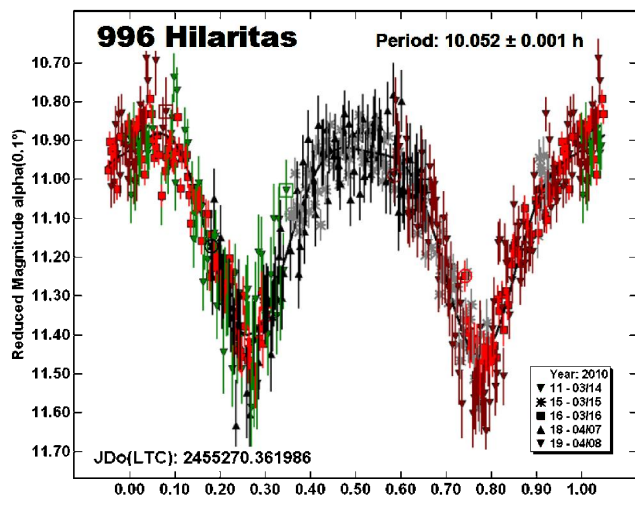


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ROTATION PERIOD DETERMINATIONS FOR 266 ALINE AND 850 ALTONA

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(Received: 15 September)

Synodic rotation periods and amplitudes are found for:
266 Aline 13.011 ± 0.001 hours or 26.023 ± 0.002 hours,
 0.07 ± 0.01 mag; 850 Altona 11.197 ± 0.002 hours with
a complex lightcurve, 0.12 ± 0.02 mag.

Here we present results of collaborative photometric observations from our two observatories separated by about 120 degrees longitude – enabling the sampling of different parts of asteroid lightcurves within an interval of one to two days. Pilcher at Organ Mesa Observatory used a 0.35 m f/10 Meade LX200 GPS S-C, SBIG STL-1001E CCD, unguided, clear filter, instrumental magnitudes only. Benishek at Belgrade Observatory used a 0.4 m SCT operating at f/10, SBIG ST-10 XME CCD, unfiltered and unguided, instrumental magnitudes only. Photometric measurement, lightcurve analysis, and data sharing were enabled by *MPO Canopus* software. The large number of data points obtained for both objects have been binned in sets of three with time difference not exceeding five minutes to draw the lightcurves.

266 Aline. Denchev et al. (1998) obtained a sparse lightcurve from which they interpreted a 12.3 hour period. New observations on 20 nights 2010 July 18 – Aug. 25 indicate an amplitude of only 0.07 ± 0.01 magnitudes. Lightcurves phased to 13.011 ± 0.001 hours with one maximum and minimum per rotational cycle, or to 26.023 ± 0.002 hours with two unusually symmetric maxima and minima per cycle, provide comparably good fits. A monomodal

lightcurve of low amplitude is commonly observed for asteroids at near polar aspect. We consider this interpretation and a 13.011 hour period more likely than a shape highly symmetric over a 180 degree rotation required to produce the bimodal lightcurve. But future observations at a very different aspect will be required to provide a completely secure period determination. Lightcurves phased to both 13.011 hours and 26.023 hours are published here to assist the reader in making an independent evaluation.

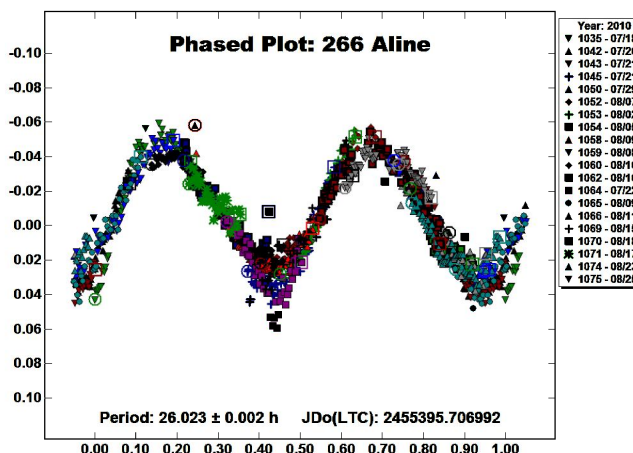
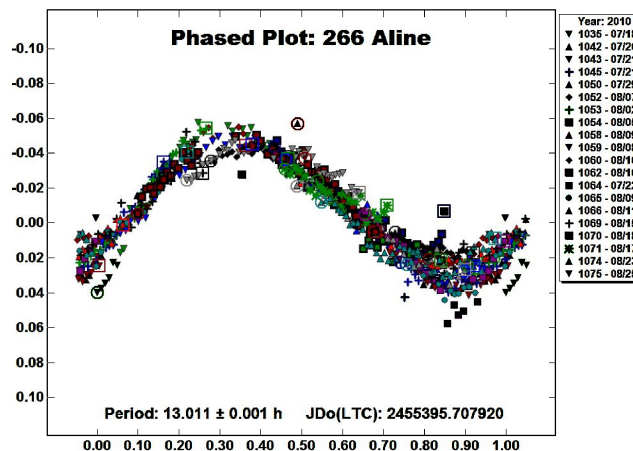
850 Altona. Behrend (2010) suggested a period of 4 hours based on a single lightcurve of slightly more than two hours. New observations on 10 nights 2010 June 7 – July 9 show a period of 11.197 ± 0.002 hours, amplitude 0.12 ± 0.02 mag, and an irregular lightcurve.

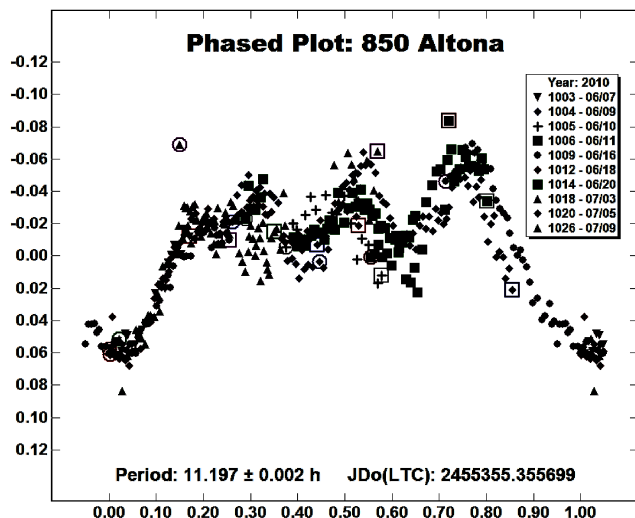
Acknowledgment

The authors thank Dr. Petr Pravec for help in the data analysis and interpretation for 266 Aline.

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MINOR PLANETS AT UNUSUALLY FAVORABLE ELONGATIONS IN 2011

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(Received: 20 September)

A list is presented of minor planets which are much brighter than usual at their 2011 apparitions.

The minor planets in the lists that follow will be much brighter at their 2011 apparitions than at their average distances at maximum elongation. Many years may pass before these minor planets will be again as bright as in 2011. Observers are encouraged to give special attention to those that lie near the limit of their equipment.

These lists have been prepared by an examination of the maximum elongation circumstances of minor planets computed by the author for all years through 2060 with a full perturbation program written by Dr. John Reed, and to whom he expresses his thanks. Elements are from EMP 1992, except that for all minor planets for which new or improved elements have been published subsequently in the Minor Planet Circulars or in electronic form, the newer elements have been used. Planetary positions are from the JPL DE-200 ephemeris, courtesy of Dr. E. Myles Standish.

Any minor planet whose brightest magnitudes near the time of maximum elongation vary by at least 2.0 in this interval and in 2011 will be within 0.3 of the brightest occurring, or vary by at least 3.0 and in 2011 will be within 0.5 of the brightest occurring; and which are visual magnitude 14.5 or brighter, are included. For minor planets brighter than visual magnitude 13.5, which are within the range of a large number of observers, these standards have been relaxed somewhat to include a larger number of objects. Magnitudes have been computed from the updated magnitude parameters published in MPC28104-28116, on 1996 Nov. 25, or more recently in the Minor Planet Circulars.

Oppositions may be in right ascension or in celestial longitude. Here we use still a third representation, maximum elongation from

the Sun, instead of opposition. Though unconventional, it has the advantage that many close approaches do not involve actual opposition to the Sun near the time of minimum distance and greatest brightness and are missed by an opposition-based program. Other data are also provided according to the following tabular listings: Minor planet number, date of maximum elongation from the Sun in format yyyy/mm/dd, maximum elongation in degrees, right ascension on date of maximum elongation, declination on date of maximum elongation, both in J2000 coordinates, date of brightest magnitude in format yyyy/mm/dd, brightest magnitude, date of minimum distance in format yyyy/mm/dd, and minimum distance in AU.

Minor planet 1036 Ganymed is the brightest Mars crosser and on 2011 Oct. 29 will be brighter (magnitude 8.3) than at any other time in the interval 1950-2060. Three other numbered minor planets approaching more closely than 0.4 AU will be magnitude 14.5 or brighter in the year 2011, with the dates of brightest magnitude and brightest magnitudes being: 3103 Eger July 31, 13.7; 3288 Seleucus March 23, 14.5; 3554 Amun March 18, 13.7.

Users should note that when the maximum elongation is about 177° or greater, the brightest magnitude is sharply peaked due to enhanced brightening near zero phase angle. Even as near as 10 days before or after minimum magnitude the magnitude is generally about 0.4 greater. This effect takes place in greater time interval for smaller maximum elongations. There is some interest in very small minimum phase angles. For maximum elongations E near 180° at Earth distance Δ , an approximate formula for the minimum phase angle ϕ is $\phi = (180^\circ - E) / (\Delta + 1)$.

Table I. Numerical Sequence of Favorable Elongations

Planet	Max Elon	D Max E	RA	Dec	Br Mag D	Br Mag	Min Dist	D Min Dist
10	2011/05/13	175.3°	15h13m	-22°	2011/05/13	9.1	2011/05/14	1.766
15	2011/11/29	164.5°	4h 3m	+36°	2011/11/28	7.9	2011/11/24	1.239
21	2011/07/04	177.9°	18h52m	-25°	2011/07/04	9.4	2011/07/10	1.123
23	2011/01/21	163.9°	8h34m	+35°	2011/01/21	9.1	2011/01/23	1.048
28	2011/01/14	171.7°	7h35m	+13°	2011/01/14	10.0	2011/01/16	1.392
30	2011/11/13	176.1°	3h 7m	+21°	2011/11/13	9.5	2011/11/10	1.084
31	2011/11/02	172.7°	2h23m	+21°	2011/11/03	10.2	2011/11/07	1.639
43	2011/06/27	178.6°	18h24m	-21°	2011/06/27	9.0	2011/06/28	0.819
44	2011/02/10	178.8°	9h36m	+15°	2011/02/10	8.9	2011/02/08	1.106
68	2011/11/11	178.9°	3h 1m	+18°	2011/11/11	9.7	2011/11/04	1.451
90	2011/08/26	176.4°	22h25m	-13°	2011/08/26	11.7	2011/08/24	1.671
109	2011/12/23	164.3°	6h 2m	+39°	2011/12/21	10.8	2011/12/15	0.986
115	2011/11/22	158.1°	3h22m	+41°	2011/11/21	9.6	2011/11/19	0.977
139	2011/03/11	176.1°	11h30m	+7°	2011/03/11	10.4	2011/03/12	1.304
192	2011/09/02	178.9°	22h44m	-9°	2011/09/02	8.4	2011/09/08	0.862
197	2011/07/26	169.6°	20h34m	-29°	2011/07/26	12.0	2011/07/28	1.323
200	2011/11/04	168.5°	2h20m	+26°	2011/11/04	11.3	2011/11/04	1.392
202	2011/02/14	177.8°	9h55m	+14°	2011/02/14	11.0	2011/02/15	1.778
220	2011/08/19	163.5°	21h33m	+2°	2011/08/20	12.2	2011/08/21	0.754
281	2011/11/04	178.1°	2h33m	+17°	2011/11/04	13.3	2011/11/03	0.908
312	2011/07/05	164.3°	19h 4m	-38°	2011/07/05	11.9	2011/07/03	1.352
382	2011/06/20	171.6°	17h54m	-31°	2011/06/20	12.3	2011/06/16	1.672
415	2011/11/07	163.9°	3h 7m	+0°	2011/11/09	11.3	2011/11/11	1.002
444	2011/08/26	167.4°	21h57m	+0°	2011/08/26	10.6	2011/08/27	1.311
449	2011/02/17	174.9°	10h 9m	+16°	2011/02/17	11.6	2011/02/16	1.136
454	2011/05/11	176.5°	15h 9m	-21°	2011/05/11	11.9	2011/05/10	1.341
465	2011/06/20	175.9°	17h55m	-27°	2011/06/20	12.9	2011/06/15	1.547
503	2011/02/08	171.7°	9h37m	+22°	2011/02/07	11.9	2011/02/05	1.305
531	2011/04/17	166.8°	14h10m	+0°	2011/04/19	14.5	2011/04/23	1.349
538	2011/08/01	177.8°	20h41m	-15°	2011/08/01	13.0	2011/08/06	1.832
543	2011/09/18	168.4°	23h23m	+8°	2011/09/19	13.1	2011/09/21	1.720
545	2011/07/14	167.7°	19h41m	-33°	2011/07/15	12.5	2011/07/15	1.664
548	2011/12/04	175.1°	4h44m	+17°	2011/12/04	12.6	2011/12/03	0.876
569	2011/02/04	179.4°	9h11m	+15°	2011/02/04	12.6	2011/01/30	1.321
575	2011/08/26	171.3°	22h26m	-19°	2011/08/25	13.5	2011/08/24	1.230
593	2011/12/28	168.2°	6h39m	+34°	2011/12/28	11.7	2011/12/29	1.152
622	2011/10/27	162.3°	2h29m	-3°	2011/10/27	11.8	2011/10/26	0.858
638	2011/05/12	169.1°	15h25m	-7°	2011/05/12	12.6	2011/05/13	1.290
650	2011/10/28	179.7°	2h 7m	+13°	2011/10/28	14.5	2011/10/27	1.011
668	2011/08/26	168.6°	22h 2m	+0°	2011/08/26	14.2	2011/08/25	1.150
678	2011/12/23	178.0°	6h 5m	+25°	2011/12/23	11.1	2011/12/16	1.154
679	2011/07/28	167.8°	20h53m	-29°	2011/07/31	11.4	2011/08/09	1.102
688	2011/09/16	179.3°	23h36m	-3°	2011/09/16	13.3	2011/09/12	1.400
696	2011/11/21	160.6°	3h21m	+38°	2011/11/20	12.2	2011/11/18	1.428
704	2011/07/18	172.9°	19h44m	-14°	2011/07/18	10.0	2011/07/23	1.900