

ROTATIONAL PERIOD DETERMINATION FOR 62 ERATO AND 165 LORELEY

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Lightcurve period and amplitudes for 62 Erato and 165 Loreley were measured at the Shed of Science Observatory in late 2004 and early 2005. The synodic period and amplitude of 62 Erato are found to be 9.22 ± 0.02 hr and 0.15 mag. The results for 165 Loreley are 7.22 ± 0.01 hr and 0.09 mag.

The Shed of Science Observatory is located in Minneapolis, Minnesota at an elevation of 271 meters. The observatory utilizes a 0.35 meter Schmidt-Cassegrain telescope operating at f8.6 with a SBIG ST10XE CCD camera binned 3x3, resulting in an image scale of 1.4 arc seconds per pixel. All observations were unfiltered. Asteroid 62 Erato was selected for observation from the CALL website operated by Brian Warner. In September, 2004, Ellen Howell and Mike Nolan of Arecibo Observatory posted a request on the Minor Planet Mailing List for a number of asteroid lightcurves. Asteroid 165 Loreley was included on that list.

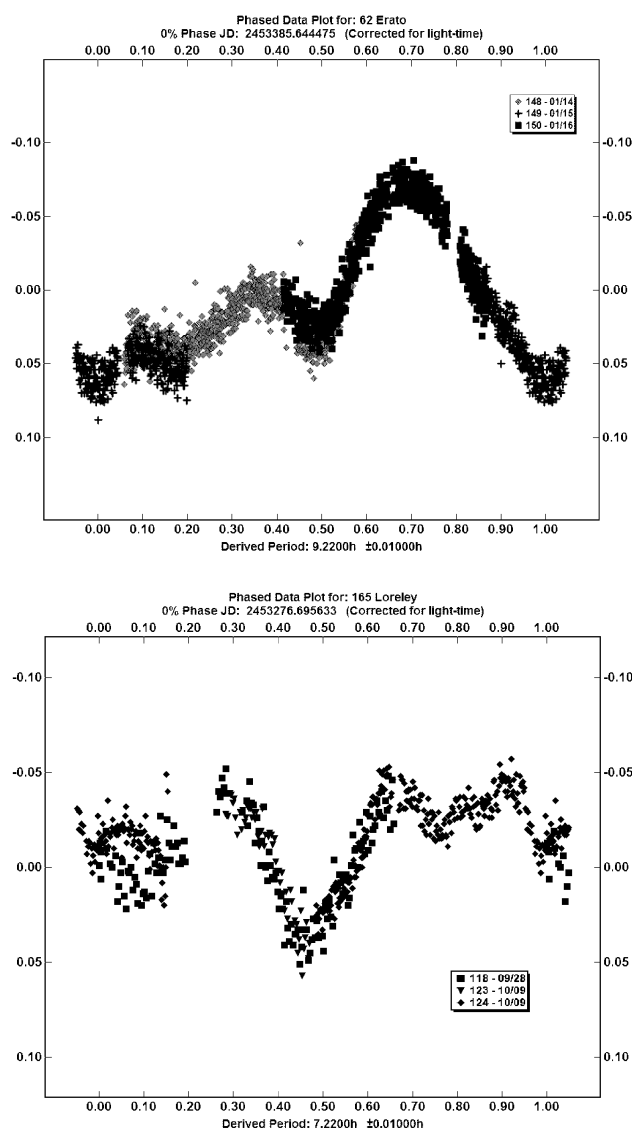
62 Erato. Over three consecutive nights in January 2005, 675 observations were used to derive the synodic period of 9.22 ± 0.02 hours with an amplitude of 0.15 ± 0.01 magnitude, as shown in the figure. The lightcurve is not bimodal and is characterized by three maxima and three minima. Harris et al. (1992) estimated a period somewhat greater than 8 hours. However, Alvarez-Candal et al. (2004) recently reported a period of 5.675h based on an incomplete lightcurve. The current data were plotted with a period of 5.675h and was found to be completely incompatible with the Alvarez-Candal et al. result. In addition, the period spectrum based on the current data strongly supports the 9.22 hour period; however, a 13.82h solution cannot be ruled out. Measurements made during the same time period by Goncalves and Behrend (2005) also support the 9.22 hour period solution.

165 Loreley. Previous lightcurve measurements of Loreley by Schober et al. (1988) indicated a 7.22h period. Harris et al. (1991) also reported a 7.22h period. Roy and Behrend (2004) reported an 8.5h period. Our current data supports the 7.22h solution. The mismatch at 0.05 phase initially led to a slightly longer solution of 7.88h; however, the period spectrum from the current data does not clearly favor a single solution. On the other hand, the period spectrum of Harris et al. (1991) strongly indicates a 7.22h period. In light of the ambiguity in the current data, the 7.22h solution is favored, and shown in the figure. The mismatch at 0.05 is not explained in our data and further observations could be helpful.

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References

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ASTEROID LIGHTCURVE RESULTS FROM MENKE OBSERVATORY

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Lightcurves for the following asteroids are reported:
295 Theresia, 463 Lola, 605 Juvisia, 656 Beagle,
691 Lehigh, 885 Ulrike, 899 Jokaste, 931 Whittemora,
1116 Catronia, 1120 Cannonia, 1185 Nikko, 2463
Sterpin, 2647 Sova, 4649 Sumoto, 6475 Refugium,
(27496) 2000 GC125, and (42600) 1997 YF10.

The asteroid program at Menke Observatory has been described elsewhere (Menke 2005, this issue). In brief, we use a C11 with an ST7E camera in an automated setup. The data are taken and the images are read using MaximDL to create text files of raw intensity values using a digital reference star plugin. These files are imported into Excel where the data are analyzed. The period is determined by inspection using a data folding process. Night to night calibration is done using a modified Landolt star reference process and/or manual offsets. The data are not light-time corrected. Virtually all targets were taken from the CALL web site lists (Warner 2005).

The results are presented in the table below. The lightcurve plots show data session dates as DXMMDDYY where X is our session number. Where appropriate, comments are provided on the individual results.

463 Lola. Note that very similar results were recently published by Bembrick (2005). These data were submitted to Aericibo in support of their radar work on this object.

605 Juvisia. I note that data sets D10 and D11 were supplied by another person whose name regretfully has been lost.

691 Lehigh. These data were taken under poor weather conditions and show substantial noise. While the derived period of 10.482 hr appears valid, an alternative period of 10.592 hr is not ruled out.

899 Jokaste. After the initial submission of this paper, the MPB editor noted that there was another paper by Don Pray that was pending, and that included different Jokaste data. At the editor's request, Don Pray and I combined the Pray data (7 sessions) from Jan-Feb 2005 with our data from Dec. 2003 (3 sessions). Using the combined data, we were able to determine the period with the high precision as noted in the results table. For clarity, the graph shows the Pray data as a single data series because there are relatively few points per session.

1116 Catronia. These data are relative only.

1185 Nikko. Very similar period results were recently published by Stephens (2005); however, the shape of the curve reported here is substantially different. We could find no explanation for the anomalous portion of the curve between phase=0.40-.55. Such a feature does not appear in the Stephens data taken in Nov. 2004, nor did it appear on the preceding or following sessions in this campaign (each of which covered about 1.5 full rotations).

(27496) 2000 GC125. These data were taken in 12/02-01/03 without calibration. The amplitude was small and the data noisy; however our analysis showed a period of 4.712hr. Petr Pravec kindly offered to review the data, and verified a period of 4.7097+/-0.0005 hr. which we have used.

(42600) 1997 YF10. These data are relative magnitude only.

References

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CALL website supported by Brian Warner.
<http://www.minorplanetobserver.com>

Number	Name	Period(hr)	Unc	Amp	Unc	DateStart	DateEnd	DateSpan	Sessions
295	Theresia	10.71	0.02	0.15	0.04	12/23/03	12/30/03	8	6
463	Lola	6.212	0.005	0.2	0.02	10/07/04	10/10/04	4	3
605	Juvisia	15.85	0.02	0.24	0.03	09/11/04	09/24/04	14	7
656	Beagle	7.035	0.003	1.2	0.1	04/15/04	04/18/04	4	3
691	Lehigh	10.482	0.003	0.12	0.02	12/12/03	02/19/04	68	6
885	Ulrike	4.90	0.05	0.55	0.05	09/20/04	09/20/04	1	1
899	Jokaste	6.2510	0.0002	0.25	0.05	12/02/03	02/27/05	446	10
931	Whittemora	19.20	0.01	0.2	0.05	01/07/04	01/13/04	7	4
1116	Catronia	8.83	0.01	0.09	0.02	12/06/03	12/16/03	11	3
1120	Cannonia	3.816	0.002	0.16	0.03	11/07/04	11/08/04	2	2
1185	Nikko	3.788	0.003	0.5	0.05	01/23/05	01/28/05	6	3
2463	Sterpin	15.40	0.01	0.3	0.05	12/24/04	02/10/05	47	5
2647	Sova	9.38	0.01	0.35	0.05	01/30/05	02/01/05	2	3
4649	Sumoto	26.31	0.01	0.3	0.05	12/10/04	01/01/05	22	6
6475	Refugium	8.01	0.01	0.45	0.05	11/09/04	11/11/04	3	2
27496	2000 GC125	4.7097	0.0005	0.10	0.03	12/22/02	01/12/03	21	5
42600	1997 YF10	7.771	0.001	0.9	0.1	01/08/05	01/28/05	21	6