2
15213 1980 UO_1	13.2	X	168.30303	112.52320	220.12614	21.57327	0.0352729	0.17704192	3.1411257	21	1 8.4	18.2
15214 1981 DY	14.1	X	190.79309	326.72469	284.83286	6.25880	0.1445027	0.21266925	2.7797106	21	—	—
15215 1981 EH_{13}	15.2	X	179.15568	65.98705	256.41723	2.98313	0.2162702	0.26513776	2.3996892	21	1 10.3	19.0
15216 1981 EX_{14}	15.3	X	127.65718	56.27496	206.39930	8.62987	0.1090244	0.20928580	2.8095895	21	11 27.9	19.7
15217 1981 ET_{19}	16.2	X	218.29641	115.05457	135.61582	1.91484	0.1393182	0.26336528	2.4104439	21	—	—
15218 1981 EO_{41}	14.0	X	89.94042	357.58937	5.95201	9.72736	0.1381061	0.21428336	2.7657341	21	—	—
15219 1981 EY_{42}	16.0	X	240.56918	10.42850	211.77126	0.63260	0.1352344	0.26302722	2.4125089	21	—	—
15220 Sumerkin	13.9	X	309.69725	344.49989	40.13617	8.65355	0.2444134	0.24475333	2.5311448	21	8 19.1	16.4
15221 1981 UA_{23}	14.9	X	221.43754	338.82885	92.95853	3.08586	0.1615988	0.28998679	2.2605663	21	7 4.7	18.3
15222 1982 FL_1	12.6	X	49.20737	89.18146	25.22775	1.40163	0.1491550	0.17625891	3.1504215	21	2 17.1	16.2
15223 1984 SN_4	15.0	X	249.48157	9.39614	337.54073	1.48122	0.2117273	0.23276553	2.6173207	21	4 10.5	19.2
15224 Penttilä	13.9	X	206.05213	196.24950	70.11441	12.34622	0.2415649	0.26233342	2.4167606	21	—	—
15225 1985 RJ_4	13.7	X	181.56134	314.64035	33.49309	2.24889	0.2030771	0.17839875	3.1251786	21	2 22.6	19.0
15226 1986 UP	13.4	X	212.94436	251.96579	35.13433	22.47476	0.2383052	0.26594459	2.3948332	21	—	—
15227 1986 VA	13.1	X	262.27862	61.23994	271.96987	8.84855	0.1003829	0.18735976	3.0247200	21	4 18.2	17.7
15228 Ronmiller	14.8	X	299.81437	351.55608	178.33136	2.76460	0.1388341	0.31152317	2.1551416	21	—	—
15229 1987 QZ_6	14.1	X	12.14528	15.74428	291.18119	5.02138	0.0679095	0.29022826	2.2593122	21	8 31.8	16.5
15230 Alona	14.6	X	232.34455	248.50933	167.74545	5.42834	0.1659669	0.28559590	2.2836773	21	6 24.6	18.1
15231 Ehdita	12.0	X	104.75206	215.78995	158.29435	6.81609	0.2931356	0.12594103	3.9417694	21	1 31.3	17.9
15232 1987 SD_{13}	14.8	X	79.83979	334.03653	65.07257	1.92141	0.1921755	0.27112483	2.3642307	21	—	—
15233 1987 WU_4	14.0	X	58.89191	326.16367	79.33233	4.72517	0.1557736	0.23878504	2.5731473	21	—	—
15234 1988 BJ_5	13.7	X	182.02699	227.80035	280.88246	12.04892	0.0633862	0.22048747	2.7136059	21	8 30.1	17.9
15235 1988 DA_5	13.4	X	178.57336	163.72231	183.20571	22.41511	0.0316476	0.17820930	3.1273931	21	2 6.9	18.2
15236 1988 RJ_4	14.0	X	198.07371	152.79185	204.01295	2.16199	0.0949867	0.22775842	2.6555415	21	3 9.8	17.9
15237 1988 RL_6	14.3	X	317.29928	180.51261	159.82162	7.32528	0.1484492	0.26628847	2.3927710	21	7 6.7	16.7
15238 Hisaohori	14.9	X	88.75359	137.54262	43.68546	3.88211	0.0764523	0.28555263	2.2839080	21	6 28.9	17.5
15239 Stenhammar	13.6	X	332.93817	26.75792	247.07125	9.05887	0.0534511	0.19132797	2.9827515	21	5 13.2	17.6
15240 1989 GF_3	15.3	X	134.02556	14.65929	223.14494	4.14583	0.1600073	0.25814353	2.4428411	21	11 11.1	19.2
15241 1989 ST_3	14.9	X	143.08996	306.89150	135.90219	3.03552	0.1111149	0.23429275	2.6059344	21	5 1.4	18.7
15242 1989 SX_5	14.5	X	167.40427	11.79099	94.45043	2.88384	0.1079941	0.23836349	2.5761801	21	6 25.9	18.2
15243 1989 TU_1	13.5	X	82.40972	161.17125	260.10587	6.70267	0.2882891	0.22623810	2.6674250	21	2 8.2	16.4
15244 1989 TY_2	14.3	X	3.74611	240.27692	71.27198	4.55881	0.0264953	0.24305170	2.5429448	21	8 22.8	17.5
15245 1989 TP_{16}	13.6	X	252.54151	2.28677	52.41308	2.01468	0.1417797	0.17920487	3.1157996	21	7 17.7	18.1
15246 Kumeta	14.2	X	147.71590	296.89906	117.53919	3.63621	0.2042140	0.23132501	2.6281752	21	4 9.3	18.3
15247 1989 WS	13.8	X	251.60570	159.15621	237.22406	8.74523	0.1928943	0.23943672	2.5684762	21	6 16.3	17.6
15248 Hidekazu	14.2	X	280.49218	347.64295	36.82572	1.20304	0.2089466	0.23998236	2.5645815	21	7 2.4	17.6
15249 Capodimonte	12.2	X	96.37044	169.12408	59.09315	16.76619	0.1229754	0.17567196	3.1574349	21	9 21.7	17.2
15250 Nishiyamahiro	13.8	X	56.98233	217.72787	337.81435	9.58638	0.1700109	0.19555262	2.9396364	21	6 18.3	17.6
15251 1990 EF_2	15.1	X	260.65637	301.69379	252.83650	3.71069	0.0766381	0.30787415	2.1721371	21	—	—
15252 Yoshiken	14.1	X	297.97978	157.01156	127.50639	7.52109	0.1315808	0.27948159	2.3168642	21	3 21.0	17.1
15253 1990 QA_4	14.4	X	356.56045	253.66794	337.95017	4.86460	0.0440448	0.27826565	2.3236087	21	4 10.4	17.0
15254 1990 QM_4	14.0	X	34.77699	124.49326	137.99559	5.23504	0.1412036	0.28505275	2.2865773	21	8 15.3	15.9
15255 1990 QQ_8	14.1	X	162.80467	308.88436	52.05974	2.15803	0.1601915	0.17606453	3.1527398	21	2 19.9	19.1
15256 1990 RD_1	12.8	X	108.12284	248.14854	169.43175	9.59611	0.0838228	0.17511181	3.1641648	21	2 19.4	17.3
15257 1990 RQ_8	14.0	X	206.77315	326.06240	7.88123	1.27946	0.1729343	0.17729488	3.1381371	21	2 25.6	19.0
15258 Alfilipenko	13.1	X	143.16242	32.67021	293.88446	6.73577	0.1649415	0.16911958	3.2384718	21	—	—
15259 1990 SL_7	15.2	X	77.22924	342.46567	61.79639	3.19222	0.1946064	0.26567107	2.3964767	21	—	—
15260 1990 SY_8	14.9	X	320.42702	240.70015	56.70810	4.23635	0.1656192	0.28057524	2.3108397	21	5 3.5	17.3
15261 1990 SV_{12}	13.5	X	136.68834	324.22033	62.76001	2.27752	0.1875581	0.17511284	3.1641524	21	2 28.7	18.4
15262 Abderhalden	13.3	X	205.90864	288.04679	5.74222	0.62816	0.1422543	0.17109494	3.2134973	21	1 11.2	18.5
15263 Erwingroten	14.6	X	349.20583	116.30859	26.32248	2.97003	0.1140948	0.26422290	2.4052252	21	—	—
15264 Delbrück	15.1	X	327.34675	128.31187	336.55656	2.29867	0.1295050	0.26061337	2.4273827	21	—	—
15265 Ernsting	14.6	X	355.01123	24.82046	64.82702	11.46068	0.2005186	0.26082588	2.4260640	21	—	—
15266 1990 UQ_3	15.1	X	236.57919	170.32899	177.29847	5.82359	0.1777887	0.27481145	2.3430389	21	3 30.4	18.6
15267 Kolyma	13.8	X	94.84339	324.57342	81.07885	12.84929	0.2277600	0.26518722	2.3993908	21	1 22.5	16.3
15268 Wendelinefroger	14.7	X	189.82530	210.50390	143.98279	2.75378	0.2337300	0.27075863	2.3663620	21	2 27.5	18.5
15269 1990 XF	12.2	X	135.71085	220.90330	292.91651	10.99855	0.2034155	0.24162016	2.5529792	21	7 29.7	16.3
15270 1991 AE_2	13.6	X	168.87982	267.35984	150.04800	14.10848	0.1469625	0.24003228	2.5642259	21	5 1.4	17.9
15271 1991 DE	13.8	X	71.99477	82.81982	81.83470	13.09121	0.2313897	0.23499817	2.6007168	21	6 7.8	16.8
15272 1991 GH	12.9	X	331.88456	13.01752	194.88800	13.27953	0.0976338	0.22692828	2.6620138	21	1 31.5	16.6
15273 Ruhmkorff	13.6	X	184.32531	236.75152	199.83013	12.10755	0.1484950	0.23527073	2.5987078	21	6 5.9	17.9
15274 1991 GO_6	14.0	X	214.65169	191.96423	200.09467	14.92036	0.1346658	0.23256098	2.6188551	21	5 10.9	18.2
15275 1991 GV_6	14.5	X	278.16014	99.99857	200.06419	2.76168	0.0942096	0.22854243	2.6494648	21	3 25.4	18.3
15276 Diebel	12.6	X	170.75115	130.44727	111.67370	16.14645	0.1760725	0.21321988	2.7749229	21	12 13.9	17.3
15277 1991 PC_7	13.8	X	44.70561	227.82829	100.13263	3.22285	0.0725578	0.20247142	2.8722808	21	11 9.9	17.7
15278 Pâquet	11.5	X	206.32772	64.34566	344.76739	9.29200	0.2160418	0.12386864	3.9856130	21	5 22.0	18.1
15279 1991 PY_7	15.0	X	21.40595	342.39428	84.60795	1.93198	0.0954928	0.30715767	2.1755136	21	—	—
15280 1991 PW_{11}	14.4	X	338.95098	100.91383	187.57108	7.26899	0.1883785	0.25928678	2.4356552	21	5 25.0	16.7

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15281 1991 PT_{16}	13.2	X	28.80392	167.15626	152.27224	2.40593	0.0672973	0.19845405	2.9109142	21	10 6.8	16.9
15282 Franzmarc	13.5	X	285.57744	145.65219	203.44986	8.47954	0.0787949	0.19028448	2.9936462	21	6 12.7	17.7
15283 1991 RB_8	14.1	X	246.71915	59.03289	37.33368	5.30104	0.1213643	0.29405813	2.2396522	21	9 15.4	16.7
15284 1991 RZ_{16}	15.2	X	269.51906	355.57890	63.91587	2.52741	0.2053118	0.29302481	2.2449144	21	8 9.2	17.8
15285 1991 RW_{18}	13.8	X	189.72256	98.59956	268.07909	4.85900	0.1161184	0.18409932	3.0603277	21	3 16.8	18.8
15286 1991 RJ_{22}	14.2	X	183.55449	214.91690	120.49915	4.48235	0.2112687	0.31360922	2.1455740	21	1 22.9	17.4
15287 1991 RX_{25}	14.5	X	147.15090	253.18590	90.52964	5.05583	0.2034951	0.30974788	2.1633684	21	—	—
15288 1991 RN_{27}	12.6	X	290.92761	176.93376	338.56468	14.27655	0.0329925	0.23767735	2.5811358	21	—	—
15289 1991 TL	15.3	X	167.62943	171.90440	140.72521	5.65009	0.1343956	0.30913777	2.1662139	21	—	—
15290 1991 TF_1	13.1	X	47.33413	275.40514	170.45500	17.69187	0.1398561	0.17391836	3.1786236	21	1 6.9	17.2
15291 1991 VO_1	14.1	X	245.00635	313.27930	112.69621	5.47781	0.1228902	0.29018471	2.2595382	21	7 28.6	16.9
15292 1991 VD_2	13.1	X	156.17542	302.21037	103.26220	3.01750	0.1930010	0.18085031	3.0968717	21	4 8.8	18.1
15293 1991 VO_3	14.6	X	337.54505	37.95860	59.37201	4.16158	0.1508215	0.26782362	2.3836188	21	—	—
15294 Underwood	14.3	X	149.93782	240.01863	117.95468	3.59315	0.1833171	0.31079781	2.1584935	21	1 14.8	17.0
15295 Tante Riek	14.9	X	326.53655	104.87241	59.61357	7.60791	0.0614071	0.27335053	2.3513797	21	—	—
15296 Tantetruus	15.5	X	308.97026	61.76637	114.25736	2.29267	0.1297068	0.26715690	2.3875829	21	—	—
15297 1992 CF	13.4	X	279.23189	307.56710	283.97418	9.70069	0.0535661	0.26839732	2.3802209	21	—	—
15298 1992 EB_{13}	14.2	X	208.58920	7.90260	306.53766	4.10659	0.1237705	0.26822315	2.3812512	21	1 22.6	17.8
15299 1992 ER_{17}	14.5	X	87.54822	102.05356	324.97830	1.77813	0.1885882	0.27002498	2.3706463	21	1 30.9	16.7
15300 1992 RV_2	14.0	X	53.57342	208.08180	169.34815	6.97293	0.1246407	0.21276703	2.7788589	21	—	—
15301 Marutesser	14.1	X	312.04600	257.84982	134.41506	2.72176	0.0987834	0.20304378	2.8668805	21	9 15.8	17.5
15302 1992 TJ_1	13.1	X	269.65454	180.84219	149.85197	14.46945	0.1819402	0.22838046	2.6507173	21	4 18.2	17.3
15303 Hatoyamamachi	13.0	X	242.74187	109.05396	226.96106	9.13558	0.1077233	0.19022812	2.9942374	21	3 31.7	17.7
15304 Wikberg	13.5	X	325.24221	173.28173	239.26868	16.10340	0.3259264	0.20249494	2.8720584	21	10 14.2	15.7
15305 1992 WT_1	13.1	X	113.77462	292.58783	83.69428	7.53941	0.2589624	0.21470985	2.7620704	21	1 26.5	17.0
15306 1992 WK_2	15.0	X	307.81764	229.04020	250.69175	2.60215	0.1081677	0.27548046	2.3392440	21	—	—
15307 1992 XK	14.4	X	272.50796	118.94153	282.41767	1.16713	0.2126955	0.26513274	2.3997195	21	7 14.9	17.6
15308 1993 FR_4	15.3	X	241.94615	115.13741	152.63151	3.22221	0.2045634	0.27316437	2.3524479	21	—	—
15309 1993 FZ_7	15.8	X	299.28441	13.34414	53.55929	4.10799	0.0314070	0.29685215	2.2255768	21	11 3.6	18.0
15310 1993 FT_{19}	14.5	X	174.20564	280.17834	47.91456	7.89815	0.2250431	0.27220777	2.3579560	21	1 14.0	18.3
15311 1993 FZ_{22}	15.3	X	32.27875	46.45740	263.08622	1.33050	0.1886956	0.29142330	2.2531315	21	10 30.7	17.7
15312 1993 FH_{27}	14.4	X	267.33713	23.11243	339.28336	5.84255	0.1442466	0.21741786	2.7390875	21	5 25.7	18.5
15313 1993 FM_{28}	15.6	X	179.72066	180.30751	293.00203	1.67768	0.1497322	0.25557848	2.4591585	21	7 18.3	19.3
15314 1993 FL_{34}	13.2	X	106.33423	181.88031	43.52996	6.76672	0.0423087	0.15295704	3.4627653	21	9 11.9	18.3
15315 1993 FX_{35}	14.3	X	300.92785	296.72049	15.29555	22.52074	0.2489031	0.28234040	2.3011983	21	4 8.9	17.2
15316 Okagakimachi	14.6	X	38.13995	295.44706	291.94726	0.76219	0.1639645	0.28416145	2.2913562	21	6 28.8	16.4
15317 1993 HW_1	13.9	X	2.84238	177.50613	75.87538	12.51292	0.2042199	0.28268953	2.2993031	21	5 20.1	15.3
15318 Innsbruck	13.3	X	272.16405	192.39739	93.63166	25.62066	0.2007197	0.27477653	2.3432374	21	2 17.8	17.4
15319 1993 NU_1	14.9	X	148.92660	226.34234	151.74177	2.88075	0.2097719	0.26715862	2.3875726	21	2 19.2	18.4
15320 1993 OQ_8	15.5	X	168.40974	247.40622	108.79724	2.23829	0.1984756	0.26736273	2.3863573	21	2 9.9	19.1
15321 Donnadean	14.0	X	296.32164	44.96352	269.14972	24.03533	0.2722455	0.27523216	2.3406506	21	3 23.7	18.1
15322 1993 QY	13.7	X	208.55210	235.98850	156.12982	28.33419	0.3289701	0.23580632	2.5947713	21	5 5.6	19.1
15323 1993 QH_4	13.9	X	311.67060	245.92950	128.33733	2.20408	0.2247176	0.17339916	3.1849654	21	8 1.3	17.7
15324 1993 QO_4	14.0	X	32.57455	210.29272	149.52066	1.79232	0.2128126	0.18054057	3.1004128	21	12 18.4	18.0
15325 1993 QN_7	15.2	X	150.76997	290.33554	44.18068	1.75379	0.1461431	0.26194707	2.4191364	21	—	—
15326 1993 QA_9	15.3	X	154.06593	133.48551	140.73217	3.14903	0.1758855	0.25771943	2.4455203	21	—	—
15327 1993 RA_3	13.5	X	147.41955	99.46292	203.36356	12.22173	0.1710490	0.22414527	2.6840030	21	—	—
15328 1993 RJ_9	14.9	X	190.89877	22.06114	254.50145	1.20652	0.1859307	0.26127256	2.4232981	21	—	—
15329 Sabena	13.9	X	308.21021	120.40771	317.72571	1.22275	0.1217888	0.17776599	3.1325903	21	11 1.6	17.9
15330 de Almeida	14.1	X	135.59708	338.03839	22.69816	13.90141	0.2481448	0.22536463	2.6743129	21	1 31.3	18.4
15331 1993 TO_{24}	14.7	X	5.71975	62.48111	99.48339	3.06543	0.1296679	0.22673541	2.6635232	21	1 21.8	17.6
15332 CERN	13.4	X	72.03178	182.39930	51.37804	7.03359	0.0560756	0.24163800	2.5528535	21	8 18.6	16.8
15333 1993 TS_{36}	13.7	X	204.38325	357.67225	65.27691	14.21168	0.2302235	0.23687875	2.5869338	21	6 4.1	18.2
15334 1993 UE	13.9	X	134.32946	225.55671	117.08698	13.32867	0.2116845	0.26025978	2.4295808	21	—	—
15335 Satoyukie	14.2	X	115.96683	192.67759	217.59262	13.60195	0.2408592	0.22531734	2.6746870	21	3 1.9	18.3
15336 1993 UC_3	14.1	X	128.35180	92.21586	317.49157	1.19949	0.2188706	0.22682687	2.6628071	21	3 15.5	18.2
15337 1993 VT_2	13.4	X	106.86717	295.05613	91.23668	22.67498	0.2931764	0.26074157	2.4265870	21	1 26.7	16.5
15338 Dufault	14.4	X	110.20788	103.15330	96.39795	2.93806	0.1242280	0.19649847	2.9301955	21	8 25.3	18.7
15339 Pierazzo	13.6	X	267.33131	245.79759	127.72087	3.10505	0.0853231	0.19679268	2.9272743	21	6 19.7	17.7
15340 1994 CE_{14}	13.7	X	77.62301	9.94149	126.79601	10.63594	0.0380305	0.18538332	3.0461804	21	4 17.7	18.0
15341 1994 CV_{16}	13.7	X	111.90104	120.62830	107.62257	3.11506	0.0136793	0.19770759	2.9182365	21	9 21.1	17.8
15342 Assisi	14.1	X	27.71988	85.90780	65.26593	1.85235	0.1271942	0.18129248	3.0918342	21	2 26.3	17.6
15343 1994 PB_1	15.4	X	306.74948	238.49297	155.66392	3.72140	0.1342306	0.29299723	2.2450553	21	9 16.4	17.1
15344 1994 PA_2	14.7	X	8.72102	8.91946	356.74487	3.77026	0.1872371	0.29679961	2.2258394	21	12 14.7	16.8
15345 1994 PK_{11}	14.4	X	89.19981	116.19860	299.57758	4.34812	0.2223855	0.27159695	2.3614901	21	1 22.3	16.5
15346 Bonifatius	15.1	X	293.90682	105.25570	246.29733	5.57476	0.1398185	0.28727865	2.2747507	21	6 14.9	17.7
15347 Colinstuart	14.6	X	166.80968	328.03116	76.12614	6.05628	0.2252346	0.27666434	2.3325659	21	4 12.3	18.4
15348 1994 UJ	15.0	X	349.56319	289.21282	70.03394	3.86798	0.1835632	0.29081190	2.2562884	21	10 26.4	16.4
15349 1994 UX_1	14.5	X	217.14751	326.42512	67.58859	3.45971	0.2194459	0.28074107	2.3099296	21	5 9.0	18.2
15350 Naganuma	14.1	X	95.13971	204.87255	197.79422	4.61562	0.2739011	0.26826732	2.3809898	21	1 22.8	16.4
15351 Yamaguchimamoru	14.2	X	25.99702	26.84043	33.12722	10.01089	0.2184135	0.26200200	2.4187982	21	—	—
15352 1994 VB_7	14.8	X	64.47477	197.87638	223.10788	2.81183	0.1551792	0.26611170	2.3938306	21	—	—
15353 Meucci	14.7	X	225.37910	287.45327	87.23243	4.23029	0.2037585	0.27909622	2.3189964	21	4 23.3	18.5
15354 1994 YN_1	14.8	X	112.41982	299.92642	74.06294	3.72708	0.1820424	0.26444261	2.4038928	21	—	—
15355 Maupassant	13.7	X	134.06306	322.36165	321.82324	4.99371	0.0620075	0.25600444	2.4564300	21	—	—
15356 1995 DE	13.5	X	324.27499	175.83668	151.20819	15.70811	0.1309150	0.23718382	2.5847151	21	7 2.7	16.7
15357 1995 FM	13.9	X	350.74657	61.29595	177.76400	14.51737	0.0947422	0.22899900	2.6459420	21	4 18.6	17.0
15358 Kintner	14.0	X	268.32524	40.85722	140.70599	6.04471	0.0325846	0.21522802	2.7576354	21	—	—
15359 Dressler	14.5	X	50.58360	268.60278	139.87776	4.85947	0.0365088	0.21551820	2.7551595	21	—	—
15360 Moncalvo	15.7	X	307.25723	101.94128	104.29601	2.92286	0.1812878	0.27021781	2.3695183	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15361 1996 DK_2	14.7	X	13.00464	103.13646	131.55996	5.27614	0.1985755	0.24018515	2.5631377	21	5 19.9	16.8
15362 1996 ED	13.7	X	227.84921	53.34204	19.73121	5.81477	0.1618988	0.28866520	2.2674607	21	7 14.6	17.1
15363 Ysaye	14.4	X	356.01202	157.38848	171.65770	5.27395	0.2255254	0.28791014	2.2714233	21	9 22.7	15.6
15364 Kenglover	14.8	X	177.70030	86.04840	198.71820	13.12065	0.0936644	0.26053116	2.4278933	21	—	—
15365 1996 HQ_9	14.2	X	21.31171	160.53435	218.33281	11.98626	0.2350149	0.25340495	2.4732005	21	—	—
15366 1996 HR_{16}	14.5	X	348.62506	265.43604	43.87578	14.02732	0.1920487	0.24070354	2.5594563	21	7 25.5	17.1
15367 1996 HP_{23}	14.3	X	348.19131	14.30781	58.03871	6.99967	0.0697994	0.25663656	2.4523947	21	—	—
15368 Katsuji	14.4	X	257.60428	99.32450	164.13296	11.37338	0.1304114	0.26453711	2.4033202	21	1 6.8	18.2
15369 1996 KB	13.6	X	77.73792	6.80411	229.92424	2.75480	0.0898118	0.24433147	2.5340574	21	8 31.1	17.0
15370 Kanchi	15.1	X	118.43355	113.96660	264.40688	2.74011	0.1032723	0.21782460	2.7356767	21	1 10.5	18.7
15371 Steward	14.4	X	328.98679	126.52683	171.16080	2.73880	0.1090692	0.19016058	2.9949464	21	6 3.2	18.2
15372 Agrigento	13.3	X	277.08096	275.82224	97.46539	4.43736	0.0971812	0.15077609	3.4960776	21	6 30.4	18.2
15373 1996 WV_1	12.9	X	29.44439	205.84013	214.41484	8.43039	0.1535896	0.12485806	3.9645296	21	—	—
15374 Teta	14.5	X	58.58934	190.27685	131.95618	32.40587	0.1618967	0.35036324	1.9927693	21	—	—
15375 Laetitiafoglia	15.1	X	12.89472	33.92406	146.09269	4.48054	0.0578735	0.28812686	2.2702841	21	2 19.6	17.4
15376 Marták	12.5	X	130.98223	101.64023	256.39831	2.89707	0.3098969	0.12598340	3.9408857	21	2 5.9	18.8
15377 1997 KW	15.4	X	75.18131	216.34616	127.12826	6.35417	0.2197561	0.30372069	2.1918952	21	—	—
15378 Artin	15.7	X	315.76313	222.45171	124.16994	4.74018	0.1859870	0.24434051	2.5339949	21	7 7.8	18.2
15379 Alefranz	14.3	X	196.75094	341.06292	222.90171	5.40919	0.1052852	0.25545489	2.4599517	21	12 2.5	17.7
15380 1997 QQ_4	14.7	X	177.80211	339.19674	23.77670	2.76862	0.0827304	0.22552857	2.6730167	21	2 25.7	18.5
15381 Spadolini	14.7	X	4.72107	13.74496	271.89114	4.57786	0.1310613	0.28553322	2.2840115	21	7 19.6	16.5
15382 Vian	15.0	X	107.27233	0.95149	219.27545	6.93750	0.0482725	0.28724479	2.2749295	21	9 12.6	18.1
15383 1997 SE_3	14.4	X	159.08837	251.94616	175.41587	13.81984	0.1722265	0.23362464	2.6109003	21	5 4.6	18.7
15384 Samková	14.7	X	239.67918	202.34008	212.26517	1.41698	0.0791053	0.19582067	2.9369532	21	7 9.8	18.9
15385 Dallolmo	14.1	X	156.71721	321.69474	130.61698	11.74510	0.0802299	0.19350433	2.9603445	21	5 29.9	18.7
15386 Nicolini	15.3	X	212.10052	129.74533	196.32441	6.03379	0.1337142	0.27007714	2.3703410	21	2 7.5	18.9
15387 Hanazukayama	14.4	X	142.10297	285.91102	13.78280	12.54528	0.1807990	0.25855087	2.4402747	21	—	—
15388 Coelum	15.4	X	183.40995	178.16500	160.37246	2.68667	0.2064079	0.26725624	2.3869912	21	2 1.4	19.3
15389 Geflorsch	15.3	X	142.20838	217.01774	78.66541	3.46195	0.1870556	0.25861176	2.4398916	21	—	—
15390 Znojil	14.9	X	321.66465	175.67654	159.71830	0.50699	0.0761199	0.23849814	2.5752104	21	7 17.0	17.7
15391 Steliomancinelli	14.8	X	89.75235	172.66790	202.64654	5.18427	0.1560464	0.26021374	2.4298674	21	—	—
15392 Budějický	15.0	X	17.07565	117.36874	210.42999	5.00451	0.1645600	0.28757332	2.2731965	21	10 27.9	17.0
15393 1997 TR_{24}	13.7	X	85.46469	265.46378	192.89999	2.04121	0.2214648	0.18417155	3.0595274	21	4 1.6	17.7
15394 1997 TQ_{25}	14.4	X	221.85309	84.14743	248.74457	8.40819	0.1490702	0.22607989	2.6686693	21	2 28.0	18.8
15395 Rükl	14.4	X	5.58808	354.75720	145.46047	0.86253	0.1274297	0.17670064	3.1451689	21	1 7.1	18.0
15396 Howardmoore	15.3	X	140.82833	169.96134	217.11344	1.81440	0.2419575	0.22417036	2.6838027	21	3 2.3	19.6
15397 Ksoari	14.5	X	180.52668	69.18862	325.47500	2.75500	0.0515348	0.23081771	2.6320247	21	4 5.1	18.4
15398 1997 UZ_{23}	10.9	X	246.16026	315.98744	189.59907	28.46280	0.0253713	0.08478913	5.1314794	21	11 3.2	17.9
15399 Hudec	14.7	X	352.36885	263.23727	345.94502	1.70659	0.1488764	0.23271078	2.6177312	21	4 27.2	17.2
15400 1997 VZ	13.5	X	176.61853	18.26136	45.25663	7.03971	0.1885666	0.18810588	3.0167162	21	5 15.0	18.6
15401 1997 VE_4	14.0	X	292.37398	110.53947	234.20941	10.70560	0.3045504	0.23719531	2.5846316	21	5 9.9	17.6
15402 Suzaku	14.9	X	176.02658	211.26820	94.29410	2.26977	0.1897913	0.26173221	2.4204602	21	—	—
15403 Merignac	14.6	X	265.42142	269.81775	49.19933	4.77372	0.0413019	0.22990191	2.6390098	21	4 11.8	18.2
15404 1997 VE_8	14.1	X	281.65046	329.36852	341.45775	3.10620	0.1697813	0.23041121	2.6351195	21	4 1.7	17.9
15405 1997 WJ_7	14.6	X	126.23552	91.35258	263.96140	2.02488	0.2030427	0.21824918	2.7321275	21	1 5.4	18.5
15406 Bleibtreu	14.4	X	260.30111	182.91988	40.21663	4.99642	0.0193114	0.21770843	2.7366498	21	—	—
15407 Udakiyoo	13.7	X	358.81455	223.36475	116.56286	6.72502	0.1888391	0.28838652	2.2689212	21	10 18.3	15.5
15408 1997 WU_{21}	13.0	X	282.09203	241.58384	81.82906	9.59867	0.0739991	0.18559701	3.0438417	21	5 9.2	17.3
15409 1997 WQ_{31}	13.8	X	274.58353	293.06597	79.78743	3.13493	0.1226056	0.19511621	2.9440181	21	6 22.5	18.0
15410 1997 YZ	12.3	X	349.59010	297.54485	237.00109	17.15799	0.0966932	0.17953504	3.1119784	21	1 22.4	16.7
15411 1997 YL_1	13.9	X	156.44628	228.77456	165.73539	6.50155	0.1269885	0.27186505	2.3599373	21	3 11.2	17.1
15412 Schaefer	13.6	X	107.85337	294.13730	99.39110	2.88541	0.1992249	0.17459253	3.1704356	21	2 7.9	18.0
15413 Beaglehole	14.0	X	120.83273	351.97038	86.55100	12.63752	0.0440656	0.18313042	3.0711124	21	4 2.5	18.6
15414 Pettirossi	13.9	X	130.45866	58.18257	108.68015	3.19216	0.0385913	0.19406387	2.9546515	21	7 28.2	18.0
15415 Rika	14.3	X	196.23527	28.81289	327.30084	7.47825	0.2282493	0.30174359	2.2014594	21	3 1.9	17.9
15416 1998 DZ_2	12.4	X	302.83363	276.42519	85.71804	15.85783	0.1447876	0.23909707	2.5709080	21	7 15.4	15.4
15417 Babylon	11.9	X	256.41407	194.17890	75.74800	3.18374	0.0533718	0.12626189	3.9350887	21	2 13.2	17.6
15418 Sergiospinelli	13.6	X	270.52672	116.93028	151.21353	9.43851	0.1606569	0.21246305	2.7815088	21	1 31.2	17.9
15419 1998 FZ_{62}	13.3	X	296.67701	207.43046	187.76913	14.11643	0.1857613	0.22941518	2.6427411	21	8 10.9	16.7
15420 Aedouglass	15.1	X	63.13889	358.83046	305.84183	3.29386	0.2723776	0.22947521	2.6422802	21	12 2.7	19.0
15421 Adammalin	14.3	X	142.68111	280.94645	55.78992	2.77811	0.0697828	0.20040680	2.8919742	21	—	—
15422 1998 QP_{45}	13.3	X	347.71531	340.52195	191.49697	12.24511	0.1689254	0.23635507	2.5907535	21	—	—
15423 1998 QR_{91}	15.4	X	7.14454	283.90291	102.57068	0.58650	0.1949620	0.30465379	2.1874174	21	—	—
15424 1998 QE_{100}	14.2	X	350.35001	358.80866	70.96693	3.21328	0.1864527	0.26493493	2.4009138	21	—	—
15425 Welzl	13.2	X	33.05541	294.28919	264.77264	12.21821	0.1490475	0.23089571	2.6314319	21	5 2.6	16.1
15426 1998 SW_{43}	12.9	X	315.15579	135.22021	240.13688	5.22821	0.1685113	0.12379775	3.9871345	21	8 11.5	18.0
15427 Shabas	12.6	X	65.74552	299.03333	211.02564	13.84894	0.1627261	0.23979771	2.5658978	21	4 25.3	15.4
15428 1998 SV_{128}	13.2	X	86.24447	267.67341	34.32560	9.13676	0.0073520	0.17474787	3.1685566	21	11 13.5	17.6
15429 1998 UA_{23}	14.7	X	335.98805	82.36323	56.65993	2.92361	0.1575933	0.26669963	2.3903112	21	—	—
15430 1998 UR_{31}	14.3	X	120.34600	177.42513	62.74610	8.17929	0.1704770	0.29766508	2.2215229	21	11 7.5	17.7
15431 1998 UQ_{32}	14.4	X	199.03557	343.36353	85.30412	5.63561	0.1080129	0.28279257	2.2987446	21	6 9.2	17.6
15432 1998 VA_5	14.6	X	241.30181	296.18562	231.56669	1.98615	0.1433630	0.25887793	2.4382189	21	12 4.4	17.5
15433 1998 VQ_7	13.7	X	162.08596	212.72375	69.88709	7.35112	0.1011308	0.26909524	2.3761036	21	—	—
15434 Mittal	15.1	X	161.38993	227.53525	217.35370	3.87988	0.1219606	0.28443062	2.2899104	21	5 21.4	18.3
15435 1998 VS_{28}	15.1	X	39.91608	70.03194	344.94854	1.82280	0.0872864	0.30986463	2.1628250	21	—	—
15436 1998 VU_{30}	9.1	X	315.77508	178.84953	253.42724	16.26274	0.0449491	0.08285793	5.2109072	21	10 25.1	15.9
15437 1998 VS_{35}	14.9	X	252.00111	266.44052	300.62759	1.66315	0.1366769	0.26356736	2.4092117	21	—	—
15438 Joegotobed	13.4	X	239.37923	164.00238	105.88306	34.02964	0.1679755	0.23029918	2.6359740	21	1 3.3	17.8
15439 1998 WV_1	14.8	X	194.01894	9.34617	80.74526	3.61357	0.1022076	0.28646907	2.2790345	21	7 3.2	18.0
15440 1998 WX_4	9.6	X	334.64702	283.15689	120.55471	28.75085	0.0232407	0.08092113	5.2937255	21	10 31.1	16.8

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15441 1998 WJ_9	14.5	X	58.45444	18.74856	95.41368	14.36704	0.1971383	0.22949180	2.6421528	21	3 3.9	17.4
15442 1998 WN_{11}	11.9	X	319.29119	320.35923	110.36107	4.51048	0.1686055	0.08342150	5.1874118	21	10 22.1	18.1
15443 1998 WM_{19}	14.6	X	178.18765	229.93881	209.02729	3.75881	0.2405640	0.23763729	2.5814259	21	6 4.1	19.2
15444 1998 WT_{23}	12.6	X	222.12100	31.93370	62.45884	11.63383	0.1149063	0.19738385	2.9214265	21	8 10.6	17.2
15445 1998 XE	13.5	X	122.89882	336.48424	84.16545	13.11670	0.1783752	0.22658999	2.6646627	21	3 26.4	17.6
15446 1998 XQ_4	14.1	X	353.25190	26.28914	301.89620	5.97971	0.0877482	0.29090695	2.2557968	21	9 1.2	16.3
15447 1998 XV_4	14.0	X	359.51177	240.84685	337.63185	2.29440	0.1046126	0.23239661	2.6200899	21	3 30.5	16.8
15448 Siegwarth	14.2	X	0.13114	258.76653	272.07846	2.52220	0.0175748	0.22609279	2.6685678	21	2 4.0	17.8
15449 1998 XS_{30}	13.8	X	31.08650	277.31180	251.91575	12.23553	0.1349555	0.23253729	2.6190330	21	3 10.2	16.9
15450 1998 XV_{40}	13.6	X	162.72837	269.08613	51.36195	8.04948	0.2048535	0.22508057	2.6765624	21	—	—
15451 1998 XK_{42}	12.5	X	315.25089	177.30859	77.43640	11.21824	0.0567782	0.18883007	3.0089984	21	3 31.8	16.8
15452 Ibramohammed	14.6	X	324.39654	59.99908	29.28679	3.27924	0.0810252	0.25717443	2.4489741	21	—	—
15453 Brasileirinhos	14.1	X	272.65508	282.07840	117.36522	3.14071	0.0809744	0.19840513	2.9113927	21	7 31.5	18.1
15454 1998 YB_3	12.9	X	132.86127	294.84254	290.06250	14.20871	0.2091864	0.20305095	2.8668130	21	10 14.9	18.0
15455 1998 YJ_3	14.8	X	327.47351	38.99177	309.92176	5.97900	0.1534821	0.29036543	2.2586006	21	8 12.0	16.6
15456 1998 YP_3	15.1	X	266.05406	222.23972	268.81907	5.29862	0.0935932	0.25510503	2.4622002	21	11 26.4	18.0
15457 1998 YN_6	12.6	X	302.80866	34.10135	125.19726	22.95721	0.0753040	0.17116374	3.2126361	21	—	—
15458 1998 YW_9	14.6	X	33.24819	264.65339	150.95381	1.42871	0.1921032	0.26193830	2.4191904	21	—	—
15459 1998 YY_9	14.1	X	141.61983	11.59569	122.04511	2.39596	0.0940092	0.19421665	2.9531017	21	7 2.9	18.6
15460 Manca	13.6	X	235.70277	320.00290	92.42086	3.28696	0.0892347	0.19893139	2.9062558	21	7 1.5	17.9
15461 Johnbird	13.5	X	36.64278	39.98745	18.52929	13.41751	0.1244116	0.17292100	3.1908341	21	—	—
15462 Stumegan	13.7	X	288.34141	105.91320	324.03442	1.09000	0.0371565	0.20491141	2.8494342	21	10 7.1	17.4
15463 1999 AT_2	13.7	X	83.49718	285.44614	92.33756	8.18016	0.0952696	0.21539239	2.7562323	21	—	—
15464 1999 AN_5	14.2	X	301.87460	355.62662	14.30948	5.26403	0.1988623	0.28772461	2.2723996	21	7 18.2	16.4
15465 Buchroeder	14.3	X	73.47558	355.44331	130.92022	1.52775	0.0909600	0.18344664	3.0675822	21	4 2.2	18.3
15466 Barlow	13.6	X	235.18087	310.61471	131.69010	13.73879	0.1416474	0.24169066	2.5524827	21	8 3.9	17.4
15467 Aflorsch	13.6	X	210.68525	296.10363	148.71027	2.41815	0.0721306	0.19446298	2.9506074	21	7 15.8	17.8
15468 Mondriaan	13.7	X	29.51406	302.68818	356.16725	1.81485	0.0176011	0.19824624	2.9129481	21	9 4.8	17.5
15469 Ohmura	14.1	X	223.34784	59.64882	29.97216	2.09033	0.0653936	0.19823685	2.9130401	21	8 7.3	18.2
15470 1999 BS	15.5	X	88.96757	224.48364	179.81288	2.41494	0.1598023	0.26716061	2.3875608	21	—	—
15471 1999 BE_5	14.0	X	81.14680	77.84096	115.00247	12.74058	0.0785393	0.23719964	2.5846002	21	7 5.1	17.2
15472 1999 BR_5	13.9	X	286.27705	23.42355	164.77067	1.44287	0.1341435	0.17175845	3.2052160	21	—	—
15473 1999 BL_9	12.7	X	249.61903	267.77100	185.56991	15.00334	0.1384009	0.24014081	2.5634533	21	9 2.9	16.5
15474 1999 BG_{11}	14.2	X	330.47149	38.74584	2.66042	1.45098	0.1107646	0.20452839	2.8529905	21	10 26.8	17.4
15475 1999 BQ_{14}	14.7	X	185.56630	241.00652	147.57513	6.57008	0.2207617	0.27767001	2.3269304	21	4 7.9	18.5
15476 Narendra	14.6	X	242.95668	187.38330	213.69528	6.84820	0.0986995	0.28470325	2.2884483	21	6 22.7	17.7
15477 1999 CG_1	13.5	X	245.27524	9.29263	119.96805	6.16887	0.0534194	0.20487712	2.8497520	21	10 27.7	17.5
15478 1999 CZ_2	13.6	X	10.48106	307.27806	186.88787	0.81429	0.1794974	0.17641992	3.1485044	21	1 3.2	17.2
15479 1999 CH_9	14.5	X	67.14155	214.68709	191.10194	9.34786	0.1899024	0.26455794	2.4031941	21	—	—
15480 1999 CB_{14}	12.9	X	106.32141	327.23498	135.61310	10.86999	0.0652394	0.18459835	3.0548098	21	4 15.3	17.4
15481 1999 CK_{19}	14.0	X	205.23780	344.46662	331.04482	4.11614	0.1362901	0.26790900	2.3831123	21	1 21.7	17.6
15482 1999 CB_{21}	13.6	X	13.41270	45.36430	92.90037	2.65240	0.1083462	0.17803753	3.1294043	21	1 18.1	17.3
15483 1999 CW_{25}	13.3	X	180.25537	297.60451	336.85275	7.99056	0.0623585	0.16996156	3.2277675	21	—	—
15484 1999 CU_{46}	13.3	X	163.78272	37.27887	352.56050	6.31379	0.0701844	0.18210726	3.0826049	21	3 18.7	17.8
15485 1999 CY_{53}	13.7	X	47.77502	18.67365	94.18121	2.65211	0.1457013	0.17797475	3.1301402	21	2 12.3	17.4
15486 1999 CP_{62}	13.9	X	177.48377	278.05907	149.42514	14.96046	0.1740236	0.23560732	2.5962322	21	5 22.7	18.4
15487 1999 CC_{63}	13.0	X	260.50410	11.54122	225.61439	5.06525	0.1306024	0.17373109	3.1809074	21	—	—
15488 1999 CB_{75}	12.5	X	45.17161	274.00732	176.23382	21.95442	0.0338014	0.17472478	3.1688357	21	1 4.1	17.3
15489 1999 CJ_{78}	12.8	X	70.77514	207.32735	189.04110	7.80839	0.2108026	0.17385863	3.1793515	21	—	—
15490 1999 CJ_{81}	14.3	X	202.92139	194.46311	221.37210	4.59369	0.2916328	0.23684466	2.5871820	21	5 24.9	19.1
15491 1999 CW_{85}	13.7	X	110.06791	351.36834	326.91959	5.18806	0.2169877	0.30109151	2.2046368	21	—	—
15492 Nyberg	14.7	X	60.75848	45.97171	341.23779	2.13509	0.1821567	0.26053071	2.4278961	21	—	—
15493 1999 CS_{105}	13.4	X	204.02619	289.47142	311.70262	11.98134	0.0626694	0.16909967	3.2387260	21	—	—
15494 1999 CX_{123}	13.7	X	187.56708	309.83043	45.80517	15.10751	0.1336757	0.22654472	2.6650177	21	3 7.9	18.2
15495 Bogie	13.2	X	53.37338	208.34948	214.60413	4.53032	0.1394444	0.21560561	2.7544148	21	—	—
15496 1999 DQ_3	13.4	X	123.75165	64.98687	97.72884	13.06629	0.1033649	0.23486881	2.6016716	21	7 22.7	17.2
15497 Lucca	14.4	X	296.26817	140.91063	80.35119	2.68929	0.1093651	0.17704500	3.1410892	21	1 15.5	19.0
15498 1999 EQ_4	12.5	X	186.77229	257.24619	190.65358	9.68838	0.0682417	0.18844281	3.0131194	21	6 23.2	17.2
15499 Cloyd	12.9	X	189.64247	283.33460	152.76447	10.69419	0.0923095	0.18933085	3.0036901	21	6 12.6	17.7
15500 Anantpatel	14.8	X	318.36230	127.10813	17.23993	4.81406	0.1332659	0.25596438	2.4566863	21	—	—
15501 Pepawlowski	14.4	X	165.01807	336.96843	0.30181	1.70078	0.0700573	0.20251562	2.8718629	21	1 13.7	18.6
15502 1999 NV_{27}	10.0	X	129.04339	181.04129	308.72532	16.82568	0.0149952	0.08501105	5.1225450	21	6 8.9	17.0
15503 1999 RD_{25}	14.1	X	114.50026	35.65951	226.01981	3.55227	0.0606192	0.22884925	2.6470962	21	11 12.4	17.6
15504 1999 RG_{33}	12.1	X	287.40624	273.89230	23.43374	34.95344	0.7741840	0.03435747	9.3710582	21	3 1.7	23.2
15505 1999 RF_{56}	11.5	X	20.36642	215.42833	1.48830	7.98099	0.1172304	0.12554217	3.9501140	21	5 13.3	16.6
15506 Preygel	14.8	X	69.75755	330.45492	278.23286	4.80015	0.0620507	0.26921668	2.3753890	21	9 2.2	17.9
15507 Rengarajan	14.4	X	167.49173	356.99080	147.23709	5.65943	0.1422847	0.26545230	2.3977932	21	8 16.0	17.9
15508 1999 TE_{38}	14.8	X	156.71016	188.59476	193.45685	3.50710	0.2278668	0.20198575	2.8768832	21	3 11.2	19.6
15509 1999 TX_{113}	13.8	X	241.27083	322.06900	200.15055	12.40144	0.0705355	0.23055716	2.6340073	21	12 3.2	17.5
15510 Phoeberounds	15.3	X	190.10745	312.63161	156.04400	2.49447	0.0905791	0.26035781	2.4289709	21	7 23.9	18.9
15511 1999 TD_{185}	13.2	X	82.63112	48.36684	257.35409	14.67078	0.1867919	0.23047000	2.6346714	21	12 14.1	17.1
15512 Snyder	12.2	X	100.67910	170.22118	127.16698	13.79958	0.0210700	0.18604548	3.0389482	21	12 2.7	16.7
15513 Emmermann	14.6	X	188.99047	311.88907	342.84386	4.89722	0.0802431	0.28599734	2.2815398	21	—	—
15514 1999 VW_{24}	11.8	X	229.44576	263.58626	258.23148	19.59689	0.0783965	0.17628759	3.1500798	21	11 5.5	16.6
15515 1999 VN_{80}	14.0	X	257.37145	86.22621	197.35180	5.25368	0.2398160	0.20139149	2.8825397	21	2 1.4	19.0
15516 1999 VN_{86}	13.7	X	114.03729	93.63605	179.16655	12.51722	0.1704489	0.22544329	2.6736907	21	12 3.1	18.2
15517 1999 VS_{113}	14.0	X	34.33951	235.34724	19.40687	7.76487	0.1790696	0.21207674	2.7848856	21	8 7.1	17.2
15518 1999 VY_{153}	13.3	X	199.69758	99.56406	79.42180	8.72622	0.1611639	0.21103375	2.7940539	21	10 27.9	17.8
15519 1999 XW	12.6	X	302.08029	324.59413	80.51738	12.99497	0.1072163	0.17046337	3.2214297	21	9 19.5	17.0
15520 1999 XK_{98}	12.7	X	222.05937	322.35130	263.03399	11.69032	0.1280406	0.22779918	2.6552247	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15521 1999 XH_{133}	11.2	X	215.20259	171.16243	10.40690	10.67841	0.0695449	0.08211440	5.2423156	21	11 1.5	18.5
15522 Trueblood	14.5	X	100.73033	241.97576	114.08623	9.83978	0.1250986	0.27882053	2.3205248	21	—	—
15523 Grenville	13.4	X	288.41467	228.74644	103.41640	10.24506	0.1621036	0.21329297	2.7742889	21	5 14.4	17.4
15524 1999 XO_{175}	12.9	X	162.38684	297.72507	312.58928	11.48836	0.1145629	0.22007553	2.7169911	21	12 17.8	17.3
15525 1999 XH_{176}	13.4	X	188.96237	309.23350	323.53375	8.93731	0.1935552	0.22583225	2.6706199	21	—	—
15526 Kokura	13.5	X	23.80019	314.05975	179.96681	16.18575	0.1653956	0.19163628	2.9795515	21	1 21.1	17.1
15527 1999 YY_{2}	10.9	X	44.05639	168.70283	173.75403	21.26628	0.1545962	0.08287224	5.2103073	21	11 19.2	17.7
15528 2000 AJ_{10}	15.1	X	321.15445	20.95453	286.31999	4.31998	0.1926570	0.30239149	2.1983137	21	5 11.1	17.2
15529 2000 AA_{80}	11.4	X	133.09671	87.94238	169.53328	5.08392	0.0257239	0.08167826	5.2609606	21	11 6.1	18.4
15530 Kuber	15.0	X	76.08192	290.03705	78.53559	5.69321	0.1599933	0.28004861	2.3137358	21	—	—
15531 2000 AV_{99}	15.3	X	274.08467	273.30930	91.92782	5.22988	0.1511254	0.30412720	2.1899417	21	6 4.2	18.1
15532 2000 AP_{126}	12.6	X	156.27517	347.71394	297.06456	11.63913	0.0254769	0.17732092	3.1378299	21	—	—
15533 2000 AP_{138}	13.9	X	281.39729	52.30698	99.03514	9.67890	0.1309360	0.27673855	2.3321489	21	—	—
15534 2000 AQ_{164}	13.1	X	335.91193	310.10000	264.31145	7.81499	0.1514390	0.18569441	3.0427773	21	2 15.4	17.0
15535 2000 AT_{177}	10.6	X	303.02351	302.17559	155.09765	13.17670	0.0847180	0.08357282	5.1811481	21	11 9.0	17.3
15536 2000 AG_{191}	11.3	X	305.40152	258.83009	192.66820	14.65832	0.1439331	0.08294352	5.2073217	21	10 27.9	17.8
15537 2000 AM_{199}	12.6	X	78.82707	187.39884	134.41522	12.53535	0.1308461	0.18430967	3.0579987	21	12 17.5	17.3
15538 2000 BW_{14}	13.3	X	198.15284	279.60769	86.89385	10.33581	0.0751944	0.19250667	2.9705636	21	3 31.7	18.0
15539 2000 CN_{3}	10.5	X	278.51073	332.25413	108.75893	27.93862	0.0452623	0.08140610	5.2726801	21	10 5.5	17.8
15540 2000 CF_{18}	12.2	X	174.50960	78.91036	142.45212	16.97012	0.1095143	0.12424610	3.9775367	21	11 17.2	18.5
15541 2000 CN_{63}	13.1	X	342.25459	137.88876	333.75672	18.39119	0.1258679	0.17661708	3.1461608	21	—	—
15542 2000 DN_{3}	13.9	X	288.06260	87.67276	32.00634	9.93770	0.1053373	0.21557940	2.7546381	21	12 2.6	17.3
15543 Elizateel	15.6	X	78.33580	230.47502	188.50462	0.57707	0.1593230	0.23241647	2.6199406	21	1 9.6	18.3
15544 2000 EG_{17}	14.0	X	228.59012	55.28210	345.03746	1.37459	0.0597925	0.19784311	2.9169037	21	6 10.4	18.2
15545 2000 EK_{46}	13.1	X	305.88872	120.98100	348.23640	2.17589	0.1754314	0.12464600	3.9690249	21	11 19.7	18.1
15546 2000 EZ_{75}	14.0	X	324.11970	288.73423	353.94055	11.49605	0.1451584	0.24102578	2.5571746	21	4 20.6	17.1
15547 2000 ET_{91}	14.9	X	162.80532	15.76406	300.30073	2.84611	0.1348074	0.31463211	2.1409212	21	—	—
15548 Kalinowski	15.2	X	106.73833	261.40361	340.39497	5.03699	0.0932448	0.29736545	2.2230149	21	10 18.3	18.2
15549 2000 FN	13.8	X	77.77166	175.16310	127.16214	7.13366	0.2101564	0.29872375	2.2162711	21	12 18.4	17.2
15550 Sydney	13.3	X	289.54236	112.96034	228.05683	9.59247	0.1220057	0.19231942	2.9724915	21	5 31.8	17.4
15551 Paddock	12.9	X	289.29726	247.51889	35.79926	9.00379	0.1766244	0.18519837	3.0482081	21	3 16.0	17.4
15552 Sandashounkan	12.6	X	5.22313	95.01602	18.88839	16.34424	0.2075199	0.17955050	3.1117998	21	—	—
15553 Carachang	14.8	X	319.01858	203.56116	124.01800	6.85722	0.1479007	0.28894600	2.2659914	21	6 20.3	16.9
15554 2000 FH_{46}	14.2	X	103.86372	251.81466	102.45231	7.08412	0.1405152	0.26523190	2.3991213	21	—	—
15555 2000 FD_{49}	13.8	X	122.06206	265.92986	208.59187	10.29478	0.0637842	0.19103729	2.9857764	21	5 15.0	18.1
15556 2000 FW_{49}	14.1	X	190.55045	34.54292	294.70835	6.08638	0.1264848	0.27010214	2.3701948	21	1 22.6	17.6
15557 Kimcochran	13.8	X	80.55170	71.75781	202.27575	1.16549	0.0857343	0.20395331	2.8583509	21	10 19.1	17.8
15558 2000 GR_{2}	13.4	X	66.21029	327.55398	146.40403	14.71206	0.1261935	0.23752817	2.5822164	21	3 1.9	16.2
15559 Abigailhines	14.9	X	91.86388	240.30029	219.11391	1.78413	0.0816893	0.23273882	2.6175209	21	3 13.9	18.2
15560 2000 GR_{24}	13.3	X	5.07204	137.31675	202.02267	12.00674	0.2621405	0.20226724	2.8742135	21	10 17.4	15.8
15561 2000 GU_{36}	14.2	X	121.95629	178.69213	159.90699	10.47050	0.2434760	0.26521517	2.3992222	21	—	—
15562 2000 GF_{48}	12.2	X	264.82567	217.63451	24.03484	11.58074	0.1962751	0.17625039	3.1505230	21	—	—
15563 Remsberg	15.2	X	269.33367	106.44176	12.58871	2.32190	0.1555702	0.25841871	2.4411066	21	11 5.8	17.9
15564 2000 GU_{48}	13.8	X	351.23725	332.50579	327.50863	1.32676	0.0547677	0.19603293	2.9348328	21	7 15.1	17.3
15565 Benjaminsteele	14.5	X	27.17136	55.61944	272.38032	0.76134	0.0897298	0.20400634	2.8578556	21	10 18.1	18.1
15566 Elizabethbaker	15.7	X	234.12033	234.83839	171.81208	2.33343	0.1405183	0.28936173	2.2638205	21	6 15.7	18.8
15567 Giacomelli	14.8	X	324.96090	70.95103	228.26512	0.60471	0.0401339	0.19277894	2.9677660	21	6 6.4	18.6
15568 2000 GP_{54}	13.8	X	118.04331	225.85510	268.46115	0.90988	0.0455636	0.19233221	2.9723598	21	6 1.1	18.0
15569 Feinberg	15.4	X	353.92355	241.44796	101.42014	1.76021	0.1842220	0.29303238	2.2448757	21	10 9.0	16.8
15570 2000 GT_{60}	14.4	X	29.69016	187.05430	185.76289	1.47028	0.1281943	0.25659718	2.4526456	21	—	—
15571 2000 GM_{61}	14.0	X	63.94663	335.68696	60.12795	0.63284	0.2132224	0.17315021	3.1880176	21	—	—
15572 2000 GH_{65}	13.6	X	180.71816	213.97846	82.40014	2.10734	0.1600077	0.17077750	3.2174782	21	—	—
15573 2000 GX_{65}	13.9	X	244.17610	272.19108	183.09386	1.71678	0.0355447	0.20258772	2.8711815	21	9 12.2	18.0
15574 Stephaniehass	15.2	X	204.61510	20.38190	23.01156	3.69179	0.1323865	0.28423897	2.2909396	21	5 10.4	18.6
15575 2000 GC_{68}	13.6	X	101.86093	173.51575	180.08457	5.25070	0.1707933	0.21548532	2.7554398	21	—	—
15576 Munday	14.5	X	28.00999	99.75078	181.26065	1.92832	0.0717385	0.19726370	2.9226127	21	8 14.8	18.1
15577 Gywilliams	16.3	X	140.53962	35.85813	189.30780	2.16713	0.1191009	0.29848360	2.2174597	21	11 6.1	19.4
15578 2000 GW_{69}	13.7	X	314.56676	26.97356	342.25789	1.35857	0.0774640	0.19949744	2.9007558	21	8 20.7	17.4
15579 2000 GP_{70}	14.2	X	55.33295	59.95089	30.87427	3.23163	0.0416373	0.22409890	2.6843732	21	1 8.5	17.5
15580 2000 GE_{71}	13.1	X	86.64305	269.85958	208.07909	7.38906	0.0493123	0.23191424	2.6237217	21	3 26.1	16.6
15581 2000 GV_{72}	14.3	X	352.37763	33.83216	198.99639	2.10247	0.0490315	0.23360451	2.6110503	21	4 13.2	17.5
15582 Russellburrows	14.6	X	193.11721	34.23740	13.91398	1.68993	0.0981025	0.18965205	3.0002978	21	5 10.8	19.2
15583 Hanick	14.9	X	229.61479	139.99725	212.15619	1.81248	0.1329922	0.23161389	2.6259895	21	4 3.7	19.0
15584 2000 GO_{74}	13.9	X	193.97762	131.46918	35.45121	13.48632	0.0600325	0.20524377	2.8463572	21	10 13.4	18.0
15585 2000 GR_{74}	14.2	X	288.37966	285.16159	36.60980	9.06141	0.2400959	0.27997185	2.3141587	21	4 11.9	17.4
15586 2000 GV_{75}	13.7	X	274.83162	309.08869	34.74377	13.66758	0.2316359	0.23485654	2.6017623	21	4 28.8	17.5
15587 2000 GK_{76}	14.5	X	283.81297	305.49379	12.81835	2.32766	0.0146858	0.18899698	3.0072265	21	5 10.2	18.6
15588 2000 GO_{79}	14.0	X	217.62885	74.19631	193.90076	1.02497	0.1501293	0.17189227	3.2035522	21	—	—
15589 2000 GB_{80}	12.9	X	138.39125	216.92766	229.28530	9.10669	0.0546421	0.19046166	2.9917893	21	4 25.9	17.3
15590 2000 GH_{82}	13.0	X	318.20369	103.42407	193.79619	12.37088	0.1615151	0.23536254	2.5980320	21	5 6.3	16.1
15591 2000 GP_{89}	12.5	X	94.95619	349.07250	60.10108	13.36981	0.0864789	0.17831327	3.1261773	21	1 28.2	17.0
15592 2000 GJ_{91}	14.4	X	161.61486	344.39199	128.77687	8.32061	0.2040394	0.24360316	2.5391057	21	7 2.1	18.7
15593 2000 GR_{93}	13.2	X	345.99098	339.60435	131.01283	11.00007	0.1818150	0.17511005	3.1641860	21	—	—
15594 Castillo	14.4	X	231.10171	35.88210	4.78950	7.41287	0.1621420	0.28704232	2.2759991	21	5 31.7	17.9
15595 2000 GX_{95}	14.3	X	325.07151	291.11479	19.90433	14.23511	0.1066819	0.23830500	2.5766017	21	6 10.7	17.6
15596 2000 GZ_{95}	14.0	X	211.43721	315.27205	326.45105	1.85277	0.1889410	0.26566726	2.3964996	21	—	—
15597 2000 GM_{96}	13.9	X	308.91137	25.98872	35.88827	2.36179	0.0412090	0.20570425	2.8421077	21	10 25.1	17.4
15598 2000 GP_{96}	14.3	X	31.62400	147.20264	27.98995	2.54811	0.1648888	0.23240748	2.6200082	21	3 28.8	16.6
15599 Richardlarson	14.8	X	338.26233	195.07910	250.00893	3.64664	0.1023541	0.26244851	2.4160540	21	—	—
15600 2000 GY_{103}	13.3	X	236.21921	141.61264	188.80600	9.62404	0.0825683	0.18500294	3.0503543	21	3 22.4	17.9

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15601 2000 GZ_{106}	13.0	X	312.83898	85.64476	52.56250	11.45226	0.1749807	0.17247034	3.1963900	21	—	—
15602 2000 GA_{108}	13.4	X	306.28243	311.57063	160.42913	4.69709	0.0229613	0.21299596	2.7768673	21	12 26.5	17.1
15603 2000 GG_{108}	14.3	X	131.29051	176.27334	103.94363	6.49370	0.0729104	0.21097896	2.7945375	21	12 20.9	18.6
15604 Fruits	14.8	X	17.51447	110.53347	177.95067	8.69537	0.1835756	0.28817576	2.2700273	21	8 27.8	16.5
15605 2000 GY_{114}	13.1	X	8.44040	222.69541	58.70296	14.18539	0.1486380	0.23895389	2.5719349	21	7 24.0	15.9
15606 Winer	14.7	X	141.68718	204.70314	97.17911	3.72544	0.1721247	0.30642454	2.1789822	21	—	—
15607 2000 GA_{124}	13.8	X	39.62233	276.38281	108.62817	7.58379	0.2730238	0.25785662	2.4446528	21	—	—
15608 Owens	14.5	X	25.67068	43.31888	145.82359	7.34870	0.0417809	0.27878918	2.3206988	21	3 30.4	17.0
15609 Kosmaczewski	15.4	X	19.77885	163.51648	138.80619	6.73142	0.2900293	0.28806873	2.2705896	21	10 20.3	17.4
15610 2000 GY_{126}	13.3	X	85.65267	65.98604	171.84948	10.99680	0.0907047	0.19564519	2.9387091	21	9 8.8	17.5
15611 2000 GD_{127}	13.8	X	189.98895	107.37437	159.32084	8.18563	0.1621038	0.21404770	2.7677637	21	—	—
15612 2000 GV_{133}	13.9	X	33.40815	83.17690	161.96701	11.58062	0.0569851	0.19236695	2.9720018	21	7 3.8	18.0
15613 2000 GH_{136}	13.5	X	123.58961	333.82023	165.84209	12.78794	0.1068860	0.23971394	2.5664956	21	6 21.7	17.4
15614 Pillinger	13.6	X	317.97424	150.23564	148.35392	10.27412	0.0516559	0.19073555	2.9889245	21	5 27.9	17.7
15615 2000 HU_1	12.4	X	166.42152	152.57246	180.17778	2.99708	0.2419703	0.12448251	3.9724992	21	1 31.2	18.9
15616 2000 HG_{10}	13.3	X	254.46598	83.95189	160.73385	2.50751	0.1491095	0.17396833	3.1780148	21	—	—
15617 Fallowfield	14.8	X	323.33042	108.26137	193.58702	2.81397	0.1108333	0.28309089	2.2971293	21	5 24.8	17.2
15618 Lorifritz	16.4	X	51.80049	40.35346	172.77156	2.21001	0.1422736	0.28492968	2.2872357	21	6 28.8	18.5
15619 Albertwu	14.6	X	252.57742	304.95957	20.42942	2.17264	0.0970688	0.23021739	2.6365983	21	3 28.4	18.3
15620 Beltrami	15.2	X	279.62642	312.69680	204.08116	1.57406	0.1529028	0.26136642	2.4227179	21	—	—
15621 Erikhovland	12.8	X	312.86767	145.77665	109.74766	15.99037	0.1542181	0.23109761	2.6298990	21	3 8.4	16.5
15622 Westrich	15.1	X	96.48560	64.85897	150.07772	3.68912	0.0623960	0.29099270	2.2553537	21	8 26.5	17.7
15623 2000 HU_{30}	14.4	X	266.84913	9.27148	18.54392	3.37582	0.1797279	0.28767824	2.2726438	21	6 23.3	17.4
15624 Lamberton	14.8	X	302.18887	189.47695	16.50404	1.92382	0.0466373	0.26912705	2.3759164	21	—	—
15625 2000 HB_{35}	14.2	X	297.31578	277.00679	44.03606	15.55011	0.1361899	0.23793735	2.5792551	21	5 9.4	17.4
15626 2000 HR_{50}	12.5	X	49.97198	288.16942	137.94692	1.80145	0.1130436	0.12529721	3.9552606	21	—	—
15627 Hong	14.4	X	331.86981	232.53498	67.49097	4.30250	0.1231870	0.23662364	2.5887928	21	6 6.7	17.0
15628 Gonzales	15.2	X	104.06668	135.03897	163.43346	0.92932	0.1395819	0.29999182	2.2100212	21	—	—
15629 Sriner	14.7	X	271.97606	18.11352	222.98261	1.20352	0.1063567	0.22237168	2.6982554	21	1 4.2	18.8
15630 Disanti	14.2	X	81.13812	38.63493	74.33272	5.46034	0.1159606	0.27788459	2.3257324	21	3 18.2	16.7
15631 Dellorusso	12.8	X	145.84091	250.23224	205.39361	10.54863	0.0798314	0.18950990	3.0017979	21	5 20.6	17.3
15632 Magee–Sauer	14.7	X	136.32222	47.98637	86.10203	5.11260	0.0918244	0.28638346	2.2794886	21	6 26.7	17.5
15633 2000 JZ_1	13.5	X	316.33764	117.84672	97.57513	24.24014	0.2157555	0.27369024	2.3494336	21	—	—
15634 2000 JD_{15}	13.8	X	335.58394	152.09358	64.85498	7.50702	0.0514578	0.27395286	2.3479319	21	2 22.5	16.7
15635 Andrewhager	14.3	X	131.42586	346.03395	329.03964	3.26141	0.1820417	0.25881772	2.4385971	21	—	—
15636 2000 JD_{31}	13.3	X	324.88672	259.54592	262.39562	5.83004	0.1524098	0.17478139	3.1681514	21	—	—
15637 2000 JY_{53}	12.7	X	262.72608	328.09255	238.15920	15.37226	0.0790361	0.17430248	3.1739519	21	—	—
15638 2000 JA_{65}	11.4	X	149.43775	224.54600	118.63378	9.41096	0.1851926	0.12351054	3.9933131	21	1 27.3	17.5
15639 2074 P–L	15.7	X	352.68628	210.40091	239.01314	2.52203	0.0913753	0.27857906	2.3218655	21	—	—
15640 2632 P–L	14.7	X	294.78090	333.53886	18.16259	1.18740	0.2130878	0.19178406	2.9780206	21	6 7.4	18.6
15641 2668 P–L	16.1	X	54.01637	138.49760	111.65531	1.36553	0.0571563	0.28923691	2.2644718	21	8 15.5	18.4
15642 2679 P–L	16.0	X	358.48064	189.28218	159.99936	3.73168	0.1955783	0.29134567	2.2535317	21	11 1.2	17.7
15643 3540 P–L	13.6	X	52.36151	96.08542	278.61954	7.74325	0.1699673	0.21325099	2.7746530	21	—	—
15644 4157 P–L	15.4	X	148.68919	186.75876	304.64900	2.18118	0.1583910	0.28738127	2.2742092	21	7 12.2	18.8
15645 4163 P–L	14.3	X	275.95522	88.32681	228.33036	3.86757	0.0143965	0.18890575	3.0081946	21	4 28.4	18.4
15646 4555 P–L	15.2	X	128.36056	182.47379	167.78425	2.46162	0.2212282	0.26480728	2.4016853	21	—	—
15647 4556 P–L	13.7	X	244.20650	332.49799	43.18574	3.14732	0.1402050	0.19017320	2.9948139	21	5 20.1	18.3
15648 6115 P–L	15.5	X	181.72432	119.43559	338.00572	5.23705	0.0762893	0.28782528	2.2718697	21	6 29.9	18.6
15649 6317 P–L	15.0	X	174.53432	138.16429	245.77917	1.02462	0.0791156	0.20337259	2.8637895	21	3 20.9	19.2
15650 6725 P–L	14.3	X	10.39686	345.93275	163.56976	2.50619	0.1271113	0.18539973	3.0460006	21	1 23.8	18.0
15651 Tlepolemos	11.3	X	334.51991	29.37070	45.32784	2.95968	0.0408834	0.08074981	5.3012106	21	11 21.5	18.2
15652 1048 T–1	12.7	X	308.41206	267.41732	192.51800	22.36580	0.0807166	0.16982265	3.2295275	21	12 2.5	17.3
15653 1080 T–1	13.9	X	248.01735	241.56082	198.30373	8.99219	0.2282884	0.24406511	2.5359007	21	8 2.2	18.0
15654 1176 T–1	13.3	X	291.16652	19.38098	188.53134	6.09559	0.1008339	0.17347465	3.1840413	21	—	—
15655 2209 T–1	13.5	X	123.20168	303.07714	75.63325	3.01026	0.1869336	0.17448905	3.1716890	21	2 5.8	18.2
15656 3277 T–1	13.3	X	185.85678	136.61364	175.63711	0.53391	0.1229665	0.17196124	3.2026957	21	1 13.6	18.4
15657 1125 T–2	14.1	X	131.41621	186.19513	191.76248	1.00980	0.1815696	0.17372029	3.1810391	21	2 11.4	19.0
15658 1265 T–2	15.1	X	157.15415	287.27545	205.54933	1.42331	0.1263486	0.24255532	2.5464130	21	7 20.3	19.0
15659 2141 T–2	13.7	X	95.37031	323.53606	9.38861	5.14135	0.0535223	0.21013169	2.8020444	21	—	—
15660 3025 T–2	15.4	X	232.58380	257.52869	121.80995	2.35690	0.1870822	0.28240470	2.3008489	21	5 5.8	19.1
15661 3281 T–2	15.1	X	332.97706	172.00240	160.90148	4.50332	0.1819767	0.28607924	2.2811044	21	7 24.1	16.9
15662 4064 T–2	14.3	X	142.01584	322.09325	176.71311	8.51672	0.0307887	0.28385627	2.2929982	21	7 4.2	17.4
15663 Periphas	10.9	X	1.92526	23.86216	12.08866	33.87915	0.1053606	0.08318955	5.1970498	21	10 31.8	17.6
15664 4050 T–3	14.6	X	227.30106	284.32830	135.52731	5.07865	0.1454127	0.24155410	2.5534446	21	6 26.3	18.4
15665 4094 T–3	14.7	X	16.23695	282.24423	60.34104	4.93924	0.0735184	0.24695993	2.5160449	21	10 27.9	17.6
15666 5021 T–3	14.0	X	202.55978	248.89141	151.91339	9.40843	0.1665883	0.23921614	2.5700549	21	5 10.7	18.3
15667 5046 T–3	15.4	X	126.38147	356.12337	116.96377	6.17815	0.1160973	0.28353716	2.2947184	21	5 20.4	18.4
15668 5138 T–3	14.5	X	63.70424	86.05447	61.00360	12.96727	0.1295104	0.23661306	2.5888700	21	4 17.9	17.6
15669 Pshenichner	14.5	X	154.66977	329.48119	356.45682	2.77139	0.2060292	0.26055179	2.4277652	21	—	—
15670 1975 SO_1	13.8	X	181.08945	335.71766	145.04715	2.38665	0.0395204	0.18874542	3.0098979	21	7 28.9	18.1
15671 Suzannedébarbat	12.3	X	219.70766	18.20816	185.08351	7.20711	0.1023203	0.12510071	3.9594013	21	12 5.7	18.2
15672 Sato-Norio	14.9	X	274.77511	152.89881	4.65638	2.27980	0.1410458	0.26122015	2.4236223	21	—	—
15673 Chetaev	14.4	X	32.30460	5.22208	319.12934	5.36723	0.2683989	0.30068713	2.2066129	21	12 5.2	17.0
15674 1978 RR_7	14.4	X	177.07814	325.44242	171.64044	6.16173	0.0472689	0.27414663	2.3468254	21	8 17.4	17.5
15675 Goloseevo	13.4	X	89.05057	196.84391	186.18660	3.95081	0.1091319	0.21321077	2.7750019	21	—	—
15676 Almoisheev	13.1	X	214.10818	58.91618	322.62499	4.84914	0.3322125	0.17676150	3.1444469	21	4 21.1	19.0
15677 1980 TZ_5	12.2	X	173.20659	1.54291	12.94032	13.33514	0.1526397	0.20511763	2.8475240	21	3 15.4	16.8
15678 1981 DM	14.6	X	349.74567	339.88339	262.52763	6.62980	0.0820749	0.27200508	2.3591273	21	4 11.3	17.3
15679 1981 DA_1	13.8	X	295.51539	10.97772	234.50700	11.47279	0.0935035	0.21938539	2.7226862	21	2 2.5	17.9
15680 1981 EV_7	14.5	X	163.90701	68.28550	254.58165	4.28098	0.0500285	0.21649938	2.7468289	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15681 1981 ES_{17}	14.4	X	160.37550	87.01364	257.15915	2.03928	0.0973496	0.21781487	2.7357582	21	1 16.2	18.2
15682 1981 EB_{25}	13.7	X	174.09725	135.80151	178.66410	11.55927	0.2332235	0.19044076	2.9920082	21	1 7.8	18.9
15683 1981 EX_{25}	15.3	X	250.50921	130.97454	179.62303	4.08480	0.1141144	0.26980406	2.3719402	21	2 28.1	18.7
15684 1981 ED_{28}	14.4	X	242.56505	145.06519	153.36247	2.82745	0.0859199	0.21941029	2.7224801	21	2 13.9	18.5
15685 1981 EU_{33}	15.1	X	258.89526	106.05499	233.98138	5.69698	0.1361599	0.27288083	2.3540772	21	4 13.7	18.5
15686 1981 EW_{33}	14.9	X	212.48685	106.13033	251.93644	2.69991	0.1151544	0.22237660	2.6982157	21	3 25.7	19.2
15687 1981 ES_{38}	14.9	X	188.46042	146.24689	197.77769	6.57316	0.1316215	0.26804127	2.3823283	21	2 6.8	18.5
15688 1981 UW_{23}	12.8	X	225.21287	283.48656	59.62988	13.94530	0.2025638	0.23613687	2.5923493	21	3 24.2	17.4
15689 1981 UP_{25}	13.2	X	127.56956	1.27172	201.14159	7.73987	0.1965182	0.24318747	2.5419983	21	9 21.2	17.4
15690 1982 JD_3	14.2	X	229.08216	308.71863	80.81019	7.58754	0.1113216	0.27843705	2.3226550	21	5 21.2	17.5
15691 Maslov	14.7	X	247.47763	29.95474	332.49822	3.12642	0.2429165	0.27102723	2.3647983	21	4 22.4	18.6
15692 1984 RA	15.0	X	220.99319	273.08912	142.56609	23.22099	0.1021182	0.36870495	1.9261203	21	6 18.5	17.9
15693 1984 SN_6	13.1	X	157.95662	128.53931	61.64851	3.28913	0.0889765	0.24035271	2.5619464	21	10 4.6	16.8
15694 1985 RR_3	13.0	X	344.46786	149.41999	169.94683	10.96547	0.0976431	0.18952358	3.0016534	21	7 27.3	16.8
15695 Fedorshpig	14.6	X	142.08380	338.33389	52.55288	2.82227	0.2467012	0.26052856	2.4279095	21	3 6.6	18.4
15696 1986 QG_1	14.5	X	85.84641	86.52247	111.60444	4.57637	0.0124354	0.27867791	2.3213165	21	7 8.6	17.1
15697 1986 QO_1	13.5	X	77.15087	194.57028	113.03845	4.27824	0.1435742	0.20259007	2.8711592	21	12 2.8	17.7
15698 1986 QO_2	13.6	X	121.26966	200.20387	120.69875	1.86200	0.1670226	0.17800055	3.1298377	21	—	—
15699 Lyytinen	14.5	X	231.69151	324.95976	42.98091	4.10659	0.2226726	0.27268859	2.3551834	21	4 18.7	18.2
15700 1987 QD	14.7	X	132.80702	119.49595	175.44565	26.79232	0.3150398	0.30020936	2.2089535	21	—	—
15701 1987 RG_1	14.3	X	326.32895	348.46530	348.58823	1.21904	0.1842086	0.25903802	2.4372143	21	7 15.5	16.2
15702 Olegkotov	13.2	X	134.57345	115.53769	288.00402	7.95176	0.1381091	0.21779314	2.7359401	21	3 2.9	17.3
15703 Yrjölä	14.8	X	92.26713	122.70086	254.49672	6.02401	0.1330831	0.30006280	2.2096726	21	—	—
15704 1987 SE_7	15.1	X	82.99905	54.15581	297.05710	4.82351	0.1914961	0.29799374	2.2198891	21	—	—
15705 Hautot	13.8	X	290.17334	269.71407	269.92520	6.96470	0.0870371	0.26237469	2.4165072	21	—	—
15706 1988 CE_2	14.2	X	351.94969	58.22932	307.38811	6.44902	0.1495047	0.28593293	2.2818825	21	10 31.8	16.4
15707 1988 RN_4	13.8	X	17.89512	279.46439	336.66268	11.19322	0.2558776	0.23680582	2.5874649	21	7 15.1	15.9
15708 1988 RB_{12}	14.1	X	36.14621	345.51218	350.42143	5.42739	0.2564969	0.24312916	2.5424047	21	12 12.4	17.4
15709 1988 XH_1	13.0	X	242.75825	249.51010	78.11499	13.92791	0.1877402	0.22508983	2.6764890	21	3 22.5	17.6
15710 Böcklin	13.8	X	86.10920	172.86074	116.26606	6.99984	0.1880393	0.29364024	2.2417766	21	12 7.6	17.2
15711 1989 GZ_1	15.3	X	21.19759	48.11999	253.66712	2.05071	0.0586785	0.28459133	2.2890482	21	9 7.8	17.7
15712 1989 RN_2	13.0	X	246.89666	320.36541	349.01136	11.22555	0.2059353	0.17349031	3.1838498	21	3 2.1	18.2
15713 1989 SM_4	13.8	X	11.61892	244.95109	108.95255	2.52054	0.1337810	0.18556899	3.0441481	21	10 31.7	17.5
15714 1989 TL_{15}	14.4	X	298.79729	87.36815	322.37611	1.42075	0.1492512	0.24528637	2.5274764	21	9 15.5	16.9
15715 1989 UN_1	14.8	X	283.67021	184.67871	213.40900	4.81336	0.2862831	0.24204072	2.5500210	21	7 12.2	18.3
15716 Narahara	13.3	X	336.56547	303.30053	75.18173	15.22831	0.1892283	0.21301996	2.7766588	21	10 15.9	16.3
15717 1990 BL_1	13.5	X	183.41531	258.46944	177.12115	12.92352	0.1593079	0.23257816	2.6187262	21	6 4.8	18.0
15718 Imokawa	13.5	X	191.33956	190.22798	305.13610	11.13887	0.1096839	0.23573186	2.5953177	21	8 25.1	17.5
15719 1990 CF	13.3	X	184.20160	350.58747	113.98764	14.29364	0.1029545	0.23303627	2.6152931	21	7 11.7	17.3
15720 1990 EN_1	13.6	X	198.32874	350.35977	230.69216	7.43954	0.1517337	0.20974305	2.8055047	21	12 13.1	17.9
15721 1990 OV	14.5	X	33.20324	87.00435	208.33484	6.31273	0.1299623	0.28871356	2.2672074	21	9 29.6	16.9
15722 1990 QV_2	12.8	X	1.56194	137.24871	177.21136	10.40403	0.1077288	0.18933257	3.0036719	21	8 18.5	16.5
15723 Girraween	14.6	X	357.94810	7.86910	359.08339	1.42552	0.1324924	0.28739059	2.2741600	21	11 15.8	16.6
15724 Zille	14.1	X	189.06577	219.97886	211.61191	5.40735	0.1032395	0.27683197	2.3316242	21	6 2.6	17.5
15725 1990 TX_4	13.6	X	30.50071	90.76967	212.39837	8.23653	0.1501900	0.19200915	2.9756928	21	9 25.3	17.2
15726 1990 TG_5	15.0	X	23.41526	84.34379	295.42754	3.75760	0.1849102	0.29194932	2.2504243	21	—	—
15727 Ianmorison	15.1	X	309.59362	126.77515	276.86561	3.23403	0.1368002	0.28560418	2.2836332	21	10 3.2	17.0
15728 Karlmay	14.9	X	9.57076	351.74965	277.57585	2.49445	0.0822059	0.28103153	2.3083377	21	7 1.3	17.1
15729 Yumikoitahana	14.9	X	292.68616	141.41198	284.90210	3.20261	0.1685359	0.28513697	2.2861271	21	9 30.7	17.1
15730 1990 UA_1	12.6	X	324.52816	221.51975	236.55390	12.07699	0.1295056	0.22575935	2.6711947	21	—	—
15731 1990 UW_2	13.2	X	205.87120	240.19680	82.37380	7.10195	0.1146691	0.17297073	3.1902225	21	2 14.7	18.3
15732 Vitusbering	12.6	X	256.24582	191.97946	122.48725	10.41498	0.0566095	0.17480853	3.1678235	21	4 2.5	17.3
15733 1990 VB_6	14.2	X	175.15248	298.19160	132.77305	7.55548	0.0840785	0.27400008	2.3476621	21	5 18.7	17.6
15734 1990 WV_1	14.9	X	115.27230	1.77119	131.58757	5.28387	0.0437275	0.27429318	2.3459894	21	5 24.3	17.9
15735 Andakerkhoven	13.1	X	201.93369	257.72999	95.44944	10.45842	0.0749698	0.17414351	3.1758832	21	3 21.3	18.1
15736 Hamanasu	13.8	X	296.99957	19.19148	86.28389	6.32127	0.1588726	0.25472649	2.4646390	21	12 4.9	16.0
15737 1991 CL	12.6	X	191.38835	50.14985	128.40261	13.95346	0.1578743	0.21439046	2.7648129	21	10 22.9	17.3
15738 1991 DP	13.0	X	260.67688	350.77114	147.49770	10.81949	0.0369459	0.18501061	3.0502701	21	11 26.0	17.4
15739 Matsukuma	14.2	X	247.85139	331.57166	165.06887	8.05264	0.0819096	0.24734327	2.5134446	21	11 11.4	17.6
15740 Hyakumangoku	13.5	X	156.20707	314.61622	176.94165	14.94066	0.1284533	0.23784861	2.5798966	21	7 16.1	17.7
15741 1991 GZ_6	15.2	X	64.55894	224.13867	246.51796	2.22367	0.0881797	0.29174774	2.2514607	21	2 3.1	17.4
15742 Laurabassi	13.8	X	292.99593	15.85072	238.94419	14.23276	0.0321004	0.22357835	2.6885382	21	2 16.8	17.8
15743 1991 ND_7	14.1	X	243.14446	162.27364	155.09948	2.79738	0.0459276	0.22144236	2.7057993	21	3 13.2	17.9
15744 1991 PU	13.7	X	210.01696	81.93551	289.55763	4.15392	0.1318195	0.22110055	2.7085873	21	4 7.8	18.0
15745 Yuliya	17.3	X	119.95494	140.60044	132.61445	14.42872	0.2551970	0.43710638	1.7195360	21	—	—
15746 1991 PN_8	14.5	X	131.97282	213.76171	175.11442	1.96269	0.2329174	0.21426844	2.7658625	21	2 24.9	18.8
15747 1991 RW_{23}	13.6	X	105.42765	187.38703	198.70668	4.00745	0.0800099	0.21111574	2.7933304	21	1 1.4	17.3
15748 1991 RG_{25}	13.3	X	168.68269	224.22197	91.72516	9.10192	0.2171360	0.21025810	2.8009212	21	1 2.5	17.9
15749 1991 VT_1	14.4	X	72.57411	144.52229	262.22058	2.95056	0.1160477	0.30501255	2.1857018	21	—	—
15750 1991 VJ_4	13.6	X	289.31040	278.98149	42.37877	7.01915	0.1491670	0.28517095	2.2859454	21	4 24.1	16.5
15751 1991 VN_4	12.0	X	276.05707	279.71128	92.99919	11.64073	0.1121175	0.18936238	3.0033567	21	6 25.8	16.0
15752 Eluard	13.1	X	150.80331	238.17558	144.97583	10.85399	0.2355886	0.17606416	3.1527442	21	3 13.1	18.4
15753 1992 DD_{10}	13.4	X	198.28871	117.25554	213.94810	4.43118	0.1076879	0.16871177	3.2436884	21	2 14.1	18.6
15754 1992 EP	14.1	X	301.00147	179.76491	70.06915	5.83934	0.1927966	0.26854224	2.3793645	21	1 29.8	17.4
15755 1992 ET_5	13.9	X	214.26616	236.57095	124.46462	6.84232	0.1663154	0.17473624	3.1686971	21	4 7.1	19.1
15756 1992 ET_9	14.3	X	347.19778	159.36037	153.99229	6.42191	0.1446349	0.28143465	2.3061330	21	7 26.8	16.1
15757 1992 EJ_{13}	14.5	X	345.41752	317.13308	178.90504	5.87208	0.0944414	0.26549293	2.3975485	21	—	—
15758 1992 FT_1	14.0	X	350.75488	193.70040	353.12238	4.94159	0.1671686	0.26834861	2.3805090	21	1 15.3	16.7
15759 1992 GM_4	14.0	X	217.83902	127.72859	212.78434	5.70407	0.1359998	0.26725898	2.3869749	21	3 3.2	17.8
15760 Albion	7.3	X	33.69721	2.49879	359.24198	2.17814	0.0738763	0.00336598	44.0956156	21	11 2.9	23.4

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
15761 Schumi	13.3	*X*	172.62588	308.42185	182.23714	10.50210	0.0577010	0.23365697	2.6106595	21	7 31.0	17.2
15762 Rühmann	13.9	*X*	51.62463	57.69530	272.82276	4.18373	0.2209118	0.24323913	2.5416383	21	12 19.1	17.5
15763 Nagakubo	13.4	*X*	103.20738	353.75882	76.70091	9.73437	0.0742067	0.21858352	2.7293409	21	2 26.3	17.2
15764 1992 UL_8	13.4	*X*	233.82985	139.03661	262.02007	11.84411	0.2036592	0.22843134	2.6503237	21	6 4.2	17.8
15765 1992 WU_1	14.7	*X*	324.31839	164.83580	231.07017	5.21083	0.3407683	0.23613010	2.5923988	21	9 21.4	16.2
15766 Strahlenberg	12.7	*X*	136.72022	70.22696	298.32225	5.12314	0.0476032	0.17507172	3.1646478	21	1 21.6	17.2
15767 1993 FN_7	13.4	*X*	290.28836	218.31271	141.53196	6.34654	0.1619971	0.18500552	3.0503261	21	6 20.6	17.6
15768 1993 FW_{11}	15.8	*X*	110.07640	181.56040	130.62990	4.28785	0.2045390	0.29967468	2.2115802	21	—	—
15769 1993 FP_{23}	15.1	*X*	262.96919	110.89727	307.77888	1.92362	0.1599569	0.25753123	2.4467116	21	8 3.6	18.4
15770 1993 FL_{29}	13.5	*X*	253.72524	79.93834	290.32943	3.80821	0.1839781	0.18268323	3.0761223	21	5 18.5	18.3
15771 1993 FS_{34}	13.4	*X*	215.48926	293.12245	53.86113	2.18400	0.1900385	0.17504275	3.1649970	21	3 20.1	18.6
15772 1993 FW_{34}	13.6	*X*	221.42978	174.46606	135.85879	2.70604	0.1390876	0.17044628	3.2216452	21	2 12.3	18.8
15773 1993 FO_{37}	14.3	*X*	32.85696	349.11576	167.72235	3.57391	0.0346217	0.20920574	2.8103063	21	3 5.4	18.0
15774 1993 FK_{38}	13.4	*X*	302.52739	117.66905	152.27209	4.38760	0.0393958	0.17612809	3.1519813	21	4 2.5	17.8
15775 1993 FA_{49}	15.1	*X*	197.82356	333.20927	335.88454	0.65270	0.1975768	0.30792613	2.1718927	21	1 2.8	18.4
15776 1993 *KO*	13.9	*X*	189.78733	25.74937	198.54380	5.73984	0.1190203	0.29776947	2.2210037	21	12 26.5	16.9
15777 1993 *LF*	12.6	*X*	288.87740	183.62312	119.30464	15.56276	0.1079895	0.24156896	2.5533399	21	4 16.1	16.4
15778 1993 *NH*	14.8	*X*	333.93007	81.13993	245.75571	22.26545	0.3123398	0.28177307	2.3042861	21	6 20.7	16.3
15779 Scottroberts	13.5	*X*	309.81936	59.86602	282.95253	23.21648	0.2425294	0.27810356	2.3245114	21	6 11.3	16.1
15780 1993 OO_3	15.3	*X*	188.62629	63.27975	298.92151	1.39016	0.2173075	0.26954276	2.3734729	21	3 6.6	19.3
15781 1993 OJ_7	14.2	*X*	254.93645	117.82282	297.54217	5.85482	0.0961201	0.28198119	2.3031521	21	7 29.5	17.0
15782 1993 ON_8	15.3	*X*	74.41596	106.25689	107.21916	3.24447	0.0622714	0.28191686	2.3035025	21	7 23.2	18.0
15783 Briancox	12.3	*X*	189.24381	119.10874	220.35802	4.84164	0.2577780	0.12518911	3.9575372	21	2 22.0	19.1
15784 1993 *QZ*	14.2	*X*	219.39804	183.22839	163.85405	21.85239	0.1583135	0.27029398	2.3690731	21	3 15.5	17.9
15785 de Villegas	13.1	*X*	270.11650	286.31940	156.33224	14.23435	0.0541784	0.17671177	3.1450368	21	9 26.5	17.5
15786 1993 *RS*	14.3	*X*	239.02085	45.90755	351.48426	22.48182	0.0479201	0.38136498	1.8832537	21	6 14.9	17.0
15787 1993 RY_7	15.1	*X*	166.82331	341.26592	289.79546	1.21864	0.1655848	0.25729451	2.4482121	21	—	—
15788 1993 *SB*	7.9	*X*	358.16517	78.87353	354.64043	1.93567	0.3194998	0.00399980	39.3046276	21	12 2.9	22.1
15789 1993 *SC*	7.0	*X*	72.19093	317.87524	354.48712	5.14547	0.1887485	0.00394611	39.6603534	21	11 7.9	22.9
15790 Keizan	13.6	*X*	268.86885	293.55755	23.51604	22.86295	0.3169993	0.27187105	2.3599025	21	3 19.4	17.8
15791 Yoshiewatanabe	14.2	*X*	175.44373	340.82419	77.15207	3.35359	0.2028383	0.26856583	2.3792252	21	5 4.9	18.1
15792 1993 TS_{15}	15.2	*X*	86.89704	216.71874	153.70596	2.42584	0.1989253	0.22124099	2.7074409	21	—	—
15793 1993 TG_{19}	14.9	*X*	234.00785	221.10648	49.40469	4.24740	0.1866381	0.26315852	2.4117064	21	—	—
15794 1993 TG_{31}	14.5	*X*	245.66452	171.56206	69.35429	3.78261	0.1398230	0.25977674	2.4325916	21	—	—
15795 1993 TY_{38}	14.3	*X*	156.61521	270.15900	161.79494	7.79163	0.1480526	0.23219524	2.6216045	21	5 6.0	18.4
15796 1993 TZ_{38}	13.6	*X*	180.57298	150.93009	144.65863	6.88082	0.1256075	0.25894243	2.4378140	21	—	—
15797 1993 UD_3	13.8	*X*	198.03157	99.06488	256.12717	5.33070	0.1502989	0.26519439	2.3993475	21	3 2.4	17.6
15798 1993 VZ_4	14.4	*X*	146.72354	348.06870	29.49370	1.73677	0.1965467	0.26120909	2.4236907	21	2 16.5	17.8
15799 1993 *XN*	12.8	*X*	64.55544	280.13793	268.22037	12.14375	0.1261250	0.22891418	2.6465956	21	6 12.2	16.0
15800 1993 *XP*	13.4	*X*	267.03267	207.98521	267.62284	12.26028	0.1157997	0.24292010	2.5438631	21	10 28.9	16.8
15801 1994 *AF*	14.5	*X*	93.17015	166.49680	240.38729	3.47039	0.1861893	0.25621851	2.4550615	21	1 14.5	17.1
15802 1994 AT_2	14.3	*X*	140.63792	108.88243	252.74506	4.77122	0.0731283	0.21787351	2.7352672	21	1 12.1	18.1
15803 1994 *CW*	13.5	*X*	292.79512	218.51142	158.45271	14.43240	0.1873771	0.23663186	2.5887329	21	7 12.0	17.0
15804 Yenisei	13.5	*X*	113.91009	297.41665	116.58928	6.27122	0.0503270	0.21734403	2.7397077	21	2 12.3	17.2
15805 Murakamitakehiko	13.6	*X*	289.82032	238.88554	40.13241	5.50921	0.1966915	0.28794727	2.2712280	21	2 21.8	16.9
15806 Kohei	12.7	*X*	103.50948	43.61003	128.97541	10.33074	0.1166072	0.18789549	3.0189678	21	7 11.9	17.2
15807 1994 GV_9	7.4	*X*	82.20714	303.43001	176.69831	0.56172	0.0580982	0.00341699	43.6555905	21	4 18.9	23.8
15808 Zelter	13.4	*X*	161.92970	117.30339	107.30009	1.32143	0.0853151	0.20115472	2.8848013	21	11 14.7	17.7
15809 1994 *JS*	7.8	*X*	357.23238	237.77058	56.33940	14.04261	0.2242358	0.00354393	42.6068196	21	7 13.0	23.0
15810 Arawn	7.7	*X*	34.34704	104.91089	144.81357	3.79627	0.1213766	0.00394468	39.6699620	21	7 15.3	23.2
15811 Nüsslein–Volhard	12.8	*X*	240.39468	75.22322	225.49747	9.61105	0.1660603	0.17173159	3.2055502	21	2 12.8	18.2
15812 1994 *PZ*	15.1	*X*	257.53880	139.94419	149.62349	3.11575	0.1643728	0.31588035	2.1352774	21	1 30.0	18.2
15813 1994 PL_{12}	14.8	*X*	201.05056	269.69473	260.06561	1.48150	0.1375307	0.26097845	2.4251184	21	10 21.5	18.5
15814 1994 PX_{12}	15.5	*X*	171.72171	181.14354	199.09125	1.72182	0.1663049	0.24099898	2.5573642	21	3 14.6	19.6
15815 1994 PY_{18}	14.4	*X*	184.44854	10.19555	331.06505	11.18254	0.2751859	0.27591616	2.3367807	21	2 9.6	18.4
15816 1994 PV_{39}	14.9	*X*	180.85853	329.95540	275.01459	1.30366	0.1813401	0.26858870	2.3790901	21	—	—
15817 Lucianotesi	18.4	*X*	284.23747	94.26560	162.48700	13.87305	0.1181092	0.64652952	1.3245768	21	—	—
15818 DeVeny	16.6	*X*	355.65334	232.94046	274.82852	0.78529	0.0704533	0.27160458	2.3614458	21	—	—
15819 Alisterling	14.3	*X*	157.05599	119.57947	181.89567	6.83390	0.1133032	0.30502079	2.1856624	21	—	—
15820 1994 *TB*	7.3	*X*	3.77857	98.66773	317.24628	12.14496	0.3174471	0.00397050	39.4977643	21	11 25.2	21.6
15821 Iijimatatsushi	14.4	*X*	137.35716	312.62624	120.32146	3.28860	0.0387519	0.31443042	2.1418367	21	3 24.1	16.8
15822 Genefahnestock	14.6	*X*	321.62336	150.03826	190.83660	22.02535	0.0800432	0.36248415	1.9480946	21	7 24.0	17.0
15823 1994 UO_1	15.1	*X*	133.90682	173.21739	204.38302	1.59463	0.1565902	0.30774568	2.1727416	21	1 17.5	17.4
15824 1994 WM_1	14.6	*X*	317.65158	38.47593	65.47981	15.89322	0.0846862	0.25800483	2.4437165	21	—	—
15825 1994 WX_1	14.9	*X*	165.59607	229.56774	257.82285	2.72348	0.0884598	0.24541696	2.5265797	21	7 21.0	18.6
15826 1994 *YO*	15.3	*X*	14.34893	272.80698	107.33153	3.88552	0.1649484	0.29221440	2.2490631	21	—	—
15827 1995 AO_1	13.8	*X*	333.57333	308.16877	210.67881	10.08652	0.3151220	0.22162599	2.7043045	21	—	—
15828 Sincheskul	14.6	*X*	31.06217	39.22921	132.27977	7.41973	0.0580921	0.26781194	2.3836881	21	3 15.3	17.3
15829 1995 BA_1	13.9	*X*	180.23536	295.61975	117.86515	14.47352	0.1759512	0.23640898	2.5903597	21	5 9.4	18.4
15830 1995 BW_1	15.0	*X*	158.07338	329.32379	131.19191	8.99958	0.2197753	0.23767573	2.5811475	21	6 14.6	19.5
15831 1995 BG_3	13.1	*X*	98.95001	278.77431	281.12375	11.77109	0.0803476	0.20334144	2.8640820	21	8 3.6	17.3
15832 1995 CB_1	14.1	*X*	101.34841	279.90261	103.36176	7.15601	0.1591393	0.26193470	2.4192126	21	—	—
15833 1995 CL_1	14.1	*X*	34.92197	53.50770	132.47563	13.39999	0.1534542	0.23078869	2.6322454	21	4 26.5	17.1
15834 McBride	13.4	*X*	221.41373	301.26069	270.10992	32.39553	0.2582452	0.21301922	2.7766653	21	12 14.8	17.8
15835 1995 *DY*	14.3	*X*	64.65854	83.74560	193.62827	2.30427	0.1380129	0.24133520	2.5549884	21	10 16.1	17.6
15836 1995 DA_2	7.7	*X*	69.06756	331.07917	127.58809	6.56617	0.0715328	0.00452343	36.2096344	21	3 17.7	23.2
15837 Mariovalori	14.2	*X*	274.99920	52.36405	157.29757	1.41302	0.1113745	0.18184693	3.0855463	21	—	—
15838 Auclair	14.1	*X*	228.67772	339.59138	11.95905	1.72994	0.0994341	0.19062796	2.9900490	21	4 7.8	18.5
15839 1995 JH_1	14.0	*X*	212.09230	172.89426	136.72082	2.18362	0.1476153	0.17948640	3.1125406	21	2 1.9	19.1
15840 Hiroshiendou	13.3	*X*	168.70948	187.26375	124.10485	10.26306	0.1443583	0.21160888	2.7889889	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
15841	Yamaguchi	14.4	*X*	298.23315	298.80285	284.68607	20.29575	0.3232313	0.17689356	3.1428817	21	—	—
15842	1995 SX_2	14.2	*X*	322.07459	280.63360	41.97539	3.50683	0.1910100	0.26111278	2.4242866	21	6 11.2	16.5
15843	Comcom	13.2	*X*	111.82675	325.79782	297.87611	11.95240	0.1815834	0.19827338	2.9126822	21	11 13.4	18.1
15844	1995 UQ_5	12.7	*X*	342.69100	338.56364	317.79072	10.67557	0.1778602	0.18527625	3.0473538	21	6 18.8	16.2
15845	Bambi	14.5	*X*	86.72237	305.66076	64.03881	7.58622	0.1325311	0.27493077	2.3423609	21	—	—
15846	Billfyfe	14.4	*X*	292.63855	294.06477	40.36731	5.70615	0.1417673	0.25773861	2.4453990	21	5 19.3	17.4
15847	1995 WA_2	15.2	*X*	353.66077	256.76447	215.87356	3.12090	0.1934476	0.27343139	2.3509161	21	—	—
15848	1995 YJ_4	12.4	*X*	211.64313	281.30384	132.04118	25.98700	0.2993941	0.17687946	3.1430487	21	6 4.5	18.4
15849	Billharper	14.3	*X*	226.47384	102.82657	162.80451	2.37960	0.0706033	0.19424008	2.9528643	21	—	—
15850	1996 AE_1	13.3	*X*	160.35964	268.28676	291.02209	15.08496	0.0540889	0.18039433	3.1020881	21	10 2.7	18.3
15851	Chrisfleming	13.3	*X*	189.33948	304.70311	292.83826	12.21784	0.1424975	0.22464278	2.6800387	21	12 27.8	17.5
15852	1996 BR_1	14.3	*X*	182.46838	126.55347	103.99051	5.63012	0.1100332	0.29985550	2.2106909	21	12 28.1	17.2
15853	Benedettafoglia	14.8	*X*	181.25328	14.29037	119.87524	5.32185	0.1010664	0.29289088	2.2455987	21	8 20.2	17.9
15854	Numa	15.3	*X*	127.11447	11.89320	245.28733	5.80443	0.0985426	0.29715514	2.2240637	21	12 2.9	18.2
15855	Mariasalvatore	15.1	*X*	55.07756	107.06735	126.89996	4.40332	0.0911168	0.28559877	2.2836620	21	7 28.6	17.4
15856	Yanokoji	13.4	*X*	296.95349	262.87637	327.77659	7.87029	0.2038176	0.26972308	2.3724149	21	—	—
15857	Touji	14.3	*X*	105.86893	9.04384	207.11432	2.58970	0.1244489	0.28753644	2.2733909	21	9 15.6	17.3
15858	Davidwoods	15.7	*X*	187.33954	179.05709	127.87220	2.03500	0.1533907	0.30703319	2.1761016	21	—	—
15859	1996 GO_{18}	15.0	*X*	28.54324	135.26055	201.12528	4.57481	0.1323662	0.28881363	2.2666837	21	11 23.6	17.4
15860	Siráň	14.7	*X*	106.03637	299.42322	123.27438	7.90300	0.0951341	0.26912719	2.3759155	21	2 9.5	17.4
15861	Ispahan	12.6	*X*	258.68099	248.13737	40.99698	13.63964	0.1338568	0.19040996	2.9923308	21	2 26.5	17.4
15862	1996 HJ_{15}	14.6	*X*	102.68648	84.81611	139.24982	1.11978	0.0387375	0.24614608	2.5215878	21	9 10.0	17.9
15863	1996 HT_{15}	13.8	*X*	154.57820	258.81565	161.28156	2.21865	0.0827710	0.19555008	2.9396619	21	4 15.3	18.2
15864	1996 HQ_{23}	15.2	*X*	24.51032	266.86790	139.28505	1.10638	0.1469639	0.29640363	2.2278214	21	—	—
15865	1996 HW_{25}	14.5	*X*	294.69765	285.87267	75.36105	6.32801	0.2116764	0.27953024	2.3165954	21	6 18.1	17.0
15866	1996 KG	14.4	*X*	254.55691	280.31658	192.38708	2.91150	0.0530246	0.28899904	2.2657141	21	10 28.7	16.9
15867	1996 NK_5	13.5	*X*	252.08192	46.86691	177.31975	0.77020	0.1288030	0.17617919	3.1513718	21	—	—
15868	Akiyoshidai	14.9	*X*	130.73771	230.49904	96.73385	4.53202	0.1647333	0.29116683	2.2544544	21	—	—
15869	Tullius	15.0	*X*	335.48799	62.60423	219.61122	12.15275	0.1838027	0.23095710	2.6309656	21	5 10.6	17.6
15870	Obůrka	14.5	*X*	312.57784	86.38566	208.75472	11.40959	0.1673406	0.23009711	2.6375171	21	4 22.5	17.7
15871	1996 QX_1	13.3	*X*	175.09741	85.21805	312.15739	12.15636	0.1772706	0.22283916	2.6944805	21	4 3.8	18.0
15872	1996 RJ_4	14.1	*X*	22.82322	101.14937	142.25647	2.46950	0.0886991	0.23000435	2.6382261	21	6 17.1	17.0
15873	1996 TH_7	14.1	*X*	171.55569	7.81913	21.18612	2.75080	0.0821792	0.22006642	2.7170661	21	3 23.4	18.1
15874	1996 TL_{66}	5.3	*X*	9.56441	184.24412	217.73359	23.97129	0.5806193	0.00129471	83.3720807	21	12 14.7	21.2
15875	1996 TP_{66}	7.0	*X*	31.12804	74.86935	316.63610	5.70379	0.3312546	0.00399750	39.3197297	21	12 24.6	21.8
15876	1996 VO_{38}	13.8	*X*	136.15332	174.24033	134.54033	2.86358	0.0618539	0.20484125	2.8500848	21	—	—
15877	1996 WZ_1	12.2	*X*	37.76029	347.93779	98.77124	10.61554	0.1014991	0.17054056	3.2204576	21	—	—
15878	1996 XC_3	12.9	*X*	217.78237	231.63767	108.40351	11.46986	0.1710962	0.17396625	3.1780401	21	3 18.5	18.3
15879	1996 XH_6	13.7	*X*	61.48953	243.51490	109.63080	3.20837	0.1086878	0.19967364	2.8990490	21	—	—
15880	1997 AM_7	15.3	*X*	341.03760	208.70901	328.38209	3.46800	0.0937133	0.28433168	2.2904416	21	—	—
15881	1997 CU	14.7	*X*	203.19989	12.15590	157.68256	6.10728	0.0498588	0.26790290	2.3831485	21	11 5.7	17.8
15882	1997 CF_{29}	14.4	*X*	2.76133	14.73840	169.94868	2.30371	0.1325431	0.28306554	2.2972665	21	2 1.2	16.6
15883	1997 CR_{29}	7.1	*X*	75.23141	299.27190	127.30082	19.20018	0.2121737	0.00308178	46.7665213	21	3 10.1	23.8
15884	Maspalomas	14.4	*X*	248.47722	58.48342	130.54811	7.06400	0.0546374	0.27666582	2.3325576	21	—	—
15885	1997 EE	15.0	*X*	122.50240	60.69406	43.19153	4.01583	0.0969491	0.29154677	2.2524953	21	4 27.4	17.5
15886	1997 EB_6	15.2	*X*	289.15833	190.85744	48.59045	3.70126	0.1272825	0.28222167	2.3018436	21	1 7.5	18.3
15887	Daveclark	13.9	*X*	21.26073	192.13959	167.12011	1.88926	0.2047612	0.18425730	3.0585781	21	12 1.3	17.6
15888	1997 EE_{29}	15.2	*X*	159.80036	230.57474	303.04806	0.49160	0.1255628	0.26077251	2.4263950	21	9 15.3	18.7
15889	Xiaoyuhe	15.2	*X*	186.80101	245.95867	180.76414	6.49656	0.0501130	0.29186092	2.2508787	21	5 23.9	18.2
15890	Prachatice	16.2	*X*	285.29310	339.68003	201.56417	2.66938	0.0959861	0.31461848	2.1409831	21	—	—
15891	Alissazhang	15.0	*X*	194.99378	169.79894	181.22548	4.37670	0.2004339	0.27946433	2.3169596	21	2 24.3	18.9
15892	1997 GB_{14}	15.2	*X*	285.10750	186.81789	232.10217	3.55822	0.1295022	0.30229945	2.1987599	21	9 14.1	17.2
15893	1997 GV_{20}	14.9	*X*	43.83547	280.44140	231.43792	2.89567	0.1581453	0.24519946	2.5280736	21	3 13.8	17.3
15894	1997 JA_{13}	15.3	*X*	72.08428	167.74447	161.45395	3.02813	0.1496943	0.26273442	2.4143009	21	—	—
15895	1997 JJ_{15}	14.5	*X*	315.74637	84.99028	211.39799	5.48647	0.1364676	0.28662010	2.2782338	21	4 28.3	16.7
15896	Birkhoff	15.6	*X*	156.84811	115.13309	139.38933	1.98571	0.1541063	0.26131140	2.4230580	21	12 22.4	19.2
15897	Beňačková	15.5	*X*	168.23870	247.77002	144.00408	2.54179	0.0952397	0.31352135	2.1459749	21	3 12.8	18.2
15898	Kharasterteam	13.2	*X*	22.50577	260.66238	327.93620	13.60338	0.0671245	0.23756101	2.5819784	21	5 19.9	16.6
15899	Silvain	15.4	*X*	143.16537	243.10290	66.91301	2.32748	0.0874278	0.30204852	2.1999775	21	—	—
15900	1997 RK_3	14.3	*X*	184.72482	263.24049	84.98767	7.35169	0.1323974	0.26829663	2.3808164	21	2 12.9	17.9
15901	1997 RY_8	13.4	*X*	60.55756	333.17125	172.10807	10.55879	0.1024474	0.18696431	3.0289835	21	4 10.3	17.2
15902	Dostál	14.9	*X*	358.79945	195.01807	179.12142	5.67393	0.0951221	0.28976146	2.2617380	21	11 25.5	17.2
15903	Rolandflorrie	13.9	*X*	259.30996	104.97466	158.00678	12.76322	0.1403959	0.22987955	2.6391809	21	1 13.0	18.2
15904	Halstead	14.2	*X*	16.39974	268.71646	242.09841	3.04626	0.0263147	0.30981035	2.1630776	21	1 11.0	16.5
15905	Berthier	14.3	*X*	353.00481	326.18546	18.62668	7.80140	0.1793889	0.24451767	2.5327708	21	9 29.5	16.4
15906	Yoshikaneda	15.1	*X*	17.56378	192.19671	188.74425	1.87916	0.1208108	0.29294962	2.2452985	21	—	—
15907	Robot	15.7	*X*	21.03037	91.41484	205.43204	5.33666	0.1313742	0.28329299	2.2960367	21	9 9.0	17.9
15908	Bertoni	14.2	*X*	94.19511	146.97230	309.33486	1.88099	0.0970270	0.18402058	3.0612006	21	3 22.3	18.4
15909	1997 TM_{17}	14.5	*X*	42.75954	25.50218	257.53269	6.78707	0.1453257	0.28499587	2.2868816	21	9 26.2	17.1
15910	Shinkamigoto	14.4	*X*	85.03553	64.38569	206.90923	5.51549	0.1009260	0.28872521	2.2671465	21	11 3.7	17.2
15911	Davidgauthier	16.5	*X*	168.44092	274.25216	15.11854	2.13688	0.2090540	0.25991103	2.4317537	21	—	—
15912	1997 TR_{26}	14.5	*X*	130.94881	299.21737	45.75496	3.63672	0.1914627	0.25996535	2.4314149	21	—	—
15913	Telemachus	12.0	*X*	325.37837	9.95152	49.03241	7.24972	0.0608207	0.08329825	5.1925276	21	10 24.9	18.5
15914	1997 UM_3	14.2	*X*	156.06456	64.06053	348.52167	2.01863	0.2007705	0.26859276	2.3790662	21	4 9.1	17.8
15915	1997 UR_3	14.1	*X*	227.38609	294.02571	37.17305	3.33456	0.0492111	0.22627233	2.6671560	21	3 12.5	17.9
15916	Shigeoyamada	14.1	*X*	341.84373	82.61762	103.82892	3.76584	0.0507856	0.26494360	2.4008614	21	1 19.1	16.8
15917	Rosahavel	13.5	*X*	350.78796	223.15197	225.92123	7.09433	0.1979112	0.21140274	2.7908017	21	—	—
15918	Thereluzia	15.1	*X*	35.08307	61.04367	301.08200	6.63697	0.1623069	0.29331776	2.2434194	21	—	—
15919	1997 UA_{22}	14.7	*X*	331.29265	252.68630	106.44946	5.78464	0.2020452	0.28425160	2.2908717	21	9 8.2	16.1
15920	1997 UB_{25}	14.5	*X*	131.11092	75.22375	262.29246	4.05357	0.2172145	0.30139612	2.2031511	21	—	—

ELEMENTS AND OPPOSITION DATES IN 2021

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2021 JULY 5.0 TT

	Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
		m		°	°	°	°		°				
15921	Kintaikyo	15.6	X	349.27116	64.32895	231.31805	6.39997	0.1195555	0.27979778	2.3151184	21	7 2.4	17.7
15922	Masajisaito	15.6	X	12.95767	194.45682	172.76336	2.98942	0.1887797	0.28992608	2.2608818	21	12 22.6	17.8
15923	1997 VN_3	13.4	X	25.75612	36.82771	236.80400	18.10623	0.1895324	0.23692305	2.5866113	21	8 9.2	16.6
15924	Axelmartin	14.9	X	140.23636	292.25859	75.11177	3.05572	0.2011306	0.26446440	2.4037608	21	1 27.9	18.1
15925	Rokycany	13.1	X	264.61047	160.69952	284.40214	12.37238	0.1226294	0.23608726	2.5927124	21	9 8.5	16.8
15926	1997 VP_6	14.4	X	4.27940	139.01310	225.20106	1.04522	0.1724603	0.24708331	2.5152072	21	11 19.5	16.9
15927	1997 WV_2	13.8	X	148.84512	145.41705	268.32428	5.19806	0.0856956	0.26589914	2.3951061	21	3 20.8	17.1
15928	1997 WC_3	14.2	X	195.28538	252.34330	91.32108	7.72053	0.1199351	0.26462152	2.4028092	21	2 17.8	17.8
15929	Ericlinton	13.4	X	251.90196	166.41495	53.41805	1.48678	0.1172168	0.17456721	3.1707422	21	—	—
15930	1997 WT_{37}	14.5	X	212.66236	338.87990	350.64924	2.46658	0.1128720	0.26566446	2.3965164	21	2 15.1	17.9
15931	1997 WK_{45}	13.1	X	44.29761	14.76811	71.35513	2.07625	0.1838473	0.17409410	3.1764840	21	1 5.6	16.6
15932	1997 XL_5	13.8	X	230.12581	290.98901	132.17482	5.45162	0.0924302	0.23427333	2.6060784	21	7 8.5	17.5
15933	1997 YD	14.7	X	180.28736	17.18293	54.59478	1.42428	0.2016098	0.27145108	2.3623360	21	5 25.8	18.7
15934	1997 YQ	14.9	X	191.43422	172.12604	198.52618	2.36161	0.2076323	0.26578021	2.3958206	21	3 19.5	18.8
15935	1997 YT	14.4	X	316.02961	38.67229	272.70637	3.85321	0.0746522	0.22908764	2.6452594	21	6 3.7	17.7
15936	1997 YM_4	13.4	X	335.10517	59.37583	269.90429	12.72720	0.1734175	0.23804438	2.5784820	21	7 19.9	15.9
15937	1997 YP_5	14.5	X	132.38720	265.16934	126.08548	2.63016	0.2121899	0.26036028	2.4289555	21	2 20.4	17.9
15938	Bohnenblust	13.7	X	327.00335	317.91109	251.33620	11.93319	0.2090595	0.25636677	2.4541149	21	1 4.9	17.1
15939	Fessenden	12.4	X	319.71484	114.97821	106.91753	13.12250	0.1181384	0.17389881	3.1788618	21	2 15.3	16.8
15940	1997 YU_{13}	13.6	X	57.71151	319.51617	358.58541	1.45116	0.0498085	0.19740887	2.9211797	21	11 8.7	17.6
15941	Stevegauthier	13.0	X	338.46110	355.91589	294.39268	14.43952	0.1134604	0.18610934	3.0382530	21	6 7.9	16.8
15942	1997 YZ_{16}	14.0	X	107.83580	261.86650	149.65001	5.47405	0.1168257	0.25968519	2.4331633	21	1 31.9	16.9
15943	1998 AZ	13.2	X	27.62723	278.98885	326.32502	10.07148	0.0685629	0.18327423	3.0695057	21	6 27.9	17.3
15944	1998 AH_5	13.2	X	102.97573	351.55986	140.83450	2.63702	0.1224756	0.17903049	3.1178224	21	5 23.1	17.7
15945	Raymondavid	13.6	X	206.40452	20.14564	340.00397	4.83580	0.1397328	0.17617741	3.1513930	21	3 26.5	18.8
15946	Satinský	14.8	X	239.28686	244.50131	98.66044	4.29559	0.0938202	0.22374496	2.6872034	21	4 8.2	18.7
15947	Milligan	14.4	X	0.44275	265.35061	141.49810	4.93986	0.1568222	0.24599752	2.5226030	21	—	—
15948	1998 BE	13.3	X	237.78096	288.55922	39.52174	6.53261	0.0672246	0.22076210	2.7113550	21	3 21.2	17.2
15949	Rhaeticus	14.1	X	251.32863	356.95257	105.98310	7.41141	0.1395466	0.28523899	2.2855819	21	9 29.1	17.0
15950	Dallago	14.1	X	5.75987	304.19464	47.74996	4.17604	0.1880322	0.24059513	2.5602252	21	11 5.2	16.4
15951	1998 BB_2	12.2	X	313.26252	160.31861	102.03365	17.69714	0.1268413	0.17815489	3.1280299	21	4 2.2	16.8
15952	1998 BM_7	12.9	X	330.21814	124.53383	127.18911	12.86143	0.0608259	0.17904726	3.1176277	21	4 17.4	17.3
15953	1998 BD_8	13.0	X	288.74810	48.27390	327.16663	12.91381	0.1908513	0.23199202	2.6231353	21	7 6.6	16.5
15954	1998 BG_{11}	13.5	X	258.30442	178.05711	106.74641	6.42874	0.0299257	0.21862661	2.7289822	21	2 21.7	17.3
15955	Johannesgmunden	13.3	X	346.47202	256.29518	256.79190	3.07987	0.0458903	0.21197411	2.7857844	21	—	—
15956	1998 BY_{24}	13.8	X	179.88975	2.01796	278.16068	1.21491	0.0164222	0.20555916	2.8434450	21	—	—
15957	Gemoore	13.8	X	24.88204	28.74604	310.75304	1.10913	0.1086503	0.19652957	2.9298864	21	10 30.8	17.5
15958	1998 BE_{33}	14.4	X	179.30477	257.46981	167.49923	10.30256	0.2848540	0.22278841	2.6948897	21	5 21.8	19.4
15959	1998 BQ_{40}	13.8	X	148.94828	4.36560	340.07851	4.28169	0.0850668	0.21119889	2.7925972	21	1 4.8	17.9
15960	Hluboká	12.8	X	173.00329	293.82569	106.25503	22.73206	0.0697325	0.22330830	2.6907053	21	4 18.3	17.3
15961	1998 CC_1	13.4	X	182.48006	181.21278	140.64517	9.96286	0.1461266	0.21215166	2.7842299	21	1 16.1	17.8
15962	1998 CM_2	14.4	X	71.82967	288.64017	137.08719	3.16140	0.1510719	0.26008389	2.4306760	21	—	—
15963	Koeberl	13.1	X	223.73220	243.81974	150.81378	13.26709	0.1760327	0.22510183	2.6763939	21	5 23.1	17.7
15964	Billgray	15.1	X	286.45463	110.55048	309.55063	18.07643	0.0919281	0.36117997	1.9527813	21	9 22.0	17.3
15965	Robertcox	12.8	X	248.25956	342.74375	90.62400	12.21231	0.0840919	0.18947442	3.0021726	21	8 16.0	17.2
15966	1998 DL_{13}	12.7	X	151.77140	293.89203	133.24047	7.42008	0.1424785	0.17730353	3.1380351	21	4 29.1	17.7
15967	Clairearmstrong	13.0	X	272.41225	273.08847	123.50346	12.21998	0.2881073	0.23003747	2.6379729	21	6 27.9	16.9
15968	Waltercugno	13.3	X	321.96796	199.06658	23.57116	1.00891	0.1238421	0.17082579	3.2168718	21	2 16.7	17.4
15969	Charlesgreen	12.5	X	236.26365	217.30682	132.25807	8.64791	0.0768864	0.17579286	3.1559872	21	4 20.0	17.3
15970	Robertbrownlee	15.6	X	323.68491	309.81277	53.21238	5.05897	0.1826929	0.31053954	2.1596901	21	8 31.9	16.9
15971	Hestroffer	15.3	X	209.38228	207.36138	145.23507	5.50649	0.1906639	0.29249588	2.2476200	21	3 10.9	18.8
15972	1998 FM_{27}	13.3	X	213.25979	201.75671	236.47036	3.12918	0.1205560	0.18484013	3.0521453	21	7 6.9	18.0
15973	1998 FM_{85}	13.4	X	151.81938	346.46015	145.92849	11.80788	0.0539900	0.18302944	3.0722420	21	7 9.7	18.0
15974	1998 FL_{103}	13.1	X	248.59646	87.32178	332.85373	8.15166	0.1351756	0.18511676	3.0491039	21	7 22.3	17.7
15975	1998 FW_{108}	13.5	X	156.25456	131.69784	272.43174	5.19417	0.1488927	0.17213218	3.2005750	21	4 1.3	18.7
15976	1998 FY_{119}	13.5	X	321.79717	47.90902	339.99296	10.05812	0.1029965	0.19075417	2.9887300	21	9 20.5	17.2
15977	1998 MA_{11}	10.4	X	174.36533	227.89865	209.57837	17.34975	0.0471600	0.08365603	5.1777119	21	5 31.6	17.6
15978	1998 QL_1	14.5	X	39.95174	171.90704	206.95460	3.79604	0.1196627	0.22465394	2.6799500	21	—	—
15979	1998 QW_{34}	13.2	X	2.08763	131.47491	175.12314	14.87052	0.2011571	0.21346886	2.7727648	21	8 13.8	16.1
15980	1998 RC_{19}	12.9	X	96.05132	140.17158	133.72434	8.96379	0.0394303	0.17718903	3.1393868	21	10 31.3	17.5
15981	1998 UP_6	13.3	X	201.25552	299.88707	23.58895	17.55737	0.2513976	0.23425959	2.6061804	21	2 11.3	18.2
15982	1998 VA_4	14.6	X	317.79093	100.96304	70.91062	12.88116	0.1566391	0.26720738	2.3872821	21	—	—
15983	1998 WM_1	13.8	X	316.64521	59.76662	255.29004	4.70213	0.1900209	0.24391182	2.5369631	21	5 21.8	16.6
15984	1998 WM_7	13.6	X	148.73202	67.10994	94.39627	9.05242	0.2215660	0.23939428	2.5687797	21	8 24.7	18.0
15985	1998 WU_{20}	14.0	X	128.82341	9.14340	216.90774	7.54430	0.0507821	0.29757539	2.2219693	21	10 22.3	16.9
15986	Fienga	14.7	X	348.79262	284.79460	207.13430	2.64987	0.2291420	0.22270735	2.6955435	21	—	—
15987	1998 XV_{10}	14.9	X	101.74856	84.79383	118.46766	4.70795	0.1125925	0.28289064	2.2982133	21	8 24.1	17.8
15988	Parini	14.0	X	50.03953	170.22123	107.76596	5.42678	0.1771066	0.28842438	2.2687226	21	10 12.8	16.7
15989	1998 XK_{39}	14.0	X	44.30741	108.13116	74.18926	5.70816	0.0995473	0.27783984	2.3259821	21	4 23.5	16.3
15990	1998 YT_1	14.8	X	149.88646	235.44677	173.04737	1.99643	0.2147811	0.27295089	2.3536743	21	3 30.7	18.3
15991	1998 YH_3	13.8	X	168.46025	49.17949	272.09079	5.25787	0.0699866	0.30985486	2.1628705	21	—	—
15992	Cynthia	14.2	X	51.43711	269.75396	312.32709	6.54094	0.0645276	0.27849026	2.3223591	21	6 30.5	16.8
15993	1998 YH_8	13.7	X	103.14345	244.80749	261.61003	3.89780	0.1301635	0.23442857	2.6049278	21	6 8.6	17.2
15994	1998 YO_8	14.1	X	138.55854	47.03484	143.53221	5.05458	0.0608181	0.28808600	2.2704988	21	9 16.4	17.0
15995	1998 YQ_9	14.5	X	118.23825	331.04458	244.41450	2.31003	0.1188255	0.28816436	2.2700872	21	9 27.9	17.7
15996	1998 YC_{12}	14.3	X	51.90749	291.25476	314.08075	7.27226	0.1701110	0.28244411	2.3006349	21	8 22.3	16.8
15997	1999 AX	13.7	X	319.01069	106.78119	100.88060	13.56845	0.1191249	0.22372701	2.6873472	21	1 15.3	17.4
15998	1999 AG_2	14.2	X	168.49841	236.63830	24.85759	4.25824	0.0439805	0.30069619	2.2065686	21	—	—
15999	1999 AG_7	14.5	X	158.35984	325.36174	233.25776	3.45568	0.0743823	0.29065732	2.2570883	21	10 19.6	17.6
16000	Neilgehrels	14.7	X	285.33947	50.79608	174.79125	2.18769	0.1670818	0.26451672	2.4034438	21	—	—