LIGHTCURVE ANALYSIS AND ROTATION PERIOD OF 6372 WALKER

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(Received: 2019 June 3)

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.

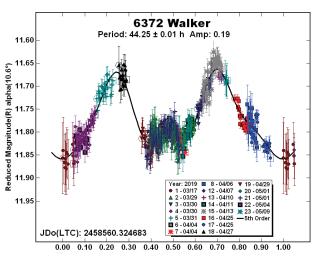
6372 Walker is a main-belt asteroid discovered in 1985 by C.S. Shoemaker at Palomar Observatory and was last observed in May of 2018 (JPL, 2019). It has a diameter of 42.13 km and orbital period of 5.68 yr.

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

Funding for the observations at iTelescope (iTelescope, 2019) was provided by the University of Maryland Department of Astronomy.

References

Harris, A.W.; Young, J.W.; Scaltriti, F.; Zappala, V. (1984). "Lightcurves and phase relations of the asteroids 82 Alkmene and 444 Gyptis." *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	LPAB	BPAB	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.