



OASI News

The newsletter of the Orwell Astronomical Society



The Grazers

Photo by James Appleton

Trustees: Mr Roy Adams Mr David Brown Mr David Payne
Honorary President: Dr Allan Chapman D.Phil MA FRAS

Contents

Cover picture: The Grazers	
Society Notices	3
Society Contact details	3
Next Committee Meeting	4
Welcome new members	4
OASI and BAA Events	4
Lecture Meetings	7
OASI @ Newbourn	7
Stargazer's guide	7
Astronomy Workshops	8
Astronomy Book Swap	8
Other local astronomy society meetings	9
Atheneum Astro Soc	9
LYRA Lowestoft & Yarmouth Regional Astronomers	9
DASH Astro	9
The Night Sky in October.....	10
Moon	10
Sun, Moon and planets	10
Paul's Astronomy Podcast for October	10
Occultations during September 2018	11
Meteor showers	11
Visible ISS passes $\geq 15^\circ$ max altitude	12
Iridium flares	12
Astronomy on the radio	13
BAA news	13
October	13
Next year – Practical Astronomy Show	13
Back to Basics 2019 – Hosted by OASIpSwich	14
Astronomy Course at Ipswich Institute	14
The OASI Christmas Meal	15
For Sale: Meade LS8 ACF.....	16
European Conference on Amateur Radio Astronomy 2018.....	17
Another little missive from the Library.....	18
New Horizons Interplanetary space Probe.	18
A Grazing Lunar Occultation of Hipparcos 21630	20
Lecture Notes	25
From the Interweb	25
A modification for the Coronado PST using eyepiece projection.	25
Jupiter's Great Red Spot	25
The Hayabusa2 rovers just made a movie on the surface of an asteroid	25
A new H-R diagram.....	26
The Summer Triangle	27
Solar prominence	27
Open Weekend.....	28

Society Notices

Society Contact details

Observatory (meeting nights only)

NB new number! 07960 083714

Email queries: info@oasi.org.uk

Facebook: <https://www.facebook.com/groups/445056098989371/>

Twitter: @OASlpswich

The OASI Facebook pages are proving very popular. Several non-members are active

contributors.

Please send material for the OASI web site and newsletter e.g. observations, notices of events, general interest articles, to

news@oasi.org.uk

Other contact details will be issued to members on a separate printed list.

Access into the School Grounds and Observatory Tower

Please use the third gate into the school grounds by the gym.

Areas out of Bounds

Access to the Observatory is **only via the black door** at the foot of the Observatory tower, which leads to the staircase and thence to the spiral staircase up to the Observatory. If the black door is locked, please phone the observatory mobile, **07960 083714** during meeting hours. **Kindly check/amend the number shown on your 2018 membership card.**

Please do NOT explore other routes. When in doubt, ask or call the Observatory mobile.

Remember this is a school and straying into the main part of the school where the pupils reside would cause the society big problems and could see us losing the use of the observatory. Any member found to be anywhere other than the approved access route or the observatory area will face serious sanctions up to and including expulsion from OASI.

Please note that access time for all observatory member nights is after 20:15

Articles for OASI News

News, pictures and articles for this newsletter are always welcome. Please send them to

news@oasi.org.uk

The CLOSING date is the 15th day of the month

Please submit your articles in any of the following formats:–

Text: txt, rtf, rtf, doc, docx, odt, Pages, pdf

Spreadsheets: xls, xlsx, OpenOffice/LibreOffice, Numbers

Images: tiff, png, jpg

Please send tables as separate files in one of the above formats.

If you don't feel up to writing a major article, perhaps you might write a short note for OASI News along the lines of *"This month I have mostly been observing/constructing/mending/reading/etc."*?

[Newsletter archive](http://www.oasi.org.uk/NL/NL_form.shtml) www.oasi.org.uk/NL/NL_form.shtml

Authors, please note that your articles will now be publicly available worldwide!

Reproducing articles from OASI News

If you plan to reproduce an article exactly as per OASI News then please contact the [Editor](#) – otherwise, as a matter of courtesy, please seek permission from and credit the original source/author. You may not reproduce articles for profit or other commercial purpose.

Committee 2018

Chairman	Paul Whiting FRAS	Set overall agenda for OASI, Chair committee meetings, Press and publicity, Visits by outside groups, Observatory tours, Public appreciation of astronomy, Outreach activities.
Secretary	Roy Gooding	Outreach meetings (jointly with Chairman), observatory decoration.
Treasurer	Paul Whiting FRAS	Finance, Supervision of applications for grants.
Committee	James Appleton	Committee meeting minutes, Web site
	Martin Cook	Membership, Tomline refractor maintenance & user testing
	Peter Richards	Lecture meetings, Email distribution lists
	Martin Richmond-Hardy	Newsletter, OASI @ Newbourne
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club.
	Matt Leeks	Safety & security
	Andy Gibbs	
	Andy Wilshire	Librarian

Signing in and out

Please ensure you sign in and out when visiting the Observatory and/or Newbourne.
This is for fire safety precautions and also provides an historic record.

Next Committee Meeting

30 November 2018, at Museum St Methodist Church rooms, Black Horse Lane.

Welcome new members

Nadia Myerscough

Robin Carpenter

OASI and BAA Events

For the latest event details, please see www.oasi.org.uk/Events/Events.php

There's a Google Calendar on the OASI web site with the latest dates (and corrections!). If you want to easily add OASI Events to your own computer/ phone/tablet calendar application click this button on the website Events page or use this address to access this calendar from other calendar applications.



<https://calendar.google.com/calendar/ical/1jhs9db71ncki4sojo7092vfvc%40group.calendar.google.com/public/basic.ics>

For other astronomy news and astro pictures try our

Twitter feed <https://twitter.com/OASIpSwich>

Facebook page <https://www.facebook.com/pages/Orwell-Astronomical/158256464287623>

Subscribe to the OASI Yahoo group by emailing oasi-subscribe@yahoogroups.com

Date, Time & Location	Contact	Event
Weekly, every Wednesday, 20:15–22:00 Orwell Park Observatory	Martin Cook, Roy Gooding	General observation (weather permitting) using a variety of telescopes. Entry via the third gate left. NOT the main gate
Mon 8 Oct from 19:00 Newbourne VH	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne . 19:30 Skynotes by Bill Barton. Book swap. Bring your telescope to our dark-sky site. (Talks on astronomy if weather unsuitable for observing.)
Friday & Saturday 19 & 20 Oct. 19:30 – 22:00 OPS	Roy Gooding secretary@oasi.org.uk	Public access event. Observatory Open Day. Last admission: 21:30.
Mon 22 Oct, 10:00-16:00.	Roy Gooding secretary@oasi.org.uk	Public access event. Norwich Science Festival, Astronomy Day OASI display. Booking not necessary.
Mon 22 Oct from 19:00	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne . Bring your telescope to our dark-sky site. (Talks on astronomy if weather unsuitable for observing.)
Fri 26 Oct 2018, 20:00 St Augustine's Church Hall	Pete Richards lectures@oasi.org.uk	Lecture Meeting. Dr Matt Bothwell, Institute of Astronomy, University of Cambridge , <i>Monsters in the Dark: Searching for the Most Massive Galaxies in the Universe</i> .
Mon 12 Nov from 19:00 Newbourne VH	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne . 19:30 Skynotes by Bill Barton. Book swap. Bring your telescope to our dark-sky site. (Talks on astronomy if weather unsuitable for observing.)
Fri 23 Nov, 20:00 St Augustine's Church Hall	Pete Richards lectures@oasi.org.uk	Lecture Meeting. Martin Lewis , <i>Imaging with a Dobsonian</i> .
Mon 26 Nov from 19:00 Newbourne VH	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne . Bring your telescope to our dark-sky site. (Talks on astronomy if weather unsuitable for observing.)
Tue 27 Nov, 04:00 Location TBD	James Appleton info@oasi.org.uk	Field trip to observe the graze of 85 Gem. More info .

Date, Time & Location	Contact	Event
Tue 27 Nov, 22:15 Location TBD	James Appleton info@oasi.org.uk	Field trip to observe the graze of δ Cnc. More info.
Friday 30 Nov 20:00	Roy Gooding secretary@oasi.org.uk	OASI Committee Meeting
Monday 10 Dec from 19:00 Newbourne Village Hall	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne. 19:30 Sky notes 20:00 astro bring & buy.
Wednesday 12 Dec. Coach & Horses, Melton	Roy Gooding secretary@oasi.org.uk	OASI Christmas Dinner.
2019		
Monday 14 January	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne. 19:30 Sky notes 19:45 Workshop: Astroimaging – Andy Gibbs
Saturday 2 March 09:45 to 18:00 Museum St Methodist Church room.	https:// britastro.org/ node/14933	BAA Back to Basics Workshop– hosted by OASI See page 14
Saturday 9 March, 09:30 Kettering Conference and Exhibition Centre, NN15 6PB	http:// practicalastrosho w.com/	The Practical Astronomy Show See page 13
29 June Newbourne Village Hall	Pete Richards lectures@oasi.org.uk	OASI Summer BBQ

Lecture Meetings

Contact: Peter Richards
lectures@oasi.org.uk

We have an exciting and interesting set of lectures by guest speakers for the Autumn.

There is a new venue for lectures this year which is:

St Augustine's Church Hall
Bucklesham Road
Ipswich IP3 8TH.

The start time for all talks will be 8pm and, as usual, the talks will be held on Friday evenings.



OASI Guest Speaker Lectures for 2018

Friday 26th October

"Monsters in the Dark: searching for the Universe's most massive galaxies" Dr Matt Bothwell, Institute of Astronomy, University of Cambridge.

Friday 23rd November

"Imaging with a Dobsonian" Martin Lewis, Lunar and Planetary Imager.

Notes from Dr Lorne Whiteway's lecture "Can the world's largest digital camera answer cosmological questions?" are available here:

<https://github.com/LorneWhiteway/DECamCosmologyTalk/blob/master/DECamCosmologyTalk.pdf>

OASI @ Newbourne

Martin Richmond-Hardy newbourne@oasi.org.uk

We normally meet at Newbourne Village Hall, Mill Lane, IP12 4NP on the 2nd and 4th Mondays (with a few exceptions, like December and January).

OASI @ Newbourne is a good place to start for beginners. If you are thinking of buying a scope or binoculars, come and try before you buy and talk to owners about the strengths and weaknesses of particular models. If you've already splashed the cash, bring your new scope along to use or for advice on setting-up and adjustment. All welcome, with or without telescopes. We would like visitors to join OASI to enjoy the full benefits of membership.

There are also **Stagazers' Guide (Sky Notes)**, **Astronomy Workshops** and the **Book Swap**.

Stargazer's guide

On the first meeting each month Bill Barton FRAS will give a short presentation of what can be viewed in the following 4 weeks. For armchair stargazers (on those cloudy nights) there is a small branch of the OASI Library held at Newbourne and a copy of the full catalogue.

OASI@Newbourne Meetings in 2018

8 Oct (S+B)

22 Oct

12 Nov (S+B)

26 Nov

10 Dec (S+B+ Bring & Buy)

We open up for all meetings at 7pm. Star Guide (S) at 7:30pm and Workshops (W) at 7:45pm. B = Book Swap night (see below).

Astronomy Workshops

Contact Mike Whybray

Location: Newbourne Village Hall IP12 4NP

Doors open at 7:00pm.

Workshops start at 7:45pm

If you are a new OASI member, or haven't been to one of these informal workshops before, they are a mixture of events of different characters including beginners talks, interactive workshops, films, etc., suitable for all. They are also a chance to chat with other members over a cup of tea and a biscuit, in a venue rather warmer than the observatory dome on a winter's night!

Given a clear night, we can make use of the field for a workshop or continue afterwards with some observing – something not possible at the previous venue, Nacton village hall.

Do you have a subject you could workshop? You could do a short one, or share the effort with a partner. Drop Mike Whybray a line! workshops@oasi.org.uk

TBA Martin Cook on Tomline Refractor Training (at the Observatory)

Monday 14 January 2019: Andy Gibbs – Practical Astroimaging Workshop,

This would give members the chance to bring their own cameras and telescopes to see what can be done and to share tips and ideas.

There will be a first quarter Moon that evening, so it would be ideal for lunar imagers, without compromising deep sky imagers, where Orion will be well placed.

In the event of cloudy skies, I suggest members bring along their laptops so processing tips and ideas can be shared.

Astronomy Book Swap

Pete Richards

If you are anything like me you'll have a bookcase or two full of astronomy books and no room for any more but you know the next time you are at an astronomy event you'll be tempted again. OASI will be hosting an astronomy book swap event at Newbourne on a Monday evening help you to clear some space or maybe you can provide a home for someone else's unwanted books.

If you bring any books and they are not taken you will need to take them home again as OASI has no spare storage space for books.

You can take away any books you are interested in but if you have not provided any books yourself you might like to make a small cash donation to OASI.

Any cash donations will help towards running OASI @ Newbourne.

The books can be on any area of astronomy, or space exploration, or related subjects. They can be factual or works of fiction including space related science fiction. As well as books you could bring DVDs on similar subjects, or maybe you have an astronomical jigsaw puzzle you'd like to give away or exchange.

The book swap will be held at Newbourne Village Hall on Monday Star Guide/Workshop nights (a normal oasi @ newbourne night).

Other local astronomy society meetings

Athaneum Astro Soc

www.3a.org.uk/index.htm

We meet fortnightly on Thursdays, from 7.30pm, at our dark-sky site in the [Walled Garden](#) at Nowton Park, just outside Bury St Edmunds. If you're planning on joining us for the first time, please [contact us](#) in advance, just to make sure the meeting is going ahead. We recommend that you wear warm clothing (even summer nights can be chilly, especially when the skies are clear!) and bring a flask, or insulated mug, for a warm drink. We have tea and coffee-making facilities on-site. Events are listed here <http://www.3a.org.uk/events.htm>

- | | |
|------------|-----------------------------------|
| 11 October | Star Shadows - all about sundials |
| | What's topical in astronomy |

LYRA Lowestoft & Yarmouth Regional Astronomers

www.lyra-astro.co.uk

LYRA Programme and Local Events 2018 – All talks (unless other wise stated) will commence at 7.30pm in the Coach House Room at Parkhill Hotel, just outside Oulton Village on the B1375 (Oulton Broad to Gt. Yarmouth Road) NR32 5DQ

All Talks £2.50 For Non Members

- | | |
|--------|---|
| 9 Oct | Talk by Dr John Rogers, BAA Jupiter Section Director “Jupiter and the Juno mission” |
| 23 Oct | LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7:30pm |
| 13 Nov | Talk by Bob Argyle, President of the Webb Society “Observing Double Stars Past & Present” |
| 27 Nov | LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7:30pm |

DASH Astro

Darsham And Surrounding Hamlets

<http://dash-astro.co.uk>

All DASH Astro observing sessions will take place at WESTLETON COMMON. ASOG observing sessions and locations may be arranged at the time of observation.

Unless stated all group meetings will take place at WESTLETON VILLAGE HALL from 7:30 pm.

Note these are now on Sundays.

- | | |
|--------|--|
| 07 Oct | Dash Observing Session (Sunset 18:17 Moonset 18:04 4% Moon) |
| 21 Oct | Meeting – S.Hubbard / D.Gwynn: Colliding Neutron Stars ... evidence? |
| 11 Nov | Dash Observing Session (Sunset 16:06 Moonset 18:59 16% Moon) |
| 25 Nov | Meeting – Dave Green: Distances to Stars and Galaxies. How do we measure? |
| 08 Dec | (Saturday) DASH Christmas Social – Irene's confirmed (Members and Guests only) |



The Night Sky in October

Martin RH

All event times given are for the location of Orwell Park Observatory
52.0096°N, 1.2305°E

The UK reverts to GMT (UTC) on Sunday 28 October

ALL times this month are given in UTC.



Moon

Source: <http://heavens-above.com/moon.aspx>

New Moon

1st Quarter

Full Moon

Last Quarter

Sun, Moon and planets

Source: <http://heavens-above.com/PlanetSummary.aspx>

Object	Date	Rise	Set	Mag.	Notes
Sun	1	05:56	17:33		
	31	06:48	16:29		
Moon	1				
	31				
Mercury	1	06:43	17:44	-0.8	Aphelion 2018-Oct-16
	31	09:15	16:56	-0.1	
Venus	1	09:37	17:35	-4.4	Inferior Conjunction 2018-Oct-26
	31	06:30	15:31	-4	
Mars	1	15:59	23:44	-1.3	
	31	14:22	23:20	-0.6	
Jupiter	1	10:09	18:57	-1.7	
	31	08:45	17:14	-1.6	
Saturn	1	13:36	21:15	0.5	
	31	11:46	19:25	0.6	
Uranus	1	18:11	08:12	5.7	Opposition 2018-Oct-24
	31	16:10	06:07	5.7	
Neptune	1	16:54	03:42	7.8	
	31	14:55	01:41	7.8	

Paul's Astronomy Podcast for October

Paul Whiting FRAS Podcast, September 2018 www.oasi.org.uk/2018_09_pod.mp3

Occultations during September 2018

James Appleton

The table lists occultations during the month under favourable circumstances. The data relates to Orwell Park Observatory, but will be similar at nearby locations.

The events should be readily visible in small telescopes or binoculars. The first two columns list the date and time (UT) of the occultation. Column three gives the phenomenon: 'D' denotes a disappearance and 'R' a reappearance. The table lists circumstances of disappearances and reappearances as dictated by the visibility of each phenomenon (determined by altitude, lunar phase, etc). Column four details the lunar phase ('+' for waxing and '-' for waning). Columns five and six give the altitude of the Sun and the star, both in degrees. (A negative solar altitude means that the Sun is below the horizon.) Columns seven and eight provide the star's magnitude and catalogue number.

Only one lunar occultation occurs during July under favourable circumstances, detailed below.

The data relates to Orwell Park Observatory, but will be similar at nearby locations.

Please note that **times are shown in UTC**.

Date	Time (UT)	D/ R	Lunar Phase	Sun Alt(°)	Star Alt(°)	Mag	Star
03 Oct	01:55:55	D	0.42-	-35	29	5.1	56 Gem
	02:36:07	R		-30	35		
03 Oct	04:03:52	D	0.41-	-18	47	5.9	61 Gem
	05:15:31	R		-8	55		
15 Oct	19:41:37	D	0.41+	-25	9	6.3	30 Sgr
19 Oct	21:26:51	D	0.78+	-40	22	6.0	39 Aqr
30 Oct	00:01:01	D	0.68-	-51	30	4.0	43 Gem, ζ Gem
	01:00:43	R		-48	39		

On 02 October at 06:15 UT, there is a southern limit graze of the magnitude 4.1 star v Gem. Details are on the OASI website: http://www.oasi.org.uk/Occs/Occ_summary_2018.php. An observing trip will be organised if weather conditions are favourable: details will be provided via the OASI email list.

Meteor showers

Source: BAA Handbook 2018 p97-99

Shower	Maximum	Normal limits	ZHR at Max	Notes
Piscids	Sept 9 Sept 21 Oct 13	Sept – Oct	10 5 ?	A multiple-radiant ecliptic complex with low rates
Draconids	Oct 8 23–00z	Oct 7–10	20?	Periodic shower connected with 21P/Giacobini-Zinner. Only weak activity expected. Very favourable
Orionids	Oct 21–24	Oct 16–30	25	Fast meteors, many with persistent trains. Flat maximum, with several sub-peaks. Good in 2007. Unfavourable.

Visible ISS passes $\geq 15^\circ$ max altitude

Martin RH

Source: <http://heavens-above.com/PassSummary.aspx?satid=25544>

Times are BST. Predictions are approximate (26 Sept) due to craft adjustments. Check the day before.

Date	Mag	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Oct	-3.9	19:39:20	10°	W	19:42:39	85°	S	19:44:47	20°	E
01 Oct	-1.7	21:15:49	10°	W	21:17:27	26°	W	21:17:27	26°	W
02 Oct	-3.9	20:23:51	10°	W	20:27:10	77°	S	20:27:26	69°	SE
03 Oct	-3.8	19:31:52	10°	W	19:35:11	85°	S	19:37:24	19°	E
03 Oct	-1.7	21:08:24	10°	W	21:10:04	25°	W	21:10:04	25°	W
04 Oct	-4	20:16:23	10°	W	20:19:38	57°	SSW	20:20:03	51°	SSE
05 Oct	-4	19:24:22	10°	W	19:27:40	72°	SSW	19:30:03	17°	ESE
05 Oct	-1.5	21:01:03	10°	W	21:02:43	21°	WSW	21:02:43	21°	WSW
06 Oct	-2.8	20:08:54	10°	W	20:11:58	37°	SSW	20:12:45	31°	S
07 Oct	-3.2	19:16:49	10°	W	19:20:02	51°	SSW	19:22:49	13°	SE
07 Oct	-1.1	20:54:02	10°	WSW	20:55:30	14°	SW	20:55:30	14°	SW
08 Oct	-1.8	20:01:33	10°	W	20:04:11	22°	SSW	20:05:38	17°	S
09 Oct	-2.3	19:09:17	10°	W	19:12:17	32°	SSW	19:15:16	10°	SE
11 Oct	-1.3	19:01:57	10°	W	19:04:23	19°	SW	19:06:48	10°	SSE
27 Oct	-1	06:44:42	10°	S	06:46:54	17°	SE	06:49:06	10°	E
The following times are GMT										
29 Oct	-2	05:35:39	10°	SSW	05:38:31	28°	SSE	05:41:24	10°	E
30 Oct	-1.4	04:44:39	13°	S	04:46:24	19°	SE	04:48:50	10°	E
31 Oct	-3	05:27:31	13°	SW	05:30:11	45°	SSE	05:33:22	10°	E

Iridium flares

Too many to list but see <http://heavens-above.com/IridiumFlares.aspx>

[Iridium flares to cease by end of 2018 | BBC Sky at Night Magazine](#)

Astronomy on the radio

Bill Barton's Radio Broadcast

ICRFM (Ipswich Community Radio) 105.7 MHz at about 08:25 in the morning of the first Wednesday of each month. I aim to cover what there is to see in the sky and then a little bit on something topical. ICRFM is also available to listen to over the Internet and there is a listen again option on their website. <http://www.icrfm.com>

David Murton's Radio Broadcast

On 1st Tuesday of the month, 1.40pm on the Lesley Dolphin show on BBC Radio Suffolk – now digital (channel 10c) and FM 103.9 (Ipswich), 104.6 (west Suffolk), 95.5 (Lowestoft), 95.9 (Aldeburgh) and the internet. <https://www.bbc.co.uk/radiosuffolk>

BAA news

October

Saturday 6 October - 10:00

[Back to Basics Workshop, Bexleyheath](#)

Saturday 13 October (All day)

['The Astronomer' magazine Annual General Meeting](#)

Annual meeting of TA, open to all BAA members

Wednesday 31 October 31 - 17:30

[BAA Annual General Meeting and Ordinary Meeting](#)

Next year – Practical Astronomy Show

Date: Saturday 9 March 2019 - 09:30

[The Practical Astronomy Show](#) is a free one-day event at the Kettering Conference and Exhibition Centre, Thurston Drive, Kettering, Northamptonshire, NN15 6PB.

There will be free talks about the practical aspects of astronomy, with an emphasis on using and getting the best out of astronomy products.

The show caters for all levels of practical astrophotography and visual astronomy.

Organisations involved in astronomy education, outreach and tourism will be available to meet and greet the general public.

Please note the Practical Astronomy Show is not run by the BAA, but the BAA will be present as an exhibitor.

Back to Basics 2019 – Hosted by OAS Ipswich

<https://britastro.org/node/14933>

Venue: Museum Street Methodist Church, 17 Black Horse Lane, Ipswich, IP1 2EF

Date: Saturday, 2019, March 2 - 09:45 to 18:00

The British Astronomical Association has designed a programme of talks and practical sessions to help you learn basic techniques and develop your interest to its full potential. Experienced people will be on hand to answer your questions.

The programme will cover:

What Equipment you need to get started, Lunar Observing, Observing Planets, Comets and Deep Sky Observing

The cost for the meeting is £TBC BAA Members & children under 16. £TBC for non-members.

SPACE IS LIMITED SO ALL ATTENDEES MUST PRE-BOOK

Programme times for the day are: -

- 10:00 Registration – Tea/coffee
- 10:30 Official welcome – BAA President – Mr Callum Potter
- 10:35 So what astronomy can I do? – Mrs Hazel Collett
- 10:45 What equipment & books do I need? – Dr Stewart Moore
- 11:30 Lunar observing & Workshop – Mr Nick James
- 12:15 Lunch
- 13:30 Ipswich Astronomical Society
- 14:45 Comets - Nick James TBC
- 15:30 Afternoon Tea
- 16:00 Deep Sky observing – Mr Callum Potter
- 16:45 Feedback, Q&A session & Raffle
- 17:00 Close.

Astronomy Course at Ipswich Institute

Once again Paul Whiting FRAS will be running an evening astronomy course at the Ipswich Institute starting 9th October running for 10 weeks. If interested please contact the Ipswich Institute directly:

<http://www.ipswichinstitute.org.uk/course.php?id=212&cat=5>

With Astronomy featuring more and more on our TV screens have you ever wondered what it is all about? This course will introduce this interesting science and hobby. You do not need a telescope to take part (although you will probably want to get one afterwards!). You just need an enquiring mind. There will be an optional visit to Orwell Park Observatory on Thursday 6 December at a small extra cost.

[Terms & Conditions](#)

Course Tutor: Paul Whiting

Course Duration: 10

Course dates: 09 Oct – 11 Dec

Half Term: n/a

Price: £80

Members Price: £52

Concessions*: £60

Additional Information:

Optional visit to Orwell Park Observatory on Thursday 6 December at a small extra cost.

*The concessionary rate is available to anyone in receipt of means-tested benefits.

The OASI Christmas Meal

Roy Gooding

I have booked the [Coach & Horses](#) in Melton for this year's Christmas meal and will be taking orders up to the middle of November.

Coach and Horses, Melton Wednesday 12th December at 20:00

Christmas Party Menu 2018

2 Courses £18	3 Courses
£22	Deposit £5

Starters

Roasted Squash & Sweet Potato Soup

Soup Served with fresh bread

Shredded Slow cooked Lamb Shoulder

Slow cooked with honey & rosemary. Served with tomato pearl & crisp green salad

Creamy Garlic & herb Mushrooms

Served with grilled brioche

Prawn & Crayfish Cocktail

Bound with fresh tomato & chilli salsa with fresh bread

Filo Wrapped Tiger Prawns

Tiger prawns wrapped in filo pastry with a sweet chilli dip

Main Course

Traditional Roast Suffolk Turkey

Roasted Suffolk turkey breast served with rich sage & onion stuffing, Procter's Cumberland chipolata wrapped in smoked bacon, golden roasted potatoes, fresh vegetables & rich gravy

Slow Roasted Belly of Pork

Served upon gratin potatoes with Aspalls cider gravy & vegetable medley

Seafood Filo strudel

Served with rich cheese sauce & vegetable medley

Roasted Winter Vegetable Bake

Medley of winter vegetable layered with parmesan cream sauce with gratinated potato topping. Served with mixed salad

Roasted Sirloin Steak (£5 sup)

Served with garlic buttered mushrooms, coleslaw, onion rings & chips

Desserts

Traditional Christmas pudding

Served with brandy sauce

Chocolate Gingerbread Cake

Served with chocolate sauce & vanilla ice cream

Selection of Fine Cheese & Biscuits

Served with selection of crackers & apple

Lemon & Clementine Posset

Served with spiced flapjack

Mince Pies to Finish



For Sale: Meade LS8 ACF

Jeremy Reynolds cbxman@gmail.com

8 inch computerised goto catadioptric scope (light usage). fitted with "Bobs Knobs" for collimation.

Meade video display

Meade 2" 99% prism (including 2" to 1.25" & SCT adaptors)

Pentax SMC 8-24 Zoom eyepiece

Revelation 5 piece 1.5" eye piece set - 9, 12, 15, 20, & 32mm camera projection & 2x Barlow

Revelation 2" 50mm

Meade 07066 1.25" LED illuminated MA12mm eyepiece

Revelation advanced red dot finder

Philips SPC900NC webcam

2GB mini SD card for updates and images, etc.

12V Mains PSU

Olympus 1.25" T mount and remote trigger.

All in excellent condition and including the original supplied accessories (eyepiece, 1.25" SCT adaptor finder and diagonal)



I'm looking for £1,500 pounds or near offer.

These scopes are still current and range from £1600 to £1900 new.

The Pentax eyepiece is around £300 currently new



European Conference on Amateur Radio Astronomy 2018

Source: <https://astropeiler.de/european-conference-amateur-radio-astronomy-2018>

Astropeiler Stockert hosted the 3rd EUCARA on September 15th and 16th, 2018. With 59 participants from eight countries it was the largest conference so far. Eleven talks were given by attendants, and the keynote speech was delivered by Prof. Michael Kramer, Director of the Max-Planck Institute for Radio Astronomy. Both mornings were devoted to these presentations.

In the afternoon of the 15th, a visit to the Effelsberg telescope was organized, and on the afternoon of the 16th various demonstrations were presented by the Astropeiler team on their telescopes. A special display was devoted to the various options to observe the spectrum of neutral Hydrogen in our galaxy.

Coffee breaks, lunch and the conference dinner gave opportunity to exchange views and experiences, to make new friends and meet old friends again.

The slides from the presentations are made available in the links below.

In the sequence as they were held:

- [The Radio Meteor Zoo: involving citizen scientists in radio meteor research](#) (17 MB)
Stijn Calders
- [Building the CAMRAS 'Meteor Scatter' webSDR](#) (11 MB)
Simon Bijlsma
- [First results with the live CAMRAS meteor reception](#) (10 MB)
Frans de Jong
- [Digital Sky Maps and Catalogues for Amateur Radio Astronomy](#) (34 MB)
Jürgen Starek
- [We make a chart of the Milky Way](#) (3 MB)
Andries Boone
- [Small Aperture, Low SNR Pulsar Detection](#) (1 MB)
Peter East
- [Highlights from the observations at Astropeiler Stockert](#) (4 MB)
Wolfgang Herrmann
- [DL0SHF station remote control with BeagleBone, Python and ZMQ](#) (6 MB)
Per Dudek and Martin Sütke
- [Dwingeloo goes SDR](#) (12 MB)
Paul Boven
- [Schumann Resonance, Barriers to Detection](#) (4 MB)
Norman Pomfret
- [Hydrogen-line and pulsar observations with a small antenna](#) (9 MB)
Tadeja Saje and Matjaž Vidmar

The next conference is in 2020 and will probably be in The Netherlands.

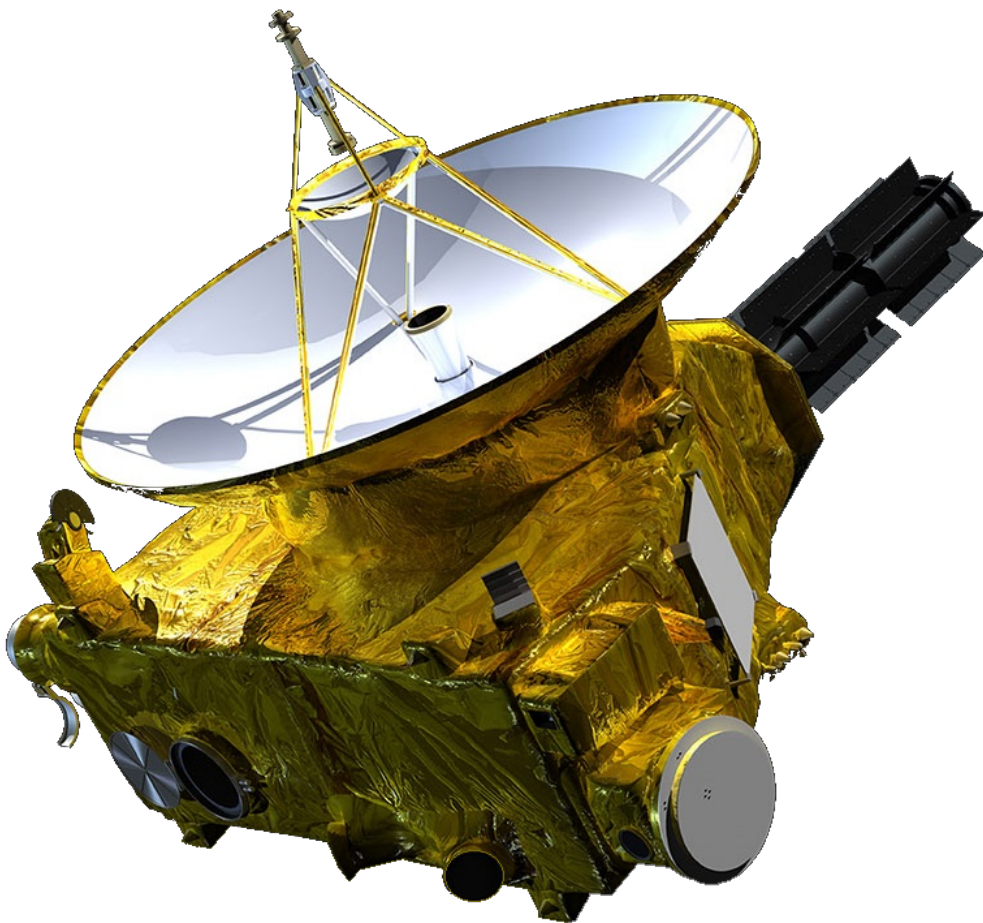
Another little missive from the Library.

Andy Willshire

New Horizons Interplanetary space Probe.

New Horizons began its official life in November 2001 when it gained official funding as a segment of the New Frontiers program. It was at this point that the Bush administration selected a new NASA chief who was against the project. However due to much lobbying at all political levels, the project was accepted, with a proposal to be ready for launch in 2006. The Southwest Research Institute built the majority of the spacecraft with John Hopkins Applied Physics Lab.

New Horizons is a medium-class mission from NASA which has been designed to explore diverse areas in the solar system. It arrived at the Kennedy Space Center on board a Boeing C-17 GlobemasterIII, aircraft. It was launched from pad 41, Cape Canaveral, Florida with a Lockheed Martin Atlas V 551, rocket,(which uses five solid rocket boosters), on January 19th 2006 at 1400 hrs EST, with the intention of meeting up with Pluto ten years later. The speed of the earth and solar escape trajectory was about 16.26 km/sec. This was third attempt lucky, as due to high winds and bad weather the previous two proposed launches that week had been cancelled. Once separation from the launch vehicle occurred, the Applied Physics Lab in Maryland took over complete control. Having collected data from Pluto it is to flyby and investigate some Kuiper belt objects.



Picture credit ;By National Aeronautics and Space Administration (NASA), Applied Physics Laboratory - "PEPSSI Instrument Tastes Pluto's Atmosphere" from the Applied Physics Laboratory New Horizons website., Public Domain, <https://commons.wikimedia.org/w/index.php?curid=41340864>

The body of New Horizon is triangular in shape 0.76m in thickness, with an aluminium alloy tube comprising the main pillar that anchored the structure and a 2.1m dish antenna attached to the flat side. The tube also housed the titanium fuel tank. Using titanium allows for temperature regulation and structural strength. Internally radiative heat transfer occurred by having the walls painted black. Its steadiness is controlled by having spin stabilisation and three axis stabilisation modes which are controlled by inorganic hydrazine monopropellant. An extra delta-v used post launch, provided 290m/s push. There are 16 thrusters throughout the craft. The larger thrusters are for flight path control, with the smaller ones for altitude management. Star cameras and two Adcole sun sensors assist with measuring altitude position. Within the unit there are also gyroscopes and accelerometers. The on board power is provided by a radioisotope thermoelectric generator (RTG), which gave 245.7 W of power at launch and would lose 5% every 4 years. This RTG module originated for the Cassini mission and was retained as a spare, containing 9.75 Kg of plutonium 238 oxide pellets, clad in indium and a graphite shell.

X band radio, a band of frequencies in the microwave radio region, is used to transmit information to and from the spacecraft. The frequency range is spread between 7.0 and 11.2 GHz. At Jupiter the transmit rate is about 38kbit/s, but this drops to 1kbit/s at each onboard transmitter at Pluto as well as the 4.5 hours signal latency rate. Signals once past Jupiter are sent via 70m Deep Space Network dishes.

There are four computer systems on the spacecraft. One controls the command module and one the guidance and control systems. These are duplicated in order to increase reliability. They contain a Mongoose-V, a 12 MHz processor which is radiation seasoned. There are many redundant systems within this section of the module, so that snags and offline time are kept to a minimum.

The mission's primary objectives were to investigate how Pluto and the Kuiper belt were formed and the changes that occurred to the early Solar System, collecting a multitude of data including atmospheres and surface constituents. Its main objectives are:

- Investigate the structure of the surface of Pluto and Charon, geologically.
- Research the atmosphere of Pluto, and investigate if Charon has one.
- Look for any extra satellites around Pluto and plot surface temperatures.
- To attempt similar projects with some Kuiper Belt objects.

As it left Earth, it headed for Jupiter culminating on 28th February 2007 with its closest flyby, at a distance of 2.3×10^6 km. This flyby increased New Horizons speed by a gravity assist. It also gave the scientists time to check on some of the instruments on New Horizons to ensure that they were working. They scanned the moons, magnetosphere and atmospheric composition. During the dates 27/28 of February 2007 the four main moons were photographed providing intuitive pictures. Plumes from the Tvashtar paterae region of Io were noted at 330km in height. The probe then spent most of its time at Pluto in hibernation mode, only occasionally having sections woken up to check on its viability.

On December 6th 2014 the probe was woken up and checks were made of its systems, to ensure that all was well for the Pluto encounter. On 15th January 2015, the New Horizons space probe began its next phase, to get nearer to the dwarf planet Pluto. A dwarf planet is neither a planet nor a natural satellite and directly orbits a star.

On 14th July 2015 it flew 12,500km above the surface of Pluto, having a relative velocity of 13.78km/s at its closest approach. Using LORRI (long range imaging), they mapped both Pluto and Charon to a resolution of 40km, at 50m per pixel. Examination of the dwarf planet was occurring for the first time. Close range imaging was undertaken twice each day checking to see if there were any large falls of snow and/or cryomagma. At the same time the ultraviolet imaging spectrometer (ALICE) was examining the atmospheric emissions, and investigations were made of the solar winds. While on flyby, the equipment also searched for dust which could be an indicator for meteoroid collisions.

October 25th 2016 was the last flyby of Pluto, which meant that the next phase of the adventure was to be put into operation. This was to head towards the Kuiper Belt. New Horizons was then

put to sleep for several periods until it was awoken again on 5/6/2018. The spacecraft has now found data that may indicate that there is a layer of hydrogen gas surrounding all planets orbiting the sun. Using ALICE (Ultraviolet imaging spectrometer), a wall of ultraviolet light has been found that would indicate the existence of a hydrogen layer. Information about this layer was first suggested by the Voyager project.

New Horizons is now speeding towards the Kuiper Belt object 2014 MU69. This is an icy body nicknamed Ultima Thule that exists way beyond Neptune and does orbit our sun. This trans Neptunian body has a reasonably circular orbit ($e = 0.0046$) and an orbital period of 295 years. It is elongated with two distinct lobes of diameters 20km and 18 km. It was discovered on the 26 June 2014 by Hubble and was given an identification tag 1110113Y. The flyby is scheduled for the 1st January 2019.

References:

1. https://en.wikipedia.org/wiki/New_Horizons https://www.nasa.gov/mission_pages/newhorizons/main/index.html
2. timetravellerwiki.com/2018/06/05/nasas-new-horizons-probe-woke-up-today-to-prep-for-its-next-deep-space-flyby/
3. <https://gizmodo.com/nasas-new-horizons-is-awake-and-ready-to-explore-space-1826650192>

A Grazing Lunar Occultation of Hipparcos 21630

James Appleton

The sixth grazing lunar occultation of 2018 was forecast to be visible from East Anglia along a line running SW to NE, passing a few kilometres north of the village of Dennington (north of Framlingham) at approximately 02:30 UT on Monday 03 September. (All times in this report are expressed as UT.) The star, Hipparcos 21630, is a magnitude 7.9 object, relatively faint for visual observations of a graze.

Alan Smith and James Appleton made the usual arrangements. They used the freeware software package Occult 4.01 to calculate the nominal graze line for the event; this passed 22 km from Orwell Park Observatory. Potential observing locations were identified with Google Earth and then Alan carried out a reconnaissance of prospective sites, finding the best to be just off Tannington Long Road, approximately 3.6 km NW of the centre of Dennington. The site, although exposed, offered an isolated location just off a quiet public road, unlikely to be disturbed by passing traffic. Following an unfortunate incident during an attempt to observe the graze of V4190 Sgr on 25 October 2017, Alan informed Suffolk Constabulary by email of our intentions, receiving in response a hope for clear weather!

Following the usual protocol, Alan emailed the membership of OASI asking for expressions of interest in observing the graze. Because of the unsociable time, only three observers stepped forward to join Alan and James: Andy Gibbs, Mike O'Mahony and Joe Startin. The five convened for a go/no-go audioconference on the evening before the graze: the weather forecast for the event was good, so the decision to proceed with observations was an easy one.

First to arrive at the observing site, at 01:23 UT, was James, followed soon after, in order, by Mike, Alan, Andy and Joe. All experienced journeys from Ipswich and environs beset by banks of localised fog, sometimes dense, which generated worries that the graze itself could be obscured by fog. In fact, the observing site turned out to be ideal: at an altitude of approximately 61 m above mean sea level, it was above the fog, and the quiet rural location meant that there was no passing traffic. The night was windless, and damp, but the sky was transparent with no light pollution.

1 Occult 4.0 is developed by the amateur astronomer David Herald. It may be downloaded from his website: <http://www.lunar-occultations.com/iota/occult4.htm>

By 01:45UT, all observers had arrived and were busy setting up. Table 1 shows the equipment in use and approaches to timing the event.

Observer	Equipment	Timing
James	Meade LX200 SCT, 254 mm, F10 on Meade altaz driven mount with x2 Barlow and Canon EOS 6D MkII camera. Recorded video at 25 fps, 1/25s exposure, ISO 20,000).	Commentary and time pips from Alan's "Time Sync" app recorded on the video for off-line determination of event times.
Andy	Orion XX12i push-to Dobsonian, 305 mm with 14 mm Meade Series 5000 eyepiece (107x magnification).	"Audio Memos" app on iPhone used to record commentary and timings from Rugby radio watch and Alan's "Time Sync" app.
Mike	230 mm Celestron f10 SCT (fl= 2350 mm) on HEQ5 Pro Mount. Magnification 156x (15 mm eyepiece).	Commentary recorded on iPhone recorder synchronised to Andy's Rugby radio watch.
Alan	250 mm Dobsonian mounted Newtonian reflector, with electric drives on alt and az. 10 mm Plossl eyepiece giving about 150x magnification.	One minute pips from Android app "Time Sync" broadcast to site using bluetooth amp. Commentary and pips recorded with MP3 audio recorder.
Joe	OASI's Celestron NexStar 8SE 200 mm SCT on alt-az go-to mount. 15 mm Plossl eyepiece.	Unsuccessful observation – event not timed.

Table 1. Observers, equipment and approaches to timing the event.

Unfortunately, Joe was unable to locate the star. His telescope, borrowed from OASI, did not produce a clear image¹. The other observers fared better and were able to locate the star relatively easily, in fact, much more readily than expected. This was primarily because glare from the Moon did not present a serious problem (the lunar phase was 50%, waning). By shortly after 02:00 UT, the four observers other than Joe were tracking the star as the Moon appeared to approach.

Although the graze took place on the dark limb, the bright limb made the initial approach to the star. As the apparent distance between the two decreased, the contrast of the star against the background reduced (indeed, in James' camera screen, the star was invisible for several minutes). As the lunar terminator passed the star and the dark limb edged ever closer, contrast improved and, with it, the visibility of the star. Earthshine was visible on the dark limb, so the observers could predict when the limb was about to obscure the star. Figure 1 is a frame from James' video, showing the star shortly before first disappearance. (In order to render the star easily visible, the video had to be taken with a high ISO setting – details below – with the result that most lunar features appear bleached out.)

¹ The problem will be investigated and rectified!



Figure 1. H 21630 shortly before disappearance on the dark limb.

Other than Joe, the observers witnessed two lengthy (several seconds) disappearances and several brief disappearance events. Towards the end of the graze, at least two brief disappearances occurred in rapid succession. By 02:35 the lunar limb was visibly receding from the star and the event was over. All agreed that the event had been a great success, and certainly the most interesting graze observation in recent years. Following the obligatory team photo (figure 2), the observers packed up and returned home.



Figure 2. The observers: James Appleton, Alan Smith, Mike O'Mahoney, Joe Startin, Andy Gibbs

Analysis of Results

Figure 3 illustrates limb profile information for the event (from Occult 4.0). The dotted curve represents the mean lunar limb; it appears elliptical rather than circular because the vertical scale has been stretched to show limb features more clearly. The red line represents the true limb (based on survey data obtained from NASA's Lunar Reconnaissance Orbiter, launched in 2009) and the blue line the location of the observers.

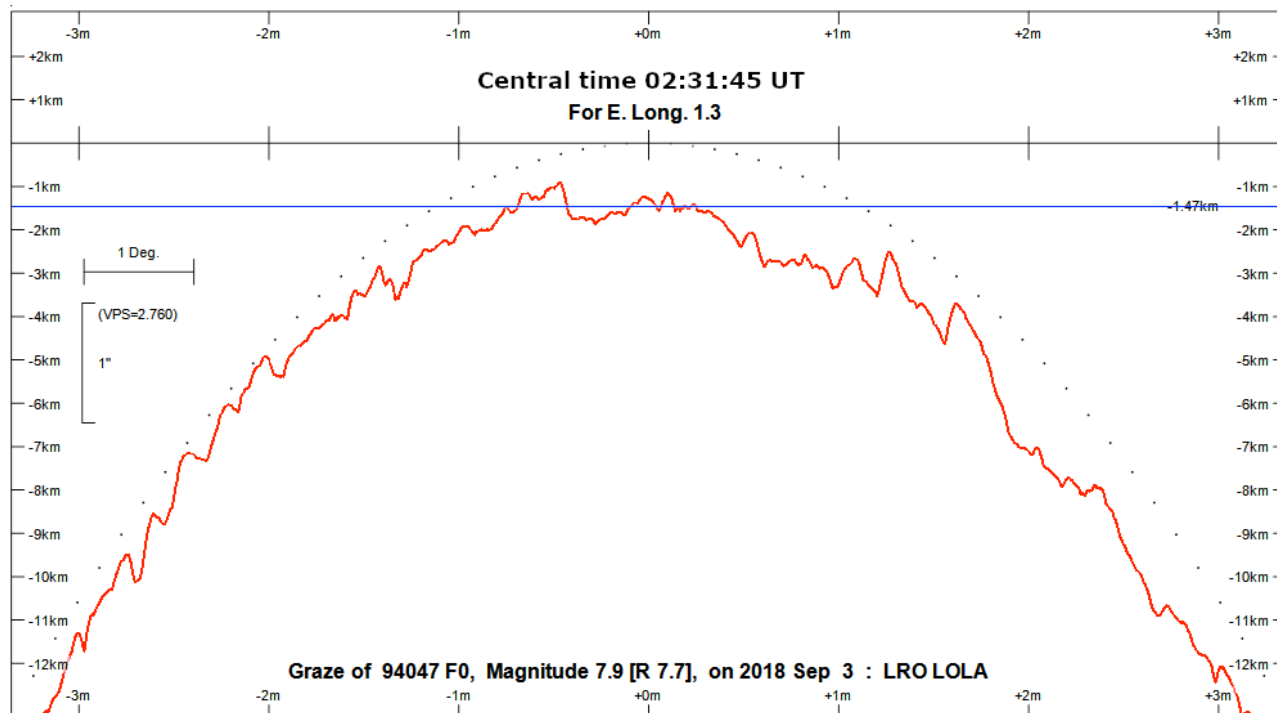


Figure 3. Limb profile.

The graze was a northern limb event. The northern limb is considerably less mountainous than the southern. As a result, for northern limb grazes, the location of observers with respect to the nominal graze line can be critical if multiple disappearance/reappearance events are to be witnessed. Indeed, inspection of the limb profile for the graze indicates that the observers needed to be within 1.1 to 1.6 km south of the nominal graze line in order to maximise the chances of witnessing multiple events. The chosen observing site, off Tannington Long Road, lay 1.47 km south of the nominal graze line, towards the southern limit of the acceptable range.

Figure 4 compares the disappearance/reappearance events predicted from the limb profile with the observer's empirical timings. Agreement between observation and theory is generally very good, more so than has been the case for recent grazes.

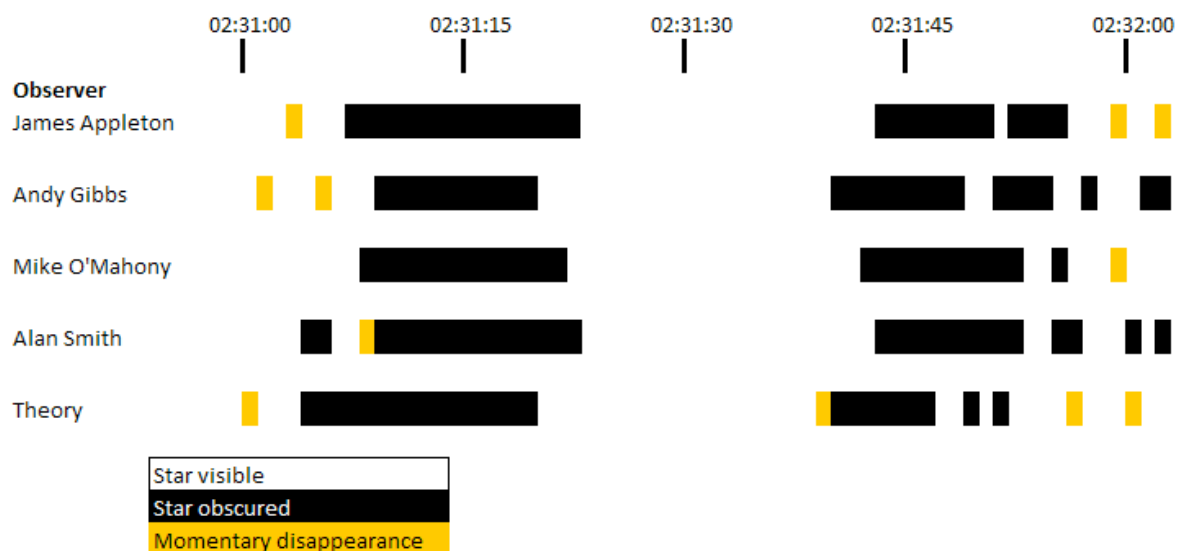


Figure 4. Timings.

Table 2 summarises key information about the event. Figure 5 shows the observing location (site 4 in Alan's original list of potential sites).

Star	Hipparcos 21630
Magnitude	7.9
Constellation	Taurus
Lunar phase	50% waning
Lunar elongation	90°
Lunar libration	$\lambda = -5.17^\circ$, $\beta = +6.16^\circ$
Approach	Bright limb
Limb	North
Predicted central time	02:31:45 UT
Altitude of Sun	-22°
Altitude of star	39°
Azimuth of star	1149°
Observing location (WGS84)	1.299839°E, 52.274870°N, 61 m elevation

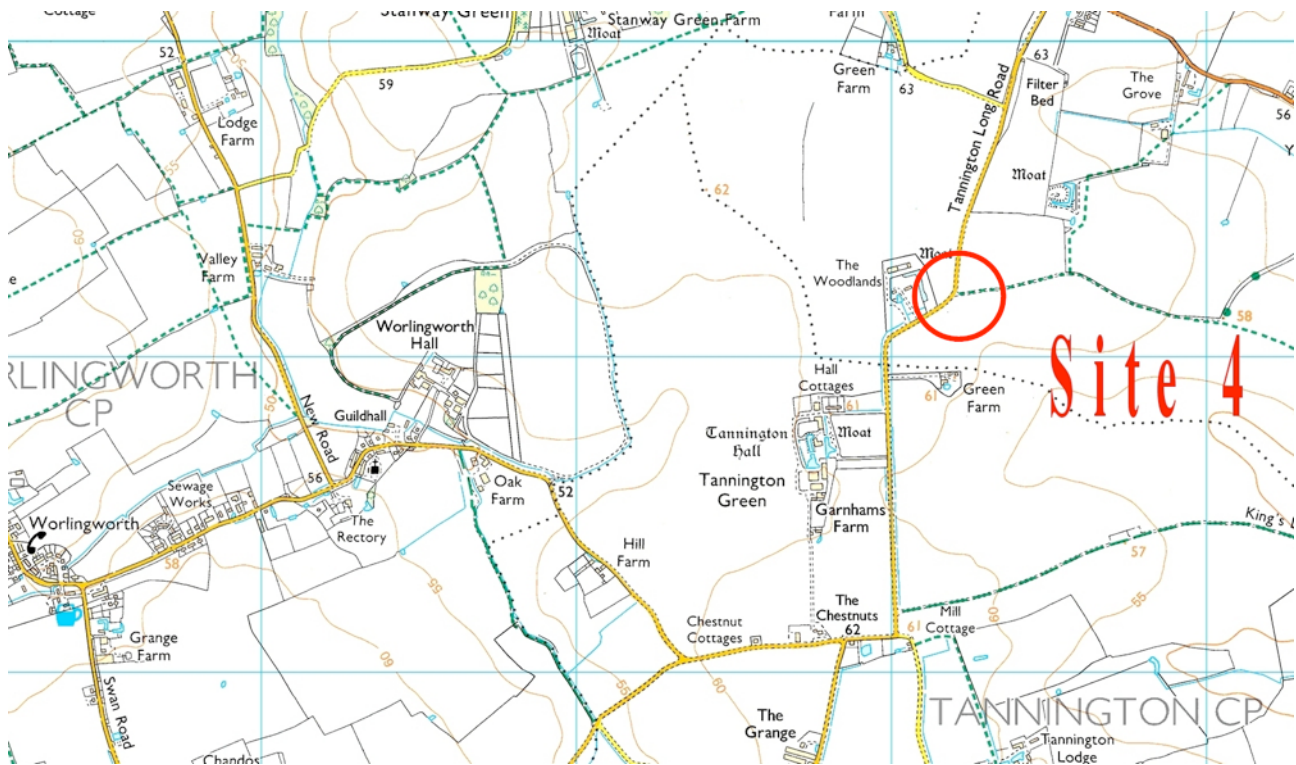


Figure 5. Observing location.

Lecture Notes

Dr Lorne Whiteway "Can the world's largest digital camera answer cosmological questions?"

<https://github.com/LorneWhiteway/DECamCosmologyTalk/blob/master/DECamCosmologyTalk.pdf>

From the Interweb

A modification for the Coronado PST using eyepiece projection.

<http://sweiller.free.fr/PST/indexPST.html>

Jupiter's Great Red Spot

<https://www.universetoday.com>

For almost 200 years humans have been watching the [Great Red Spot](#) (GRS) on Jupiter and wondering what's behind it. Thanks to NASA's [Juno](#) mission, we've been getting better and better looks at it. New images from [JunoCam](#) reveal some of the deeper detail in our Solar System's longest-lived storm.

[JunoCam Wows Us Again With Detailed Images of the Great Red Spot](#)

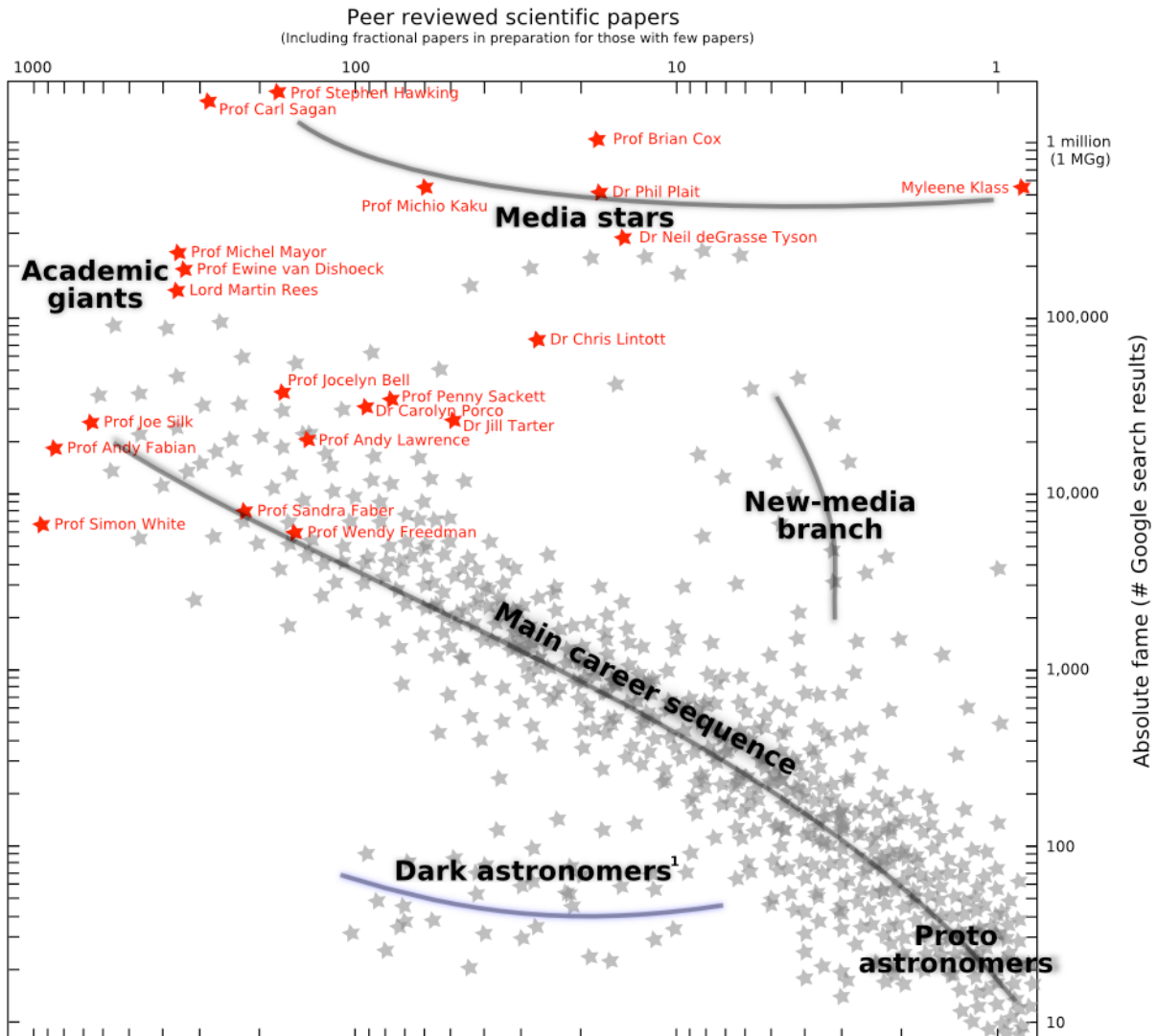
The Hayabusa2 rovers just made a movie on the surface of an asteroid

<http://gizmo.do/bixScmP>

A new H-R diagram

Bill Barton

The H-R diagram of Astronomers^{*}



NOTE: As in astronomy, the numbers are correct to a factor of a few. Most of the grey points are purely representative.
P.S. This was made in 2010 as a joke: <http://www.strudel.org.uk/blog/astro/000943.shtml>. See <http://tinyurl.com/astroHR> for a follow-up AAS poster based on real data

The Summer Triangle

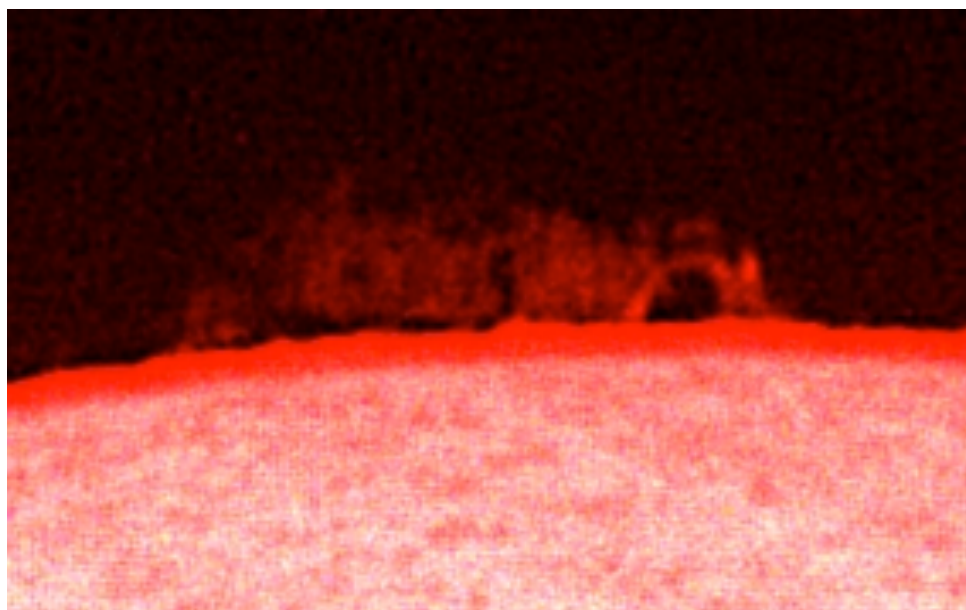
Photo by Iain Hastie



3 Sept at 22:25 BST Canon EOS1200D 50mm ISO 800, 240s

Solar prominence

Photo by Martin Cook



The Sun showing a large prominence. 29:9:2018 11:30hr

Lunt LS50THa B600PT H-alpha Solar Telescope, 2X Barlow, QHY5P-II Colour camera.

Open Weekend

Orwell Astronomical Society

Charity No. 271313

www.oasi.org.uk

PUBLIC OPEN WEEKEND

Visit and Use One of the Few Remaining Fully Operational Victorian Observatories
Located at Orwell Park School Nacton off the A1156
Between Ipswich and Felixstowe IP10 0ER

Orwell Park Observatory will be Open to the Public

The weekends observing programme will include

**Observations of the
Moon and the Night Sky**

Friday 19th October 7:30pm to 10:00pm

Saturday 20th October 7:30pm to 10:00pm

Observations will be made using the 10" Tomline Refractor
And a wide selection of other smaller telescopes

All observations are subject to favourable weather conditions

If you have a pair of binoculars we recommend that you bring them with you.
All observations are outside so please bring appropriate clothing

Entrance Donation
Adult £3.00
Child & Concessionary £ 1.50



Honorary Secretary
Roy Gooding
168 Ashcroft Road
Ipswich
IP1 6AE