

"Pseudo-MPEC" for 2020 SWCreated 2020 Sep 21 21:50:05 UT using [Find_Orb](#)[Click here for an explanation of pseudo-MPECs](#)

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Orbit Simulator View

Astrometry:

K20S00W	C2020 09 18.31827 23 47 17.28 +22 21 41.8	21.4	GVES083	G96
K20S00W	C2020 09 18.32395 23 47 16.44 +22 21 40.9	21.0	GVES083	G96
K20S00W	C2020 09 18.32413823 47 37.737+22 22 34.61	21.49	GVES083	F51
K20S00W	C2020 09 18.32961 23 47 15.55 +22 21 38.6	21.5	GVES083	G96
K20S00W	C2020 09 18.33529 23 47 14.75 +22 21 37.5	21.6	GVES083	G96
K20S00W	C2020 09 18.34869123 47 34.552+22 22 44.33	21.39	GVES083	F51
K20S00W	C2020 09 18.43246 23 47 02.27 +22 20 39.4	21.8	GVES083	V06
K20S00W	C2020 09 18.43563 23 47 01.93 +22 20 36.9	21.4	GVES083	V06
K20S00W	C2020 09 18.43880 23 47 01.64 +22 20 34.2	21.3	GVES083	V06
K20S00W	C2020 09 18.44197 23 47 01.32 +22 20 31.4	21.5	GVES083	V06
K20S00W	C2020 09 18.47602 23 46 58.62 +22 19 59.3		VES083	V06
K20S00W	C2020 09 18.47919 23 46 58.39 +22 19 56.5	21.7	GVES083	V06
K20S00W	C2020 09 18.48235 23 46 58.25 +22 19 53.5		VES083	V06
K20S00W	2C2020 09 18.95524023 47 48.545+22 19 36.21	20.7	GVES083	J04
K20S00W	2C2020 09 18.96295623 47 47.450+22 19 38.43	21.0	GVES083	J04
K20S00W	2C2020 09 18.97065623 47 46.337+22 19 39.95	20.8	GVES083	J04
K20S00W	IC2020 09 19.04999023 47 21.26 +22 16 54.3	21.2	GVES083	L01
K20S00W	KC2020 09 19.05311023 47 20.92 +22 16 51.9	21.3	GVES083	L01
K20S00W	KC2020 09 19.06052023 47 20.13 +22 16 46.1	21.0	GVES083	L01
K20S00W	CK200921:210718 357.63561 +21.62616	19.9	GV	970
K20S00W	CK200921:212317 357.63075 +21.62329	19.3	GV	970
K20S00W	CK200921:213930 357.62531 +21.62012	19.8	GV	970

Station data:

- (970) [Chelmsford \(N51.744716 E0.495400\)](#) UK. Observer N. James.
- (F51) [Pan-STARRS 1, Haleakala \(N20.707235 W156.255910\)](#) US/Hawaii.
Observers N. [Primak](#), A. Schultz, S. [Watters](#), J. Thiel, T. Goggia. Measurer PS1 Science Consortium. 1.8-m Ritchey-Chrétien + CCD.
- (G96) [Mt. Lemmon Survey \(N32.442754 W110.788720\)](#) US/Arizona. Observers B. M. [Africano](#), E. J. [Christensen](#), G. A. Farneth, D. C. Fuls, A. R. [Gibbs](#), A. D. [Grauer](#), H. Groeller, J. A. Johnson, R. A. [Kowalski](#), S. M. [Larson](#), G. J. [Leonard](#), R. L. [Seaman](#), F. C. [Shelly](#). 1.5-m reflector + 10K CCD.
- (J04) [ESA Optical Ground Station, Tenerife \(N28.300924 W16.511830\)](#) Canary Islands (Spain). Observer D. Abreu. Measurers M. [Micheli](#), D. [Koschny](#), E. [Schwab](#), M. [Busch](#), A. [Knöfel](#). 1.0-m f/4.4 reflector + CCD.
- (L01) [Višnjan Observatory, Tičan \(N45.290900 E13.749300\)](#) Croatia.
Observers K. [Korlević](#), E. [Pettarin](#). Measurer E. Pettarin. 1.0-m f/2.9 reflector + CCD.
- (V06) Catalina Sky Survey-Kuiper ([N32.416847 W110.732550](#)) US/Arizona.
Observers B. M. [Africano](#), E. J. [Christensen](#), G. A. Farneth, D. C. Fuls, A. R. [Gibbs](#), A. D. [Grauer](#), H. Groeller, J. A. Johnson, R. A. [Kowalski](#), S. M. [Larson](#), G. J. [Leonard](#), R. L. [Seaman](#), F. C. [Shelly](#). 1.55-m reflector + CCD.

Orbital elements: 2020 SW

Perihelion 2020 Dec 11.936757 +/- 0.0115 TT = 22:28:55 (JD 2459195.436757)
Epoch 2020 Sep 21.0 TT = JDT 2459113.5 Earth MOID: 0.0002 [Find Orb](#)

M 281.00823433 +/- 0.013 (J2000 ecliptic)
 n 0.96405775 +/- 3.67e-5 Peri. 277.79271 +/- 0.0056
 a 1.01484725 +/- 2.57e-5 Node 181.47686 +/- 0.0029
 e 0.1914341 +/- 0.00013 Incl. 4.23970 +/- 0.0030
 P 1.02/373.41d H 29.1 G 0.15 U 5.9
 q 0.82057081 +/- 0.000115 Q 1.20912369 +/- 0.000158
 From 22 observations 2020 Sept. 18-21; mean residual 0".22

Residuals in arcseconds:

200918 G96	.22+	.21-	200918 V06	.03+	.03+	200919 L01	.01-	.11+
200918 G96	.15+	.33+	200918 V06	.20-	.03-	200919 L01	.02-	.09+
200918 F51	.09-	.10-	200918 V06	.34+	.26-	200919 L01	.07-	.11+
200918 G96	.69-	.36-	200918 V06	.03-	.11+	200921 970	.12+	.01-
200918 G96	.29-	.34+	200918 V06	.70+	.30+	200921 970	.10-	.04-
200918 F51	.03+	.02-	200918 J04	.16+	.24-	200921 970	.05-	.07+
200918 V06	.03+	.14-	200918 J04	.02+	.04+			
200918 V06	.26-	.02+	200918 J04	.14+	.05-			

Ephemerides for Chelmsford:

Date (UTC).dd	RA	Dec	delta	r	elong	mag	'/hr	PA	" sig PA
2020 09 21.90	23 50 30.372	+21 37 14.97	.00858	1.0118	158.0	19.8	1.38	237.9	.017 81
2020 09 21.95	23 50 23.257	+21 36 10.66	.00841	1.0116	158.0	19.8	1.89	235.6	.129 76
2020 09 22.00	23 50 14.728	+21 34 40.22	.00825	1.0114	158.0	19.7	2.24	229.6	.269 72
2020 09 22.05	23 50 06.195	+21 32 41.45	.00809	1.0113	158.1	19.7	2.42	220.2	.426 67
2020 09 22.10	23 49 59.151	+21 30 14.50	.00792	1.0111	158.1	19.6	2.50	206.9	.586 62
2020 09 22.15	23 49 55.023	+21 27 21.88	.00777	1.0109	158.2	19.6	2.60	189.7	.738 55
2020 09 22.20	23 49 55.031	+21 24 08.28	.00761	1.0108	158.3	19.5	2.85	170.7	.875 48
2020 09 22.25	23 50 00.057	+21 20 40.10	.00745	1.0106	158.3	19.5	3.32	153.2	1.00 39
2020 09 22.30	23 50 10.555	+21 17 04.82	.00730	1.0104	158.4	19.4	3.95	139.5	1.12 27
2020 09 22.35	23 50 26.495	+21 13 30.24	.00714	1.0103	158.5	19.4	4.64	129.3	1.25 15
2020 09 22.40	23 50 47.353	+21 10 03.74	.00698	1.0101	158.6	19.3	5.26	121.9	1.44 2
2020 09 22.45	23 51 12.148	+21 06 51.50	.00682	1.0099	158.7	19.3	5.71	116.5	1.69 169
2020 09 22.50	23 51 39.526	+21 03 57.84	.995212	1.0098	158.7	19.2	5.92	112.6	2.01 159
2020 09 22.55	23 52 07.864	+21 01 24.76	.970328	1.0096	158.8	19.2	5.83	109.9	2.39 150
2020 09 22.60	23 52 35.420	+20 59 11.54	.945105	1.0095	158.9	19.1	5.45	108.5	2.81 144
2020 09 22.65	23 53 00.485	+20 57 14.69	.919600	1.0093	158.9	19.1	4.78	108.8	3.24 139
2020 09 22.70	23 53 21.550	+20 55 27.95	.893897	1.0091	159.0	19.0	3.90	111.9	3.66 136
2020 09 22.75	23 53 37.463	+20 53 42.73	.868099	1.0090	159.0	18.9	2.95	120.6	4.05 134
2020 09 22.80	23 53 47.566	+20 51 48.56	.842318	1.0088	159.1	18.9	2.19	141.0	4.40 134
2020 09 22.85	23 53 51.802	+20 49 33.92	.816664	1.0086	159.1	18.8	2.09	172.5	4.70 135
2020 09 22.90	23 53 50.767	+20 46 47.17	.791234	1.0085	159.2	18.7	2.67	194.1	4.99 137
2020 09 22.95	23 53 45.713	+20 43 17.59	.766103	1.0083	159.3	18.6	3.50	201.4	5.29 140
2020 09 23.00	23 53 38.474	+20 38 56.35	.741314	1.0081	159.3	18.6	4.29	200.3	5.67 144
2020 09 23.05	23 53 31.330	+20 33 37.40	.716878	1.0080	159.4	18.5	5.00	194.2	6.19 148
2020 09 23.10	23 53 26.825	+20 27 18.06	.692768	1.0078	159.6	18.4	5.71	184.6	6.89 152
2020 09 23.15	23 53 27.535	+20 19 59.19	.668925	1.0076	159.7	18.3	6.55	173.0	7.82 155
2020 09 23.20	23 53 35.832	+20 11 45.03	.645261	1.0075	159.9	18.3	7.64	161.0	9.02 156
2020 09 23.25	23 53 53.665	+20 02 42.50	.621671	1.0073	160.0	18.2	9.04	150.1	10.5 156
2020 09 23.30	23 54 22.376	+19 53 00.25	.598042	1.0071	160.2	18.1	10.71	141.0	12.3 155
2020 09 23.35	23 55 02.573	+19 42 47.46	.574263	1.0070	160.4	18.0	12.51	134.0	14.6 153
2020 09 23.40	23 55 54.078	+19 32 12.40	.550236	1.0068	160.6	17.9	14.30	128.7	17.2 150
2020 09 23.45	23 56 55.937	+19 21 21.14	.525889	1.0066	160.8	17.8	15.95	125.0	20.4 148
2020 09 23.50	23 58 06.501	+19 10 16.15	.501175	1.0065	161.1	17.7	17.33	122.6	24.2 145
2020 09 23.55	23 59 23.561	+18 58 55.06	.476083	1.0063	161.3	17.5	18.36	121.6	28.7 142
2020 09 23.60	00 00 44.541	+18 47 09.50	.450634	1.0061	161.5	17.4	19.03	121.8	33.9 140
2020 09 23.65	00 02 06.729	+18 34 43.92	.424883	1.0060	161.7	17.3	19.40	123.6	40.0 138
2020 09 23.70	00 03 27.553	+18 21 14.50	.398907	1.0058	162.0	17.1	19.64	127.0	47.1 137
2020 09 23.75	00 04 44.894	+18 06 07.83	.372804	1.0056	162.2	17.0	20.05	132.2	55.4 137
2020 09 23.80	00 05 57.437	+17 48 39.55	.346680	1.0055	162.6	16.8	21.02	138.7	65.2 137
2020 09 23.85	00 07 05.055	+17 27 52.33	.320640	1.0053	162.9	16.6	23.04	145.7	77.1 137
2020 09 23.90	00 08 09.238	+17 02 33.14	.294778	1.0051	163.3	16.4	26.59	151.7	91.8 138
2020 09 23.95	00 09 13.571	+16 31 08.74	.269164	1.0049	163.9	16.2	32.08	155.7	111 140
2020 09 24.00	00 10 24.296	+15 51 37.80	.243842	1.0048	164.5	16.0	40.07	157.5	136 142
2020 09 24.05	00 11 51.067	+15 01 16.76	.218824	1.0046	165.3	15.7	51.46	157.2	171 143
2020 09 24.10	00 13 48.133	+13 56 12.90	.194084	1.0044	166.4	15.4	67.84	155.7	223 145
2020 09 24.15	00 16 36.495	+12 30 31.69	.169570	1.0043	167.6	15.1	92.13	153.3	300 147
2020 09 24.20	00 20 48.375	+10 34 27.65	.145212	1.0041	169.2	14.7	129.9	150.9	425 148
2020 09 24.25	00 27 17.472	+07 50 20.06	.120943	1.0039	170.8	14.2	192.8	148.7	641 149

2020	09	24.30	00	37	45.551	+03	42	23.82	96758	1.0037	171.3	13.7	308.4	147.1	1052	149
2020	09	24.35	00	56	04.917	-03	12	13.71	72865	1.0035	166.8	13.3	554.4	146.0	1953	149
2020	09	24.40	01	34	03.050	-16	36	41.76	50290	1.0033	152.2	12.9	1184	144.2	4331	147
2020	09	24.45	03	31	32.512	-44	30	49.10	33774	1.0031	115.9	13.1	2656	129.7	171'	132
2020	09	24.50	09	22	31.742	-51	16	19.19	36060	1.0029	61.2	15.7	2290	60.6	9658	63
2020	09	24.55	11	28	32.970	-30	53	47.68	55109	1.0027	31.5	20??	972.3	39.9	4360	43

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