ROTATION PERIOD DETERMINATION FOR ASTEROID (11671) 1998 BG4

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Photometric observations of the inner main-belt asteroid (11671) 1998 BG4 were conducted in order to determine its synodic rotation period. We found P = 4.630 ± 0.006 h, A = 0.83 ± 0.15 mag.

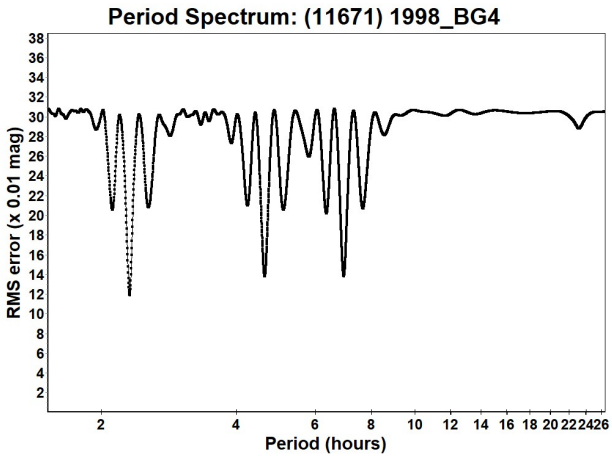
CCD photometric observations of the inner main-belt asteroid (11671) 1998 BG4 were carried out in October 2022 at the Astronomical Observatory of the University of Siena (K54), a facility inside the Department of Physical Sciences, Earth and Environment (DSFTA, 2023). We used a 0.30-m *f*/5.6 Maksutov-Cassegrain telescope, SBIG STL-6303E NABG CCD camera, and clear filter; the pixel scale was 2.30 arcsec when binned at 2×2 pixels and all exposures were 300 seconds.

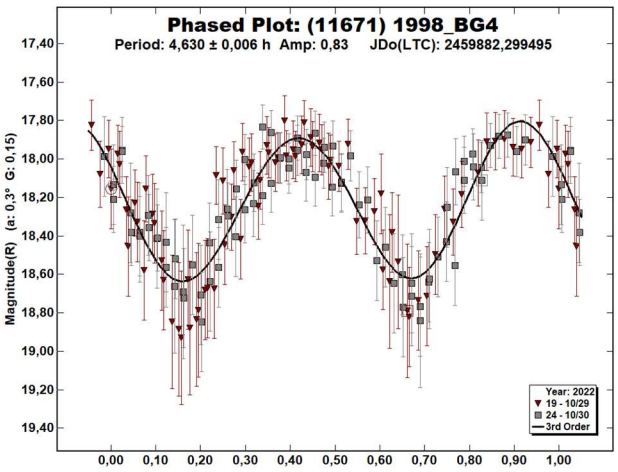
Data processing and analysis were done with *MPO Canopus* (Warner, 2018). All images were calibrated with dark and flat-field frames and the instrumental magnitudes converted to R magnitudes using solar-colored field stars from a version of the CMC-15 catalogue distributed with *MPO Canopus*. Table I shows the observing circumstances and results.

A search through the asteroid lightcurve database (LCDB; Warner et al., 2009) indicates that our result may be the first reported lightcurve observations and results for this asteroid.

(11671) 1998 BG4 was discovered on 1998 January 21 at Nachi-Katsuura by Y. Shimizu and T. Urata. It is an inner main-belt asteroid with a semi-major axis of 2.392 AU, eccentricity 0.148, inclination 1.118°, and an orbital period of 3.70 years. Its absolute magnitude is H = 14.87 (JPL, 2023). On the asteroid lightcurve database (Warner et al., 2009) we found a diameter D = 3.35 km using an absolute magnitude H = 14.74.

Observations were conducted over two nights and collected 162 data points. In the first session we found (11671) 1998 BG4 by serendipity in the same field of another asteroid. It was quite faint for our instrumentation, but the large amplitude permitted us to perform a period analysis that shows a solution of P = 4.630 ± 0.006 h with an amplitude A = 0.83 ± 0.15 mag as the most likely bimodal solution for its rotational period.





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Number	Name	2022/mm/dd	Phase	L_{PAB}	B_{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
11671	1998 BG4	10/29-10/31	*0.4,0.2	37	0	4.630	0.006	0.83	0.15	MB-I

Table I. Observing circumstances and results. The phase angle is given for the first and last date. If preceded by an asterisk, the phase angle reached an extrema during the period. L_{PAB} and B_{PAB} are the approximate phase angle bisector longitude/latitude at mid-date range (see Harris et al., 1984). Grp is the asteroid family/group (Warner et al., 2009).