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Export Format for Minor-Planet Orbits

This document describes the format used for both perturbed and unperturbed orbits of minor planets, as used in the [Extended Computer Service](#) and in the [Minor Planet Ephemeris Service](#).

The column headed 'F77' indicates the Fortran 77 format specifier that should be used to read the specified value.

Columns	F77	Use
1 - 7	a7	Number or provisional designation (in packed form)
9 - 13	f5.2	Absolute magnitude, H
15 - 19	f5.2	Slope parameter, G
21 - 25	a5	Epoch (in packed form , .0 TT)
27 - 35	f9.5	Mean anomaly at the epoch, in degrees
38 - 46	f9.5	Argument of perihelion, J2000.0 (degrees)
49 - 57	f9.5	Longitude of the ascending node, J2000.0 (degrees)
60 - 68	f9.5	Inclination to the ecliptic, J2000.0 (degrees)
71 - 79	f9.7	Orbital eccentricity
81 - 91	f11.8	Mean daily motion (degrees per day)
93 - 103	f11.7	Semimajor axis (AU)
106	i1	Uncertainty parameter, U If this column contains 'E' it indicates that the orbital eccentricity was assumed. For one-opposition orbits this column can also contain 'D' if a double (or multiple) designation is involved or 'F' if an e-assumed double (or multiple) designation is involved.
108 - 116	a10	Reference
118 - 122	i5	Number of observations
124 - 126	i3	Number of oppositions
For multiple-opposition orbits:		
128 - 131	i4	Year of first observation
132	a1	'-'
133 - 136	i4	Year of last observation
For single-opposition orbits:		
128 - 131	i4	Arc length (days)
133 - 136	a4	'days'
138 - 141	f4.2	r.m.s residual (")
143 - 145	a3	Coarse indicator of perturbors (blank if unperturbed one-opposition object)
147 - 149	a3	Precise indicator of perturbors (blank if unperturbed one-opposition object)
151 - 160	a10	Computer name

There may sometimes be additional information beyond column 160 as follows:

162 - 165	z4.4	4-hexdigit flags The bottom 6 bits are used to encode a value representing the orbit type (other values are undefined):
Value		
2 Aten		
3 Apollo		

4 Amor
5 Object with $q < 1.381$ AU
6 Object with $q < 1.523$ AU
7 Object with $q < 1.665$ AU
8 Hilda
9 Jupiter Trojan
10 Centaur
14 Plutino
15 Other resonant TNO
16 Cubewano
17 Scattered disk

Additional information is conveyed by
adding in the following bit values:

64 Unused
128 Unused
256 Unused
512 Unused
1024 Unused
2048 Unused
4096 Unused
8192 1-opposition object seen at
earlier opposition
16384 Critical list numbered object
32768 Object is PHA

167 - 194 a Readable designation
195 - 202 i8 Date of last observation included in
orbit solution (YYYYMMDD format)



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