LIGHTCURVE ANALYSIS OF MAIN-BELT ASTEROID (9899) 1996 EH

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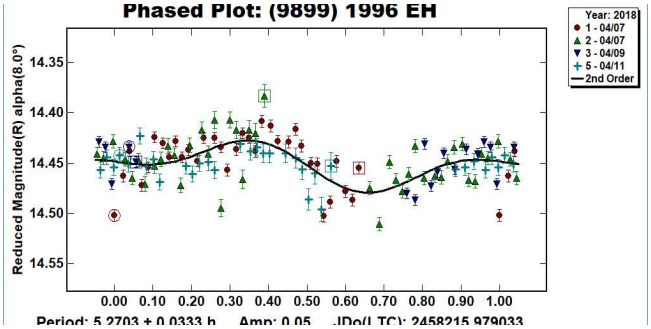
We obtained multiple sessions of observations of the main belt asteroid (9899) 1996 EH, using the iTelescope Observatory in Siding Spring, Australia. After analysis, we were unable to determine a conclusive period.

Our observations of (9899) 1996 EH were performed using iTelescope T27, a 700-mm telescope in Siding Spring, Australia with a FLI PL09000 CCD, and a 'clear' glass filter, using 300-s exposures. The CCD has an array of 3056 x 3056 pixels, where each pixel has an angular resolution of 0.53 arc-seconds. Data were collected from four observing sessions over three days, for a total of 16 hours of observations. Lightcurve analysis was done using MPO Canopus.

Our phased lightcurve shows no well-defined peaks or troughs and remains mostly flat throughout the plotted data. The change in magnitude over time is small enough (with a differential magnitude ranging from 14.5 to 14.4) that these variations could be due to noise sources. This lack of variation in magnitudes leads us to believe that 1996 EH fits one or more of the following criteria.

1. It has a nearly spherical shape and a uniform albedo. This would greatly reduce the change in brightness over time, preventing us from discerning a pattern in the lightcurve.
2. The rotation period may be abnormally long, causing a lack of detectable change of brightness throughout four days of observation.
3. 1996 EH may have an axis of rotation orthogonal to Earth, meaning no changes in brightness due to rotation would be visible until its position relative to Earth has changed.

In a search of the Asteroid Lightcurve Database, there is no currently published period of 1996 EH.



The displayed lightcurve has a period of 5.27 ± 0.03h, with an amplitude of only 0.05 magnitudes. This amplitude is not significantly larger than the variations in brightness due to the noise; therefore, this is not a definitive period, but it satisfactorily displays the data we collected.

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References

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Number	Name	2018 mm/dd	Pts	Phase	L_{PAB}	B_{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
9899	1996 EH	04/07, 04/09, 4/11	115	7.9-6.3	206.5	-7.8	N/A	N/A	N/A	N/A	MB

Table I. Observing circumstances and results. Pts is the number of data points. The phase angle is given for the first and last date. L_{PAB} and B_{PAB} are the approximate phase angle bisector longitude and latitude at mid-date range (see Harris *et al.*, 1984). Grp is the asteroid family/group (Warner *et al.*, 2009).