

BAA Occultations – Future

ESOP35, Guildford, UK, 2016 Aug 20th
Presented by BAA Members.

Suggestions for the future

- Continue with “occultation outreach” to improve geographical coverage.
- Encourage use of new CCD cameras and software for occultation timing.
 - Recording to HD or memory cards are becoming common place.
- Increase awareness of planning tools , discussion groups and alert networks.
 - UKoccultations Yahoo! Group IOTAoccultations Yahoo! Group
 - PLANOCULT list server LUNOCULT
 - Occult Watcher Ocult- 4 tools OccuRec Fire Capture
 - BAA Electronic Circular Oliver Klös call-4-obs
 - IOTA-ES web site Steve Preston’s occultations.com TA email alerts
- With the Gaia improvements we should be able to plan more effectively for Mobile events.
- Make better use of 8bit, 12bit and 14bit data. Pluto and TNO observations might be more successful in terms of photometry and detection limits, next time we observe.
- Discuss and evaluate the timing limitations of recording methods in use.

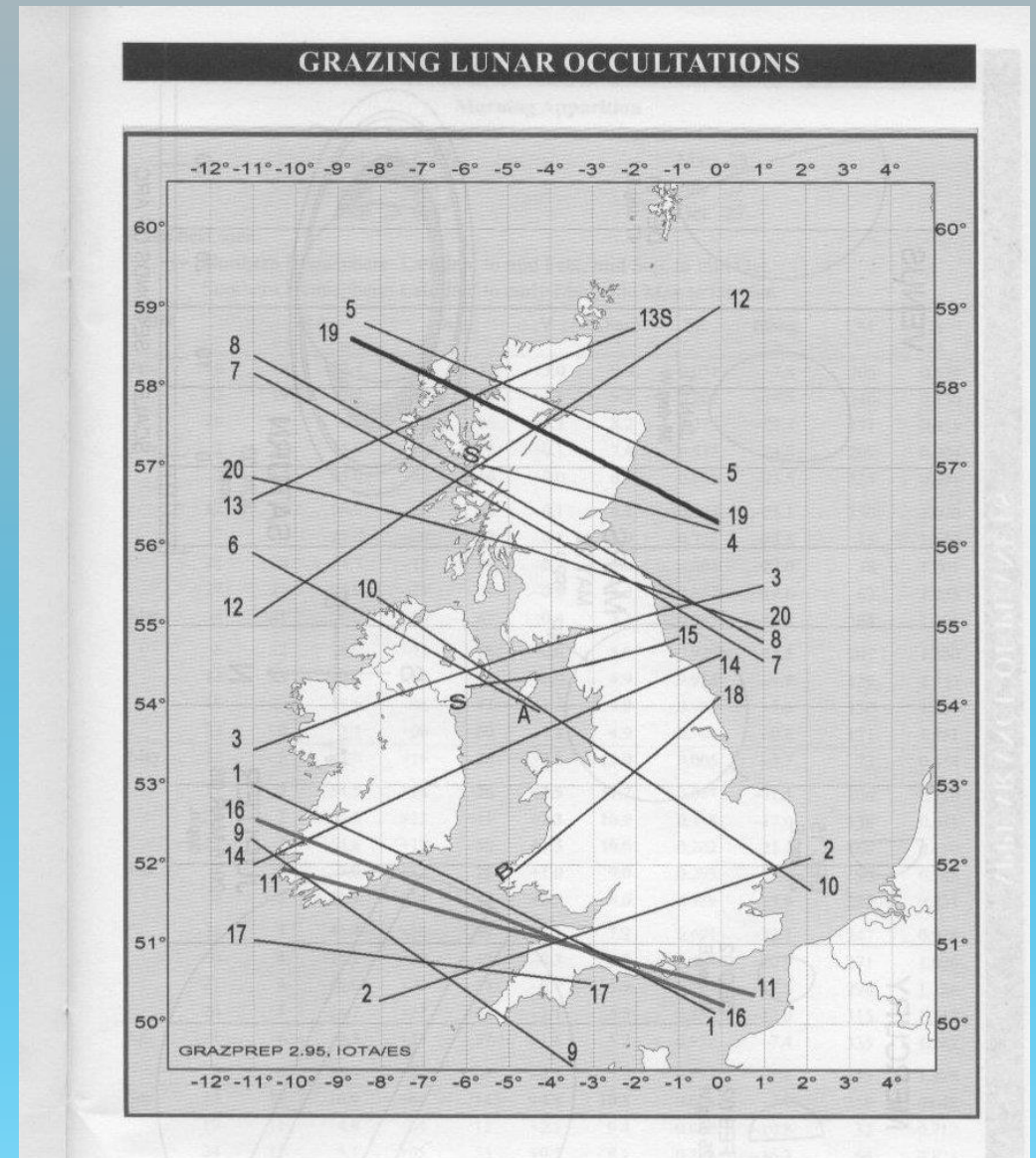
BAA Hand Book

Is produced by the BAA Computing Section, using data provided by the Observing Sections.

Lunar occultations to Mag 6.5 for 2 pair of stations in UK, AU and NZ [OCCULT4 output courtesy of D Herald]

LUNAR OCCULTATIONS												
Date	Star ZC Name	V	Ph	El. n° Moon	GREENWICH 00° 0' 0" W				EDINBURGH 7° 52' 0" W			
					UT	h	m	s	UT	h	m	s
Jan. 12	3188 k Cap	5.6	DD	75	16 35.3	00.0	-2.0	7	18 45.3	-0.9	+1.3	33
16	3199 a Pic	4.8	DD	97	18 43.3	-1.2	+0.8	48	23 59.2	-1.0	-0.1	52
19	667 72 Tau	5.0	DD	124	23 59.2	-1.0	-0.1	52	23 59.2	-1.0	-0.1	52
20	609 0 Tau	1.8	DD	125	24 15.1	+0.1	-5.6	155	23 56.1	+0.7	-2.9	132
20	673 HIP 21029	4.8	DD	129	0 54.7	+0.5	-1.6	38	0 46.1	+0.6	-1.4	87
20	691 Aldebaran	0.9	DD	130	3 24.5	+0.2	-0.1	40	3 23.8	+2.4	-0.5	23
20	806 111 Tau	5.0	DD	141	22 58.0	+1.2	-2.0	122	22 48.0	+1.2	-1.1	107
21	864 HIP 29416	5.0	DD	152	18 47.2	+0.6	+2.1	62	18 51.2	-0.4	-2.6	46
27	1683 r Leo	5.0	DD	135	21 20.1	+0.1	-1.0	291				
30	1891 d Vir	4.2	DD	131	4 30.0	+1.0	-1.4	331	3 54.4	+0.7	-1.3	138
Feb. 13	322 64 Cor	5.6	DD	69					18 35.6	+1.0	-5.2	44
13	327 65 Cor	4.4	DD	70	19 27.8	+1.2	-2.4	176	19 76.1	+1.3	-1.4	99
16	635 53 Gem	3.7	DD	94	1 48.1	-0.5	-1.1	82	1 43.8	-0.1	-1.1	75
19	1197 1 Cas	5.8	DD	140	22 49.6	+1.4	-1.1	109	22 41.6	+1.3	-0.5	96
21	1488 1 Cas	5.0	DD	169	17 45.6	+0.1	+1.2	101	17 51.9	-0.0	-1.7	88
23	1589 48 Leo	3.1	DD	91	20 9.7	-1.3	+0.5	55	20 9.1	-1.4	+3.4	38
Mar. 15	898 130 Tau	8.5	DD	175	1 25.6	+0.5	-2.5	128	3 22.9	-0.5	-2.9	333
16	1029 26 Gem	5.2	DD	103	19 3.4	-1.6	+1.1	62	19 10.4	+3.4	+2.1	66
26	2033 v Vir	4.2	DD	151	4 14.6	-1.1	-2.0	323	4 2.7	+0.9	-1.8	376
28	2247 7 Lib	5.4	DD	130	1 31.4	-1.5	+1.0	286	1 31.8	+1.2	-1.0	275
31	2658 5 Sgr	5.8	DD	95	5 34.9	+0.8	-0.4	327	5 31.2	+0.4	-0.4	318
Apr. 6	Venus	-3.8	DB	16	7 30.7	+0.7	+3.3	5				
6	Venus	-3.8	DB	16	8 1.9	+1.6	+0.0	512	15 38.3	-1.5	-0.4	95
10	615 2 Tau	3.7	DD	45	15 46.1	+1.3	-1.2	111	16 55.6	-0.4	-1.5	82
10	659 9 Tau	3.8	DD	47	20 2.9	-0.5	-1.5	92	19 58.0	+0.3	-1.8	122
10	671 0 Tau	3.4	DD	47	20 7.4	-0.2	-0.0	103	20 58.0	+0.5	-0.0	75
10	873 HIP 21029	4.8	DD	47	21 0.3	-0.3	-0.4	47	20 58.0	+0.5	-0.0	75
11	806 111 Tau	5.0	DD	59	18 1.1	+1.2	-5.9	90	17 54.4	+1.2	-0.4	78
11	828 117 Tau	5.8	DD	60	19 35.3	+0.5	-2.1	124	19 43.9	+0.6	-1.9	113
11	845 127 Tau	5.5	DD	62					23 52.7	-1.4	-4.1	168
15	1271 29 Cas	5.0	DD	100					1 41.1	-0.3	-2.2	136
17	1891 0 Vir	4.4	DD	187	0 10.3	-2.0	0.1	74	0 4.3	-1.8	+0.2	48
May 14	1549 48 Leo	5.1	DD	191	20 29.1	-1.0	2.0	134	20 47.2	+1.0	-1.7	129
16	1663 r Leo	5.0	DD	118	0 54.7	-0.4	-1.6	85	0 46.2	+0.5	-1.6	81
26	3965 HIP 21029	5.7	DD	132	7 14.5	+1.5	+0.5	274	7 12.5	+1.3	0.6	270
26	3419 0 Aur	4.2	DD	82	1 45.4	+0.6	+3.4	200	1 45.1	+1.2	-0.3	263
Jun. 2	327 65 Cor	4.4	DD	38	0 49.7	+1.3	+0.0	249	0 51.2	-0.2	-2.1	140
9	1409 2 Leo	3.0	DD	62	22 58.5	-0.3	-2.1	185	22 10.2	+1.3	-1.8	100
15	2033 v Vir	4.2	DD	129	22 19.7	+1.4	-1.3	108	22 10.2	+1.3	-1.8	100
21	2814 43 Sgr	4.9	DD	152	23 3.0	+1.4	-1.4	285	23 5.3	+1.1	+1.4	290
27	3514 24 Pic	5.9	DD	98	2 39.4	-0.5	-3.0	185	2 49.6	+0.5	-2.3	158
Jul. 30	635 2 Tau	3.7	DD	60	4 12.4	+0.9	+0.9	289	4 12.9	+0.9	+0.7	303
29	661 71 Tau	4.5	DD	58	7 15.3	+0.5	+4.7	192	7 24.6	+0.4	+2.2	215
29	609 0 Tau	3.8	DD	38	6 57.3	+1.4	+0.9	254	6 52.4	-1.3	-0.3	268
29	671 0 Tau	3.4	DD	38	8 54.3	+1.4	+0.9	254	8 52.8	-1.2	+0.3	249
29	677 HIP 21029	4.8	DD	58	10 2.0	-1.2	-1.6	288	9 49.8	+1.2	-1.1	304
31	944 124 Ori	5.9	DD	35	2 47.3	-0.0	-0.7	302	2 50.5	+0.0	+0.0	314

Lunar Graze occultation to mag 7 using the output from GRAZPREP [Courtesy Dr. E. Riedel]



Asteroid Occultations

[predictions courtesy of E. Goffin]

Featured UK event for 2016

Predictions for Europe and N Africa [Region 3] to Mag 11 including TNO and Planets

ASTEROID OCCULTATIONS

41 Daphne & UCAC4-459-006417

2016 Jan 17 22^h41.0^m U.T.

Planet:	a = 2.76, e = 0.28	Star:	Source cat. UCAC4
V. mag. = 12.65	Diam. = 182.0 km = 0.10"	$\alpha = 4^{\text{h}}26^{\text{m}}25.888^{\text{s}}$	$\delta = +1^{\circ}40'43.28''$
$\mu = 15.45''/h$	$\pi = 3.36''$ Ref. = EG2014	Vmag = 9.67	Bmag = 10.74
$\Delta m = 3.0$	Max. dur. = 22.3s	Sun : 125°	Moon : 30°, 61%

22h32m00s - 22h50m00s int. 1m

Dec. 2000.0

Right ascension (2000.0)

Vis. magn. scale

1
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ASTEROID OCCULTATIONS

REGIONAL PREDICTIONS

Date 2016	Time h m	Minor Planet No.	Name	Diam (IRAS)	Star ID	V	Dur. sec.	drop	RoV
Jan. 2	03 58	209	Dido	0.08	UCAC4-476-050158	10.81	19.4	3.1	3
4	03 34	622	Esther	0.05	UCAC4-511-025123	10.19	4.5	2.3	3
7	21 24	407	Arachne	0.07	UCAC4-503-052647	9.77	12.8	3.4	3
15	22 48	592	Bathseba	0.04	UCAC4-479-046847	10.88	6.2	2.9	3
16	21 28	34746	2001 QE ₉₁	0.01	UCAC4-547-014379	10.21	3.0	7.0	3
17	07 54	528	Rezia	0.05	HIP 49947	9.13	7.5	5.3	3
17	22 41	41	Daphne	0.10	UCAC4-459-006417	9.67	22.3	3.0	3
22	04 35	332	Siri	0.03	UCAC4-574-041205	11.16	3.3	2.6	3
26	23 57	1963	Bezovec	0.05	UCAC4-505-007188	10.52	3.5	3.5	3
27	00 16	723	Hammonia	0.02	UCAC4-531-010118	9.57	14.0	5.0	3
27	19 01	1867	Deiphobus	0.04	UCAC4-568-030390	10.48	8.0	5.5	3
Feb. 1	01 55	866	Fatme	0.05	HIP 34030	8.58	8.4	5.5	3
10	17 49	795	Fini	0.04	UCAC4-602-006630	10.87	4.4	4.5	3
22	18 40	329	Svea	0.06	UCAC4-471-017276	11.15	9.3	2.9	3
24	21 53	835	Olivia	0.02	UCAC4-563-041035	10.97	7.6	5.7	3
28	19 02	357	Ninina	0.07	UCAC4-532-050221	10.93	7.4	2.5	3
Mar. 3	19 57	36	Atalante	0.09	HIP 39219	8.42	10.7	4.1	3
10	23 14	3139	Shantou	0.02	HIP 33089	8.08	10.5	8.1	3
11	16 49	34746	2001 QE ₉₁	0.01	UCAC4-559-014630	9.86	3.5	7.9	3
14	22 52	2356	Hirons	0.03	UCAC4-468-039460	10.76	5.5	5.2	3
Apr. 11	21 14	164	Eva	0.06	UCAC4-581-048142	11.05	6.5	3.3	3
14	21 37	168	Sibylla	0.08	HIP 54675	9.41	16.8	4.2	3
15	21 43	202	Chryseis	0.04	UCAC4-555-038072	11.00	3.9	2.0	3
May 4	02 50	503	Evelyn	0.06	UCAC4-429-056177	10.90	8.1	2.3	3
17	20 40	4489	1988AK	0.02	UCAC4-478-056263	9.19	4.0	7.1	3
21	00 57	1796	Riga	0.04	UCAC4-485-115373	10.82	8.5	4.7	3
23	00 38	583	Klotilde	0.06	UCAC4-330-083244	9.87	6.6	3.5	3
Jun. 30	21 33	1264	Letaba	0.06	UCAC4-533-128732	10.90	6.9	2.3	3
Aug. 6	02 19	526	Jena	0.03	UCAC4-365-185923	10.89	3.2	4.1	3
9	03 37	286	Iclea	0.04	UCAC4-482-008843	11.16	3.2	3.9	3
13	02 29	426	Hippo	0.06	UCAC4-650-021131	9.86	4.8	4.5	3
16	22 20	227	Philosophia	0.06	UCAC4-400-136664	9.95	6.9	3.2	3
27	22 11	58	Concordia	0.06	UCAC4-362-082822	10.47	8.7	3.4	3
Sep. 1	20 00	159	Aemilia	0.07	UCAC4-361-201322	10.31	11.8	3.0	3
4	02 05	218	Bianca	0.03	UCAC4-491-008824	11.05	3.7	3.0	3
13	19 06	76	Freia	0.06	UCAC4-367-067147	11.07	6.4	3.7	3
29	03 45	705	Erminia	0.06	HIP 44331	6.46	4.4	7.6	3
Oct. 3	23 33	143	Adria	0.04	UCAC4-596-044303	11.03	3.7	3.8	3
8	21 52	32	Pomona	0.06	UCAC4-491-000903	9.21	6.4	2.2	3
9	22 47	2010 RO ₄		0.01	HIP 6687	6.65	14.5	4.8	3
12	04 20	113	Amalthea	0.03	UCAC4-545-036092	10.42	3.1	3.0	3
12	01 37	9	Metis	0.13	HIP 45826	7.40	7.2	3.6	3
25	06 49	530	Turandot	0.04	UCAC4-533-043437	10.38	10.0	5.1	3
Nov. 1	19 22	193	Ambrosia	0.07	UCAC4-670-033289	9.42	8.5	2.7	3
8	02 31	564	Duda	0.03	UCAC4-574-017385	10.43	4.3	5.3	3
13	00 51	564	Duda	0.03	UCAC4-576-016651	10.43	3.8	5.2	3
14	05 28	102	Miriam	0.08	UCAC4-540-018679	9.85	12.1	2.9	3
16	05 28	33	Polyhymnia	0.03	UCAC4-473-047055	10.59	3.2	4.2	3
21	04 09	105	Artemis	0.07	UCAC4-406-054143	10.90	3.9	2.8	3
24	22 40	927	Ratisbona	0.04	UCAC4-562-003601	10.67	6.4	4.2	3
Dec. 14	05 51	9142	Rhesus	0.01	UCAC4-517-047274	10.56	3.4	7.6	3
16	00 06	861	Aida	0.04	FK6 2577	6.73	5.7	8.1	3
17	17 41	444	Gyptis	0.13	UCAC4-469-002499	10.04	48.9	2.1	3

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ASTEROID OCCULTATIONS

TNO GLOBAL PREDICTIONS

Date 2016	Time h m	Minor Planet No.	Name	Diam (IRAS)	Star ID	V	Dur. sec.	drop	RoV
Mar. 24	19 20	20000	Varuna	0.03	UCAC4-585-041384	14.10	101.4	6.1	5
28	05 52	10199	Chariklo	0.02	UCAC4-281-197089	14.04	30.4	4.8	2
Apr. 22	01 28	50000	Quaoar	0.04	UCAC4-373-110044	13.93	106.5	5.0	3
Jun. 22	23 17	134340	Pluto	0.10	UCAC4-345-181667	14.34	101.3	0.8	3, 6
30	17 56	55576	Amycus	0.01	UCAC4-288-183652	14.92	5.1	5.8	8
Jul. 5	15 57	55576	Amycus	0.01	UCAC4-288-182412	14.81	5.2	6.0	8
7	01 09	10370	Hylonome	0.01	UCAC4-355-123292	14.09	4.7	7.6	2
7	05 53	10199	Chariklo	0.02	UCAC4-279-186300	12.86	11.2	5.6	2
23	05 15	50000	Quaoar	0.04	UCAC4-373-104756	14.52	62.4	4.3	1
Oct. 1	10 08	10199	Chariklo	0.02	UCAC4-285-174081	14.72	19.5	4.2	8
Dec. 15	13 40	54598	Bienor	0.01	PPMX 3828109	14.77	7.8	4.8	5

MAJOR PLANET PREDICTIONS

Date 2016	Time h m	Planet Name	Diam	Star ID	V	Dur. sec.	RoV
Feb. 11	02 27	Mars	7.38	UCAC4-369-069363	10.04	378.9	4
Apr. 12	16 00	Jupiter	42.65	HIP 54057	7.42	12978.9	5, 6, 7, 8
Jul. 19	01 58	Mars	14.30	HIP 75755	9.26	1433.5	1
Aug. 30	05 12	Mars	10.59	UCAC4-325-087887	9.60	463.1	1
Oct. 10	13 32	Mars	8.34	HIP 91380	8.20	291.8	7, 8
25	02 48	Mars	7.75	UCAC4-330-190712	9.85	261.0	1
Dec. 2	16 39	Mars	6.47	UCAC4-365-187347	9.58	206.7	3
10	17 29	Jupiter	33.55	HIP 64147	8.67	5312.9	8
19	18 12	Venus	19.44	HIP 104230	8.43	413.1	4

Using the tables

In the table of predictions : Time = UT of closest geocentric approach.
Region of Visibility codes (RoV):

1 = North and Central America	2 = South America
3 = Europe, North Africa and the Middle East	4 = South Africa
5 = Russia	6 = Pakistan, India, and SE Asia
7 = Japan, China and Taiwan	8 = Australia and New Zealand

Where diameters are not listed in the IRAS catalogue, an assumed value of A, the geometric albedo, has been used to calculate a value for the asteroid diameter. Predictions computed by Edwin Goffin. Track details are available from the Flemish Astronomical Association ftp site:

<ftp://ftp.ster.kuleuven.ac.be/dist/vvs/asteroids/2016>

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What changes in the future ?

I am available for discussion

Tim Haymes tvh dot observatory at btinternet.com

Thank you – any Questions?