

LIGHTCURVE ANALYSIS AND ROTATION PERIOD OF 6372 WALKER

Melissa N. Hayes-Gehrke, Marley Berk, Abisola Fatodu, Bhargin Kanani, Quinn Kropschot, Julia Marks, Ella Misangyi, Matthew Nguyen, Julie Stone, Joshua Suniga,
Michael Thompson, Matthew Vorsteg, Timothy Wagman
Physical Sciences Complex (415), Room 1113
4296 Stadium Dr.
University of Maryland
College Park, MD 20742-2421
mhayesge@umd.edu

Alessandro Marchini
Astronomical Observatory, DSFTA - University of Siena (K54)
Via Roma 56, 53100 - Siena, ITALY

Massimo Banfi, Riccardo Papini, Fabio Salvaggio
Wild Boar Remote Observatory (K49)
San Casciano in Val di Pesa (FI), ITALY

Stephen M. Brincat
Flarestar Observatory
San Gwann SGN 3160, MALTA

Charles Galdies
Znith Observatory
Naxxar NXR 2217, MALTA

Winston Grech
Antares Observatory
Fgura FGR 1555, MALTA

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From 2019 March-May, images of minor planet 6372 Walker were captured to investigate its rotation period. Our analysis found a period of 44.25 ± 0.01 h.

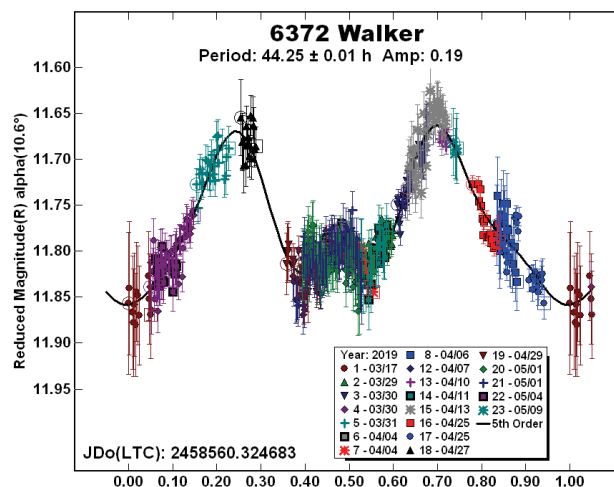
6372 Walker is a main-belt asteroid discovered in 1985 by C.S. Shoemaker at Palomar Observatory and was last observed in May of 2018 (JPL, 2019). It has a diameter of 42.13 km and orbital period of 5.68 yr.

Over the course of the observations, six telescopes were used for our observing campaign on 6372 Walker. Table I lists the basic equipment information for each observatory. All observations used a clear filter and images were processed with standard bias, dark, and flat calibrations. *MPO Canopus* (Warner, 2018) was used for standard aperture and differential photometry in order to generate the lightcurve. Images were taken on 2019 March 17, 29, 30, 31, April 4, 6, 7, 10, 11, 13, 25, 27, 29, and May 1, 4.

Our data analysis yielded a rotation period $P = 44.25 \pm 0.01$ hours with an amplitude $A = 0.19 \pm 0.03$ mag. There were no previously reported rotation periods in the asteroid lightcurve database (LCDB; Warner et al., 2009).

Obs	Scope	Cam	FOV arcmin	Scale "/pix
NMS	0.43-m CDK	FLI PL6303	33x49	0.96
DSFTA	0.32-m MC	SBIG STL-6303	59x39	2.30
WBRO	0.23-m SCT	SBIG ST-8XME	14x10	1.60
FO	0.25-m SCT	Moravian G2-1600	25x17	0.99
AO	0.28-m SCT	SBIG STL-11000	46x31	1.37
ZO	0.20-m SCT	Moravian G2-1600	30x20	1.17

Table I. Equipment used for observations. Obs column: NMS: New Mexico Skies. WBRO: Wild Boar. FO: Flarestar Obs. AO: Antares Obs. ZO: Znith Obs. Scope column: CDK corrected Dall-Kirkham; MC: Maksutov-Cassegrain; SCT: Schmidt-Cassegrain.



Acknowledgements

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References

- Harris, A.W.; Young, J.W.; Scaltriti, F.; Zappala, V. (1984). "Lightcurves and phase relations of the asteroids 82 Alkmene and 444 Gytis." *Icarus* **57**, 251-258.
- iTelescope (2019). Remote Observatory. <https://www.itelescope.net/>
- JPL (2019). Small Body Database Search Engine. <http://ssd.jpl.nasa.gov>
- Warner, B.D. (2018). *MPO Canopus* software V10.2.1.0. Bdw Publishing. <http://bdwpublishing.com>
- Warner, B.D.; Harris, A.W.; Pravec, P. (2009). "The Asteroid Lightcurve Database." *Icarus* **202**, 134-146. Updated 2019 Jan. <http://www.minorplanet.info/lightcurvedatabase.html>

Number	Name	2019 mm/dd	Phase	L_{PAB}	B_{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
6372	Walker	03/17-05/09	10.7, 12.1	199	14	44.25	0.01	0.19	0.03	MB-O

Table II. 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). MBO: outer main-belt.