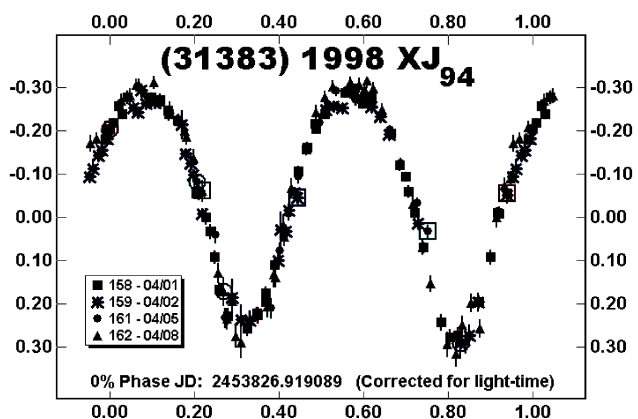
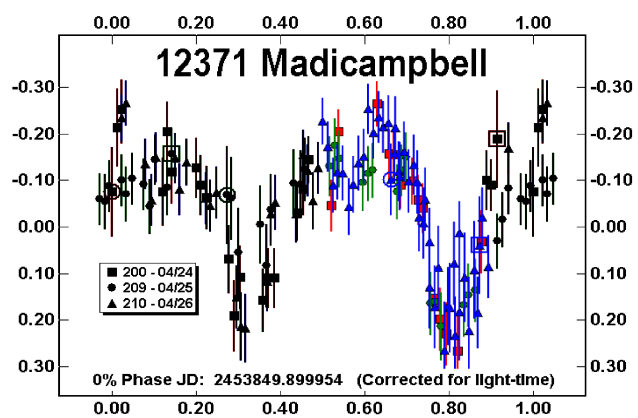
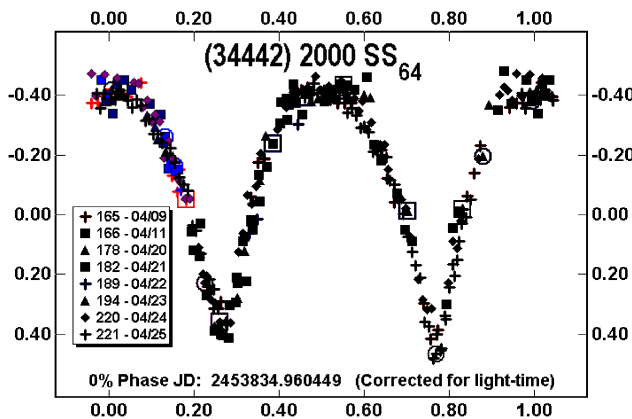
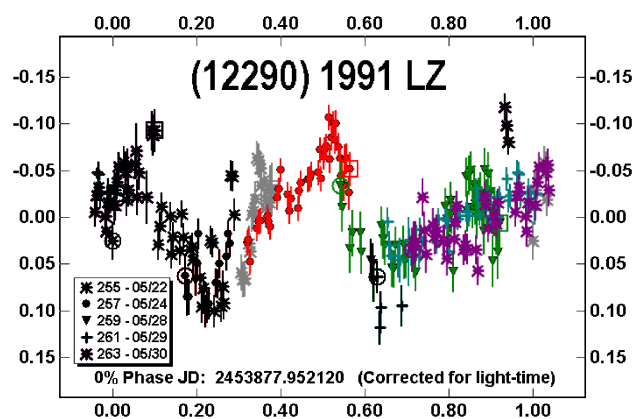
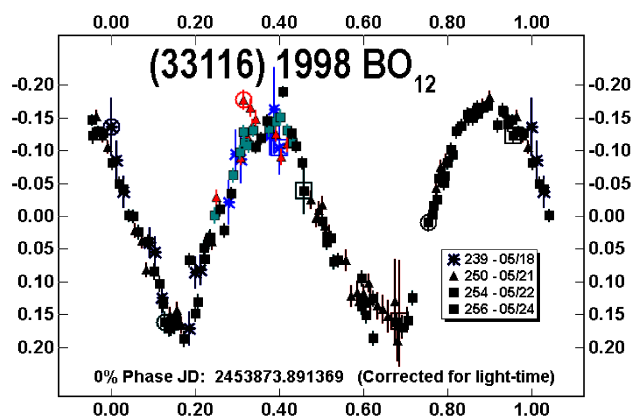
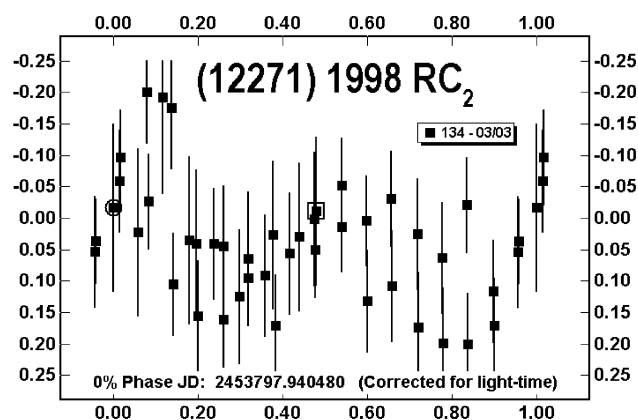




BOOK REVIEW

Richard P. Binzel, Editor

A Practical Guide to Lightcurve Photometry and Analysis (Second Edition) by Brian D. Warner. Springer Science + Business Media, 2006. 298 pages, 110 illustrations. ISBN: 0-387-29365-5. (Price \$39.95, available at www.springer.com)

With its first publication in 2003, Brian D. Warner's *Practical Guide* became the "must have" guidebook for new observers looking to make new contributions with their science capable telescopes and CCD cameras. (See original review in *MPB* 31, page 45.) The second edition is polished and updated with a crisper and more streamlined style. All the basics and more advanced topics in observing and reduction techniques are still here, with their presentation simplified and better than before. Like its predecessor, this second edition is a "must have" for every serious lightcurve observer, whether a beginner or veteran. With the *Guide* in hand, there is a clear path from planning, to observing, to publishing important scientific contributions in the study variable stars, asteroids, extra-solar planets, and more. Springer Science is the new publisher, meaning the second edition should enjoy even wider exposure and wider popularity. There is no better ambassador than Warner and his *Practical Guide* for sparking new interest and encouraging new observers to the field of lightcurve studies.

LIGHTCURVE ANALYSIS OF ASTEROIDS 53, 698, 1016, 1523, 1950, 4608, 5080, 6170, 7760, 8213, 11271, 14257, 15350 AND 17509

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Lightcurve period and amplitude results are reported for fourteen asteroids observed at Carbuncle Hill Observatory and other sites during October 2005-May 2006. The following synodic periods and amplitudes were determined: 53 Kalypso, 18.075 ± 0.005 hr, 0.14mag; 698 Ernestina, 5.0363 ± 0.0005 hr, 0.30mag; 1016 Anitra, 5.928 ± 0.001 hr, 0.30mag; 1523 Piekasamaki, 5.3202 ± 0.0005 hr, 0.50mag; 1950 Wempe, 16.788 ± 0.001 hr, 0.98mag; 4608 Wodehouse, 13.95 ± 0.01 hr, 0.10mag; 5080 Oja, 7.2220 ± 0.0004 hr, 0.37mag; 6170 Levasseur, 2.6529 ± 0.0003 hr, 0.14mag; (7760) 1990 RW3, 25.940 ± 0.005 hr, 0.32mag; (8213) 1995 FE, 2.911 ± 0.001 hr, 0.38mag; (11271) 1988 KB, 6.326 ± 0.001 hr, 0.36mag; (14257) 2000 AR97, 13.584 ± 0.002 hr, 0.67mag; 15350 Naganuma, 2.5835 ± 0.0001 hr, 0.20mag; 17509 Ikumadan, 5.788 ± 0.001 hr, 0.40mag.

Carbuncle Hill Observatory (CHO), MPC code I00, is located about twenty miles west of Providence, RI, in one of the darkest spots in this diminutive state. Of the asteroids reported here, seven were observed exclusively at CHO, while the remaining seven involved collaborations with nine observers from five other observatories. Targets in Table I are noted to show contributors and their affiliation (Table II). Below, is a description of equipment used by collaborating observatories. Observations at CHO were made using two CCD/telescope systems housed in separate buildings. One was a SBIG ST-10XME CCD camera, binned 3x3, coupled to a 0.35m f/6.5 SCT. The other was a SBIG ST-7ME CCD camera, binned 1x1, coupled to a 0.25m f/4

Schmidt-Newtonian. These systems produced image dimensions of 21x14 arcmin (1.9 arcsec per pixel), and 23x16 arcmin (1.8 arcsec per pixel), respectively. All observations were taken through the “clear” filter. Hunters Hill Observatory is equipped as described in Higgins (2005). All observations for this paper were made using a Clear filter with guided exposure times ranging from 180 seconds to 240 seconds. Modra Observatory used a 0.6m, f/5.5 reflector with AP8p CCD camera. Image dimensions were 25 arcmin squared (1.5 arcsec per pixel). All images were taken through the “clear” filter. Ondrejov Observatory used a 0.65m, f/3.6, reflector with an Apogee AP7p CCD at the prime focus, and an R filter designed to closely match the Cousins system. The image dimensions were 18x18 arcminutes. Skalná Pleso Observatory used a 0.65-m f/4.2 Newtonian reflector and a SBIG ST-8XME CCD camera. Frames were binned 2x2 (1.4 arcsec per pixel). The system produced image dimensions of 19x13 arcminutes. Differential photometry was performed through a Johnson-Cousins R filter. Sonoita Observatory used a 0.35m SCT (C-14), at f/11, and imaged with a clear filter, using 5 minute, unguided exposures.

All but three of the targets were selected from a list provided by Pravec (2006) as part of his “Photometric Survey of Asynchronous Binary Asteroids” study. Two asteroids, 53 and 1016, were selected from the “CALL” website’s “List of Potential Lightcurve Targets” (Warner 2006). The remaining object, 698, was selected from a list of control group objects compiled for a study of the Koronis family of asteroids being carried out by Slivan (2006). At CHO, image calibration via dark frames, bias frames and flat field frames was performed using “MaxIm DL”. Lightcurve construction and analysis was accomplished using “Canopus” developed by Brian Warner. Differential photometry was used in all cases, and all measurements were corrected for light travel time.

Results are shown in Table I. Column headings are self-explanatory. Plots of the lightcurves are also shown. Five of the asteroids, 53, 698, 1016, 1523 and 5080, had been previously studied by other observers, as noted below.

53 Kalypso. This asteroid had been found, photoelectrically, to have a rotational period of 17. hours (Harris and Young, 1989). This is reasonably close to the current determination of 18.075hr, particularly considering that the Harris and Young value came from a single night’s data.

698 Ernestina. This asteroid was found, in January, 2002, to have a period of 5.033 ± 0.003 hr and a lightcurve amplitude 0.71mag (Behrend, 2006). The currently determined period of 5.0363 ± 0.0005 hr agrees well with this. However, the Behrend amplitude value is more than twice the 0.30mag value found here. The reason for this is unknown, although it’s likely caused by changes in the viewing geometry.

1016 Anitra. Menke (2005) determined the period and amplitude of this to be 5.9300 ± 0.0003 hr, and 0.30mag respectively from data collected in 2002 and 2003. These agree very closely with parameters currently presented.

1523 Piekasamaki. Lagerkvist (1979) found a period of 5.328hr, and an amplitude of ~0.5mag. These values were derived from photographic plates taken on two successive nights. The lightcurve parameters found in the current paper agree closely with those.