

Acknowledgements

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ROTATION PERIOD DETERMINATION FOR 418 ALEMANNIA AND 4911 ROSENZWEIG

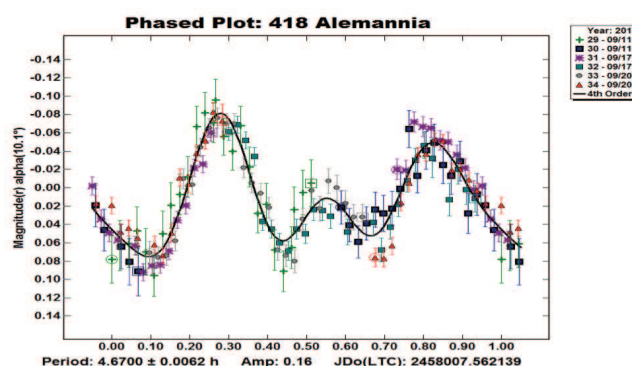
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Fourier analysis of data taken of asteroid 418 Alemannia determined a rotational period of 4.670 ± 0.006 h with an amplitude of 0.16 ± 0.02 mag. 4911 Rosenzweig's analysis shows a period of 9.75 ± 0.01 h with an amplitude of 0.08 ± 0.02 mag.

418 Alemannia was observed over 6 nights between 2017 Sep 11 and Sep 20. 4911 Rosenzweig was observed over 6 nights between 2017 Sep 25 and Oct 20. All data were taken at Purdue University Northwest's Northwestern Indiana Robotic Observatory (NIRO, MPC W11) in Lowell, Indiana. The two asteroids were selected from the MPC quarterly bulletin as good observation candidates. Data were collected using a 0.5-m f/8.1 Ritchey-Chretien telescope equipped with an FLI ProLine PLO9000 camera housing a KAF-09000 CCD image sensor. Images were corrected for bias, dark current, and flat-field artifacts using accepted data reduction practices. Rotation periods for both asteroids were determined via Fourier analysis using *MPO Canopus* (Warner, 2017).

418 Alemannia is an M-class main-belt asteroid discovered on 1896 Sep 7 by Max Wolf at the Heidelberg Observatory. Originally designated as 1896 CV, the German astronomer Adolf Berberich named this asteroid after the fraternity Alemannia in Heidelberg, Germany. The JPL Small-Bodies Database lists the orbital period as 4.18 yrs along with an albedo of 0.201, a diameter of 40.330 km, and an absolute magnitude of $H = 9.77$ mag (JPL, 2017).



The first published period for 418 Alemannia was 5.82 h (Lagerkvist et al., 1987). Wetterer et al. (1999) published a period

Number	Name	2016 mm/dd	Pts	Phase	L _{PAB}	B _{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
418	Alemannia	09/11-09/20	153	7.5, 17.0	332	9	4.760	0.006	0.16	0.02	MB-I
4911	Rosenzweig	09/25-10/20	162	7.5, 8.8	355	10	9.75	0.01	0.08	0.03	EUN

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). Grp is the asteroid family/group (Warner et al., 2009).

of 4.680 h. Most recently, Klinglesmith and Hendrickx (2018a) and Pilcher (2018) report a period of 4.67 h. Our analysis found a period of 4.670 ± 0.006 h with an amplitude of 0.16 ± 0.02 mag, which agrees with the most recent data to within our uncertainty.

4911 Rosenzweig is in the Eunomia family of S-type asteroids in the intermediate asteroid belt. Discovered on 1953 Oct 16, 4911 Rosenzweig is one of the 119 asteroids discovered by the Indiana Asteroid Program between 1949 and 1966. This asteroid is named for Jack and Marcelle Rosenzweig. The JPL Small-Bodies Database lists the orbital period as 4.28 yrs; along with an albedo of 0.309, a diameter of 9.97 km, and an absolute magnitude of $H = 12.1$ mag (JPL, 2017).

