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ASTEROID LIGHTCURVE ANALYSIS AT THE OAKLEY SOUTHERN SKY OBSERVATORY: 2008 OCTOBER THRU 2009 MARCH

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Photometric data for 39 asteroids were collected over 37 nights of observing during 2008 October thru 2009 March at the Oakley Southern Sky Observatory. The asteroids were: 239 Adrastea, 875 Nymphe, 1051 Merope, 1167 Dubiago, 1574 Meyer, 1590 Tsiolkovskaja, 1845 Helewalda, 2294 Andronikov, 2303 Retsina, 2345 Fucik, 2666 Gramme, 2679 Kittisvaara, 3062 Wren, 3162 Nostalgia, 3259 Brownlee, 3376 Armandhammer, 3453 Dostoevsky, 3527 McCord, 3560 Chengian, 3614 Tumilty, 3713 Pieters, 4164 Shilov, 4542 Mossotti, 5133 Phillipadams, 5236 Yoko, 5619 Shair, 5875 Kruga, 6071 Sakitama, 6400 Georgealexander, 6821 Ranevskaya, 6976 Kanatsu, 7087 Lewotsky, (7569) 1989 BK, (7949) 1992 SU, 9780 Bandersnatch, (16182) 2000 AH137, 17770 Baume, 18434 Mikesandras, and (34036) 2000 OX27.

Thirty-nine asteroids were observed from the Oakley Southern Sky Observatory in New South Wales, Australia, on the nights of 2008 October 21-25, November 20, 22, 27, 29-30, December 1-3, 2009 January 24, 26-31, February 1-2, and March 4-8, 15-18, 21, 25, 27-29. From the data, we were able to find lightcurves for 32 asteroids. Out of those 32, 20 were previously unrecorded results, 10 were reasonably close to previously published periods, and 2 were inconsistent with previously published results. The 7 remaining asteroids produced no repeatable data.

Selection of asteroids was based on their sky position about one hour after sunset. Asteroids without previously published lightcurves were given higher priority than asteroids with known periods, but asteroids with uncertain periods were also selected with the hopes that we would be able to improve previous results. A 20-inch Ritchey-Chretien optical tube assembly mounted on a Paramount ME was used with a Santa Barbara Instrument Group STL-1001E CCD camera and a clear filter. The image scale was 1.2 arcseconds per pixel at f/8.4. Exposure times varied between 90 and 240 seconds. Calibration of the images was done using master twilight flats, darks, and bias frames. All calibration frames were created using *CCDSoft*. *MPO Canopus* was used to measure the processed images.

As far as we are aware, these are the first reported observations for the period of the following asteroids: 1574 Meyer, 1845 Helewalda, 2303 Retsina, 2666 Gramme, 3162 Nostalgia, 3614 Tumilty, 3713 Pieters, 4542 Mossotti, 5236 Yoko, 5619 Shair, 5875 Kruga, 6071 Sakitama, 6821 Ranevskaya, 6976 Kanatsu, (7569) 1989 BK, (7949) 1992 SU, 9780 Bandersnatch, 17770 Baume, 18434 Mikesandras, (34036) 2000 OX27. No repeatable pattern was found for the following asteroids: 1167 Dubiago, 3527 McCord, 3560 Chengian, 4164 Shilov, 6400 Georgealexander, 7087 Lewotsky, and (16182) 2000 AH137. Our data for these asteroids were too noisy for us to determine periods or we didn't have enough data, so we are reporting the magnitude variations only. Results from all of the asteroids are listed in the table below. Additional comments have been included as needed.

239 Adrastea. Our data are reasonably close to the period of 18.347 ± 0.003 h found by Uzpen (2003).

875 Nymphe. Our data are reasonably close to the period of 12.638 ± 0.0045 h found by Behrend (2009).

1051 Merope. Our data are inconsistent with the period of 32 h found by Behrend (2009).

1590 Tsiolkovskaja. Our data are consistent with the period of 6.737 ± 0.004 h found by Warner (2008).

2294 Andonikov. Our data are consistent with the period of 3.1529 ± 0.0003 h found by Polishook (2009).

2345 Fucik. Our data are reasonably close to the period of 17.12 ± 0.01 h found by Brinsfield (2008).

2679 Kittisvaara. Our data are reasonably close to the period of 10.123 h found by Brinsfield (2008).

3062 Wren. Our data are reasonably close to the period of 6.9672 ± 0.0072 h found by Behrend (2009).

3259 Brownlee. Our data are consistent with the period of 9.24 ± 0.01 h found by De Sanctis (1994).

3376 Armandhammer. Our data can be fit with the period of 7.9184 ± 0.0009 h found by Pravec (2009), but our data fit our shorter period better.

3453 Dostoevsky. Our data are inconsistent with the period of 3.20 ± 0.04 h found by Polishook (2009).

4164 Shilov. We didn't get enough data to determine a period, but our data cannot be fit to the period of 18.35 h found by Angeli (1996).

5133 Phillipadams. Our data are consistent with the period of 6.66447 ± 0.00004 h found by Behrend (2009).

Acknowledgement

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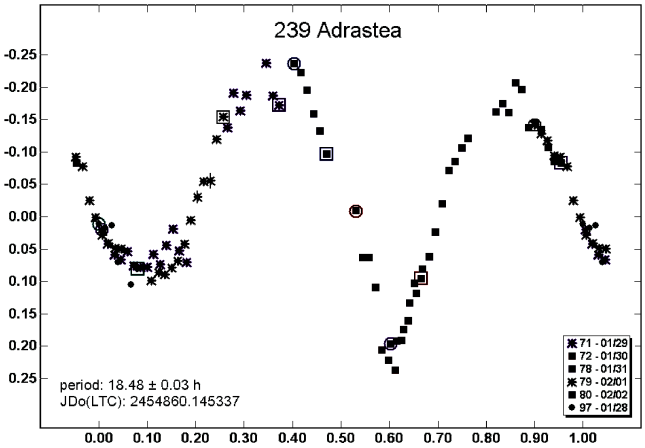
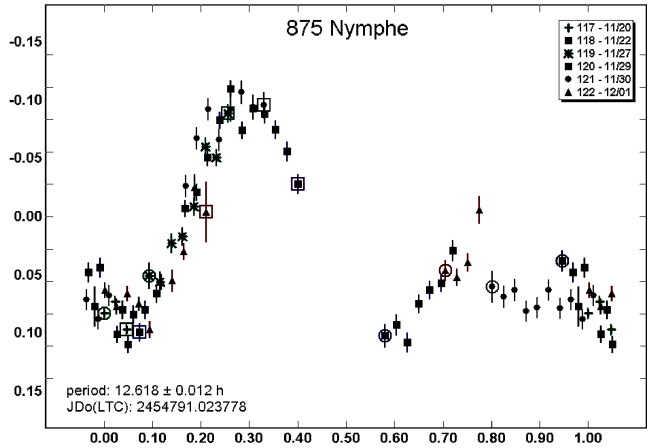
Number	Name	Dates 2008 and 2009 mm/dd	Data Points	Period (h)	P.E (h)	Amp (mag)	A.E. (mag)
239	Adrastea	1/28-2/02	93	18.48	0.03	0.45	0.05
875	Nymphe	11/20, 22, 27, 11/29-12/1	72	12.618	0.012	0.20	0.03
1051	Merope	3/4-8	66	27.2	0.3	0.20	0.04
1167	Dubiago	1/24, 26-27	45	-	-	0.26	0.01
1574	Meyer	3/27-29	70	12.64	0.05	0.12	0.02
1590	Tsiolkovskaja	3/15-18, 21	96	6.731	0.002	0.25	0.03
1845	Helewalda	11/22, 11/27, 11/29-12/1	75	7.399	0.004	0.20	0.03
2294	Andronikov	3/25, 3/27-29	86	3.154	0.002	0.35	0.05
2303	Retsina	11/20, 22, 27, 11/29-12/1	86	10.82	0.01	0.4	0.1
2345	Fucik	3/27-29	79	17.35	0.09	0.2	0.1
2666	Gramme	12/2-3	36	14.12	0.04	0.45	0.05
2679	Kittisvaara	3/15-18, 3/21	80	10.121	0.008	0.25	0.04
3062	Wren	11/22, 11/27, 11/29-30	63	7.097	0.003	0.25	0.03
3162	Nostalgia	1/28-2/2	83	6.412	0.002	0.75	0.05
3259	Brownlee	1/28-29, 1/31-2/2	90	9.25	0.02	0.40	0.05
3376	Armandhammer	1/28-2/2	95	6.82	0.02	0.03	0.02
3453	Dostoevsky	3/15-18, 3/21	84	3.16	0.01	0.10	0.03
3527	McCord	2/28-3/1, 3/4-8	82	-	-	0.10	0.03
3560	Chengian	3/15-18, 3/21	73	-	-	0.08	0.02
3614	Tumilty	3/4-7	59	26.8	0.2	0.10	0.02
3713	Pieters	10/22, 10/24-25	65	6.9	0.1	0.15	0.05
4164	Shilov	1/14-15, 1/24, 1/26-27	64	-	-	0.30	0.03
4542	Mossotti	12/2-3	40	2.947	0.007	0.15	0.02
5133	Phillipadams	12/2-3	28	6.70	0.12	0.40	0.03
5236	Yoko	12/2-3	36	2.768	0.004	0.37	0.05
5619	Shair	10/21-25	83	5.05	0.01	0.5	0.1
5875	Kruga	3/15-18, 3/21	108	5.551	0.002	0.25	0.03
6071	Sakitama	10/22, 10/24-25	76	4.437	0.013	0.10	0.02
6400	Georgealexander	10/21-25	109	-	-	0.20	0.03
6821	Ranevskaya	2/28, 3/4-8	89	2.81	0.01	0.18	0.03
6976	Kanatsu	10/22, 10/24-25	99	4.025	0.002	0.40	0.02
7087	Lewotsky	2/20-22, 2/29-3/1, 3/3-8	264	-	-	0.25	0.03
7569	1989 BK	10/22, 10/24-25	80	3.60	0.04	0.20	0.04
7949	1992 SU	1/29, 2/1	43	17.91	0.04	0.25	0.03
9780	Bandersnatch	3/15-18, 3/21	85	8.234	0.006	0.15	0.05
16182	2000 AH137	11/20, 22, 27, 11/29-12/1	81	-	-	0.10	0.03
17770	Baume	10/22, 10/24-25	64	3.26	0.01	0.20	0.05
18434	Mikesandras	1/24, 1/26-27	58	3.137	0.003	0.25	0.05
34036	2000 OX27	3/15-18, 3/21	80	14.143	0.008	0.90	0.02





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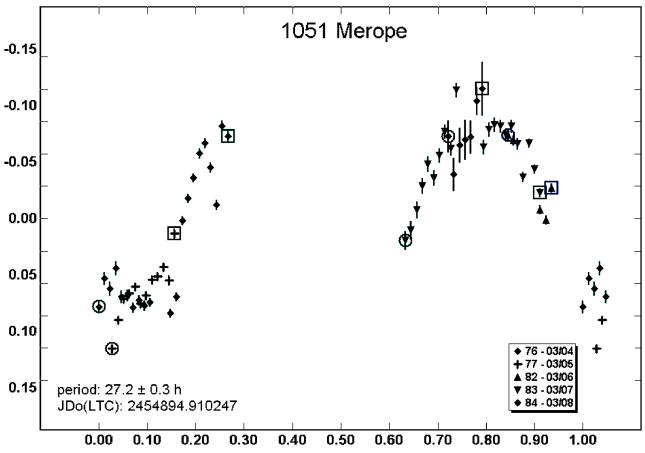

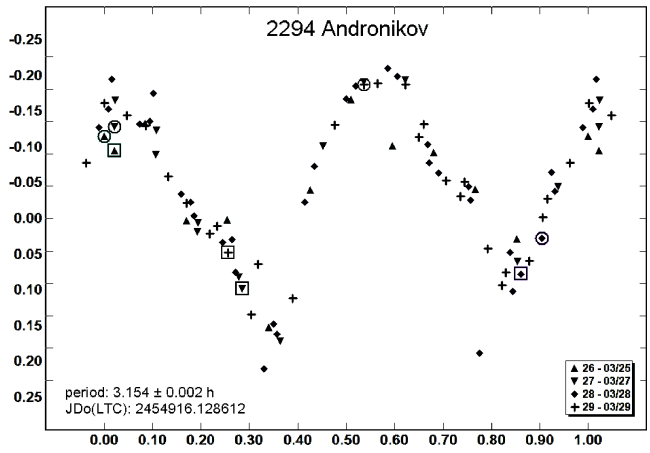

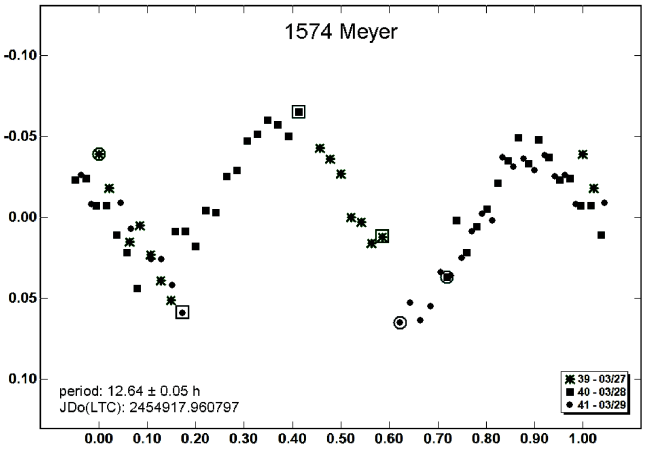

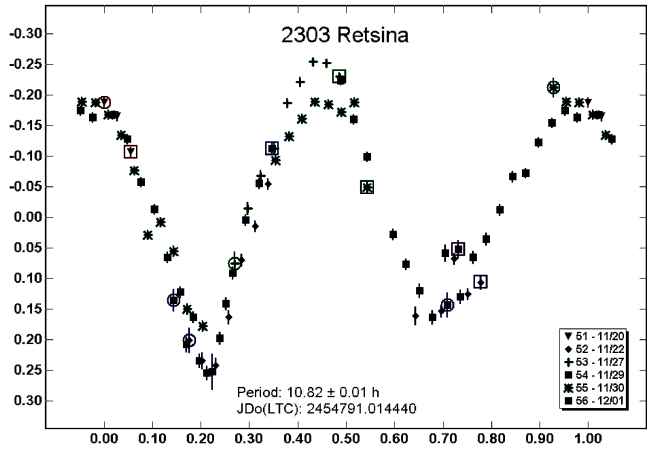

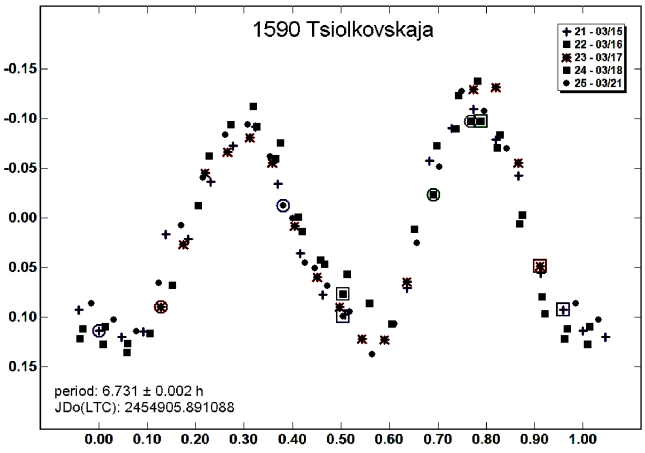

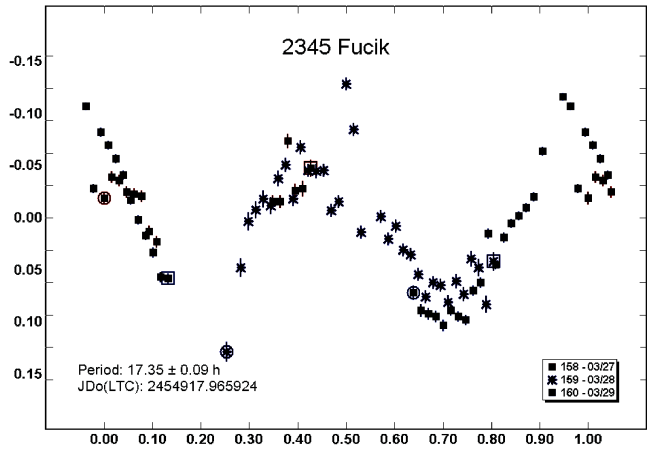

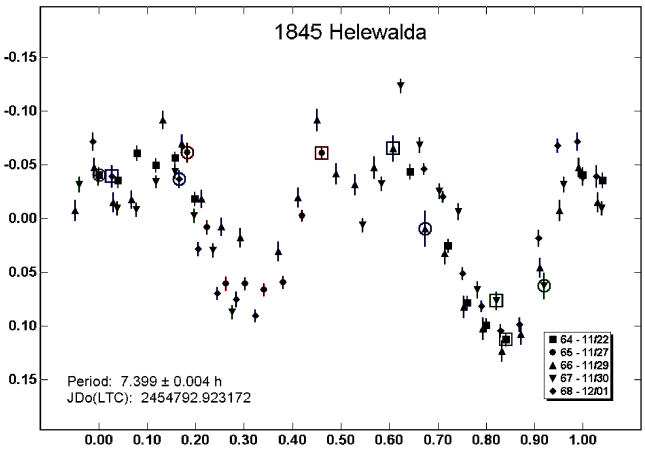

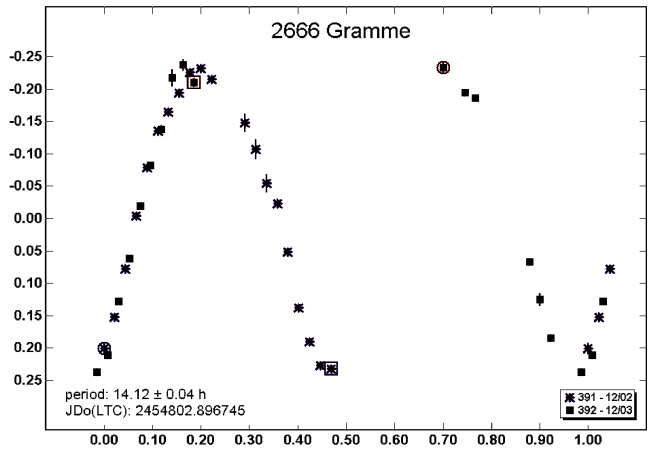

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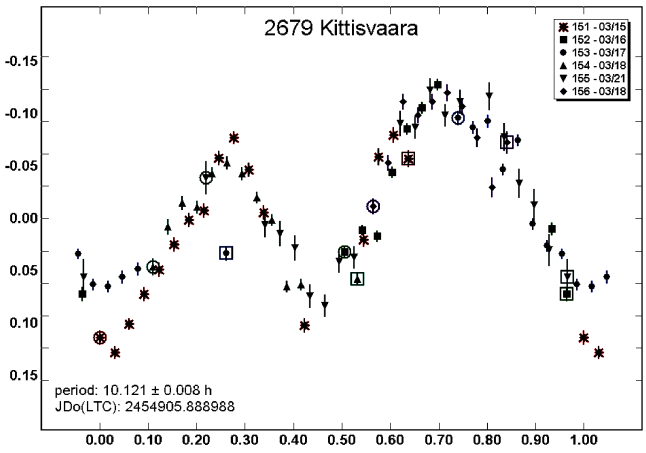

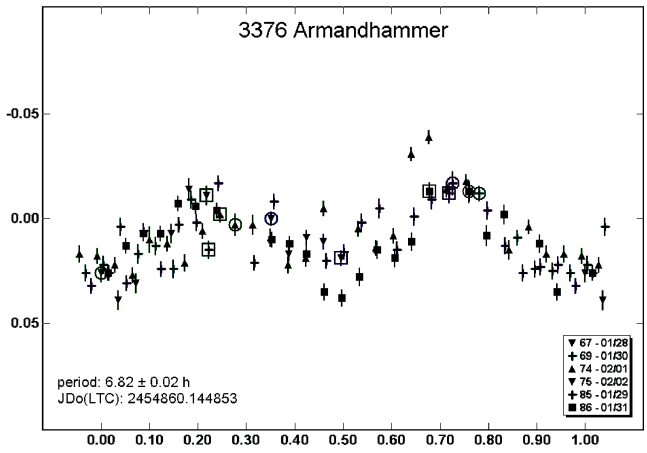

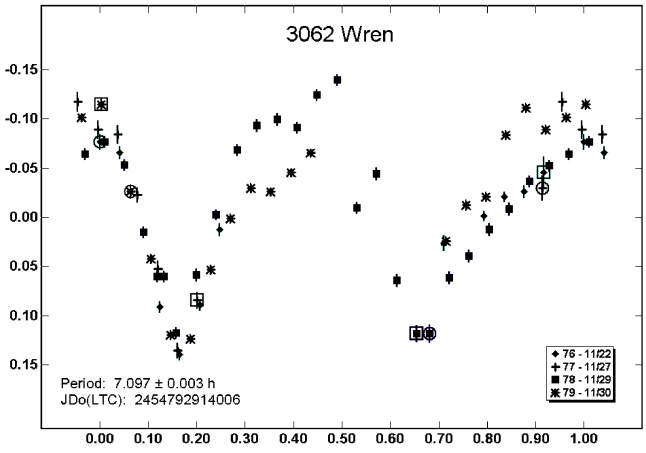

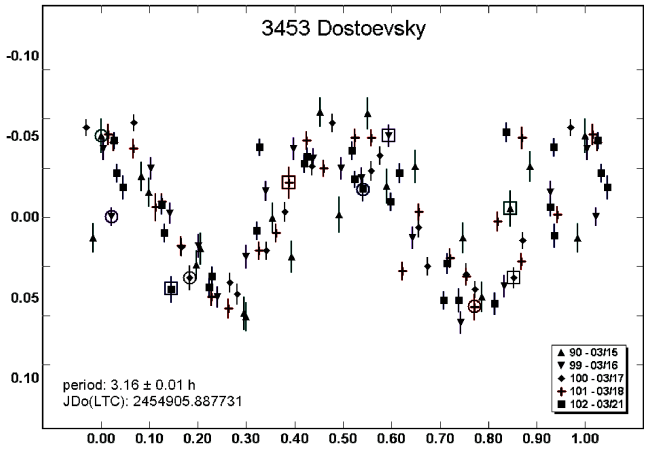

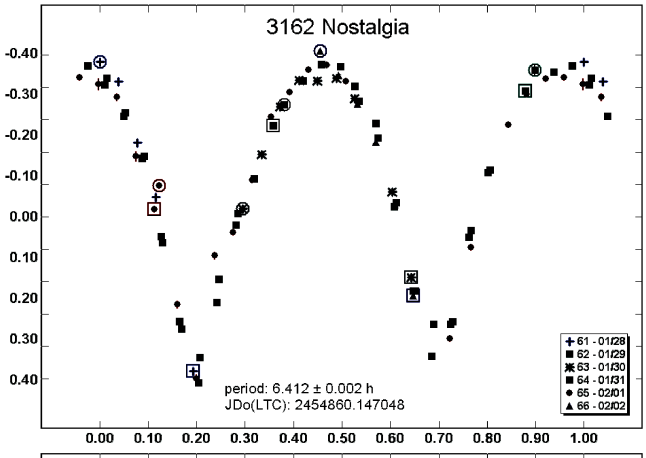

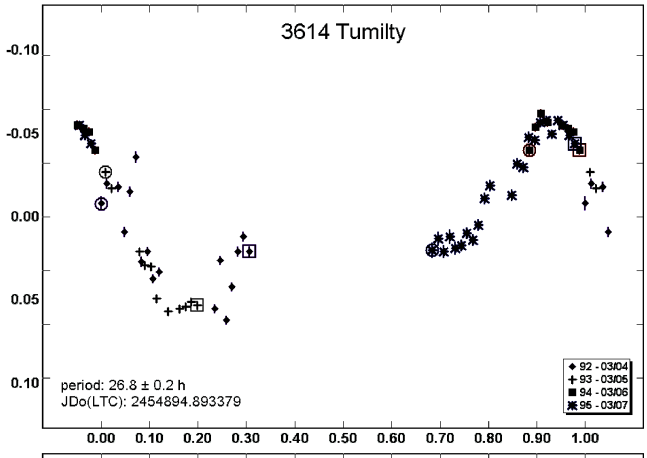

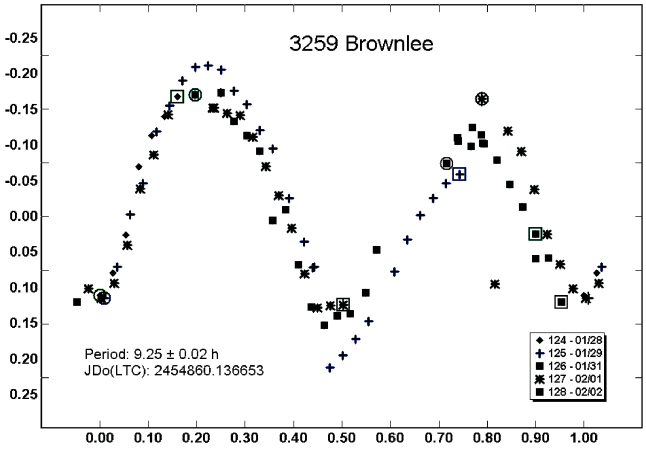

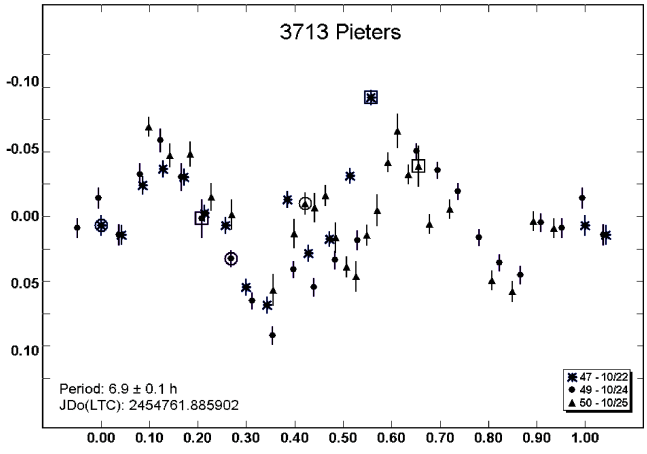

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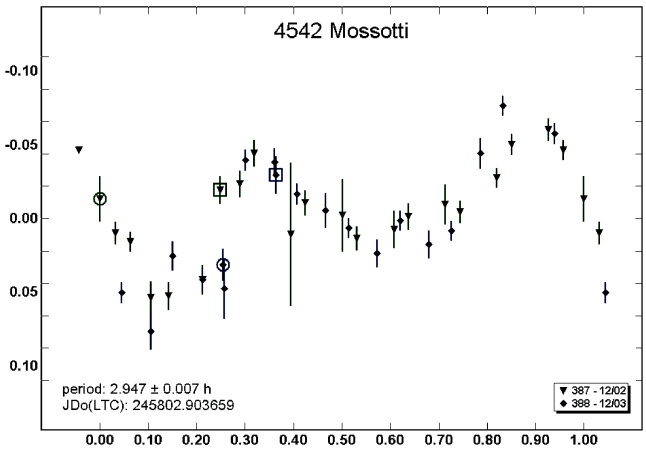

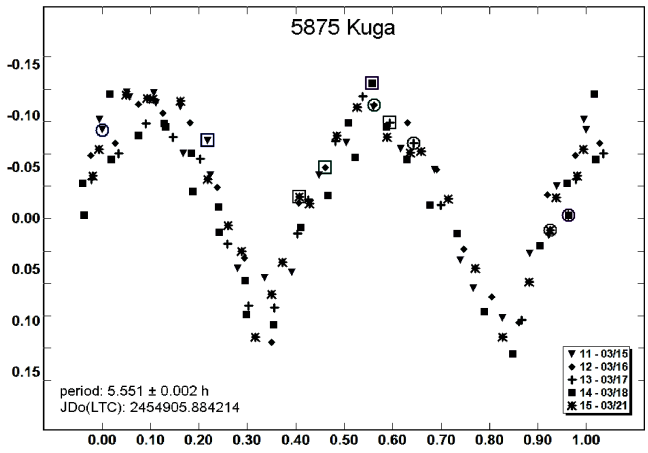

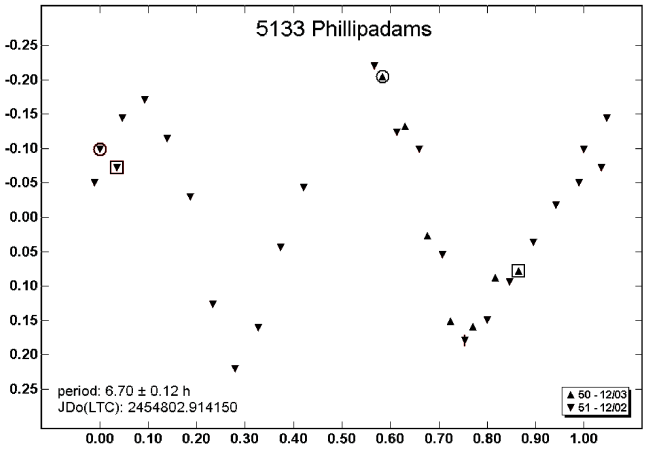

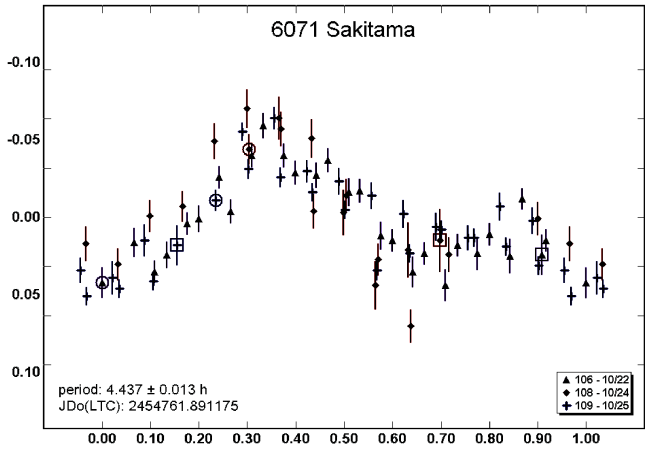

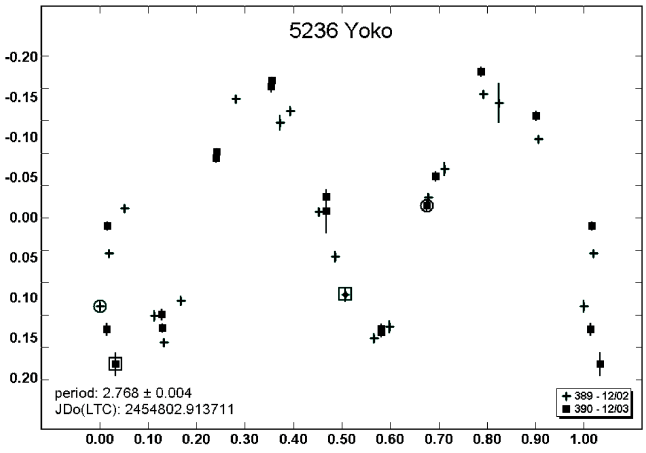

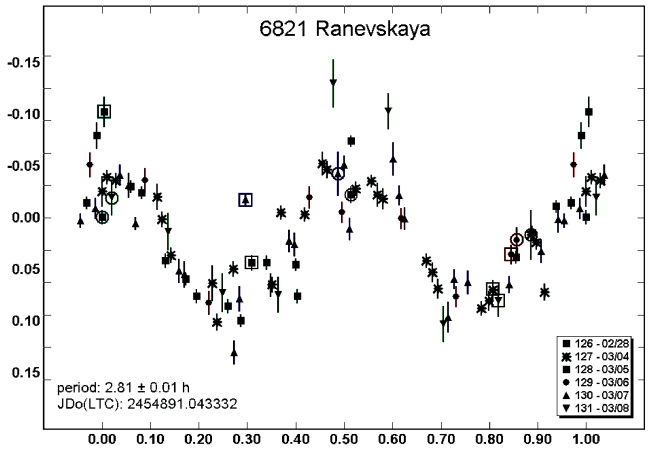

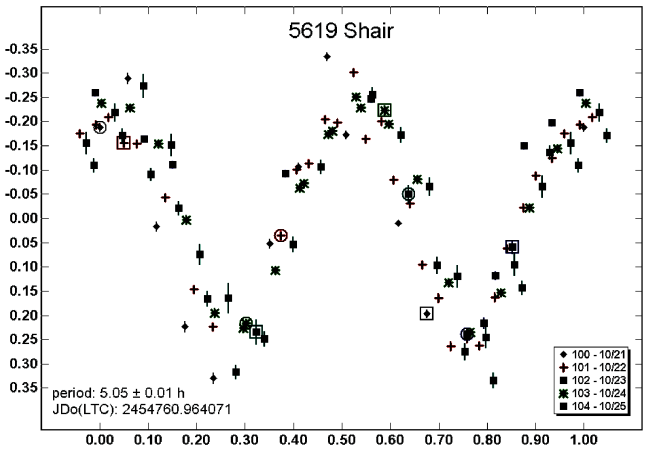

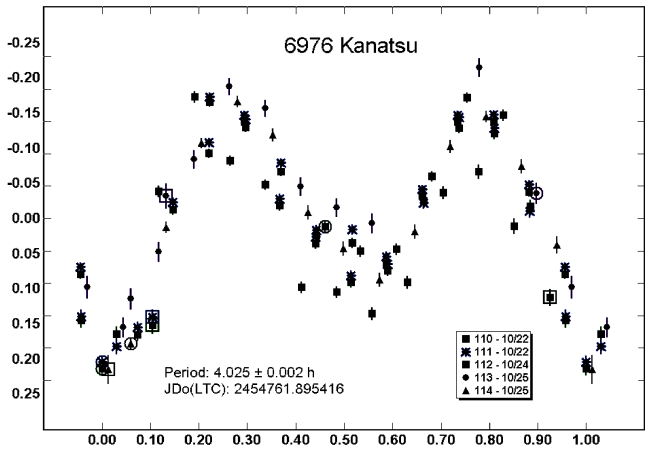

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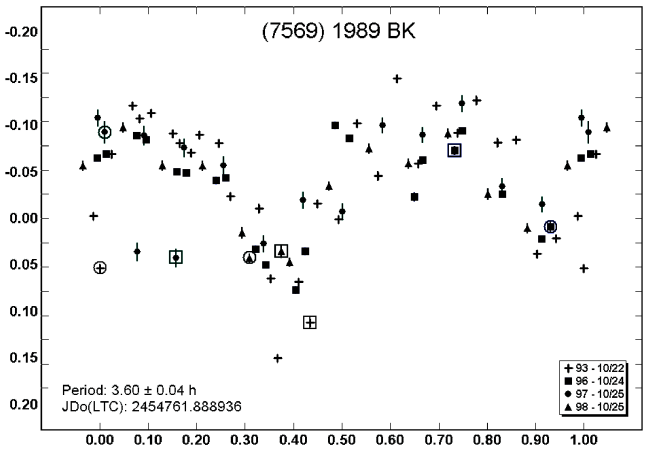

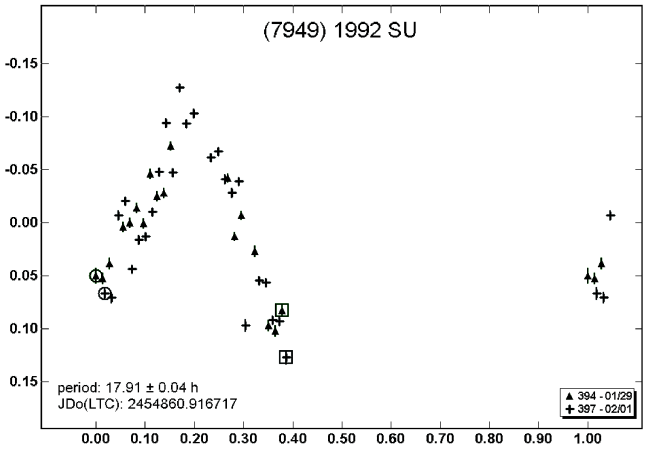

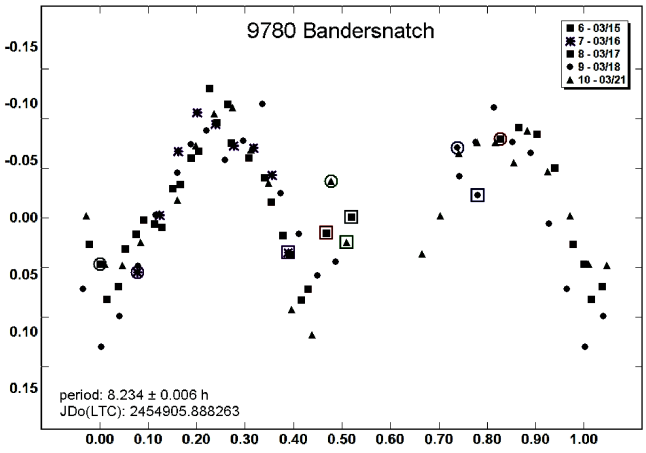

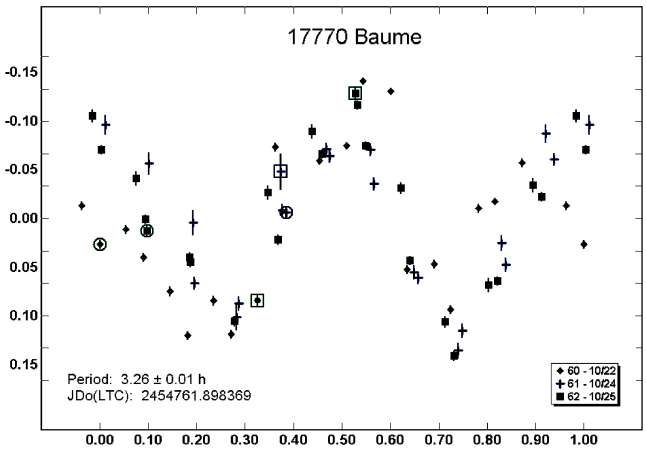

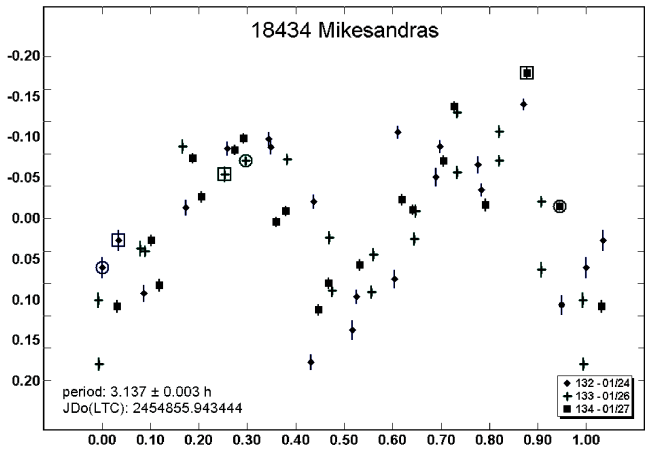

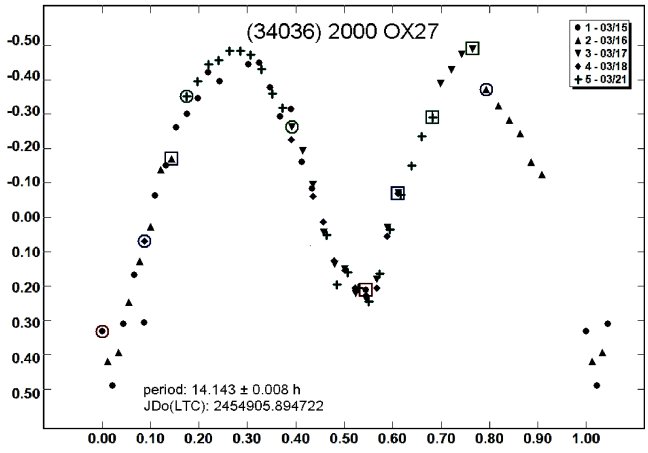

ASTEROIDS OBSERVED FROM GMARS AND SANTANA OBSERVATORIES – APRIL TO MAY 2009

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(Received: 2009 Jun 24)

Lightcurve period and amplitude results from Santana and GMARS Observatories for 2009 April to May are reported: 362 Havnia, 16.92 ± 0.01 h, 0.40 mag; 470 Kila, 290 ± 5 h, 0.26 mag; (93768) 2000 WN22, 2.6814 ± 0.0001 h, 0.30 mag.

The author operates telescopes at two observatories. Santana Observatory (MPC 646) is located in Rancho Cucamonga, CA, and GMARS (Goat Mountain Astronomical Research Station, MPC G79) is located at the Riverside Astronomical Society's observing site in Landers, CA. Details of the equipment are in Stephens (2006). All of the targets were chosen from the list of asteroid photometry opportunities published on the Collaborative Asteroid Lightcurve Link website (CALL; Warner et al., 2009). Images were measured using *MPO Canopus*, which employs differential aperture photometry to produce the raw data. Period analysis was done using *Canopus*, which incorporates the Fourier analysis algorithm (FALC) developed by Harris (1989).

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