THE MINOR PLANET BULLETIN

BULLETIN OF THE MINOR PLANETS SECTION OF THE ASSOCIATION OF LUNAR AND PLANETARY OBSERVERS

VOLUME 39, NUMBER 1, A.D. 2012 JANUARY-MARCH 1.

THE ROTATIONAL PERIOD OF 1406 KOMPPA

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(Received: 7 October)

Our observations of main-belt asteroid 1406 Komppa indicate a synodic period of P = 3.508 ± 0.002 h, A = 0.16 ± 0.05 mag.

Observations of 1406 Komppa were taken over 7 nights in 2011 August and September. The Shed of Science used a 0.35-m Schmidt Cassegrain (SCT) with an SBIG ST-10XE CCD camera working at f/8.5, resulting in a scale of 0.94 arcsec/pixel. Exposures were made through a Celestron UHC LPR filter. The Etscorn Campus Observatory of New Mexico Institute of Mining and Technology has two identical 0.35-m SCT operating at f/11 with SBIG STL-1001E CCD cameras resulting in an image scale of 1.25 arcsec/pixel. HUT Observatory has a 16-inch f/8 Ritchey-Chretien reflector by DFM Engineering. For these observations we used an Apogee Alta model U47 CCD with a Bessell R filter. The exposures were binned 2x2 for an effective image scale of 1.65 arcsec/pixel.

All images were dark and flat field corrected. Images were measured using *MPO Canopus* (Bdw Publishing) with a differential photometry technique. The *MPO Canopus* Comp Star Selector was used to link sessions. The data were light-time corrected. Period analysis was also done with *MPO Canopus*, incorporating the Fourier analysis algorithm developed by Harris (Harris *et al.* 1989).

Behrend (2011) reported a period near 7.0 h, or twice the period we are reporting here. Our current results are in close agreement with earlier work on this object by Polishook (2009).

Acknowledgements

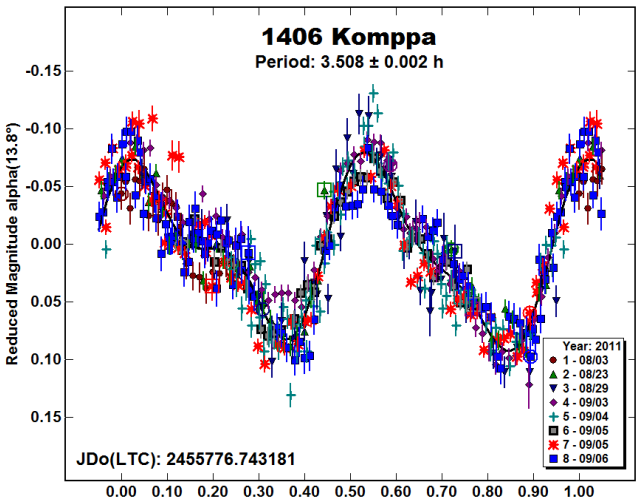
Partial funding for work at the Shed of Science is provided by Gene Shoemaker NEO Grants from the Planetary Society. Work at the HUT Observatory is supported by the Mittelman Foundation.

References

Behrend, R. (2011). "Courbes de rotation d'astéroïdes et de comètes, CdR."
http://obswww.unige.ch/~behrend/page4cou.html#001406

Harris, A.W., Young, J.W., Bowell, E., Martin, L.J., Millis, R.L., Poutanen, M., Scaltriti, F., Zappala, V., Schober, H.J., Debehogne, H., and Zeigler, K.W. (1989). "Photoelectric Observations of Asteroids 3, 24, 60, 261, and 863." *Icarus* **77**, 171-186.

Polishhook, D. (2009). "Lightcurves and Spin-Periods from the Wise Observatory: 2008 August – 2009 March." *Minor Planet Bull.* **36**, 104 -107.



ROTATIONAL PERIOD DETERMINATION FOR 1820 LOHMANN

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Observations of main-belt minor planet 1820 Lohmann were undertaken by Lenomiya Observatory during 2011 August-September. Data analysis found a period of 14.048 ± 0.001 h with amplitude 0.48 ± 0.01 mag.

1820 Lohmann is a main-belt asteroid, discovered in 1949 by K. Reinmuth in Heidelberg and named in honor of Werber Lohmann (1911-1983), an astronomer at Heidelberg (Schmadel, 2003). The asteroid was selected from Collaborative Asteroid Lightcurve Link (CALL) site's Lightcurve Targets list (Warner, 2011). A search of the Asteroid Lightcurve Database and other sources does not reveal any previously reported lightcurve results for 1820 Lohmann.

Observations of the asteroid were made at the Lenomiya Observatory with a Celestron CPC-1100 0.28-m Schmidt-Cassegrain (SCT) working at f/6.3 using a focal reducer. Images were guided and unfiltered using a Santa Barbara Instruments Group ST8XME CCD camera operating at –12° C. The images were binned 2x2, which resulted in an effective array of 765x510 18-micron pixels and scale of 1.92 arcseconds/pixel. The 1,442 images were exposed in the range of 60 s to 100 s, depending on atmospheric conditions, in order to maximize SNR. They were calibrated using *CCDSoft* version 5.00.205 and measured using *MPO Canopus* version 10.4.0.4 (Warner, 2011).

Analysis of the data disclosed a bimodal lightcurve with a period of 14.048 ± 0.001 h with an amplitude of 0.48 ± 0.01 mag.

Individual sessions spanned the complex section of the curve ruling out any trimodal or monomodal fit. Due to weather problems, only about 85% phase coverage could be obtained. However, I believe this period to be secure because the only shape that can produce a lightcurve with an amplitude as large as 0.40 magnitudes is an elongated body that features two maxima and minima per cycle that are nearly symmetrically placed.

Acknowledgments

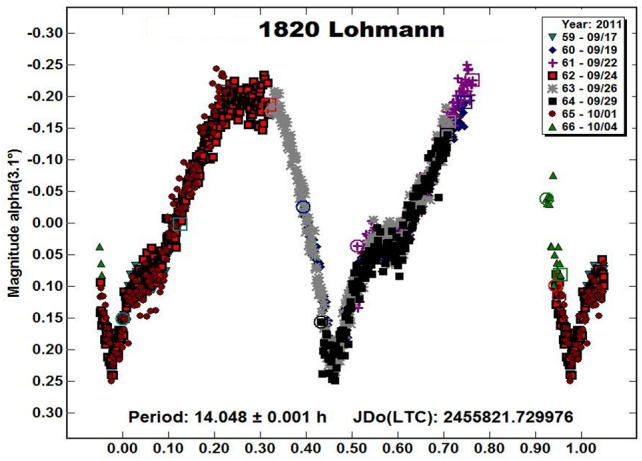
The author wishes to express gratitude to Frederick Pilcher for his support and helpful suggestions on the *MPO Canopus* software and period determination.

References

Schmadel, L.D. (2003). Dictionary of minor planets. (5th ed., p. 146). New York: Springer.

Warner, B.D. (2011). "Potential Lightcurve Targets 2011 July 1 – September 30."
http://www.minorplanet.info/CALL/targets_2011_Q3.htm

Warner, B.D. (2011). MPO Software, Canopus version 10.4.0.4 Bdw Publishing.
http://minorplanetobserver.com



ASTEROID LIGHTCURVE ANALYSIS AT THE OAKLEY SOUTHERN SKY OBSERVATORY: 2011 APRIL–MAY

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Photometric data for 19 asteroids were collected over 21 nights during 2011 April and May at the Oakley Southern Sky Observatory. The asteroids observed included: 518 Halawe, 828 Lindemannia, 999 Zachia, 1305 Pongola, 1359 Prieska, 1858 Lobachevskij, 2008 Konstitutsiya, 2141 Simferopol, 2271 Kiso, 2691 Sersic, 2776 Baikal, 2841 Puijo, 2931 Mayakovsky, 3031 Houston, 3044 Saltykov, 3181 Ahnert, 3248 Farinella, 4362 Carlisle, and 5092 Manara.

Nineteen asteroids were observed from the Oakley Southern Sky Observatory near Coonabarabran, New South Wales, Australia on the nights of 2011 April 22-30, May 1, May 3-7, May 9-10, and May 25-28. From these images, we were able to find lightcurves for eight asteroids. Of those eight, six were previously unrecorded results. Our result for one asteroid was reasonably close to the already published period, but the other was significantly different.

The selection of asteroids was based on their sky position approximately one hour after sunset. Asteroids without previously published lightcurves were given higher priority than asteroids with known periods. Asteroids with uncertain periods were also selected with the hope that we would be able to improve earlier results. We used an RC Optical, 20-inch Ritchey-Chretien optical tube assembly mounted on a Paramount ME. The camera was a Santa Barbara Instrument Group STL-1001E with a clear filter. The image scale was 1.2 arcseconds per pixel at f/8.3. 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 and complete the period analysis of the asteroids' lightcurves.

As far as we are aware, these are the first reported lightcurve and period determinations for asteroids 518 Halawe, 2008 Konstitutsiya, 2141 Simferopol, 2931 Mayakovsky, 3031 Houston, and 3248 Farinella. Our data for 828 Lindemannia, 999 Zachia, 1359 Prieska, 2271 Kiso, 2691 Sersic, 2776 Baikal, 2841 Puijo, 3044 Saltykov, 3181 Ahnert, 4362 Carlisle, and 5092 Manara were too noisy to determine their periods. Supporting lightcurve plots are included. Results from all of the asteroids are listed in the table below. Additional comments have been included as needed.

999 Zachia. We were unable to confirm the period of 22.77 ± 0.03 h found by Warner (2000).

1305 Pongola. Our results are within experimental uncertainty of the period of 8.03 ± 0.10 h found by Binzel (1987).

1858 Lobachevskij. Our current results are not compatible with the period of 7.00 ± 0.01 h reported by Ditteon (2002). However, the data from 2002 were reexamined and found to fit a period of 5.435 ± 0.009 h, which is close to our new value. In addition to the plot of the current data, a plot of the reexamined data is also included.

2841 Puijo. We were unable to confirm the period of 3.545 ± 0.005 h found by Warner (2004).

Number	Name	Dates (mm/dd 2011)	Data Points	Period (h)	Error (h)	Amp (mag)	Err (mag)
518	Halawe	5/1, 5/3 - 5/6, 5/9, 5/10	141	14.310	0.002	0.50	0.03
828	Lindemannia	5/1, 5/3 - 5/7, 5/9, 5/10	139			0.08	0.04
999	Zachia	5/25 - 5/28	65			0.04	0.04
1305	Pongola	5/25 - 5/28	82	8.06	0.02	0.14	0.04
1359	Prieska	5/25 - 5/28	74			0.04	0.04
1858	Lobachevskij	5/25 - 5/28	73	5.413	0.003	0.30	0.03
2008	Konstitutsiya	4/22 - 4/30	178	11.279	0.009	0.06	0.02
2141	Simferopol	4/22 - 4/30	200	14.956	0.003	0.48	0.03
2271	Kiso	5/1, 5/3 - 5/7, 5/9, 5/10	102			0.12	0.04
2691	Sersic	5/25 - 5/28	93			0.20	0.04
2776	Baikal	5/1, 5/3 - 5/6, 5/9, 5/10	141			0.04	0.04
2841	Puijo	5/25 - 5/28	74			0.10	0.04
2931	Mayakovsky	4/22 - 4/23, 4/25 - 4/30	149	37.38	0.05	0.14	0.02
3031	Houston	4/22 - 4/23, 4/25 - 4/30	186	11.218	0.006	0.11	0.04
3044	Saltykov	5/25 - 5/28	77			0.04	0.04
3181	Ahnert	5/1, 5/3 - 5/7, 5/9, 5/10	137			0.08	0.04
3248	Farinella	4/22 - 4/23, 4/25 - 4/30	147	6.676	0.002	0.20	0.04
4362	Carlisle	4/22 - 4/30	186			0.10	0.04
5092	Manara	5/1, 5/3 - 5/7, 5/9, 5/10	101			0.10	0.04

Table I. Observing circumstances.

Acknowledgements

We would like to thank Rose-Hulman's Operation Catapult for making it possible for us to work together on this project (*http://www.rose-hulman.edu/catapult/*).

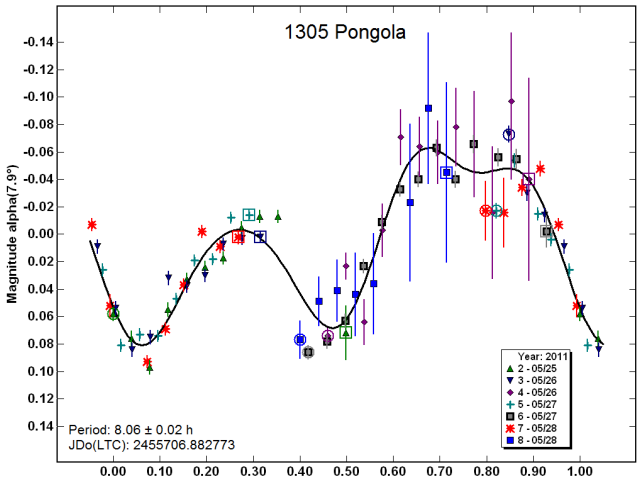
References

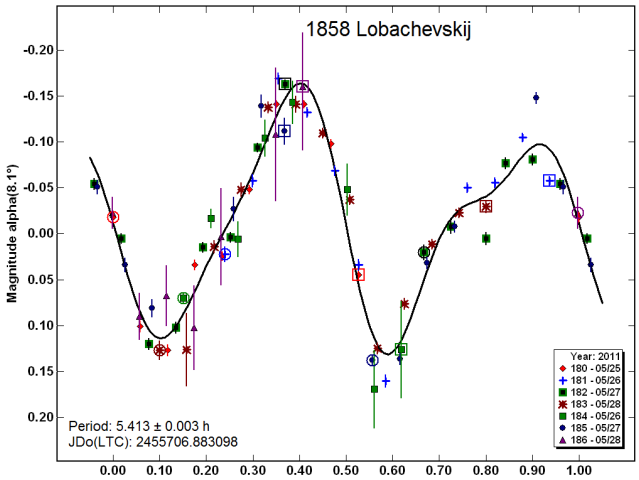
Binzel, R.P. (1987). "A Photoelectric Survey of 130 Asteroids." *Icarus,* **72**, 135-208.

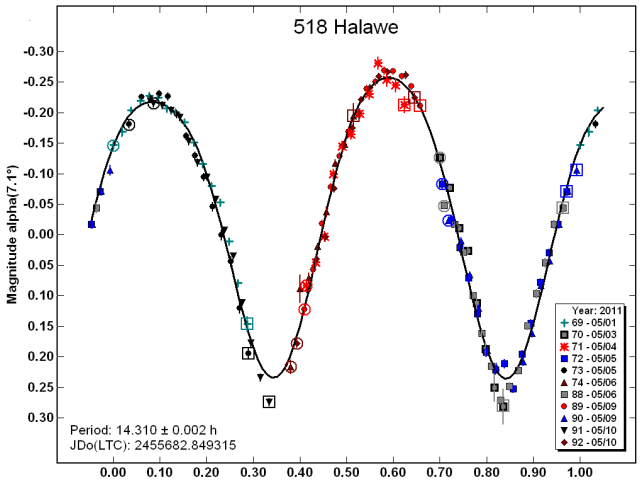
Ditteon, R., Bixby, A.R., Sarros, A.M., and Waters, C.T. (2002). "Rotational Periods and Lightcurves of 1858 Lobachevskij, 2384 Schulhof, and (5515) 1989 EL1," *Minor Planet Bul.* **29**, 85-88.

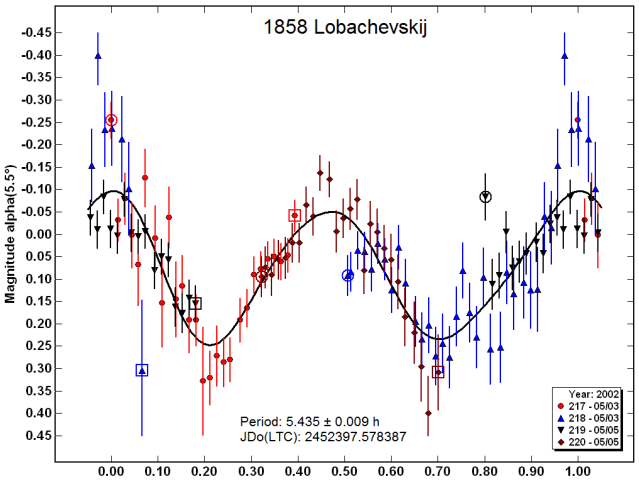
Warner, B.D. (2000). "Asteroid Photometry at the Palmer Divide Observatory." *Minor Planet Bul.* **27**, 4-6.

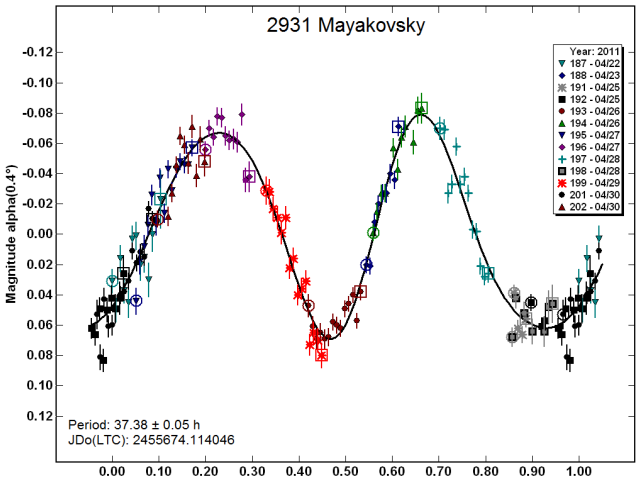
Warner, B.D. (2004). "Lightcurve Analysis for Numbered Asteroids 863, 903, 907, 928, 977, 1386, 2841, and 75747." *Minor Planet Bul.* **31**, 85-88.

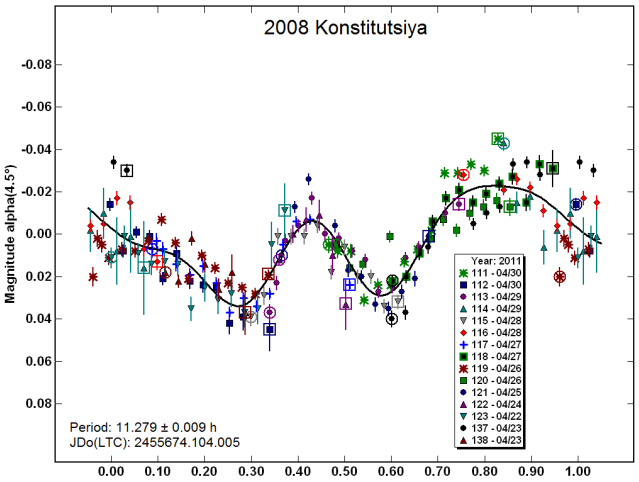







1858 Lobachevskij
Magnitude alpha(5.5°)
Period: 5.435 ± 0.009 h
JDo(LTC): 2452397.578387
Year: 2002
217 - 05/03
218 - 05/03
219 - 05/05
220 - 05/05


2931 Mayakovsky
Magnitude alpha(0.4°)
Period: 37.38 ± 0.05 h
JDo(LTC): 2455674.114046
Year: 2011
187 - 04/22
188 - 04/23
191 - 04/25
192 - 04/25
193 - 04/26
194 - 04/26
195 - 04/27
196 - 04/27
197 - 04/28
198 - 04/28
199 - 04/29
201 - 04/30
202 - 04/30


2008 Konstitutsiya
Magnitude alpha(4.5°)
Period: 11.279 ± 0.009 h
JDo(LTC): 2455674.104.005
Year: 2011
111 - 04/30
112 - 04/30
113 - 04/29
114 - 04/29
115 - 04/28
116 - 04/28
117 - 04/27
118 - 04/27
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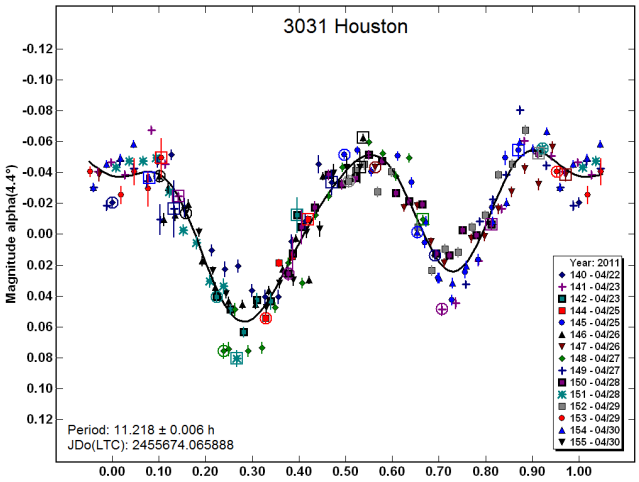
120 - 04/26
121 - 04/25
122 - 04/24
123 - 04/22
137 - 04/23
138 - 04/23


3031 Houston
Magnitude alpha(4.4°)
Period: 11.218 ± 0.006 h
JDo(LTC): 2455674.065888
Year: 2011
140 - 04/22
141 - 04/23
142 - 04/23
144 - 04/25
145 - 04/25
146 - 04/26
147 - 04/26
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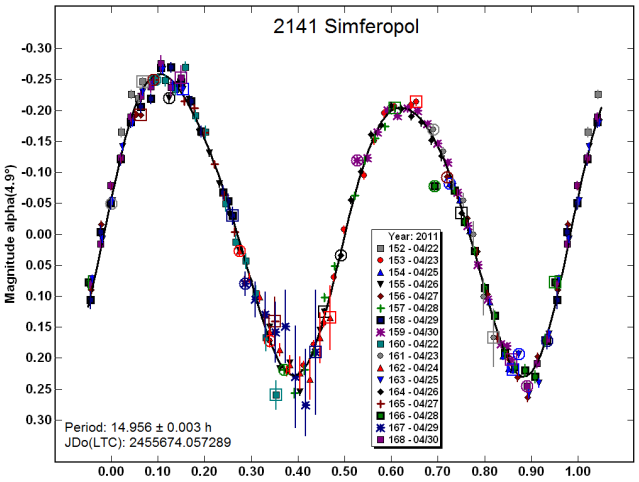
152 - 04/29
153 - 04/29
154 - 04/30
155 - 04/30


2141 Simferopol
Magnitude alpha(4.9°)
Period: 14.956 ± 0.003 h
JDo(LTC): 2455674.057289
Year: 2011
152 - 04/22
153 - 04/23
154 - 04/25
155 - 04/26
156 - 04/27
157 - 04/28
158 - 04/29
159 - 04/30
160 - 04/22
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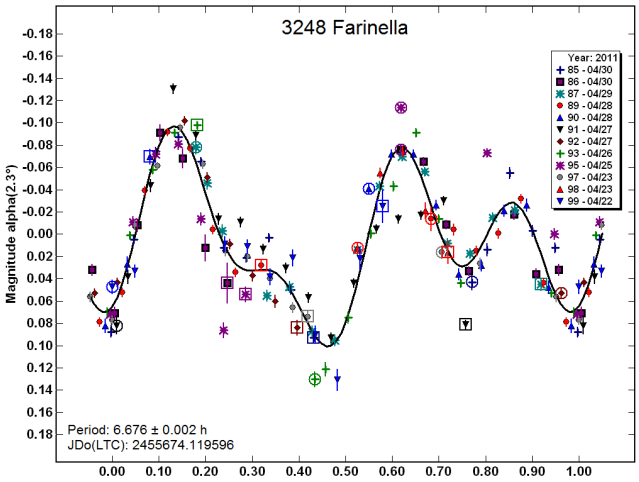
168 - 04/30


3248 Farinella
Magnitude alpha(2.3°)
Period: 6.676 ± 0.002 h
JDo(LTC): 2455674.119596
Year: 2011
85 - 04/30
86 - 04/30
87 - 04/29
89 - 04/28
90 - 04/28
91 - 04/27
92 - 04/27
93 - 04/26
95 - 04/25
97 - 04/23
98 - 04/23
99 - 04/22

THE MINOR PLANET BULLETIN (ISSN 1052-8091) is the quarterly journal of the Minor Planets Section of the Association of Lunar and Planetary Observers (ALPO). Current and most recent issues of the *MPB* are available on line, free of charge from:

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The deadline for the next issue (39-2) is January 15, 2012. The deadline for issue 39-3 is April 15, 2012.