

Figure 2. Split halves lightcurve of 5237 Yoshikawa.

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LIGHTCURVE PHOTOMETRY OF  
ASTEROID 8693 MATSUKI

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Lightcurve photometry of the main-belt asteroid 8693 Matsuki yielded an estimated period of  $6.10550 \pm 0.00225$  h and an amplitude of  $0.53 \pm 0.01$  mag.

CCD photometric observations of the main-belt asteroid 8693 Matsuki were carried out in 2017 April and May at the Cerro Tololo Inter-American Observatory, La Serena, Chile (807). Data were obtained with a 0.41-m *f*/17.3 Ritchey-Chretien telescope and an Andor Aspen CG230 camera using an open filter. The pixel size was 0.874 arcseconds with binning set to 2×2. All exposures were 120 seconds.

Data processing and analysis were done with *MPO Canopus* (Warner, 2019). All images were calibrated with bias, dark, and flat field frames, and the instrumental magnitudes converted to R magnitudes using solar-colored field stars from the CMC-15 catalogue. Table I shows the observing circumstances and results.

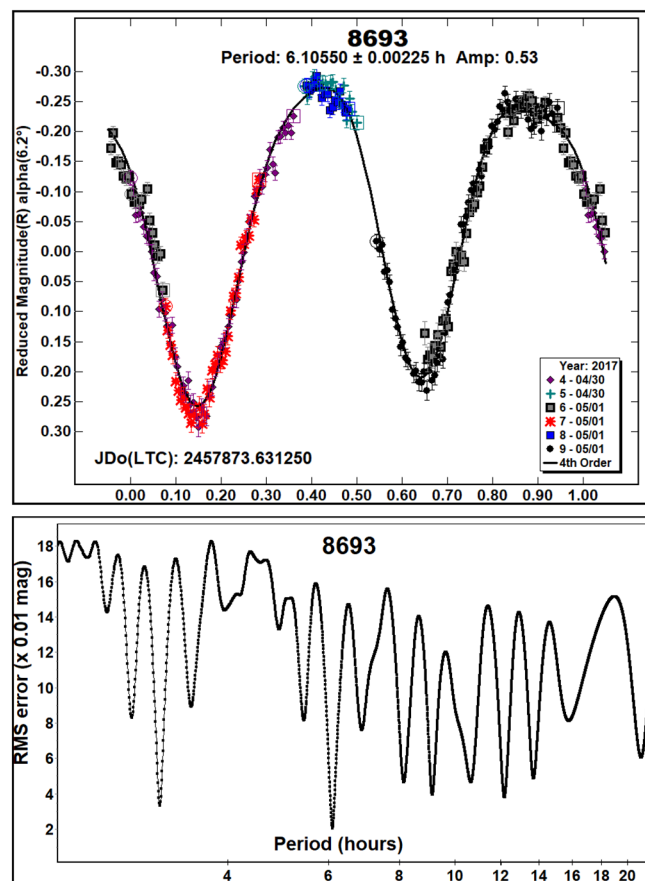
8693 Matsuki was discovered on 1992 November 16 by K. Endate and K. Watanabe at Kitami in Japan. It is a main-belt asteroid with an orbital period of 3.73 years, semi-major axis of 2.41 au, eccentricity of 0.1581, and inclination of 6.927°. It has an absolute magnitude of 13.03. The WISE/NEOWISE survey (Masiero et al., 2011) reported a diameter of  $5.944 \pm 0.191$  km and a visible albedo of  $0.379 \pm 0.083$ . Carvano et al. (2010) assigned an S-type taxonomic class. The asteroid’s dynamical family is reported as 4 Vesta (Nesvorný, 2015). While asteroids in the Vesta dynamical family are commonly associated with the V-type taxonomic class, several studies have demonstrated that a wide range of taxonomic classes are also represented (Erasmus et al., 2019; Erasmus et al., 2020).

Observations for 8693 Matsuki were conducted over two nights and collected 233 data points. The lightcurve analysis showed a solution for the rotational period of  $P = 6.10550 \pm 0.00225$  h and with an amplitude  $A = 0.53 \pm 0.01$  mag, suggested by the strongest peak in the period spectrum.

Number	Name	yyyy mm/dd	Phase	L <sub>PAB</sub>	B <sub>PAB</sub>	Period(h)	P.E.	Amp	A.E.
8693	Matsuki	2017 04/30-05/01	8.8	8	-4	6.10550	0.00225	0.53	0.01

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<sub>PAB</sub> and B<sub>PAB</sub> are the approximate phase angle bisector longitude/latitude at mid-date range (see Harris et al., 1984).

A search through the asteroid lightcurve database (LCDB); Warner et al., 2009) and ADS indicated a period of  $6.09724 \pm 0.00005$  h (Pal et al., 2020) for this asteroid based on photometry obtained using the Transiting Exoplanet Survey Satellite (TESS). Our result agreed with that published by Pal et al. (2020).



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