

---

The MINOR PLANET CIRCULARS/MINOR PLANETS AND COMETS are published, on behalf of  
Commission 20 of the International Astronomical Union, usually in batches

on the date of each full moon, by:

Minor Planet Center, Smithsonian Astrophysical Observatory, Cambridge, MA 02138, U.S.A.

Telephone 617-495-7244/7440/7444 (for emergency use only)

TWX 710-320-6842 ASTROGRAM CAM EASYLINK 62794505

MARSDEN@CFA.BITNET or .SPAN

BRIAN@CFAPS1.SPAN

GARETH@CFAPS1.SPAN

Brian G. Marsden, Director

Gareth V. Williams, Associate Director

---

### EDITORIAL

Contributors of perturbed orbital elements are advised that use of the Epoch 1994 Feb. 17.0 TT (rather than 1993 Aug. 1.0 TT) will become effective *following* the 1993 Sept. 30 batch of *MPCs*.

Regular subscribers to the *MPCs* will notice a substantial change in format from previous batches. Starting with this current batch, the *MPCs* will be computer typeset. In addition to saving space (the two-column format allows almost twice as much material to be fitted on to a single page), use can be made of **bold** and *italic* text for emphasis, and diacritical marks may now be easily inserted. Contributors of observations and orbital elements should note that there is no change in the format in which material should be submitted to the Minor Planet Center: this format is described on *MPC* 18847-18850.

Although a typesetting system is now being used to prepare the *MPCs*, there are some conventions from the old style that will continue to be used, and this seems a good opportunity to explain these conventions.

Observations are intended to be in the FK<sub>5</sub>/J2000.0 system, with the right ascension  $\alpha$  given in hours, minutes and seconds of time and the declination  $\delta$  in degrees, minutes and seconds of arc. Magnitudes of minor planets are B (photographic) unless otherwise stated (V = visual, R = red, etc.), and magnitudes of comets are T (total) =  $m_1$  or N (nuclear) =  $m_2$ . Observations are topocentric using the observatory codes tabulated with the positions of the observatories on *MPC* 22434-22439 (except that code 500 indicates an observation reduced to the geocenter). Although not shown that way in the *MPCs*, observers are requested to indicate (in column 15 of the usual format) whether a position was obtained micrometrically (M), using a transit instrument (T) or a CCD (C), the default being photographic, but if the position is simply being rotated from one determined initially according to the 1950.0 (or other) equinox, this should be denoted with a letter A (overriding M, T or C).

Orbital elements are also in the FK<sub>5</sub>/J2000.0 system, with  $\omega$  = argument of perihelion,  $\Omega$  = longitude of ascending node,  $i$  = inclination being in degrees and referred to the ecliptic. The orbital eccentricity, semimajor axis (in astronomical units), mean daily motion (in degrees) and revolution period (in years) are denoted by  $e$ ,  $a$ ,  $n$  and  $P$ , respectively. Equatorial components may also be given of the unit vectors **P** and **Q** from the sun to the perihelion and to the point in the orbit 90° ahead of perihelion. For comets the perihelion time  $T$  (in terrestrial time TT), perihelion distance  $q$  (in astronomical units) and reciprocal  $z$  of the semimajor axis (in reciprocal astronomical units, with mean error) are also given. For minor planets the mean anomaly  $M$  (in degrees) at the stated Epoch is given, as are the absolute visual magnitude  $H$  and magnitude slope factor  $G$  (0.15 unless otherwise stated). Low-precision minor-planet orbits (those for unusual objects being in bold face) also show the arclength in days and perhaps a note (D indicating a double designation, E

that  $e$  was assumed and F both), followed by an initial indicating the orbit computer. New orbits for already-numbered minor planets indicate the number of observations and the number of different oppositions utilized (with the timespan) and the root-mean-square (rms) residual (in seconds of arc); codes (M-N) or (M-P) indicate that perturbations by the planets Mercury-Neptune (generally with the earth considered separate from the moon) or Mercury-Pluto were considered; M-C allows replacement of Pluto by Ceres, and M-V indicates that the effects of Vesta (and probably Pallas) were also considered. For minor planets being newly numbered and cases of multiple-opposition linkages the (O-C) residuals of the individual observations are given (with the sign following the value); dates are condensed into the last two figures of the year, the month and the day; and the observatory codes are shown. Notes X and Y mean that the observations are approximate or semi-accurate, respectively, and observations with residuals in parentheses were excluded from the orbit solution. If the previous result gave an ephemeris good to better than 10 minutes of arc and no further identifications have been found (or discarded), multiple-opposition or long-arc single-opposition orbits are listed more concisely at the end of the orbit section.

Ephemerides give J2000.0 positions (right ascension in hours and minutes of time, declination in degrees and minutes of arc) for 0 hours TT on the dates stated.  $\Delta$  and  $r$  denote geocentric and heliocentric distances (in astronomical units),  $\epsilon$  and  $\phi$  the solar elongation and the phase angle (in degrees); in some instances these last two columns will be replaced by the Variation (in  $\alpha$  and  $\delta$ , minutes of time and arc) corresponding to a change of +1 day in  $T$ . For most objects the ephemerides are replaced by single-line entries giving the position at opposition, arranged in order of opposition date; the daily motion  $\dot{\alpha}$ ,  $\dot{\delta}$  is in minutes of time and arc;  $\phi_{\text{MIN}}$  gives the minimum phase angle (in degrees) and the date (in the nearest month) that minimum is achieved; reference is given to the *MPC* containing the orbital elements.

Readers will note the large number of new names (227) announced this month. In view of the volume of this material, which required *substantial* editing of what was submitted, it seems desirable to adopt a common format for the submission of names. The Minor Planet Center has prepared a document describing this format, including information on how diacritical marks should be indicated. Proposers of names are encouraged to obtain this document (via e-mail and/or regular mail) and are strongly urged to submit all future proposals in this format. Submission of names via e-mail is preferred, although submission on MS-DOS diskette will be acceptable if e-mail is unavailable. The processing of proposals not submitted in the correct format may be substantially delayed.

### ERRATA

*MPC* Line  
22295 - 9

For A. Żytkow read A. Żytkow and M. J. Irwin

**(4616) Bařalov = 1975 BF**

Discovered 1975 Jan. 17 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Aleksej Vladimirovich Bařalov, well-known contemporary cinema actor and producer.

**(4623) Obrastsova = 1981 UT<sub>15</sub>**

Discovered 1981 Oct. 24 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Elena Vasil'evna Obrastsova, outstanding singer at the Bolshoi Theatre in Moscow.

**(4648) Tirion = 1931 UE**

Discovered 1931 Oct. 18 by K. Reinmuth at Heidelberg.

Named in honor of the Dutch cartographer Wil Tirion, author of the *Sky Atlas 2000.0* and many other modern celestial maps. Name proposed and citation prepared by J. Meeus, endorsed by G. Klare and L. D. Schmadel.

**(4649) Sumoto = 1936 YD**

Discovered 1936 Dec. 20 by M. Laugier at Nice.

Named for the chief city of Awaji island on the Seto inland sea of Japan. The Oriental Astronomical Association's Computing Service is based in this city. Many observations of comets and minor planets by Japanese amateurs, as well as identifications and orbits, are collected there before being reported to the Minor Planet Center. Name proposed by S. Nakano, who found the identifications involving this object and who lives in Sumoto.

**(4669) Høder = 1987 UF<sub>1</sub>**

Discovered 1987 Oct. 27 by P. Jensen and K. Augustesen at Brorfelde.

Named after the blind god in Norse mythology, son of Odin and brother of Balder, whom he killed with a mistletoe shaft with the treacherous help of Loke.

**(4676) Uedaseiji = 1990 SD<sub>4</sub>**

Discovered 1990 Sept. 16 by T. Fujii and K. Watanabe at Kitami.

Named in honor of Seiji Ueda (1952– ), well known for his observations of comets and minor planets. He lives in Kushiro and has been an enthusiastic astronomer since his junior high school days. He played an active part in ice hockey as a Japanese-league player for six years. After retirement, he renewed his interest in astronomy. Since 1987 he has used a Wright-Schmidt Camera of 16-cm aperture and has discovered many minor planets.

**(4677) Hiroshi = 1990 SQ<sub>4</sub>**

Discovered 1990 Sept. 26 by A. Takahashi and K. Watanabe at Kitami.

Named in honor of Hiroshi Kaneda (1953– ), well known for his orbit computations for comets and minor planets. He lives in Sapporo and is a computer programmer who has written much astronomical software. Recently, he has been finding many identifications of minor planets. He has also put much energy into the astrometric measurement of films he has obtained at the Kushiro Observatory.

**(4686) Maisica = 1979 SX<sub>2</sub>**

Discovered 1979 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Maria Luisa Grima Garcia, a charming Spanish woman who is the soul of her family, a hospitable hostess, and founder and curator of a small home museum. Maisica is a pet name for Maria Luisa.

**(4718) Araki = 1990 VP<sub>3</sub>**

Discovered 1990 Nov. 13 by T. Fujii and K. Watanabe at Kitami.

Named in honor of Chikara Araki (1946– ), an astronomical photographer in Hokkaido. He has formed a group called 'Konpeito' and has been taking a lot of impressive astronomical photographs.

**(4720) Tottori = 1990 YG**

Discovered 1990 Dec. 19 by S. Ueda and H. Kaneda at Kushiro.

Named for a central city of the Sanin area, located on the Japan Sea, sister city of Kushiro since 1963.

**(4723) Wolfgangmattig = 1937 TB**

Discovered 1937 Oct. 11 by K. Reinmuth at Heidelberg.

Named in honor of Wolfgang Mattig (1927– ), German solar physicist and cosmologist at the Freiburg Kiepenheuer-Institut, on the occasion of his retirement. In his thesis, Mattig worked on relativistic cosmology and, in 1957, he discovered an analytical relation between the redshift and the apparent magnitude of galaxies. He took an active part in the development of the Teide Observatory, Canary Islands. Since 1980, Mattig has been the German representative in the Solar Physics Commission of COSPAR. Name proposed and citation prepared by J. Schubart, endorsed by G. Klare and L. D. Schmadel.

**(4740) Veniamina = 1985 UV<sub>4</sub>**

Discovered 1985 Oct. 22 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Veniamin Vasil'evich Somov (1945–1991), the discoverer's brother.

**(4756) Asaramas = 1950 HJ**

Discovered 1950 Apr. 21 at the La Plata Observatory.

Named in honor of the Asociacion Argentina Amigos de la Astronomia, an amateur astronomical association in Argentina, founded 1929 Jan. 4. The A.A.A.A. was the first contact with astronomy for a large number of professional astronomers at the La Plata Observatory.

**(4774) Hobetsu = 1991 CV<sub>1</sub>**

Discovered 1991 Feb. 14 by S. Ueda and H. Kaneda at Kushiro.

Named for the city, located 100 km southeast of Sapporo, famous for the fossil of a sea dinosaur that was excavated there. Hobetsu is also well known as a production center for rice and melons.

**(4795) Kihara = 1989 CB<sub>1</sub>**

Discovered 1989 Feb. 7 by A. Takahashi and K. Watanabe at Kitami.

Named in honor of Hideo Kihara (1911–1993), a founder of the Nayoro Astronomical Club, who established the Kihara Observatory, where he made observations of sunspots for 20 years. The observatory was presented to the city of Nayoro before his death and is now known as the Nayoro-Kihara Observatory. Name suggested and citation prepared by H. Fukushima.

**(4842) Atsushi = 1989 WK**

Discovered 1989 Nov. 21 by S. Ueda and H. Kaneda at Kushiro.

Named in honor of Atsushi Takahashi (1965– ). A resident of Kitami, he makes observations of minor planets and comets as a member of a group named 'Hokkaido Showakusei Suisei Kaigi'. Name proposed by K. Watanabe.

**(4844) Matsuyama = 1991 BA<sub>2</sub>**

Discovered 1991 Jan. 23 by S. Ueda and H. Kaneda at Kushiro.