ROTATION PERIODS FOR 1751 HERGET, 2022 WEST AND (23997) 1999 RW27

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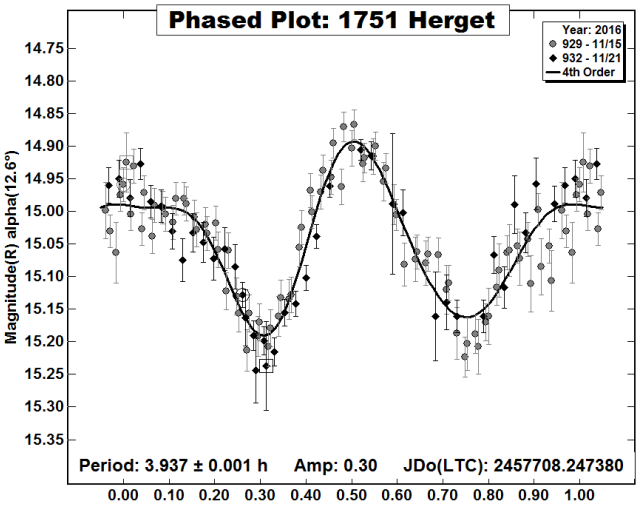
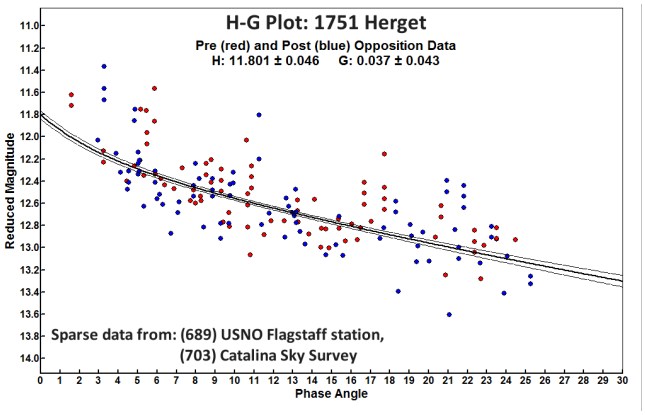
Photometric observations of three main-belt asteroids were made from Italy in order to determine their rotation periods. For 1751 Herget the synodic rotation period is 3.937 ± 0.001 hours, amplitude 0.30 magnitudes. For 2022 West the synodic rotation period is 14.14 ± 0.01 hours, amplitude 0.50 magnitudes. For (23997) 1999 RW27, the synodic rotation period is 17.82 ± 0.01 hours, amplitude 0.18 magnitudes.

CCD photometric observations for three main-belt asteroids were made in the period 2016 October-December at the Balzaretto Observatory (A81) and at the Astronomical Observatory of the University of Siena (K54), using the instrumentation described in the Table II. Data processing and analysis were made at the Balzaretto Observatory with *MPO Canopus* (BDW Publishing, 2016). All the images, acquired with clear-filter, were calibrated with dark and flat frames and converted to R magnitudes using solar-colored field stars from CMC15 catalogue, distributed with *MPO Canopus*. Table I shows the observing circumstances and results.

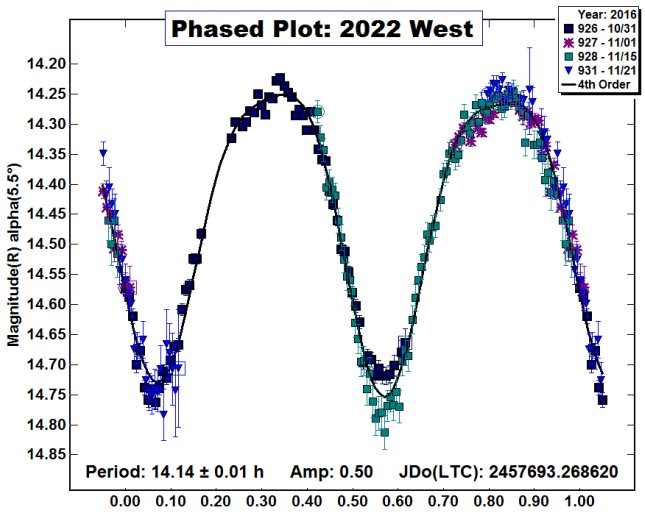
1751 Herget was discovered on 1955 July 27 by Goethe Link Observatory at Brooklyn. The asteroid orbits with a semi-major axis of about 2.789 AU, eccentricity 0.175, inclination 8.13 degrees and an orbital period of 4.66 years. Taxonomic class is S-type (Bus and Binzel, 2002). Its absolute magnitude is H = 11.9 (JPL, 2016) while the WISE satellite infrared radiometry reports a value of 12.20 with a diameter of 10.929 ± 0.248 km based on an optical albedo of 0.195 ± 0.028 (Masiero et al., 2011).





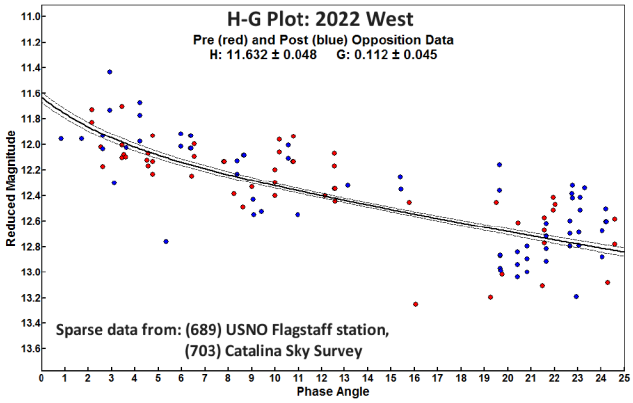
Using sparse photometric data from USNO Flagstaff station (MPC 689; USNO, 2016) and from Catalina Sky Survey (MPC 703; CSS, 2016) we derived H = 11.80 ± 0.05 and G = 0.04 ± 0.04; this H value is close to that one from JPL Small-Body Database Browser. Observations of this asteroid were made at the Astronomical Observatory of the University of Siena on two nights when it was in the same field of 2022 West. The period analysis shows a bimodal solution for P = 3.937 ± 0.001 hours and amplitude A = 0.30 ± 0.04 magnitudes.

2022 West was discovered on 1938 February 7 by K. Reinmuth at Heidelberg. The asteroid orbits with a semi-major axis of about 2.706 AU, eccentricity 0.119, inclination 5.66 degrees and an orbital period of 4.45 years. Taxonomic class is S-type (Bus and Binzel, 2002). Its absolute magnitude is H = 11.6 (JPL, 2016) while the WISE satellite infrared radiometry reports a value of H = 12.00 with a diameter of 12.916 ± 0.133 km based on an optical albedo of 0.168 ± 0.021 (Masiero et al., 2011). Using sparse photometric data from USNO Flagstaff station (MPC 689: USNO, 2016) and from Catalina Sky Survey (MPC 703; CSS, 2016) we derived H = 11.63 ± 0.05 and G = 0.11 ± 0.05; this H value is close to that one from JPL Small-Body Database Browser. Observations of this asteroid were made on four nights at the Balzaretto Observatory and at the Astronomical Observatory of the University of Siena. The period analysis shows a bimodal solution for P = 14.14 ± 0.01 hours and amplitude A = 0.50 ± 0.04 magnitudes.

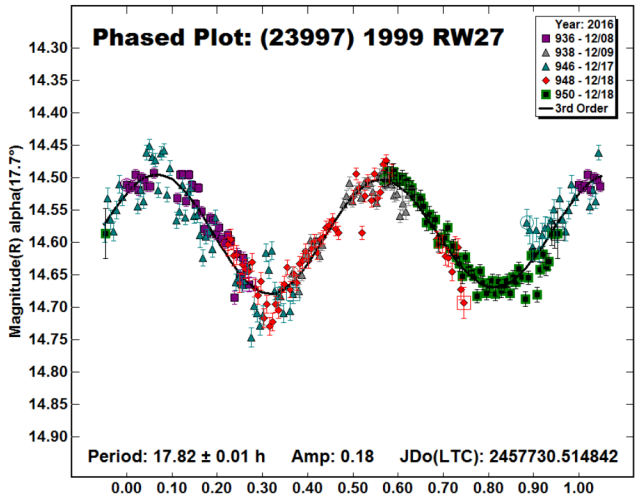


Number	Name	2016 mm/dd	Pts	Phase	L_{PAB}	B_{PAB}	Period(h)	P.E	Amp	A.E.
1751	Herget	11/15-11/21	130	12.5,14.8	30	4	3.937	0.001	0.30	0.04
2022	West	10/31-11/21	234	5.5,14.5	29	4	14.14	0.01	0.50	0.04
23997	1999 RW27	12/08-12/18	260	17.7,14.7	96	19	17.82	0.01	0.18	0.05

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).

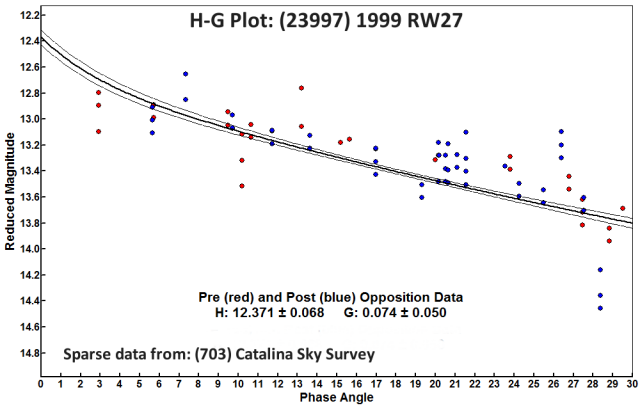


(23997) 1999 RW27 was discovered on 1999 September 8 by K. Korlevic at Visnjan. The asteroid orbits with a semi-major axis of about 2.605 AU, eccentricity 0.288, inclination 14.04 degrees and an orbital period of 4.21 years. Its absolute magnitude is H = 12.5 (JPL, 2016) while the WISE satellite infrared radiometry reports a value of H = 12.80 with a diameter of 7.021 ± 0.230 km based on an optical albedo of 0.272 ± 0.066 (Masiero *et al.*, 2011). Using sparse photometric data from Catalina Sky Survey (MPC 703; CSS, 2016) we derived H = 12.37 ± 0.07 and G = 0.07 ± 0.05; this H value is close to that one from JPL Small-Body Database Browser. Observations of this asteroid were made on five nights at the Balzaretto Observatory. The period analysis shows a bimodal solution for P = 17.82 ± 0.01 hours and amplitude A = 0.18 ± 0.05 magnitudes.



(MPC code)	Telescope/CCD	Scale arcsec/pix	Exposure (seconds)
A81	8″ SCT f/5.5, SBIG ST7xme	1.65	420
K54	12″ MCT f/5.6, SBIG STL-6303e	2.32 (bin 2x2)	300

Table II. Observing Instrumentations. SCT: Schmidt-Cassegrain. MCT: Maksutov-Cassegrain.



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