

COLLABORATIVE PHOTOMETRY OF 489 COMACINA MARCH THROUGH MAY 2001

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Asteroid 489 Comacina was observed from Santana Observatory (MPC Code 646), Flarestar Observatory (MPC Code 171), and Thornton Observatory (MPC Code 713). The rotational period was determined to be 9.02 ± 0.01 hours with an amplitude of 0.4 ± 0.05 magnitude.

Santana Observatory is located in Rancho Cucamonga, California at an elevation of 400 meters and is operated by Robert D. Stephens. Flarestar Observatory is located in San Gwann, Malta at an elevation of 100 meters and is operated by Stephen M. Brincat. Thornton Observatory is located in Thornton, Colorado and an elevation of 1,687 meters. Robert A. Koff operates it. Details of the equipment used can be found in Stephens (2000), Koff and Brincat (2000).

Asteroid 489 Comacina was independently selected by the amateur observatories from the "CALL" web site "List of Potential Lightcurve Targets" (Warner 2000) to refine its rotational period. The rotational period had previously been determined to be 9 hours by S. J. Weidenschilling. After observations began, the observers learned of each other's efforts and decided to combine observations into one study. Comacina is a main-belt asteroid discovered September 2, 1902 by L. Canera in Heidelberg. It is named for a little island in Lake Como in Northern Italy.

Aperture photometry was done using the software program "Canopus" developed by Brian Warner and including the Fourier analysis routine developed by Alan Harris (Harris *et al.*, 1989). This program allows combining data from different observers and adjusting the zero points to compensate for different equipment and comparison stars. Eventually, 412 observations over 9 sessions spanning 46 days were used to derive the rotational period. All observations were unfiltered. Dark frames and flat fields were used to calibrate the images.

Acknowledgements

Many thanks to Brian Warner for his continuing work and enhancements to the software program "Canopus" which makes it possible for amateur astronomers to analyze and collaborate on

asteroid rotational period projects and for maintaining the CALL Web site which helps coordinate collaborative projects between amateur astronomers.

References

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Table 1: Summary of Observations

Observer	Sessions/ Observations	Dates
S. M. Brincat	2/31	March 24 and April 25, 2001
R. A. Koff	1/103	April 18, 2001
R. D. Stephens	6/278	April 27, 28, 30 and May 1, 2, 9, 2001

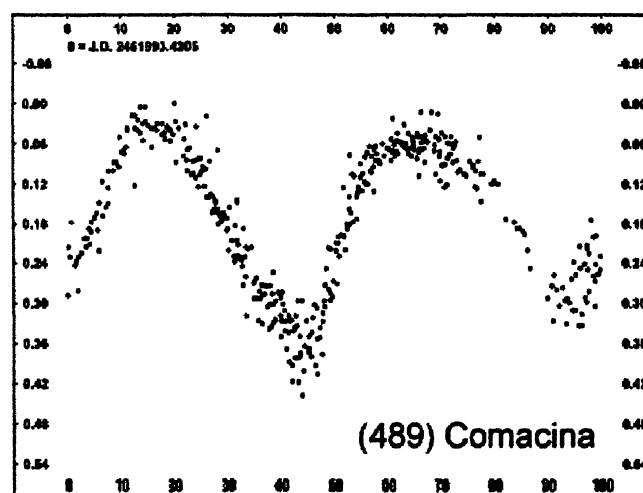


Figure 1: Lightcurve of 489 Comacina based upon a derived period of 9.02 ± 0.01 hours.

SUGGESTED REVISED H VALUES OF SELECTED ASTEROIDS – REPORT NUMBER 2

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We report 23 new minor planets for which visual and CCD measures indicate an average difference of magnitude from the current predicted values. Typical discrepancies are 0.3 to 0.5 mag., but are as high as 2.2 mag. We suggest a revision of their catalogued H magnitudes to permit better predicted magnitudes in the future ephemerides of these objects, notably by the Minor Planet Center.

Since its founding in 1997, the "Magnitude Alert Project" begun by Lawrence Garrett has continuously grown and now includes 55 members of 10 countries. The MAP is managed jointly by the ALPO Minor Planet Section (<http://www.lpl.arizona.edu/~rhill/alpo/minplan.html>) and by the French AUDE Association (Association des utilisateurs de D tecteurs Electroniques – <http://www.cdaude.com>)

As of March 10, 2001 the MAP Database contained 2834 measures of magnitudes for a total of 275 asteroids suspected to have a magnitude discrepancy greater than 0.3 magnitude. Since 1997, new star catalogs with better accuracy than the GSC Catalog have been published, such as the USNO-A and SA catalogs and recently the Tycho 2 catalog, with its 2.5 million stars (magnitude accuracy about 0.05 magnitude). This new catalog and some modifications of our methods now permit MAP observers to obtain fairly good accuracy.

Various analyses of our data show an average difference of only 0.1 to 0.2 magnitude between visual, unfiltered CCD and now filtered CCD measures in V band. From these, we calculate our average H magnitude discrepancies without all GSC measures and R measures which are too frequently different from the other obtained magnitudes (often 0.4 magnitude and more).

This second report of MAP Results only include objects for which at least 3 observers found nearly equal magnitude discrepancies for the same asteroid. Some of these asteroids also are already observed during 2 or 3 oppositions, with a continual difference between observed and predicted ephemeris magnitudes. The impact of an eventual variability of the asteroid is statistically eliminated by many measures made at different nights.

Herein we report results for 23 asteroids for which repeated and accurate measurements indicate a consistent offset, implying the necessity for the H magnitude to be revised. Our reported offset values are based on the average magnitude discrepancy of all the discrepancies calculated night by night for each asteroid. Table I

summarizes these results. Details on the observations producing these results are given in Table II.

Table I. Summary of Results

Minor Planet	MPC H Value	Revised H Value	Change (mag.)	Meas- ures	Obser- vers	Opposi- tions
457 Alleghania	11.0	10.7	-0.3	22	6	1
921 Jovita	10.6	9.3	-1.3	9	4	2
942 Romilda	10.3	10.8	-0.5	12	3	1
1002 Olbersia	11.1	10.5	-0.6	14	4	2
1067 Lunaria	10.99	10.7	-0.3	11	3	1
1166 Sakuntala	8.8	9.9	1.1	13	4	3
1239 Queteleta	12.5	11.8	-0.7	13	4	3
1296 Andree	10.9	11.3	0.4	5	3	3
1330 Spiridonia	10.17	9.8	-0.4	8	3	1
1388 Aphrodite	8.89	10.3	1.4	9	4	1
1444 Pannonia	9.1	11.3	2.2	5	4	2
4063 Euforbo	8.6	8.9	0.3	7	3	2
4339 Almamater	13.6	14.0	0.4	17	7	1
4483 Petofi	11.9	12.9	1.0	7	4	2
4497 Taguchi	11.5	12.3	0.8	11	4	1
4766 Malin	12.2	12.7	0.5	14	4	1
5092 Manara	11.0	11.5	0.5	8	3	1
5153 1940 GO	11.2	11.7	0.5	10	3	1
5231 Verne	11.1	11.8	0.7	12	4	2
5738 Billpickering	14.1	15.0	0.9	7	4	1
5785 Fulton	11.8	12.7	0.9	9	4	1
7776 Takeishi	12.8	13.3	0.5	7	4	1
9262 Bordovitsyna	13.0	13.7	0.7	14	5	1

Average (absolute value) change: 0.73 magnitude
Average of 7 negative value changes = -0.59 mag
Average of 16 positive value changes = +0.80 mag

Table II: Record of Observations

Column Legends:

M.T. = Magnitude type:

AMV= Visual magnitude with asteroid comparison

TMV= Filtered CCD magnitude with Tycho 2 comparison

UMV= Visual magnitude with USNO-SA comparison

UUV= Unfiltered CCD magnitude with USNO-SA comparison

UMV= CCD magnitude with V filter and USNO-SA comparison

O.M. = Observed V magnitude

P.M. = Predicted V magnitude

M.D. = Magnitude differences:

F/x.x = x.x magnitude fainter than predicted

B/x.x = x.x magnitude brighter than predicted

O.N. = Observer Name

O.D.	M.T.	O.T.	P.M.	M.D.	O.N.
457 Alleghenia					
98-09-17.10689	UMV	14.8	15.0	B/0.2	J-M. LLAPASSET
98-09-17.13150	UMV	14.6	15.0	B/0.4	J-M. LLAPASSET
98-09-17.94236	UMV	14.9	15.0	B/0.1	J-M. LLAPASSET
98-09-17.95166	UMV	14.8	15.0	B/0.2	J-M. LLAPASSET
98-09-24.06839	UMV	14.8	14.9	B/0.1	Robin CHASSAGNE
98-09-24.09892	UMV	14.8	14.9	B/0.1	Robin CHASSAGNE
98-09-24.13380	UMV	14.9	14.9	0.0	Robin CHASSAGNE
98-10-19.87311	UMV	14.6	14.4	F/0.2	Pierre ANTONINI
98-10-19.89571	UMV	14.5	14.4	F/0.1	Pierre ANTONINI
98-10-19.91950	UMV	14.5	14.4	F/0.1	Pierre ANTONINI
98-10-21.86805	UMV	14.0	14.4	B/0.4	Gerard FAURE
98-10-21.96250	UMV	13.9	14.4	B/0.5	Gerard FAURE
98-11-04.00790	UMV	14.2	14.5	B/0.3	Robin CHASSAGNE
98-11-04.03561	UMV	14.4	14.5	B/0.1	Robin CHASSAGNE
98-11-15.83716	UMV	14.4	14.8	B/0.4	S.MORATA/D.MORATA
98-11-15.84213	UMV	14.3	14.8	B/0.5	S.MORATA/D.MORATA
98-11-15.84811	UMV	14.3	14.8	B/0.5	S.MORATA/D.MORATA
98-11-21.76691	UMV	14.5	14.9	B/0.4	Bernard CHRISTOPHE
98-11-21.83060	UMV	14.4	14.9	B/0.5	Bernard CHRISTOPHE
98-11-23.89476	UMV	14.4	15.0	B/0.6	S.MORATA/D.MORATA
98-11-23.91899	UMV	14.6	15.0	B/0.4	S.MORATA/D.MORATA
98-11-23.92234	UMV	14.4	15.0	B/0.5	S.MORATA/D.MORATA

H= 11.19 (EMP 1988); H= 11.0 (EMP 1992 to 2001)
Actual MPC H value 11.0
Revised suggested H value is 10.7