CCD PHOTOMETRY AND LIGHTCURVE ANALYSIS OF MAIN BELT ASTEROIDS 1077 CAMPANULA AND 1151 ITHAKA FROM OBSERVATORI CARMELITA

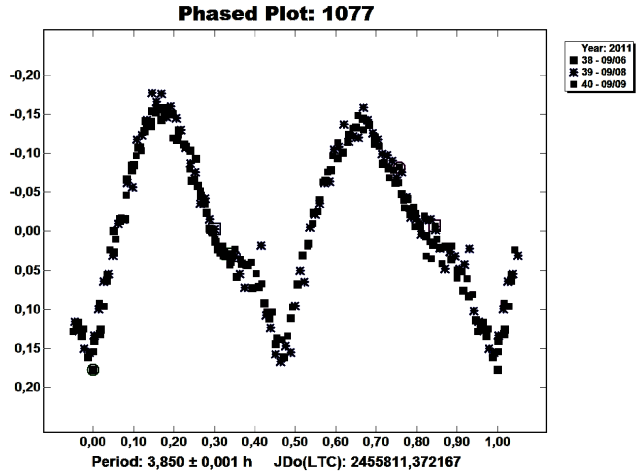
Josep Maria Aymamí
Observatori Carmelita (MPC B20)
Av. P. Lluïs Companys, 45, 08391 Tiana, SPAIN
josepmaria.aymami@gmail.com

(Received: 9 October)

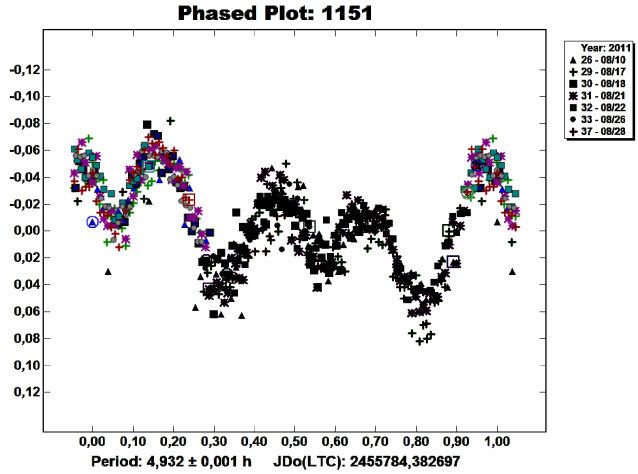
Observations carried out in 2011 August and September allowed us to determine the synodic periods of 1077 Campanula and 1151 Ithaka. For 1077 Campanula, a period of 3.850 ± 0.001 h and amplitude of 0.36 mag were found. 1151 Ithaka exhibited an irregularly-shaped lightcurve with a period of 4.932 ± 0.001 h and amplitude of 0.15 mag.

The *Carmelita Observatory* (MPC B20) is situated in Tiana, in the southernmost part of the *Serra de Marina*, a moderately light-polluted suburban park 15 km north of Barcelona, Spain. The Observatory is equipped with an Astro-Physics AP900 German Equatorial Mount on top of a fixed pier, a 25-cm Schmidt-Cassegrain telescope with a focal reducer, and a dual-chip SBIG ST8-XME CCD camera with filter wheel. This gives a 34.0' x 22.7' field of view and an effective resolution of 1.33 arc sec/pixel.

1077 Campanula (1926 TK) is a main-belt asteroid (e = 0.1982780, a = 2.3920617 AU) that was discovered by Karl Wilhelm Reinmuth at Heidelberg Observatory (024) in 1926. Before our work, no lightcurve parameters had been reported in the lightcurve database (Warner *et al.* 2011). From 2011 September 6–9, we collected 266 images of 150-s exposure through a C (clear) filter using *Maxim DL* acquisition software. The CCD camera was operated at –6º C. All images were calibrated with master bias, dark, and flat frames. According to *Astrometrica* (Raab 2011), the asteroid brightness as measured against the CMC-14 catalogue in R band was mag 13.8-14.9. We performed real-time differential photometry of the asteroid with *Fotodif* as the images were being downloaded. Using *MPO Canopus*, we derived a lightcurve showing a period of 3.850 h ± 0.001 h and amplitude of 0.36 ± 0.02 mag.



1151 Ithaka (1929 RK, e = 0.2771086, a = 2.4054447 AU) was also discovered at Heidelberg by Reinmuth (1929). It was chosen for observations from the "Lightcurve Photometry Opportunities" list in the *Minor Planet Bulletin* (Warner *et al.*, 2011). A total of 677 calibrated images were obtained during ten nights from 2011 August 10-28 using *Maxim DL*. Exposures were 150 s using a C (clear) filter with the CCD working at –6º C. Three sessions were discarded due to high-altitude clouds. The asteroid brightness was measured against the CMC-14 catalogue in R band at mag 14.0-14.3. With *MPO Canopus* we produced a rather unusual lightcurve of four minimum/maximum pairs with a synodic period of 4.932 ± 0.001 h and maximum amplitude of 0.15 ± 0.01 mag.



Acknowledgements

Special thanks are due to Ramón Bosque, a member of the Grup d'Astronomia de Tiana (G.A.T.) for revising this paper, and to Julio Castellano for his contribution with free software tools for the astronomical community. The Grup d'Astronomia de Tiana (G.A.T.) granted access to *MPO Canopus* so that we could derive the lightcurves appearing in this paper.

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ASTEROID-DEEPSKY APPULSES IN 2012

Brian D. Warner
Palmer Divide Observatory
17995 Bakers Farm Rd.
Colorado Springs, CO 80908
brian@MinorPlanetObserver.com

(Received: 15 October)

The following list is a very small subset of the results of a search for asteroid-deepsky appulses for 2012, presenting only the highlights for the year based on close approaches of brighter asteroids to brighter DSOs. The complete set of predictions is available at

http://www.minorplanet.info/ObsGuides/Appulses/DSOAppulses.htm

For any event not covered, the Minor Planet Center's web site at *http://scully.harvard.edu/~cgi/CheckMP* allows you to enter the location of a suspected asteroid or supernova and check if there are any known targets in the area.

The table gives the following data, with potentially attractive astrophotography appulses indicated in **bold**:

Date/Time	Universal Date (MM DD) and Time of closest approach
#/Asteroid	The number and name of the asteroid
RA/Dec	The J2000 position of the asteroid
AM	The approximate visual magnitude of the asteroid
Sep/PA	The separation in arcseconds and the position angle from the DSO to the asteroid
DSO	The DSO name or catalog designation
DM	The approximate total magnitude of the DSO
DT	The type of DSO: OC = Open Cluster; GC = Globular Cluster; G = Galaxy
SE/ME	The elongation in degrees from the sun and moon respectively
MP	The phase of the moon: 0 = New, 1.0 = Full. Positive = waxing; Negative = waning

Date	UT	#	Name	RA	Dec	AM	Sep	PA	DSO	DM	DT	SE	ME	MP
01 19	07:13	31	Euphrosyne	01:50.27	+27 11.4	11.6	258	148	Cr 21	8.2	OC	97	146	-0.19
01 30	08:14	387	Aquitania	10:54.30	+17 14.8	12.2	216	233	NGC 3455	12.0	G	150	126	0.42
02 21	00:14	144	Vibilia	11:00.24	+13 52.1	12.4	125	205	NGC 3489	10.3	G	168	157	-0.01
02 26	14:01	387	Aquitania	10:34.94	+21 41.5	11.8	191	38	NGC 3287	12.3	G	167	121	0.20
02 26	21:39	423	Diotima	15:00.79	-07 29.6	12.5	99	184	NGC 5812	11.2	G	112	163	0.22
03 16	11:40	416	Vaticana	10:51.28	+27 57.3	12.0	105	187	NGC 3414	11.0	G	151	127	-0.34
03 19	06:30	432	Pythia	12:36.13	+19 18.3	11.8	116	209	NGC 4561	12.5	G	159	133	-0.11
03 21	19:09	97	Klotho	12:20.59	+05 27.7	11.4	279	37	NGC 4281	11.3	G	173	164	-0.01
03 22	09:25	97	Klotho	12:20.10	+05 33.1	11.4	305	36	NGC 4270	12.2	G	173	168	0.00
03 23	18:02	5	Astraea	11:28.46	+09 25.4	9.4	100	33	NGC 3692	12.1	G	165	151	0.01
04 16	19:00	127	Johanna	15:17.39	-20 58.6	12.4	144	357	NGC 5897	8.6	GC	154	105	-0.18
04 18	01:08	374	Burgundia	12:51.59	-10 31.8	12.2	292	219	NGC 4742	11.3	G	167	157	-0.10
04 21	03:22	374	Burgundia	12:49.48	-10 05.6	12.3	111	41	AN 3	11.6	G	164	166	0.00
04 25	**07:15**	**326**	**Tamara**	**12:58.10**	**+01 34.9**	**11.9**	**9**	**158**	**NGC 4845**	**11.2**	**G**	**156**	**114**	**0.14**
05 23	00:13	5	Astraea	11:30.24	+09 20.9	10.9	265	27	NGC 3705	11.1	G	107	85	0.04
06 14	17:09	37	Fides	12:39.97	-05 52.3	12.5	282	205	NGC 4597	12.1	G	108	161	-0.20
06 17	**03:23**	**596**	**Scheila**	**16:17.05**	**-23 00.6**	**12.2**	**102**	**158**	**M80**	**7.2**	**GC**	**160**	**173**	**-0.05**
06 18	13:59	42	Isis	12:49.17	+03 23.7	12.2	30	232	NGC 4701	12.4	G	102	114	-0.01
06 19	**10:30**	**216**	**Kleopatra**	**18:10.72**	**-07 10.4**	**11.7**	**97**	**11**	**IC 1276**	**10.3**	**GC**	**163**	**164**	**0.00**
07 11	17:14	804	Hispania	20:48.64	-38 03.7	11.4	223	173	NGC 6958	11.4	G	156	84	-0.43
07 17	05:03	89	Julia	13:41.39	-29 51.1	11.7	306	343	NGC 5264	12.0	G	99	120	-0.04
07 18	22:37	196	Philomela	18:12.84	-28 23.7	11.1	224	172	PK 3-4.9	12.0	PN	156	157	0.00
07 20	16:23	196	Philomela	18:11.64	-28 25.8	11.2	228	173	PK 3-4.7	11.0	PN	154	135	0.03
07 24	21:30	11	Parthenope	23:18.77	-07 35.0	9.9	120	271	NGC 7600	11.9	G	135	154	0.34
08 12	**11:18**	**138**	**Tolosa**	**17:02.60**	**-26 16.7**	**12.3**	**44**	**184**	**M19**	**7.2**	**GC**	**117**	**175**	**-0.25**
09 13	07:27	18	Melpomene	17:56.19	-16 33.7	10.4	242	204	PK 11+4.1	12.0	PN	98	134	-0.09
09 21	22:36	287	Nephthys	01:04.89	-06 09.4	11.4	287	319	New 1	11.8	G	162	115	0.40
12 09	**19:39**	**488**	**Kreusa**	**08:27.09**	**+25 58.0**	**12.4**	**9**	**254**	**NGC 2592**	**12.3**	**G**	**135**	**86**	**-0.17**
12 12	15:30	704	Interamnia	02:37.00	+33 18.1	10.3	160	109	NGC 987	12.4	G	143	151	-0.01
12 18	02:18	9	Metis	07:07.07	+27 17.1	8.8	259	204	NGC 2331	8.5	OC	161	133	0.29