

Acknowledgements

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LIGHTCURVES AND ROTATION PERIODS OF 420 BERTHOLDA, 664 JUDITH, AND 2779 MARY

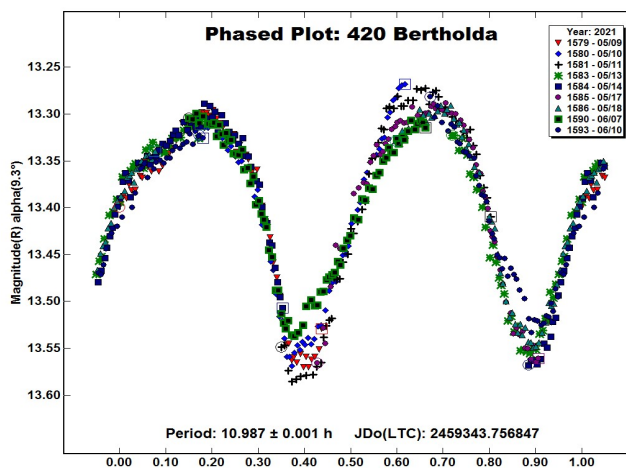
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Synodic rotation periods and amplitudes are found for 420 Bertholda 10.987 ± 0.001 h, 0.32 ± 0.02 magnitudes; 664 Judith 19.305 ± 0.001 h, 0.32 ± 0.02 magnitudes; 2779 Mary 3.583 ± 0.001 h, 0.11 ± 0.02 magnitudes.

Observations to produce the results reported in this paper were made at the Organ Mesa Observatory with a Meade 35-cm LX200 GPS Schmidt-Cassegrain, SBIG STL-1001E CCD, unguided. Exposure times were 60 seconds for 420 Bertholda and 664 Judith, 120 seconds for 2779 Mary, with a clear filter. Image photometric measurement and lightcurve construction were done by *MPO Canopus* software. To reduce the number of data points on the lightcurves and make them easier to read, data points have been binned in sets of 3 with maximum time difference 5 minutes.

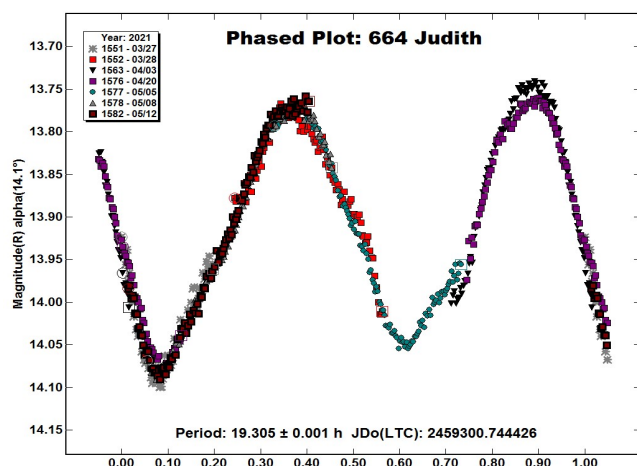
420 Bertholda. The Lightcurve Data Base (Warner et al., 2009) states a rotation period of 11.04 hours based on four independent determinations all between 10.97 hours and 11.04 hours. New observations on 9 nights 2021 May 9 at phase angle 9.3° to June 10 at phase angle 0.9° can be fit to a phased lightcurve with period 10.987 ± 0.001 hours, maximum amplitude 0.32 ± 0.02 magnitudes. The shape and amplitude of the lightcurve changed considerably as the phase angle decreased, but the period as shown by the timings of maxima and minima remained stable and may be considered secure. This new value of the rotation period is consistent with all previously published values.



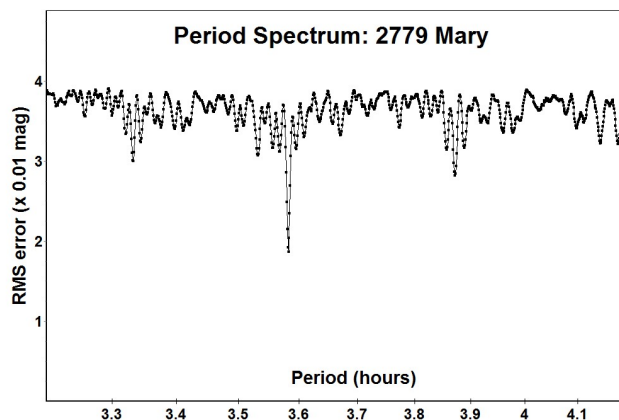
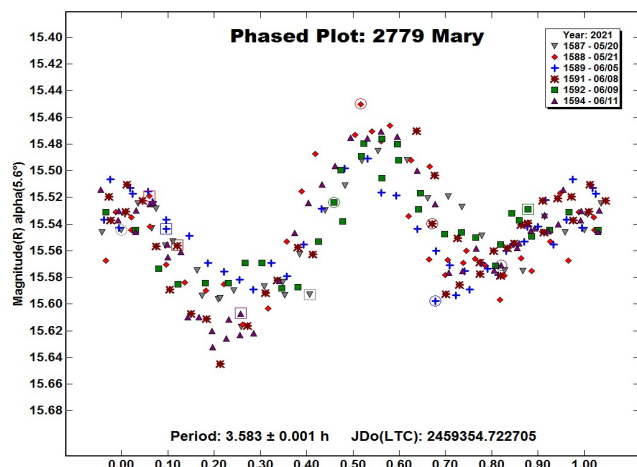
Number	Name	yyyy/mm/dd	Phase		LPAB	BPAB	Period(h)	P.E	Amp	A.E.
420	Bertholda	2021/05/09-2021/06/10	9.3	0.9	256	2	10.987	0.001	0.32	0.02
664	Judith	2021/03/27-2021/05/12	*14.1,	6.1	222	8	19.305	0.001	0.32	0.02
2779	Mary	2021/05/20-2021/06/11	* 5.6,	7.1	248	1	3.583	0.001	0.11	0.02

Table I. Observing circumstances and results. Pts is the number of data points. The phase angle is given for the first and last date, unless a minimum (second value) was reached. LPAB and BPAB are the approximate phase angle bisector longitude and latitude at mid-date range (see Harris *et al.*, 1984).

664 Judith. Almost all previously published rotation periods are different: Degraff *et al.* (1998), 10.76 h; Behrend (2009), >12. h; Garceran *et al.* (2015), 18.51 h; Hosek *et al.* (2011), 10.6829 h; Melton *et al.* (2012), 19.35 h; Pal *et al.* (2020), 19.3709 h. New observations on 7 nights 2021 Mar. 27 - May 12 provide a good fit to a bimodal lightcurve with period 19.305 ± 0.001 hours, amplitude 0.32 ± 0.02 magnitudes. This value is fairly close to Melton *et al.* (2012) and to Pal *et al.* (2020) and completely incompatible with all other previously published period determinations.



2779 Mary. The only previously published rotation period is 3.36 hours (Behrend, 2006) based on a one-night noisy lightcurve. New observations on 6 nights 2021 May 20 - June 11 can be fit to a lightcurve with period 3.583 ± 0.001 hours, amplitude 0.11 ± 0.02 magnitudes. At 15.5 magnitude, the scatter in the data points is large, but the lightcurve amplitude is larger. A period spectrum shows a narrow minimum at 3.583 hours much deeper than any other minimum between 3.2 hours and 4.2 hours. Despite the large scatter in the data points, all other periods within this range are ruled out and a 3.583-hour period should be considered secure. This value is compatible with the 3.36-hour period found by Behrend (2006).



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