

LIGHTCURVE OF 562 SALOME

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The main-belt asteroid 562 Salome (1905 QH) was observed over a span of four nights in 2012 November. A synodic rotation period of 6.351 ± 0.002 h and an amplitude of 0.17 ± 0.02 mag were obtained.

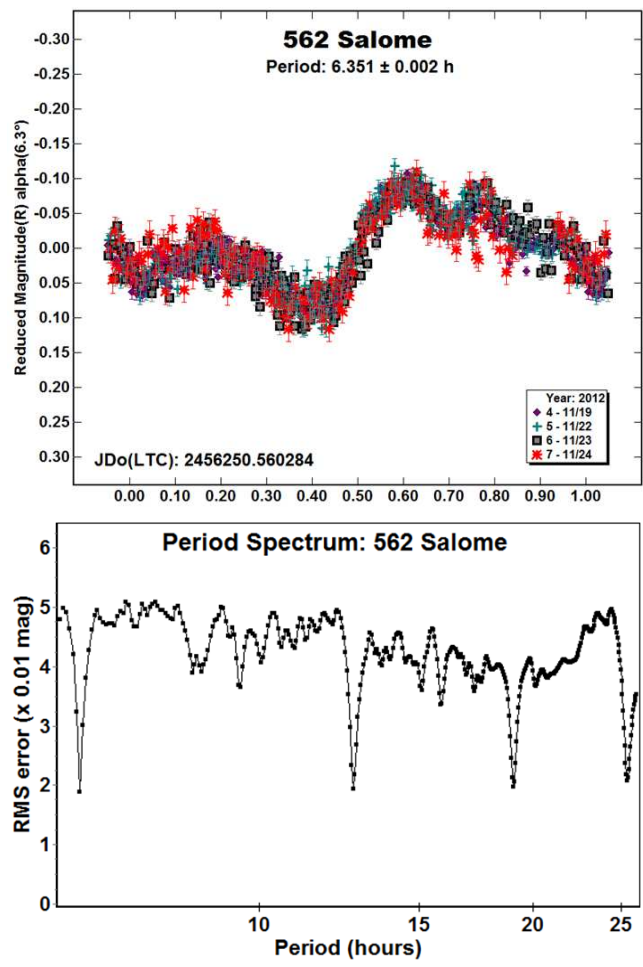
Asteroid 562 was listed as a lightcurve opportunity target in the *Minor Planet Bulletin* (Warner *et al.*, 2013). Here we report determining this asteroid's synodic rotation rate from the analysis of CCD photometric observations at Elephant Head Observatory. Observations were conducted with a 0.25-m Schmidt-Cassegrain telescope on a German Equatorial mount using an SBIG STT-8300 CCD camera with 5.4-micron pixels binned at 4x4. This provided an image scale of 1.67 arcsec per pixel. A clear filter was used for all exposures. Exposures were 100 seconds each. All images were dark and flat-field corrected.

All images were obtained from an automated image routine using *CCDAutopilot* v5.04.7. Imaging and plate solving were done with *Maxim DL* v5.23 and *TheSkyX* v10.2. Data were reduced in *MPO Canopus* v10.4.1 using differential photometry. Comparison stars were chosen for near-solar color index with the "comp star selector" of *MPO Canopus*. Period analysis was completed using *MPO Canopus*, which incorporates the Fourier analysis algorithm developed by Harris (FALC; Harris *et al.*, 1989).

A search for previous period determinations of 562 Salome found Bembrick and Allen (2007; 12.705 h) and Higgins (2011; 6.3505 h). New observations were obtained over four nights in 2012 November. Analysis of the data found a period of 6.351 ± 0.002 h and amplitude 0.17 ± 0.02 mag. The newly-determined period is in good agreement with Higgins (2011) but is inconsistent with the Bembrick and Allen (2007) period, which period appears to be the double-period since the two halves of their lightcurve look nearly identical to each other. Full phase coverage for the double-period was obtained. When the new data were phased to the double-period, the two halves of the lightcurve appeared similar. A plot of the period spectrum shows that the shorter period has a smaller RMS error.

References

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PHOTOMETRIC OBSERVATION OF 1542 SCHALEN

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CCD photometric observations of asteroid 1542 Schalen over ten nights in 2012 October and November were used to determine a synodic rotation period of 7.516 ± 0.002 h and an amplitude of 0.49 ± 0.02 mag.

Observations of 1542 Schalen asteroid started independently at the SARA Observatory and the Etsorn Campus Observatory. Once the two sides realized the other's work, we decided to join forces.

Observations at the Southeastern Association for Research in Astronomy (SARA) were obtained with a 0.91-m telescope located at the Kitt Peak National Observatory. The telescope has a Cassegrain design with an effective focal ratio of $f/7.5$. Coupled to an ARC (Astronomical Research Cameras, Inc.) CCD camera, the resulting resolution is 0.86 arcsec/pixel and field-of-view 14.6×14.6 arcmin. A Bessell R filter was used when taking images. The camera temperature was set to -109°C . Observations at the Etscorn Campus Observatory (ECO, 2012) were obtained with Celestron C-14 Schmidt-Cassegrain and SBIG ST-10 CCD resulting in an image scale of 1.05 arcsec/pixel (binned 3×3). The CCD was cooled to -25°C . All images were taken through a clear filter with 180-second exposures. Data from Oct 31, Nov 1, Nov 2, and 27 were obtained with the SARA telescope. Data from Nov 6, 7, 8, 11, 13, and 14 were obtained with the ECO telescope.

Images were reduced with master bias, dark and flat frames. *MPO Canopus* (Warner, 2012) was used for analyzing the processed images and extracting the period from the lightcurves. This asteroid was selected from the list of asteroid photometry opportunities published on the Collaborative Asteroid Lightcurve Link (CALL) website (<http://www.MinorPlanet.info/call.html>).

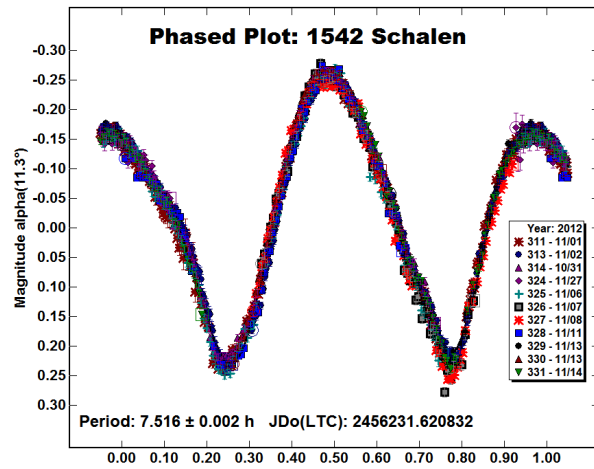
In the end, we observed this asteroid for a total of ten nights, ranging from 2012 Oct 31 to Nov 27. We obtained a synodic period of $P = 7.516 \pm 0.002$ h and an amplitude of $A = 0.49 \pm 0.02$ mag. No previously published results were found.

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THE LIGHTCURVE OF 6122 HENRARD

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Asteroid 6122 Henrard was observed on three sessions over a four-day period covering approximately 10 rotations. During this apparition, the asteroid exhibited a 9.16 hour lightcurve period with an amplitude of about 0.26 mag.

CCD photometric observations made at Via Capote Observatory (VCO) of asteroid 6122 Henrard were made in 2012 October. Prior to this campaign, no other references to photometric lightcurve analysis for 6122 Henrard were found in the literature. Exposures were guided, and obtained through a 0.4-m $f/10$ Schmidt-Cassegrain (SCT) at prime focus. The CCD imager was an Alta U6 featuring a 1024×1024 array of 24-micron pixels. All observations were made unfiltered at 1× binning yielding an image scale of 1.24 arcsec/pixel. All images were dark, flat field, and bias corrected. Images were measured using *MPO Canopus* (Bdw Publishing). Night-to-night zero point calibration was accomplished by selecting up to five comp stars exhibiting 2MASS B-V color indexes similar to the sun. See Warner (2007) and Stephens (2008) for a further discussion of this process. Fourier analysis of the data found a synodic period of 9.16 ± 0.01 h and amplitude of 0.26 ± 0.02 mag.

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#	Name	Date Range (mm/dd) 2012	Data Points	Phase	L_{PAB}	B_{PAB}	Per (h)	PE	Amp (m)	AE
6122	Henrard	10/22 - 10/25	291	10.12	15	4	9.18	0.01	0.26	0.05