















EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

Table containing ephemerides for various minor planets, including 461769 2005 UN322, 496818 1993 RA, 274833 2009 QQ1, 451210 2009 VZ78, 494670 2002 MQ1, 494670 2002 MQ1 (continuation), 282639 2005 TC46, 283319 1992 WR4, and 363012 1988 PH4. Each entry includes columns for date (2021, 21/22), alpha2000, delta2000, delta, r, beta, V, psi, and longitude/latitude coordinates (45/-26 degrees).





EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

21/22	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	21/22	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>405352</b> 2003 WM <sub>27</sub> (continuation)										<b>229958</b> 1999 RD <sub>43</sub> (continuation)									
12 12	19 51.85	-22 26.0	2.265	1.576	21.5	21.3	36 E	15*	26*	5 21	14 40.57	-7 33.0	1.295	2.269	9.3	20.3	159 E	37	72
12 17	20 7.13	-21 34.7	2.283	1.572	20.7	21.3	34 E	15*	24*	5 26	14 34.93	-7 28.8	1.298	2.249	11.7	20.3	153 E	38	71
<b>402064</b> 2003 TW <sub>6</sub>										<b>310879</b> 2003 ON <sub>12</sub>									
3 27	15 14.04	-11 48.1	1.684	2.505	15.9	21.4	137 W	33	76	3 27	15 30.67	-43 15.8	2.338	2.986	16.5	21.4	122 W	2	73
4 6	15 9.54	-11 50.4	1.569	2.472	12.6	21.1	147 W	33	76	4 6	15 26.15	-43 53.4	2.219	2.969	14.8	21.2	131 W	1	72
<b>405129</b> 2002 HW <sub>8</sub>										<b>527977</b> 2008 EY <sub>68</sub>									
3 27	15 19.61	-14 20.4	1.275	2.101	19.7	21.4	135 W	31	78	3 27	15 33.96	+6 57.4	0.404	1.300	35.1	22.3	131 W	52	57
4 6	15 13.79	-14 14.4	1.213	2.118	15.3	21.2	146 W	31	78	4 1	15 21.48	+12 38.4	0.366	1.290	32.1	22.0	137 W	58	51
<b>503434</b> 2016 ES <sub>55</sub>										<b>415996</b> 2002 AT <sub>69</sub>									
3 27	15 19.76	-0 4.6	0.960	1.814	22.6	21.4	136 W	45	64	3 27	15 34.02	-31 36.8	2.349	3.049	15.3	21.4	126 W	13	84
4 1	15 17.55	+1 15.6	0.945	1.830	20.3	21.3	141 W	46	63	4 6	15 30.61	-31 47.1	2.213	3.018	13.2	21.2	137 W	13	84
<b>535203</b> 2014 YJ <sub>15</sub>										<b>229958</b> 1999 RD <sub>43</sub>									
3 27	15 23.77	-32 50.5	2.621	3.329	13.7	21.5	128 W	12	83	3 27	15 29.76	-10 5.1	1.678	2.469	17.2	21.3	133 W	35	74
4 6	15 18.96	-32 21.9	2.496	3.312	11.6	21.3	138 W	13	84	4 6	15 26.29	-9 40.4	1.557	2.435	14.1	21.0	144 W	35	74
<b>229958</b> 1999 RD <sub>43</sub>																			
4 16	15 11.92	-31 35.3	2.392	3.293	9.0	21.1	149 W	13	84	4 16	15 19.67	-9 9.8	1.455	2.400	10.4	20.7	154 W	36	73
4 26	15 3.17	-30 29.4	2.313	3.274	6.2	20.9	159 W	15	86	4 26	15 10.25	-8 36.7	1.377	2.364	6.2	20.3	165 W	36	73
5 6	14 53.46	-29 5.1	2.262	3.254	3.9	20.7	167 W	16	87	5 11	15 4.72	-8 20.5	1.347	2.345	4.4	20.2	170 W	37	72
5 16	14 43.70	-27 26.0	2.242	3.233	4.2	20.7	166 E	18	89	5 6	14 58.81	-8 5.3	1.324	2.326	3.7	20.1	171 W	37	72
5 26	14 34.82	-25 38.2	2.252	3.211	6.9	20.8	158 E	19	90	5 11	14 52.69	-7 51.9	1.308	2.307	4.8	20.1	169 E	37	72
6 5	14 27.54	-23 49.2	2.290	3.188	10.0	21.0	147 E	21	88	5 16	14 46.55	-7 40.9	1.298	2.288	6.8	20.2	164 E	37	72
6 15	14 22.35	-22 5.9	2.353	3.165	12.8	21.1	136 E	23	86										
6 25	14 19.47	-20 33.7	2.436	3.140	15.2	21.3	126 E	24*	85										
7 5	14 18.92	-19 15.6	2.535	3.115	17.1	21.4	116 E	24*	83										





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21/22	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°-26°	21/22	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°-26°
<b>453207 2008 GO<sub>115</sub></b> (continuation)									<b>271774 2004 TO<sub>12</sub></b> (continuation)								
6 5   15 26.31   -15 59.3   1.694   2.665   7.9   21.3   159 E   29   80 6 15   15 19.37   -15 22.4   1.801   2.714   11.6   21.7   148 E   30   79									5 21   17 17.21   -26 1.9   0.616   1.603   12.9   19.5   159 W   19   90 5 26   17 13.47   -25 54.9   0.597   1.597   9.5   19.3   165 W   19   90 5 31   17 8.95   -25 45.0   0.583   1.592   6.0   19.1   171 W   19   90 6 5   17 3.88   -25 32.0   0.573   1.587   2.6   18.9   176 W   19   90 6 10   16 58.56   -25 16.2   0.568   1.582   2.5   18.8   176 E   20   89 6 15   16 53.34   -24 58.3   0.567   1.578   5.9   19.0   171 W   20   89 6 20   16 48.55   -24 39.1   0.570   1.574   9.6   19.2   165 W   20   89 6 25   16 44.48   -24 19.7   0.578   1.570   13.2   19.4   159 E   21   88 7 30   16 41.33   -24 0.9   0.589   1.567   16.6   19.5   154 E   21   88 6 5   16 39.27   -23 43.7   0.604   1.565   19.8   19.7   149 E   21   88								
<b>306607 2000 OD<sub>2</sub></b>									<b>366430 2001 VH<sub>86</sub></b>								
3 27   16 23.05   -13 0.7   1.854   2.503   20.2   21.4   120 W   32   77 4 6   16 24.76   -12 19.4   1.715   2.471   18.3   21.2   129 W   33   76 4 16   16 23.59   -11 29.8   1.591   2.439   15.7   20.9   139 W   34   75 4 26   16 19.44   -10 34.0   1.486   2.405   12.4   20.6   149 W   34   75 5 6   16 12.49   -9 35.2   1.401   2.371   8.7   20.3   159 W   35   74  5 11   16 8.11   -9 6.0   1.367   2.354   6.9   20.2   164 W   36   73 5 16   16 3.27   -8 38.1   1.340   2.336   5.6   20.0   167 W   36   73 5 21   15 58.12   -8 12.0   1.319   2.319   5.2   20.0   168 W   37   72 5 26   15 52.81   -7 48.6   1.305   2.301   6.1   20.0   166 E   37   72 5 31   15 47.50   -7 28.5   1.297   2.283   7.8   20.0   162 E   38   71 6 5   15 42.36   -7 12.4   1.295   2.266   9.9   20.1   157 E   38   71									3 27   16 53.72   -24 0.0   1.868   2.417   22.6   21.4   111 W   21   88 4 6   16 59.73   -23 43.4   1.709   2.372   21.5   21.1   120 W   21   88 4 16   17 3.12   -23 17.0   1.560   2.326   19.6   20.8   129 W   22   87 4 26   17 3.52   -22 39.9   1.424   2.279   16.9   20.5   139 W   22   87 5 6   17 0.70   -21 51.1   1.306   2.232   13.4   20.1   149 W   23   86 5 16   16 54.65   -20 50.0   1.207   2.185   9.0   19.7   160 W   24   85 5 26   16 45.89   -19 37.4   1.131   2.138   3.9   19.3   172 W   25   84  5 31   16 40.79   -18 57.8   1.102   2.114   1.8   19.1   176 W   26   83 6 5   16 35.42   -18 16.7   1.079   2.091   2.8   19.1   174 E   27   82 6 10   16 29.99   -17 34.9   1.062   2.067   5.5   19.2   169 W   27   82 6 15   16 24.71   -16 53.7   1.052   2.044   8.5   19.2   163 E   28   81 6 20   16 19.78   -16 13.9   1.047   2.021   11.5   19.3   157 E   29   80 6 25   16 15.39   -15 36.5   1.047   1.997   14.3   19.4   151 E   29   80 6 30   16 11.68   -15 2.5   1.052   1.974   17.1   19.5   145 E   30   79 7 5   16 8.78   -14 32.5   1.062   1.951   19.7   19.6   140 E   30   79  7 15   16 5.74   -13 46.3   1.092   1.906   24.4   19.7   129 E   31   78 7 25   16 6.66   -13 19.5   1.133   1.862   28.2   19.9   120 E   32*   77 8 4   16 11.48   -13 10.3   1.181   1.819   31.2   20.0   112 E   31*   77 8 14   16 20.00   -13 15.8   1.234   1.777   33.5   20.1   104 E   31*   77 8 24   16 31.91   -13 31.7   1.287   1.738   35.2   20.2   98 E   30*   78 9 3   16 46.87   -13 53.6   1.341   1.701   36.4   20.3   92 E   29*   78* 9 13   17 4.61   -14 17.4   1.394   1.667   37.1   20.3   86 E   29*   75* 9 23   17 24.82   -14 38.5   1.446   1.635   37.4   20.4   82 E   28*   72* 10 3   17 47.23   -14 53.2   1.497   1.607   37.4   20.4   77 E   28*   68* 10 13   18 11.60   -14 57.8   1.546   1.583   37.2   20.4   73 E   28*   64* 10 23   18 37.61   -14 49.0   1.595   1.563   36.7   20.5   70 E   29*   59* 11 2   19 4.97   -14 24.4   1.645   1.548   36.1   20.5   67 E   29*   55* 11 12   19 33.38   -13 42.3   1.696   1.537   35.2   20.5   64 E   30*   51* 11 22   20 2.51   -12 41.7   1.748   1.532   34.2   20.6   61 E   31*   46* 12 2   20 32.04   -11 22.8   1.804   1.531   33.2   20.6   58 E   32*   42* 12 12   21 1.73   -9 46.8   1.863   1.536   31.9   20.6   55 E   33*   37* 12 22   21 31.31   -7 55.6   1.926   1.545   30.5   20.7   53 E   34*   33* 1   1   22 0.61   -5 51.9   1.994   1.560   29.0   20.7   50 E   34*   29* 1 11   22 29.50   -3 38.6   2.066   1.578   27.4   20.8   48 E   34*   25* 1 21   22 57.88   -1 18.9   2.142   1.602   25.7   20.8   45 E   34*   22*								
<b>18172 2000 QL<sub>7</sub></b>									<b>200648 2001 TU<sub>1</sub></b>								
3 27   16 29.31   -42 41.4   2.884   3.390   15.8   21.4   112 W   2   73 4 6   16 25.97   -43 38.1   2.783   3.415   14.5   21.3   122 W   1   72 4 16   16 19.63   -44 25.3   2.697   3.438   12.8   21.2   131 W   1   72 4 26   16 10.48   -44 58.3   2.630   3.460   10.8   21.1   140 W   -   71 5 6   15 59.12   -45 12.8   2.585   3.482   8.8   21.0   148 W   -   71 5 16   15 46.44   -45 5.6   2.566   3.501   7.3   20.9   154 W   -   71 5 26   15 33.62   -44 36.6   2.575   3.520   6.9   20.9   155 E   -   71 6 5   15 21.82   -43 48.8   2.611   3.538   7.8   21.0   152 E   1   72 6 15   15 11.94   -42 47.5   2.674   3.554   9.4   21.1   145 E   2   73 6 25   15 4.58   -41 39.6   2.762   3.569   11.3   21.3   137 E   3   74 7 5   14 59.94   -40 31.4   2.870   3.583   13.0   21.4   128 E   4   75									3 27   17 26.83   -26 11.2   1.665   2.134   27.0   21.4   104 W   19   90 4 6   17 38.14   -26 44.8   1.522   2.100   26.4   21.1   111 W   18   89 4 16   17 47.29   -27 18.2   1.386   2.065   25.2   20.8   119 W   18   89 4 26   17 53.78   -27 53.0   1.260   2.031   23.3   20.5   127 W   17   88 5 6   17 57.08   -28 30.0   1.145   1.997   20.6   20.2   136 W   16   87 5 16   17 56.69   -29 8.9   1.045   1.963   17.0   19.9   145 W   16   87 5 26   17 52.37   -29 47.3   0.961   1.929   12.5   19.5   156 W   15   86  5 31   17 48.79   -30 5.1   0.926   1.913   10.1   19.3   161 W   15   86 6 5   17 44.37   -30 20.9   0.896   1.896   7.5   19.1   166 W   15   86 6 10   17 39.25   -30 34.0   0.871   1.880   5.2   18.9   170 W   14   85 6 15   17 33.63   -30 43.9   0.852   1.864   4.0   18.8   173 W   14   85 6 20   17 27.78   -30 49.9   0.838   1.848   5.2   18.8   171 E   14   85 6 25   17 21.98   -30 52.1   0.829   1.832   7.7   18.9   166 E   14   85 6 30   17 16.48   -30 50.5   0.826   1.817   10.6   19.0   161 E   14   85 7 5   17 11.56   -30 45.4   0.827   1.802   13.6   19.0   155 E   14   85 7 10   17 7.45   -30 37.7   0.833   1.787   16.5   19.1   150 E   14   85 7 15   17 4.34   -30 27.9   0.843   1.773   19.3   19.3   145 E   15   86 7 20   17 2.37   -30 17.0   0.857   1.759   21.9   19.4   140 E   15   86 7 25   17 1.62   -30 5.7   0.874   1.746   24.4   19.5   135 E   15   86  8 4   17 3.80   -29 43.4   0.916   1.720   28.6   19.6   126 E   15   86 8 14   17 10.78   -29 23.1   0.967   1.696   31.9   19.8   118 E   16*   87 8 24   17 22.14   -29 4.4   1.023   1.675   34.4   20.0   111 E   16*   87								
<b>276660 2003 WB<sub>25</sub></b>									<b>271774 2004 TO<sub>12</sub></b>								
3 27   16 46.25   -50 43.4   1.235   1.800   32.0   21.4   107 W   -   65 4 1   16 47.10   -50 39.9   1.201   1.819   30.8   21.3   111 W   -   65 4 6   16 46.33   -50 30.5   1.168   1.837   29.4   21.2   116 W   -   65 4 11   16 43.89   -50 13.8   1.136   1.855   27.8   21.2   120 W   -   66 4 16   16 39.79   -49 48.4   1.106   1.872   26.0   21.1   125 W   -   66 4 21   16 34.14   -49 12.7   1.078   1.890   24.0   21.0   130 W   -   67 4 26   16 27.11   -48 25.1   1.054   1.907   21.7   20.9   135 W   -   68 5 1   16 18.95   -47 24.2   1.034   1.924   19.3   20.8   141 W   -   69 5 6   16 9.98   -46 9.0   1.019   1.940   16.8   20.7   146 W   -   70 5 11   16 0.59   -44 39.6   1.010   1.956   14.4   20.6   151 W   -   71 5 16   15 51.18   -42 56.6   1.006   1.972   12.2   20.5   156 W   2   73 5 21   15 42.16   -41 2.3   1.009   1.988   10.5   20.5   159 E   4   75 5 26   15 33.85   -38 59.5   1.019   2.003   9.8   20.5   160 E   6   77 5 31   15 26.48   -36 51.9   1.037   2.018   10.1   20.6   159 E   8   79 6 5   15 20.20   -34 42.9   1.061   2.032   11.4   20.7   157 E   10   81 6 10   15 15.10   -32 36.1   1.091   2.046   13.3   20.8   152 E   12   83 6 15   15 11.19   -30 34.3   1.129   2.060   15.3   21.0   148 E   14   85 6 20   15 8.46   -28 39.8   1.172   2.073   17.3   21.1   143 E   16   87 6 25   15 6.82   -26 54.2   1.220   2.087   19.2   21.3   138 E   18   89 6 30   15 6.20   -25 18.2   1.274   2.099   20.9   21.5   133 E   20   89									3 27   16 48.86   -24 53.5   1.031   1.685   33.2   21.4   112 W   20   89 4 6   17 2.32   -25 23.1   0.934   1.668   31.6   21.1   119 W   20   89 4 16   17 12.80   -25 44.7   0.845   1.652   29.2   20.8   127 W   19   90 4 26   17 19.61   -25 59.2   0.764   1.637   25.9   20.5   135 W   19   90 5 6   17 22.14   -26 6.7   0.695   1.622   21.5   20.1   144 W   19   90 5 16   17 19.98   -26 6.0   0.639   1.609   16.0   19.7   154 W   19   90								



















EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

21/22	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	2021	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	
<b>189829 2002 VQ<sub>6</sub></b> (continuation)																				
7	15	2 31.56	+19 33.5	1.508	1.515	39.3	21.4	71 W	44*	43*	3 27	23 3.28	- 5 11.3	0.938	0.363	88.6	21.2	21 W	3*	15*
<b>164294 2004 XZ<sub>130</sub></b>																				
3	27	23 3.28	- 5 11.3	0.938	0.363	88.6	21.2	21 W	3*	15*	3 27	23 3.28	- 5 11.3	0.938	0.363	88.6	21.2	21 W	3*	15*
<b>427684 2004 DH<sub>2</sub></b>																				
3	27	23 9.77	- 1 43.4	1.509	0.650	29.6	21.4	19 W	4*	12*	3 27	23 9.77	- 1 43.4	1.509	0.650	29.6	21.4	19 W	4*	12*
<b>417217 2005 YS</b>																				
3	27	23 31.16	- 9 55.1	0.830	0.329	111.2	21.0	18 W	-	11*	3 27	23 31.16	- 9 55.1	0.830	0.329	111.2	21.0	18 W	-	11*
<b>523637 2010 LT<sub>108</sub></b>																				
3	27	22 45.64	+50 40.7	0.268	0.861	113.3	20.9	52 W	41*	-	3 27	22 45.64	+50 40.7	0.268	0.861	113.3	20.9	52 W	41*	-
<b>526898 2007 HR</b>																				
3	27	23 44.22	- 5 34.9	1.348	0.433	30.1	20.7	13 W	-	6*	3 27	23 44.22	- 5 34.9	1.348	0.433	30.1	20.7	13 W	-	6*
<b>429736 2011 MB<sub>2</sub></b>																				
3	27	23 50.68	- 6 42.1	1.616	0.675	18.2	21.4	12 W	-	5*	3 27	23 50.68	- 6 42.1	1.616	0.675	18.2	21.4	12 W	-	5*
<b>510262 2011 HJ<sub>61</sub></b>																				
4	6	0 15.71	+ 9 0.6	1.934	0.971	11.5	21.4	11 W	3*	3*	4 6	0 15.71	+ 9 0.6	1.934	0.971	11.5	21.4	11 W	3*	3*