No. 565 Registered Charity 271313 May 2020

OASI News

The newsletter of the Orwell Astronomical Society

Lunar Halo

Photo by Alan Smith

Contents

Society Notices

Advice regarding Coronavirus COVID-19

Dear Members,

Following the 16 March Press Conference from the Prime Minister and leading Scientists from Public Health England, it is clear that the number of Coronavirus cases in the UK is accelerating rapidly.

One of the key points was to “Avoid any non-essential social contact”. The time has come to protect the health of our members and their families, therefore, I regret that we will be suspending all OASI activities until further notice. This includes our meetings at Orwell Park and Newbourne, plus all outreach events.

I will send an email to all members when the Committee decides it is safe to resume our activities, hopefully, in the not-to-distant future.

Let’s all keep in touch during the OASI “lockdown”, one bonus of being forced to stay at home means more time for star gazing and astrophotography!

Thank you,

Andy Gibbs, Chairman

Society Contact details

Observatory (meeting nights only) 07960 083714

Email queries: info@oasi.org.uk

Facebook: Orwell Astronomical

Twitter: @OASIpswich

Members-only message board https://groups.io/g/OASI

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

The Observatory is closed.

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, rtfd, 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 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 2020

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

Assistants

	Martin Richmond-Hardy	Newsletter, OASI @ Newbourne

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.

Committee Meeting

This will be held on **Friday 22 May,** 8pm by Skype. Please join the **OASImembers** Skype group to attend. Contact Martin Cook for details.

Welcome new & returning members

None during April.

We wish all our readers and their families good health during this difficult time. Clear skies!

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 (bottom right of the calendar) 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

Key:

OASI public events *BAA & SPA events* *Other events*

Date, Time & Location	**Contact**	**Event**
Weekly, every Wednesday, 20:15–22:00 Orwell Park Observatory	Martin Cook, Roy Gooding	OBSERVATORY CLOSED Meet via Skype.
Mon 4 May from 19:30 Skype	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI @ Newbourne **Meet via Skype**.
Wed 6 May	https://britastro.org/node/21142	BAA Webinar *From Kitchens to Comets - Hunting for molecules with a spectroscope* Hugh Allen,Chairman of the Wells & Mendip Astronomers
Wed 13 May	https://britastro.org/node/21142	BAA Webinar *Sir Patrick Moore - Early Life, Mentors and Notebooks (Part II)* Dr John Mason, Trustee and Archivist for the Sir Patrick Moore Heritage Trust
Wed 20 May	https://britastro.org/node/21142	BAA Webinar *The Solar Cycle* Lyn Smith, BAA Solar Section Director
Fri 22 May 2020, 20:00 Skype	Andy Gibbs chairman@oasi.org.uk	**Committee meeting.** **Meet via Skype.**

Date, Time & Location	Contact	Event
Mon 25 May from 19:00 Skype	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. **Meet via Skype.** Talk by Bill Barton on the night sky.
Mon 8 June from 19:00 Skype	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. **Meet via Skype.**
Mon 22 June from 19:00 Newbourne Village Hall ??	Martin Richmond-Hardy newbourne@oasi.org.uk	OASI@Newbourne. **Depends on COVID-19 situation** **Meet via Skype.** Talk by Bill Barton on the night sky.
Saturday 27 June Newbourne Village Hall	Pete Richards lectures@oasi.org.uk	Summer BBQ, open to members of OASI and their guests. Barbecue lighting time: 3.00pm. Bring your own drinks and food to barbecue; in case of bad weather, bring picnic food to eat in the hall. Solar observing (if the sky is clear!) **Depends on COVID-19 situation.**

Please note that the listed events may change depending on the progress of the pandemic.

Meetings via Skype

Martin RH

I've set up an OASImembers group on Skype. To join, please first contact Martin Cook with your Skype name. OASI members only.

We meet on Wednesday evenings from 19:30 and on Newbourne nights (see below) from 19:30.

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). **BUT In view of the COVID-19 situation all meetings at Newbourne are suspended. If OASI members would like to meet up via Skype on those evenings, please first contact Martin Cook with your Skype name to receive an invitation. Members only, please.**

OASI@Newbourne Meetings

~~4 May[*] 25 May (B/H) (S+B)~~

Subsequent meetings will be assessed in line with the current Government Guidelines in place at the time. Thank you for your understanding.

8 Jun	22 Jun (S+B)	July 13 (W)	July 27 (S+B)
Aug 10	Aug 24 (S+B)	Sept 14	Sept 28 (S+B)
Oct 12	Oct 26 (S+B)	Nov 9	Nov 23 (S+B)
Dec 14	Dec 28 (S+B)		

We open up for all meetings at 7pm. Star Guide (S) at 7:30pm and Workshops (W) at 7:45pm.

* 1st Monday due to Parish Council meeting on 2nd Monday.

Stargazer's Guide

On the last meeting each month Bill Barton FRAS will give a short presentation of what can be viewed in the following 4 weeks plus a reminder of OASI events. During the COVID-19 isolation period these will be available on our website and in OASI News.

Astronomy Workshops/Informal talks

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.

Meetings will depend on COVID-19 situation. Talks will be via Skype during lock-down..

- Paul Whiting: *Wartime Astronomy*, date 13 July TBC.

Paul Whiting, Bill Barton and James Appleton have offered to lead workshops as follows:

- Paul Whiting: *Galaxy Collisions*, date TBA.
- Bill Barton: *Celestial Coordinates*, date TBA. New members at Newbourne have requested this workshop; Bill is willing to lead it but will defer if anyone else would rather do so.
- James Appleton: *Update on OASI All-Sky Meteor Cameras*, date TBA.

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

STOP PRESS

We had our first talks via Skype with about 24 attenders on Monday 27 April. Slight problems with a couple of people not seeing the screen-sharing of the first presentation, seemingly fixed by the "turn-it-off-and-on-again" method.

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.

Friday 25th September

Nik Szymanek

"Adventures in Deep Sky Astrophotography"

Friday 23rd October

Sonali Shukla

"Brown dwarfs: Linking stars and planets"

Stars and planets are fundamentally different astronomical object yet the formation processes for each of these types of objects are heavily intertwined. Brown dwarfs straddle the realm of both stars and planets, exhibiting characteristics of both but not fully fitting into either category. I will explore the history, discovery and latest results from our study of brown dwarfs and relate them to our lowest mass dwarf stars and biggest known planets. Understanding brown dwarfs can lead us to better understand how stars and planets form in tandem, both in our solar system and beyond.

Friday 20th November

Matt Bothwell:

"Big bangs to big rips: a history of 20th century cosmology"".

Other local astronomy society meetings

Athaneum Astro Society

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

LYRA Lowestoft & Yarmouth Regional Astronomers

www.lyra-astro.co.uk

Due to current Corona Virus outbreak all LYRA meetings are cancelled until further notice.

The published events are as follows:

May 12th	A talk "The Chippingdale Observatories" by Dale Holt
May 26th	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm
June 9th	A talk "Fiammetta Wilson FRAS, 19th July 1864-2 July1920, an Astronomer from Lowestoft" by Bill Barton FRAS.
June 23th	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm

July 14th	TBC
July 28th	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7.30pm
Aug 11th	Summer Social Evening at Parkhill Hotel
Sept 8th	A Talk “The 3D Sky The H-R Diagram and Gaia” by Micheal Poxon
Sept 22th	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7:30pm
Oct 13th	A Talk “The Third Gaia Release” by Floor Van Leeuwen from The Institute of Astronomy Cambridge
Oct 27th	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7:30pm
Nov 10th	A Talk “Black Holes and Gravitational Waves” by Dave Cook
Nov 24th	LYRA Observing/Practical night at Barn Car Park, Parkhill Hotel from 7:30pm

DASH Astro

Darsham And Surrounding Hamlets http://dash-astro.co.uk

Meetings are held at New Darsham Village Hall and 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 from 7:30 pm. on Sundays

Due to the Corona Virus, and on UK government Advice we have cancelled the meeting on 5th April . Subsequent meetings will be assessed in line with the current Government Guidelines in place at the time. Thank you for your understanding at this time. Stay Safe.

Note * Guest Speaker Evenings - Admission Fees:- Members Free, Non Members £ 2:00

Meetings are now on Sundays.

10 May*	**Meeting CANCELLED**
~~24 May~~	~~Solar Observing - Location TBA~~
~~14 June~~	~~Outreach:- International SUNday - Location Dunwich Heath~~
25- July	(Saturday) DASH Summer Social (Members and Guests only)
06 Sept	**Meeting:- Ian Lomas - Quantum Mechanics for Beginners**
13 Sept	Dash Observing Session (Sunset 19:14 Moonset 17:46 21.5% Moon)
19&20 Sept	Outreach:- Henham Steam Rally. Solar Observing and Displays
04 Oct*	**Meeting:- Stewart Moore – Globular Clusters**
18 Oct	Dash Observing Session (Sunset 17:50 Moonset 18:57 4.7% Moon)
01 Nov	Meeting:- Talk T.B.C.
15 Nov	Dash Observing Session (Sunset 15:59 Moonset 16.21 0.2% Moon)
29 Nov	Meeting:- Talk T.B.C.
12- Dec	(Saturday) DASH Christmas Social (Members and Guests only)

BAA news

BAA meetings in May–June

A decision has been made to cancel or postpone all the Association’s meetings scheduled for March and April. This includes the Ordinary meeting, and the SGM, the Winchester weekend and the Spring Meeting in Nottingham. Moving into May the Venus and Mercury section meeting in York and the VSS meeting have been postponed, probably to a similar time next year, subject to venue availability.

Wed., May 27	17:00 BAA Meeting & George Alcock Memorial Lecture
Sat., June 20	Advanced Planetary Imaging Workshop Institute of Physics, 37 Caledonian road, London N1 9BU A one-day workshop on high speed video imaging of the planets

For full details of all meetings or cancellations, please go to https://britastro.org/meetings.

BAA Webinars

https://britastro.org/node/21142

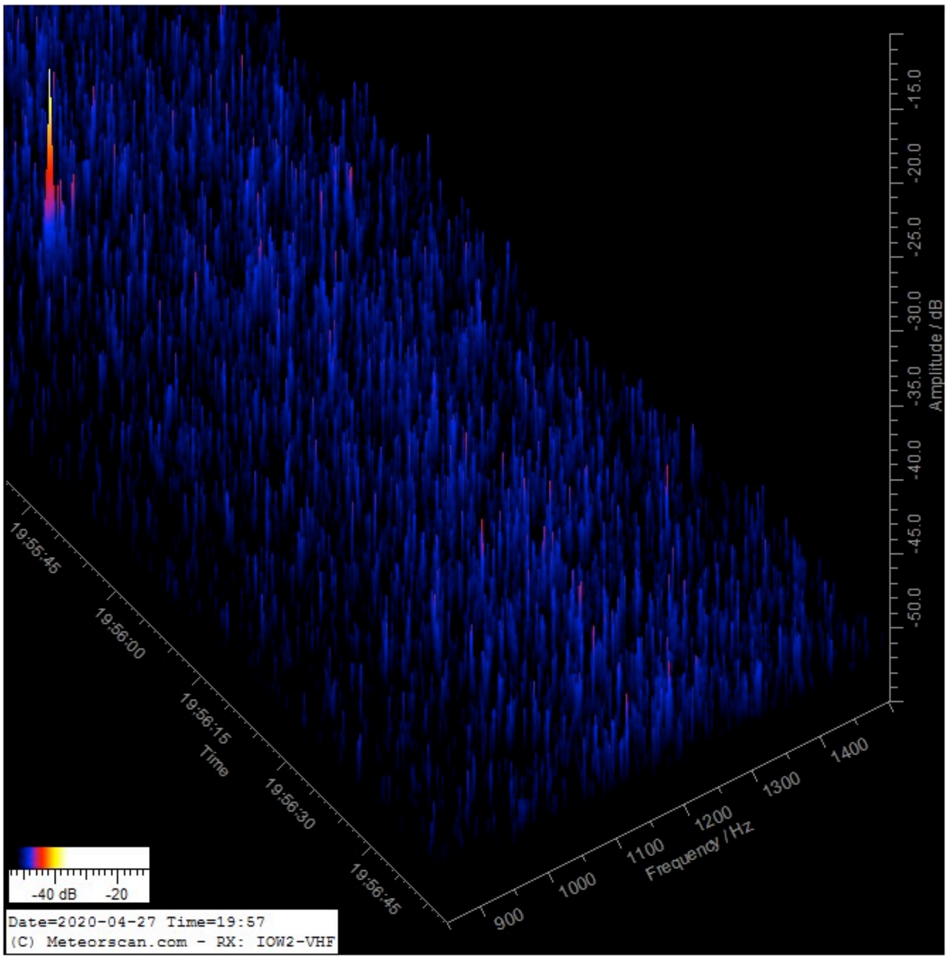
29th April 2020	Twilight Tour of the Moon	David Arditti, BAA Equipment & Techniques Section Director
6th May 2020	From Kitchens to Comets - Hunting for molecules with a spectroscope	Hugh Allen, Chairman of the Wells & Mendip Astronomers
13th May 2020	Sir Patrick Moore - Early Life, Mentors and Notebooks (Part II)	Dr John Mason, Trustee and Archivist for the Sir Patrick Moore Heritage Trust
20th May 2020	The Solar Cycle	Lyn Smith, BAA Solar Section Director

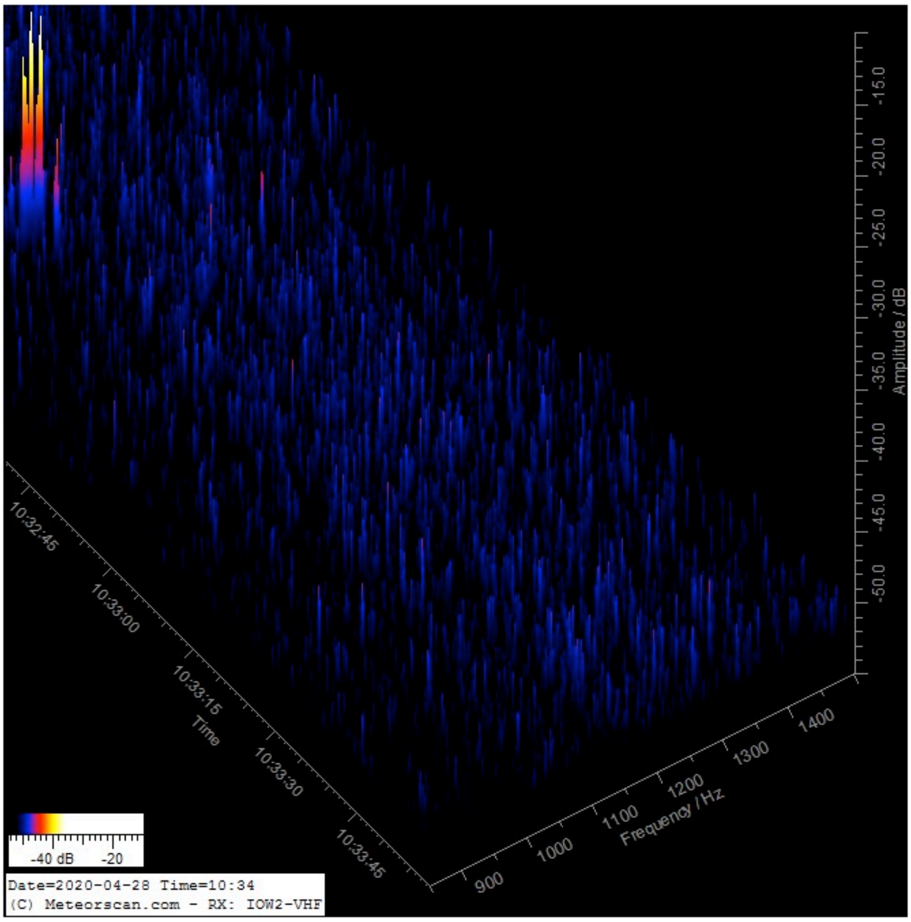
From the Interweb

Live meteor detection

http://meteorscan.com/meteor-live.html

Explained here http://www.meteorscan.com/meteor-live/live-view-explained.html





Circumzenithal Solar Arcs

http://www.thehalovault.org/2020/04/new-halo-triple-cza-jensen-arcs-in.html?m=1

On April 14, a layer of high quality crystal cloud blanketed Denmark and treated sky watchers there with a feast of rare halos. Among those lucky ones, Anders Falk Jensen was probably the most prepared and dedicated, and what he has captured this day will go down in halo history books as a legend.

13 Minutes to the Moon – The Apollo 13 Story

https://www.bbc.co.uk/programmes/w13xttx2

HT to member Olaf Kirchner for drawing attention to this.

ESO Telescope see stars dance around supermassive black hole

https://www.eso.org/public/news/eso2006/

The Night Sky in May 2020

Martin RH

All event times (**BST unless otherwise stated**) are for the location of Orwell Park Observatory 52.0096°N, 1.2305°E.

Moon

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

New Moon	1st Quarter	Full Moon	Last Quarter
	30 April 21:38	07 May 11:45	14 May 15:03
22 May 18:39	30 May 04:30		

Sun, Moon and planets

Source: http://heavens-above.com/PlanetSummary.aspx **Times are BST (UTC+1)**.

Object	Date	Rise	Set	Mag.	Notes
Sun	1	05:25	20:21		
	31	04:42	21:05		
Moon	1	12:05	03:18		Perigee 359,654 km 06 May 2020 04:03 Apogee 405,583 km 18 May 2020 08:45
	31	13:56	02:38		
Mercury	1	05:26	19:49	-1.7	Superior conjunction 04 May Perihelion 10 May In evening sky, greatest elongation June 04 (24°). Good observing opportunity mid May to mid June
	31	06:01	23:02	0.2	
Venus	1	06:37	00:17	-4.4	
	31	04:56	21:28	-3.8	
Mars	1	03:20	12:29	0.4	
	31	02:04	12:27	0	
Jupiter	1	02:10	10:14	-2.2	
	31	00:12	08:14	-2.4	
Saturn	1	02:23	10:41	0.6	
	31	00:25	08:41	0.4	
Uranus	1	05:24	19:43	5.9	
	31	03:29	17:54	5.9	
Neptune	1	04:07	15:15	7.9	
	31	02:10	13:20	7.9	

Occultations during May 2020

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.

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
02 May	22:03:23	D	0.72+	-18	43	6.8	ZC 1578
03 May	21:29:02	D	0.82+	-15	44	4.0	3 Vir, ν Vir
	22:16:04	R		-19	41		
05 May	21:06:27	D	0.96+	-13	29	5.7	80 Vir
25 May	21:16:41	D	0.10+	-9	11	6.8	Hip 32688
27 May	22:27:51	D	0.26+	-14	15	7.1	ZC 1315
31 May	23:36:03	D	0.70+	-16	20	7.3	ZC 1783

Meteor showers

Source: BAA Handbook 2020 p100-101

Shower	Normal limits	Maximum	ZHR at Max	Notes
η–Aquarids	Apr 19 – May 28	May 6	40	Fine southern shower, poorly seen from the UK. Fast meteors, many with persistent trains. Good in 2013.
Daytime Arietids	May 22 – July 2	June 7	30?	Most active of the daytime howers. Good for radio observers. ZHR and radiant location uncertain.
Daytime ζ-Perseids	May 20 – July 5	June 9	20?	Peak overlaps with that of Daytime Arietids. Good for radio observers. ZHR and radiant location uncertain.

For radio observation, use reflections from Graves radar on 143.050MHz or the Brams transmitter in Belgium on 49.97MHz.

Visible ISS passes ≥15° max altitude

Martin RH

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

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

Date	Bright–ness (mag)	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 May	-2.2	04:20:49	11°	SSW	04:23:32	26°	SSE	04:26:25	10°	E
02 May	-1.8	03:34:45	16°	S	03:35:55	19°	SE	03:38:22	10°	E
03 May	-3.2	04:21:34	12°	SW	04:24:31	46°	SSE	04:27:47	10°	E
04 May	-2.8	26/04/202(	24°	SSW	03:36:48	35°	SSE	03:39:55	10°	E
05 May	-2.4	02:49:11	25°	SE	02:49:11	25°	SE	02:51:58	10°	E
05 May	-3.7	04:22:13	10°	WSW	04:25:34	71°	S	04:28:57	10°	E
06 May	-3.6	03:35:50	22°	SW	03:37:46	59°	SSE	03:41:07	10°	E
07 May	-3.4	02:49:32	42°	S	02:50:00	45°	SSE	02:53:15	10°	E
07 May	-3.8	04:23:17	10°	W	04:26:40	86°	S	04:30:03	10°	E
08 May	-2.4	02:03:12	28°	ESE	02:03:12	28°	ESE	02:05:20	10°	E
08 May	-3.8	03:36:07	15°	WSW	03:38:49	81°	S	03:42:12	10°	E
09 May	-3.9	02:49:44	35°	WSW	02:50:58	71°	SSE	02:54:20	10°	E
09 May	-3.8	04:24:21	10°	W	04:27:44	81°	S	04:31:06	10°	E
10 May	-3.6	02:03:20	56°	SE	02:03:20	56°	SE	02:06:28	10°	E
10 May	-3.8	03:36:28	10°	W	03:39:52	86°	S	03:43:15	10°	E
11 May	-2.1	01:16:53	25°	E	01:16:53	25°	E	01:18:33	10°	E
11 May	-3.9	02:49:47	20°	W	02:51:58	86°	S	02:55:21	10°	E
11 May	-3.7	04:25:22	10°	W	04:28:42	60°	SSW	04:32:02	10°	ESE
12 May	-3.9	02:03:17	49°	WSW	02:04:04	80°	S	02:07:27	10°	E
12 May	-3.8	03:37:28	10°	W	03:40:51	72°	S	03:44:12	10°	ESE
13 May	-3.6	01:16:42	57°	ESE	01:16:42	57°	ESE	01:19:33	10°	E
13 May	-3.9	02:49:36	10°	W	02:52:57	82°	S	02:56:19	10°	E
14 May	-2.2	00:30:01	25°	E	00:30:01	25°	E	00:31:38	10°	E
14 May	-3.9	02:02:53	21°	W	02:05:02	86°	S	02:08:25	10°	E
14 May	-3.5	03:38:26	10°	W	03:41:43	47°	SSW	03:44:57	10°	SE
14 May	-1.6	23:42:57	15°	E	23:42:57	15°	E	23:43:41	10°	E
15 May	-3.9	01:15:47	35°	W	01:17:06	86°	S	01:20:29	10°	E
15 May	-3.8	02:50:29	10°	W	02:53:49	61°	SSW	02:57:10	10°	ESE
15 May	-3.1	22:49:33	10°	SW	22:52:36	33°	SSE	22:55:41	10°	E
16 May	-3.9	00:25:47	10°	WSW	00:29:10	80°	S	00:32:33	10°	E

Date	Bright –ness (mag)	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
16 May	-3.9	02:02:33	10°	W	02:05:56	73°	S	02:09:17	10°	ESE
16 May	-2.8	03:39:30	10°	W	03:42:24	27°	SSW	03:45:18	10°	SSE
16 May	-2.7	22:02:00	10°	SSW	22:04:47	24°	SSE	22:07:35	10°	E
16 May	-3.9	23:37:53	10°	WSW	23:41:14	69°	SSE	23:44:35	10°	E
17 May	-3.9	01:14:37	10°	W	01:17:59	82°	S	01:21:21	10°	E
17 May	-3.2	02:51:26	10°	W	02:54:35	36°	SSW	02:57:42	10°	SE
17 May	-3.7	22:50:01	10°	WSW	22:53:19	56°	SSE	22:56:38	10°	E
18 May	-3.9	00:26:39	10°	W	00:30:02	86°	S	00:33:25	10°	E
18 May	-3.6	02:03:26	10°	W	02:06:43	48°	SSW	02:09:58	10°	SE
18 May	-3.4	22:02:12	10°	SW	22:05:24	43°	SSE	22:08:38	10°	E
18 May	-3.9	23:38:41	10°	W	23:42:03	85°	S	23:45:26	10°	E
19 May	-3.9	01:15:27	10°	W	01:18:47	61°	SSW	01:18:53	61°	S
19 May	-3.9	22:50:42	10°	WSW	22:54:05	79°	S	22:57:27	10°	E
20 May	-3.9	00:27:28	10°	W	00:30:51	74°	S	00:31:51	41°	ESE
20 May	-3.8	22:02:46	10°	WSW	22:06:06	69°	SSE	22:09:28	10°	E
20 May	-3.9	23:39:29	10°	W	23:42:51	83°	S	23:45:07	19°	E
21 May	-2.3	01:16:19	10°	W	01:18:00	24°	WSW	01:18:00	24°	WSW
21 May	-3.8	22:51:28	10°	W	22:54:52	86°	S	22:58:14	10°	E
22 May	-3.5	00:28:15	10°	W	00:31:22	48°	SSW	00:31:22	48°	SSW
22 May	-3.8	22:03:28	10°	W	22:06:50	85°	S	22:10:13	10°	E
22 May	-3.8	23:40:14	10°	W	23:43:35	62°	SSW	23:44:47	35°	SE
23 May	-3.9	22:52:13	10°	W	22:55:34	75°	SSW	22:58:13	15°	ESE
24 May	-2.3	00:29:08	10°	W	00:31:07	24°	WSW	00:31:07	24°	WSW
24 May	-3.8	22:04:11	10°	W	22:07:33	83°	S	22:10:56	10°	E
24 May	-3.2	23:41:00	10°	W	23:44:09	38°	SSW	23:44:36	36°	S
25 May	-3.5	22:52:54	10°	W	22:56:12	50°	SSW	22:58:04	22°	SE
26 May	-3.7	22:04:51	10°	W	22:08:12	63°	SSW	22:11:32	10°	ESE
26 May	-2.2	23:41:57	10°	W	23:44:29	21°	SW	23:44:29	21°	SW
27 May	-2.6	22:53:41	10°	W	22:56:39	29°	SSW	22:58:01	21°	S
28 May	-3	22:05:32	10°	W	22:08:41	39°	SSW	22:11:34	12°	SE
29 May	-1.7	22:54:53	10°	WSW	22:56:54	15°	SW	22:58:03	13°	SSW
30 May	-2	22:06:23	10°	W	22:09:00	21°	SW	22:11:38	10°	SSE

Starlink passes

https://heavens-above.com/AllPassesFromLaunch.aspx

Comets with magnitude brighter than magnitude 10

Comet	Peak Mag.	Perihelion	Peak	Elongation at peak	Constellation
C/2017 T2 PANSTARRS	5.8	04 May	12 May	-69º	Cassiopeia – Ursa Major
2P/Encke	6.6	25 June	JPL anticipate brightest magnitude 7.31 around 28-29/6/20	-16º	

Astronomy on the radio

During virus isolation these slots will either be reports read by the host or via phone to the studio.

Bill Barton's Radio Broadcast

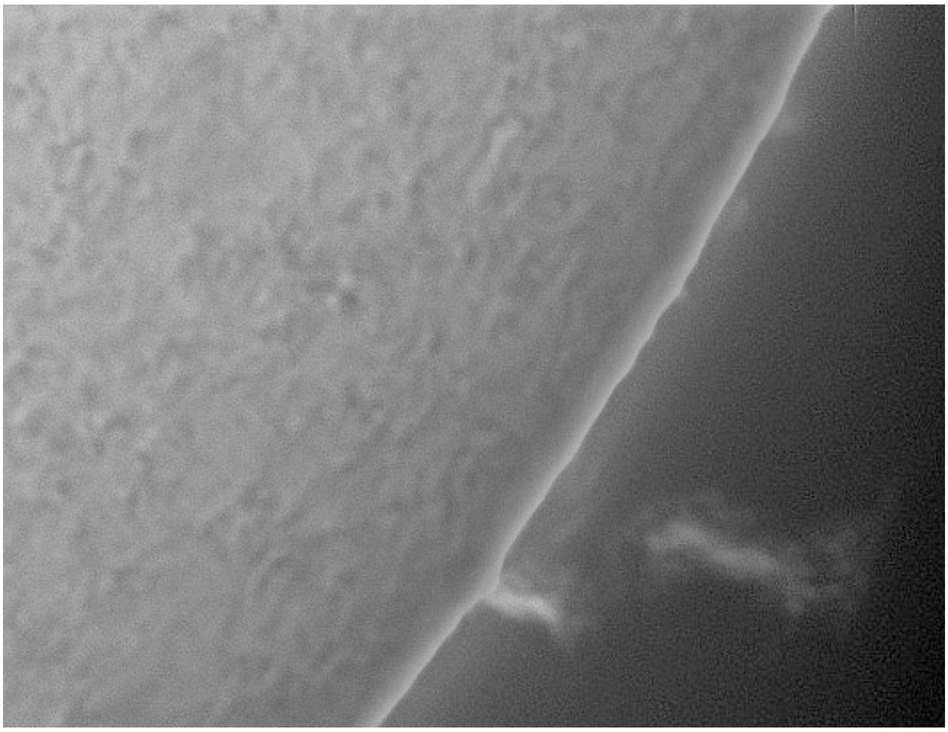
ICRFM (Ipswich Community Radio) 105.7 MHz at about 08:25 in the morning of the first Wednesday of each month. I aim to cover what there is to see in the sky and then a little bit on something topical. ICRFM is also available to listen to over the Internet and there is a listen again option on their website.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

David Murton's Radio Broadcast

On 1st Tuesday of the month, 2.40pm (note change of time) 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

Today at the proms

Martin Cook



A B&W image of a prominence on the solar limb in Hα light on the 26/4/2020 at 12:30 UT.

The image is made up of 2 images stitched together. The surface image was 0.007sec exposure and the proms was a 0.035 sec exposure. The best 20% of 2000 frames were stacked together to form the starting image

Lunt LS60THa/B1200 telescope X2 Barlow lens.

ZWOASI178mm camera

The Extremely Large Telescope

Article: Library.

A new astronomical telescope is at present being built. This will be the largest available when finished and will be known as the E.L.T. which is short for the Extremely Large Telescope. It will cover both optical and near infra-red areas of the electromagnetic spectrum, and is being built on the top of a mountain known as Cerro Armazones, at a height of 3046m which is part of the Chilean Coast Range.

It is part of the European Organisation for Astronomical Research in the Southern Hemisphere, usually referred to as ESO, which started in 1962 and comprises 16 nations with the specific task of utilising ground based telescopes, employing approximately 730 staff members.

Picture reference: artist impression.https://en.wikipedia.org/wiki/Extremely_Large_Telescope

The dome will be 74m high, have a diameter of 86m and a mass of 5000 tonnes, with the telescope structure and mounting about 3000 tonnes. In order to perform at levels required, it will be able to perform up to angular speeds of 2^0/sec, which is about 5km/h. The structure of the scope will be situated on an altitude-azimuth mount and altitude axis rotation supplied by two immense containers, whilst tracks allow for rotation about the zenith. It will also able to point and track to stipulations of 1 and 0.3 arc-seconds specifically. It began assembly in June 2014. On the 9th January 2018 the main mirror segments of the primary were successfully produced.

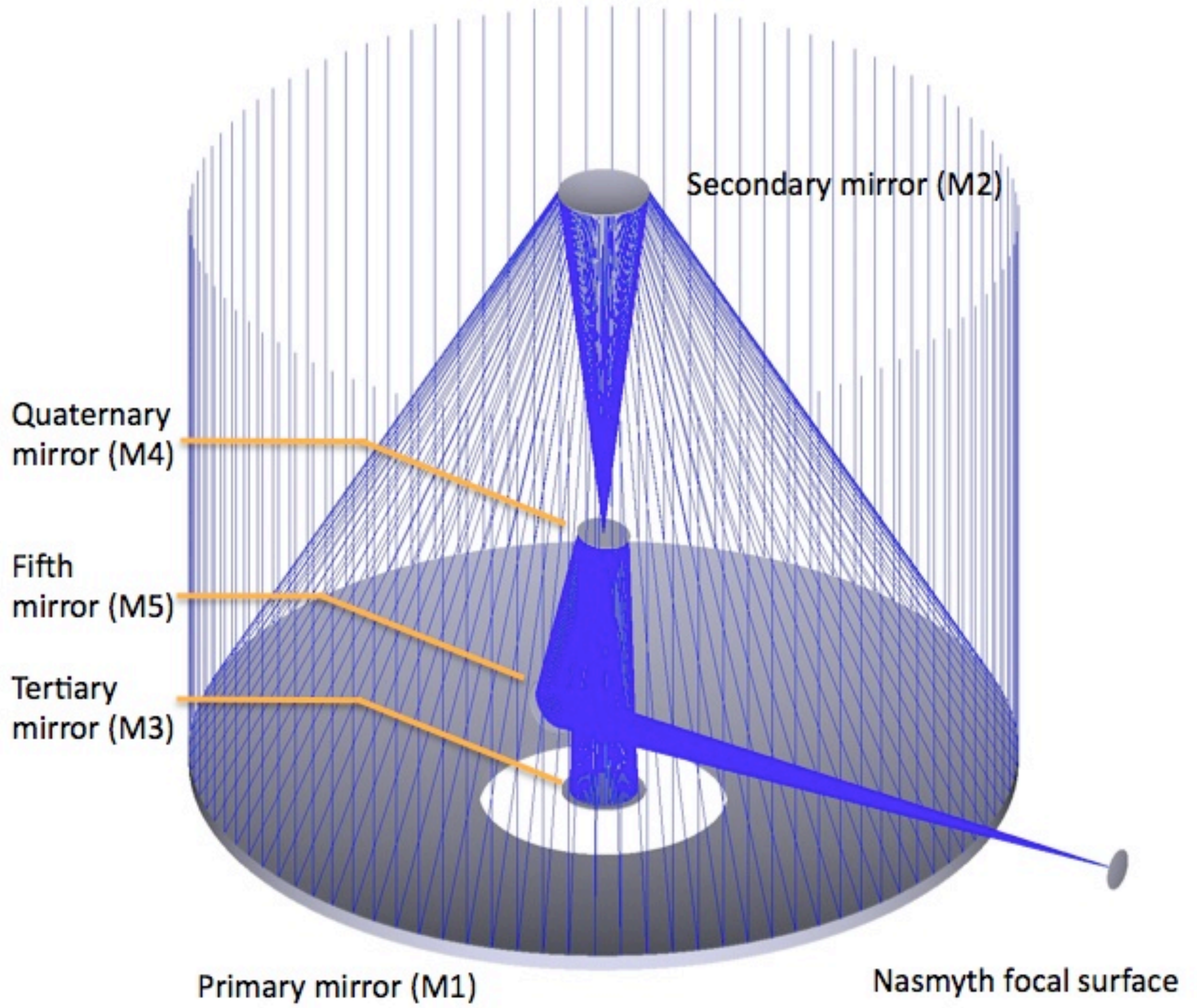
The segmented elliptical primary mirror measures 39.3 m in diameter, which approximates to 3.25 Ipswich single - decker busses placed end to end, collecting as much as 13 times as much light as optical telescopes operating in 2014. It has f/0.93 and is composed of 798 hexagonal segments approximately 1.4m across and 50mm thick. The positions of these segments are quantified by edge sensors which are supported by 2394 position actuators. These keep the overall surface shape, irrespective of outside influences, such as temperature and wind variation.

The secondary convex and aspheric mirror has also been caste with a diameter of 4.2m. The final three mirrors have not as yet been caste, but the tertiary mirror will be 3.8m and slightly aspheric and concave. The use of the first three mirrors in the telescope allows for a more pristine quality of the final image, over a larger field of view.

The quaternary mirror will have a diameter of 2.4m and a width of just 2mm, and with the aid of 8,000 actuators can correct in real time, distortion caused by wind and Earth's atmospheric tempestuousness, and will be angled at 7.75^0 to the direction of the light stream. Specifications of this mirror dictate that it must be able to yield high Strehl ratios, at least 0.7. (ratio between 0 and 1, with 1 being optimum).

Finally a fifth mirror whose theoretical dimensions are 2.6m * 2.1m, will be flat and elliptical in design, whose main justification is to compensate for image motion. This is known as a tip-tilt field stabilization unit.

The optical blueprint for the mirror system of the ELT has a design for the first three mirrors to act as a folded system corrected for spherical aberration. The fifth mirror is flat and sends the object beam of light to either of the Nasmyth foci. These are situated along the telescopes height axis. The Nasmyth telescope is a variant of the Cassegrain scope, where light rays are sent sideways before the primary mirror is reached again.



Picture credit : https://www.eso.org/sci/facilities/eelt/telescope/design/

The aim of the telescope is to provide data pertaining to unresolved queries about our universal heritage. It will also have facility to nullify some atmospheric distortion allowing for much more precise imagery.

In order to fulfil its specific criteria, several instruments will be built within. Changing from one of these to the next will take only a few minutes. The first of these has the mnemonic HARMONI which is short for High Angular Resolution Monolithic Optical and Near Infra-red Integral field. This is a first-light apparatus and will function in the wavelength range 0.47-2.45μm performing spectroscopy. Because of the large primary mirror exploration of the early Universe will be of paramount importance.

The second is known as METIS which is the Mid-infra-red ELT Imager and Spectrograph, and thirdly MICADO which is the Multi-Adaptive Optics Imaging Camera for Deep Observations. This enhances the adaptive optics technique and will function as the primary imaging camera. At first light, MICADO will provide diffraction limited pictures at near infra-red wavelengths. Its resolution is far greater than anything else available at present, and will present a comprehensive configuration of high redshift galaxies. MICADO will also work with a multi-conjugate adaptive module, MOARY.

What will the initial scientific objectives using the telescope be? Initially, comprehensive observations of planets circling other stars using direct and indirect methods. Perhaps a look at super massive black holes, primordial stars, galaxies and their associations, as well as investigation into the acceleration of Universe's enlargement.

Planetary atmospheres may also be analysed, using low resolution spectroscopy. Stellar evolution is another area that the ELT will accommodate, using photometry and spectroscopy.

Because of the resolution and sensitivity of the ELT, data will be obtained about galaxies existing in a high red-shift Universe. Spatially resolved spectroscopy of many extensive galaxies will provide information specifically about their mass, age, metal content and star formation rates. They will also be able to look backward to the earliest stages of galaxy formation, and the re-ionization of the Universe. At present, information about the earliest galaxies, including early reionization of the Intergalactic medium is being provided by high redshift galaxies at $z \sim 5.7$ and $z \sim 6.5$. obtained from data of wide-field surveys. In order to obtain this data, spectrographic studies of the above z levels using Lyman alpha narrowband surveys are used. The spectral ly-α line occurs with the emission of an electron falling from the n=2 orbital to the n=1 orbital. (n=principal quantum number). Other emission lines , such as UV line studies can also be used. Reionization usually refers mainly to hydrogen. However this part of the electromagnetic spectrum is readily absorbed by air and only time will tell if using the ELT may provide a greater input of data, which at present is mainly undiscovered. Whilst all this information is being gathered, perhaps new distant type 1a supernovae will be discovered allowing a greater understanding of Universal expansion.

References:

1. https://en.wikipedia.org/wiki/Extremely_Large_Telescope
2. https://www.hq.eso.org/public/teles-instr/elt/elt-instr/harmoni/https://www.eso.org/public/unitedkingdom/teles-instr/elt/elt-instr/metis/
3. https://www.hq.eso.org/public/teles-instr/elt/elt-instr/micado/https://www.eso.org/sci/facilities/eelt/telescope/mirrors/

Astronomer’s Telegram

13673	Discovery of an Apparent Nova in M31	K. Hornoch, P. Fatka 26 Apr 2020; 17:13 UT
13651	Continuing Fragmentation of C/2019 Y4 (ATLAS)	Quanzhi Ye, Man-To Hui 21 Apr 2020; 22:46 UT

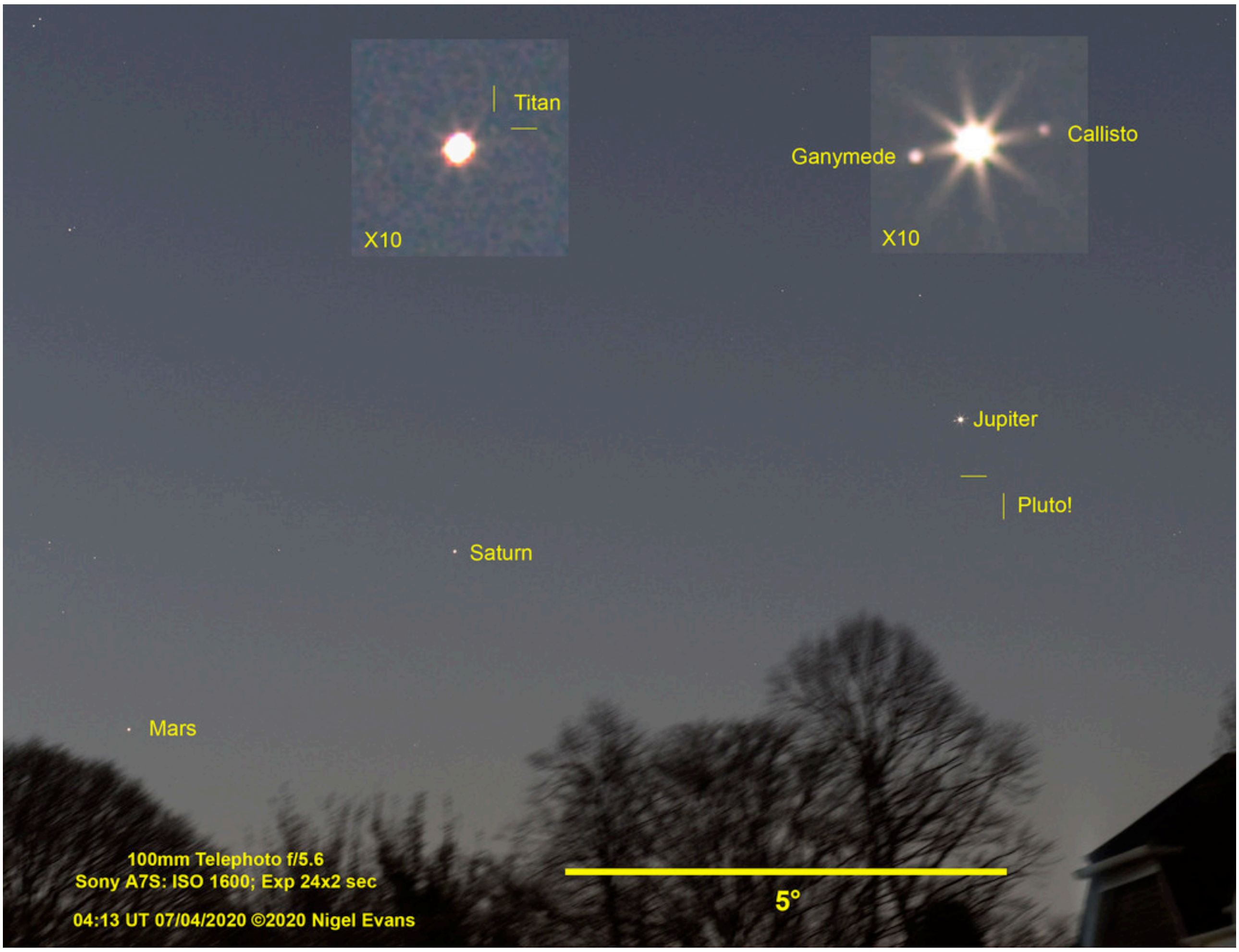
Planets

Nigel Evans

Well, it not that often you can see 3 planets in the same field of view. This morning Mars, Jupiter and Saturn were rather poorly placed for northern observers, all low down close to the SE horizon. They were too low to be seen from the garden, so I tried to see them from upstairs. A perfect plan, except for the tall trees in the cemetery that are, maybe, 500 metres away! I am not allowed to drive about unnecessarily to seek a clear flat horizon, nor to my second home (if I had one) so I sneaked out unobserved under the cover of darkness into the middle of the road! (I live in a cul-de-sac so it is not that dangerous)

M, J and S were 7,10 and 9 degrees above the horizon, with the Sun 10 degrees below. What I find quite amazing is how faint you can actually record. 2 of Jupiter's satellites were easily detected, as was Saturn's Titan at the limit of detection, but fainter objects could be found in the darker, higher sky.

What could not be detected was Pluto: it was in the frame some 46 arc-minutes south of Jupiter, but at magnitude 14 well out of range.



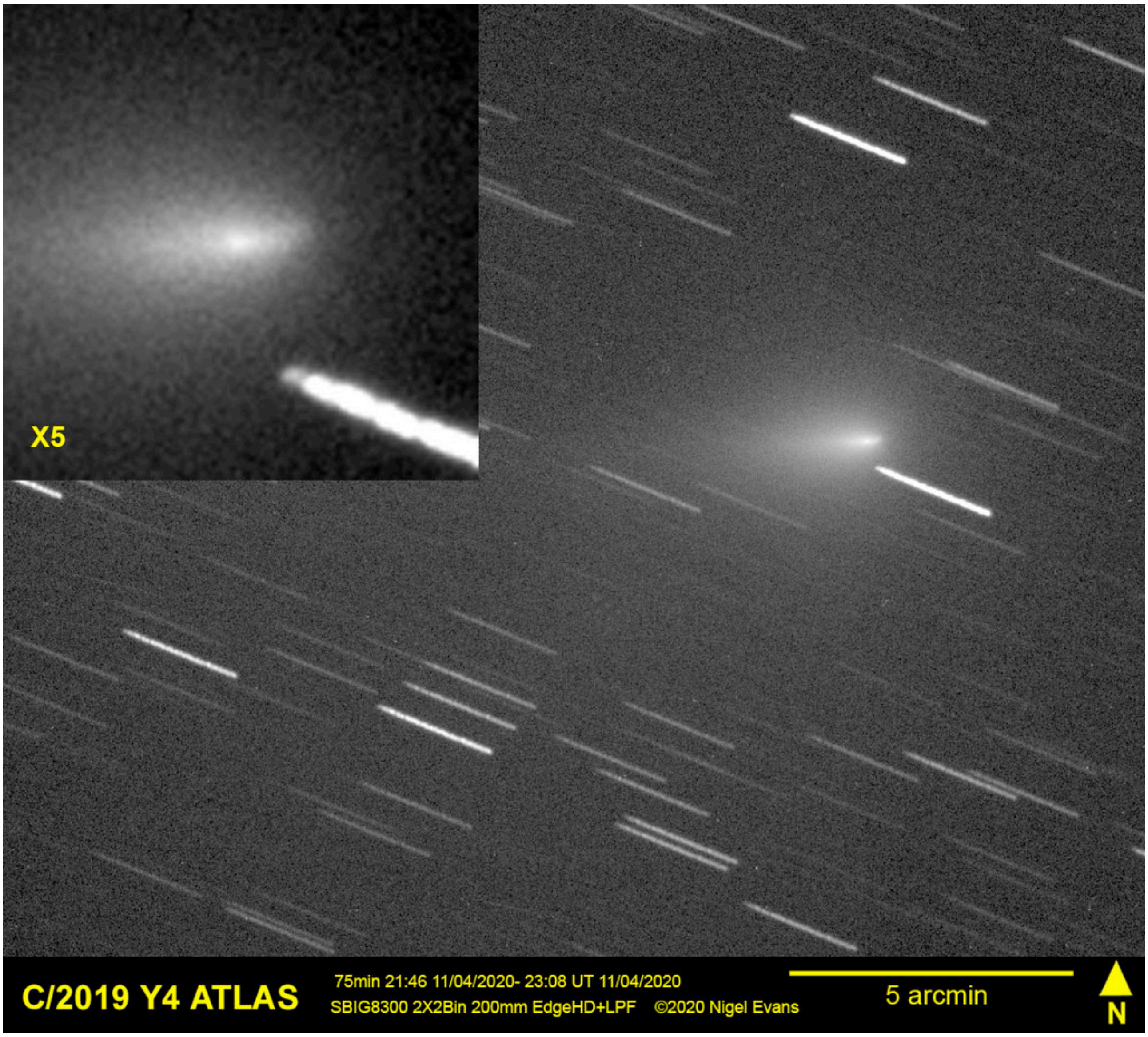
Comets: 2019 Y4 ATLAS

Nigel Evans

It now looks as if the hopes for a naked eye comet in May are receding, as this comet is now breaking up.

After a lovely sunny day yesterday, the night became any but clear. The haze level was so bad that ordinarily I would not bother. It was only the prospect of possibly imaging a comet breaking up that got me out. I stuck with it until real clouds arrived just before midnight.

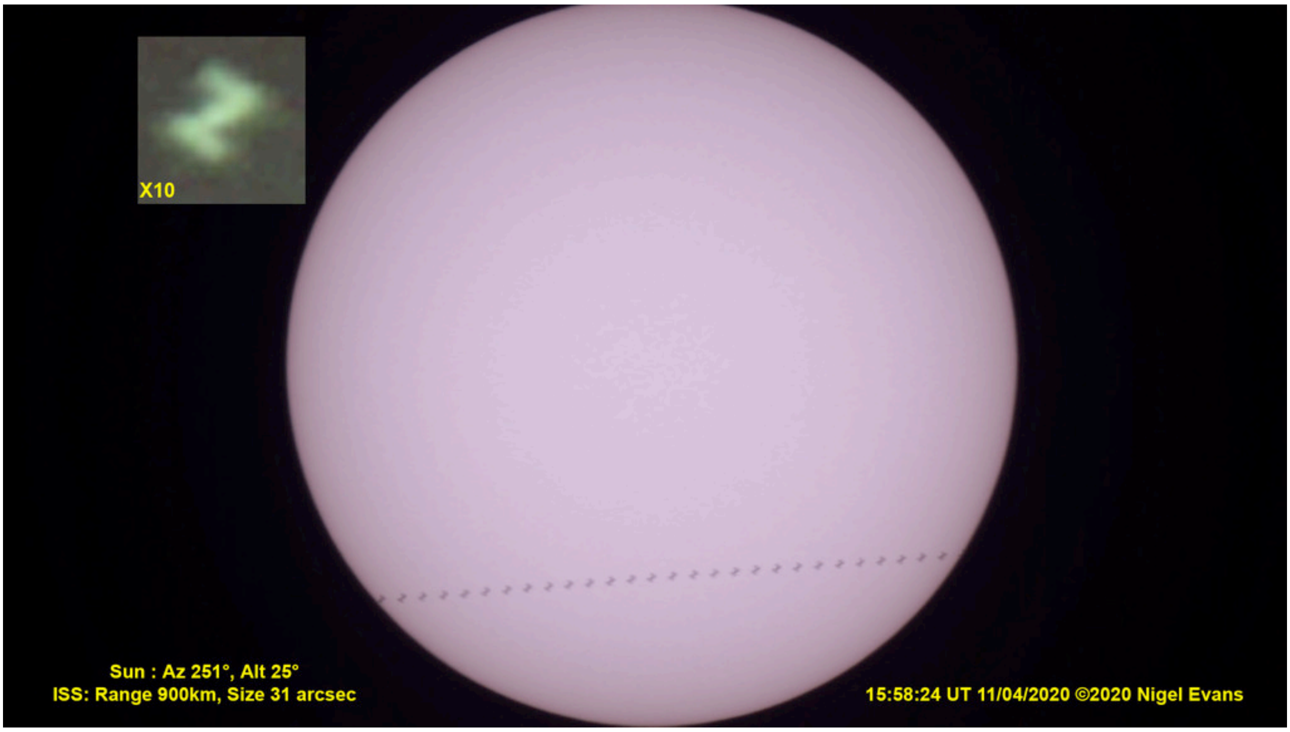
Normally the brightest part of the comet is the head, or coma, with the tail streaming away. The image shows the brightest part is no longer at one end of the image - the leading stuff are fragments of the comet. I am pleased with this image, given the conditions. A better image is here https://spaceweathergallery.com/indiv_upload.php?upload_id=161214 , but it was taken with a 0.9m scope in Mirasteilas Observatory, Switzerland, under superior skies!



ISS solar transit

Nigel Evans & Martin Cook

On a beautiful sunny Easter Saturday there was another opportunity to record the ISS, this time crossing the face of the Sun. It was a fairly long range, some 900 km away, and the Sun was completely featureless, making focusing on the solar limb the only option. When it transits the Moon, there is the entire Moon to focus on – much easier. I think the focus is a little soft, but nevertheless the main solar panels can be made out



Martin Cook also had a go at the transit of ISS in H-alpha using a Lunt LS60THa/B1200 and a ZWOASI178mm camera.

A least the sun had something to focus on in h-alpha.

Starlink satellites

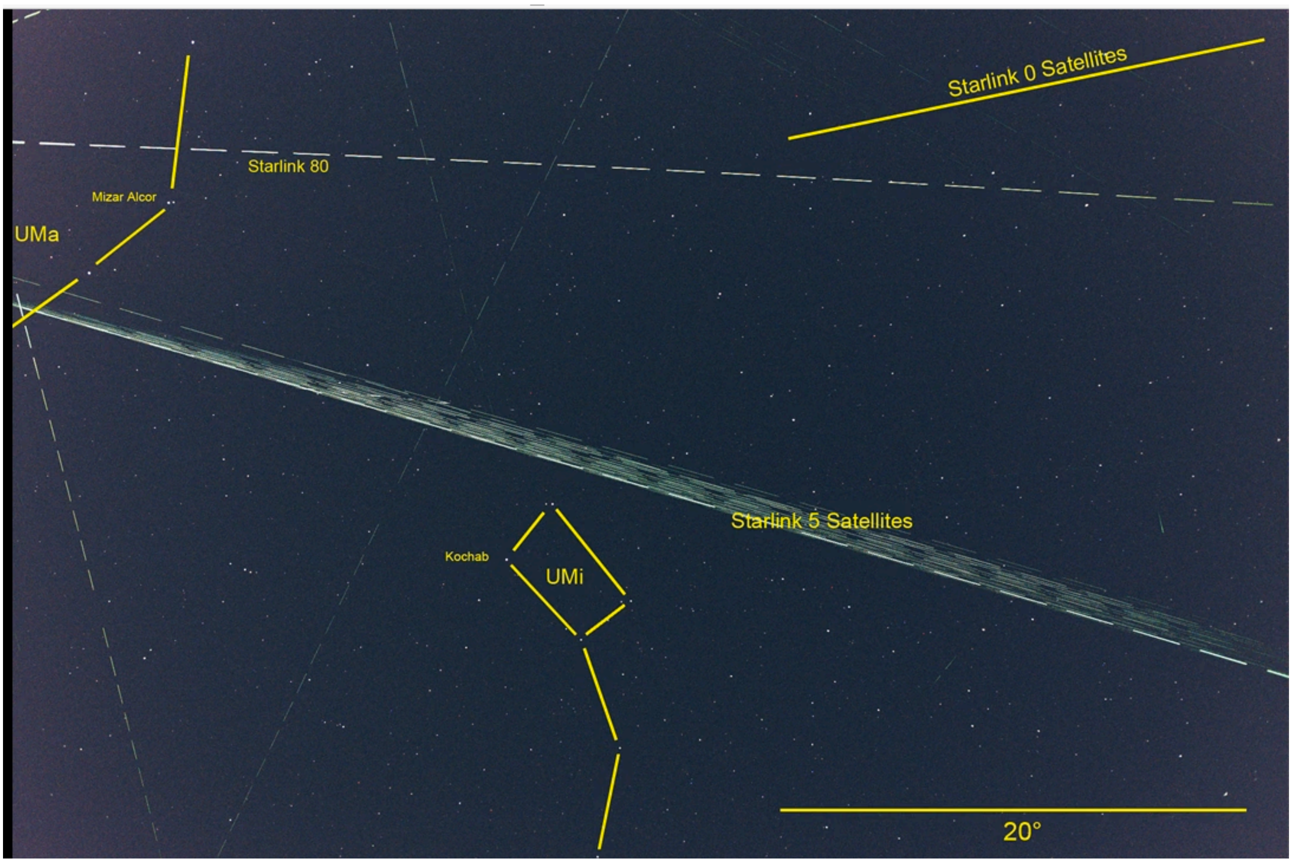
Nigel Evans

Finally got to see the latest launch of Starlink satellites. The conditions were in some ways good: cool, calm, silent and still. But up there it was hazy, moonlit with slabs of cirrus hanging around. The first camera was set to run, yet normally I then watch them pass over, but I could not see a thing. I thought something must be wrong with me e.g. a GMT BST mix up. I let the camera roll anyway, popped inside briefly to check the predictions, but was thoroughly disappointed. I was also setting up a second camera in video mode, but then packed up as conditions did not warrant the effort.

When I had a cursory look at the frames to see what had been recorded, I was amazed to find streaks of passing satellites! So I had recorded them, even though I could not see them. The frames had quite a few 'features', such as strong brightness gradient across the field of view, with moving cirrus clouds, as shown in the first part of the video. There was also some idiot in my garden with a head-torch that occasionally caught the camera, resulting in a overexposed frame (can't think who that was!!). This ugly feature has been edited out, by replacing that frame with the median of the ones either side. The second part of the video also has had the gradient removed to give a much more pleasant appearance.

So why were the satellites so faint. I honestly don't know. It is only later in the video that Starlink 80 passes above the path of the Starlink6 launch group, with what think of as 'normal' brightness.

Usually I use https://www.heavens-above.com/ for satellite predictions. If you select 'Starlink passes for all objects from a launch' you have the pass details for Starlink satellites, grouped by launch. Curiously, the latest set, for Starlink 5, have no magnitude estimates, whereas all the others do.



Still taken from Nigel's video

And just when I thought I had caught up with seeing all the different groups of Starlink satellites, SpaceX have just announced another launch date for the next set, April 16.

Lunar Halo

Alan Smith -

Good view of a lunar halo early this morning [4 April] from the allsky camera.

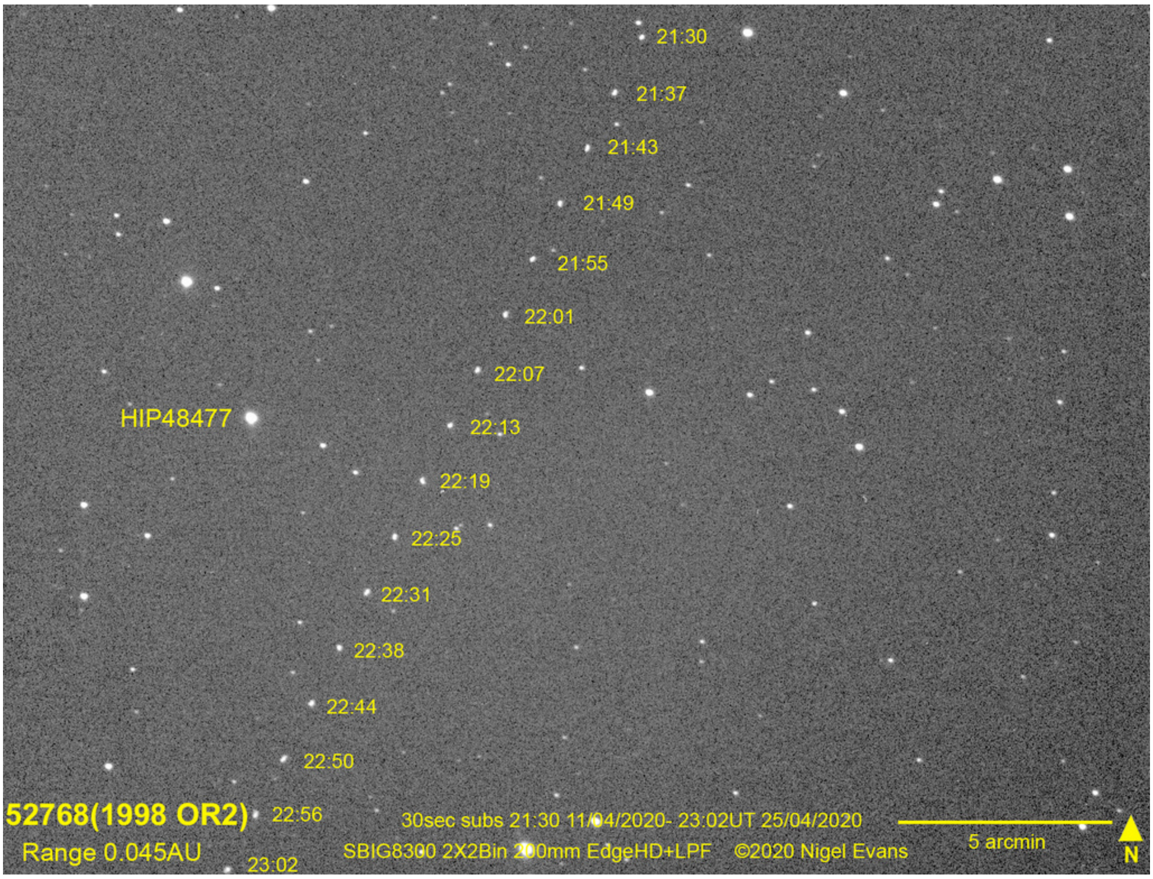
4/4/20 0314-0315 hrs UT. 58 sec exposure. Canon 1100D, Sigma 4.5mm fisheye, ISO 1600.

A Near Earth Asteroid!

Nigel Evans

Asteroid 52768 or 1998 OR2 is a Potentially Hazardous Asteroid that will pass about 6.3 million kilometres from the Earth on 29th April. This one is notable for being quite large, at over 2 kilometers. On April 25th I was able to catch it below Leo in Sextans, moving south at over 14 arcminutes per hour, shining at 11th magnitude. Even with exposures of only 30 seconds, it moved some 7 arcseconds.

The attached images show the southward progression of the asteroid. The two stills present its motion in two slightly different ways. Occasionally it appears to vanish - that's when the guider lost control and some frames are best not seen.


21:30
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22:50
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HIP48477
52768(1998 OR2)
Range 0.045AU
30sec subs 21:30 11/04/2020- 23:02UT 25/04/2020
SBIG8300 2X2Bin 200mm EdgeHD+LPF ©2020 Nigel Evans
5 arcmin
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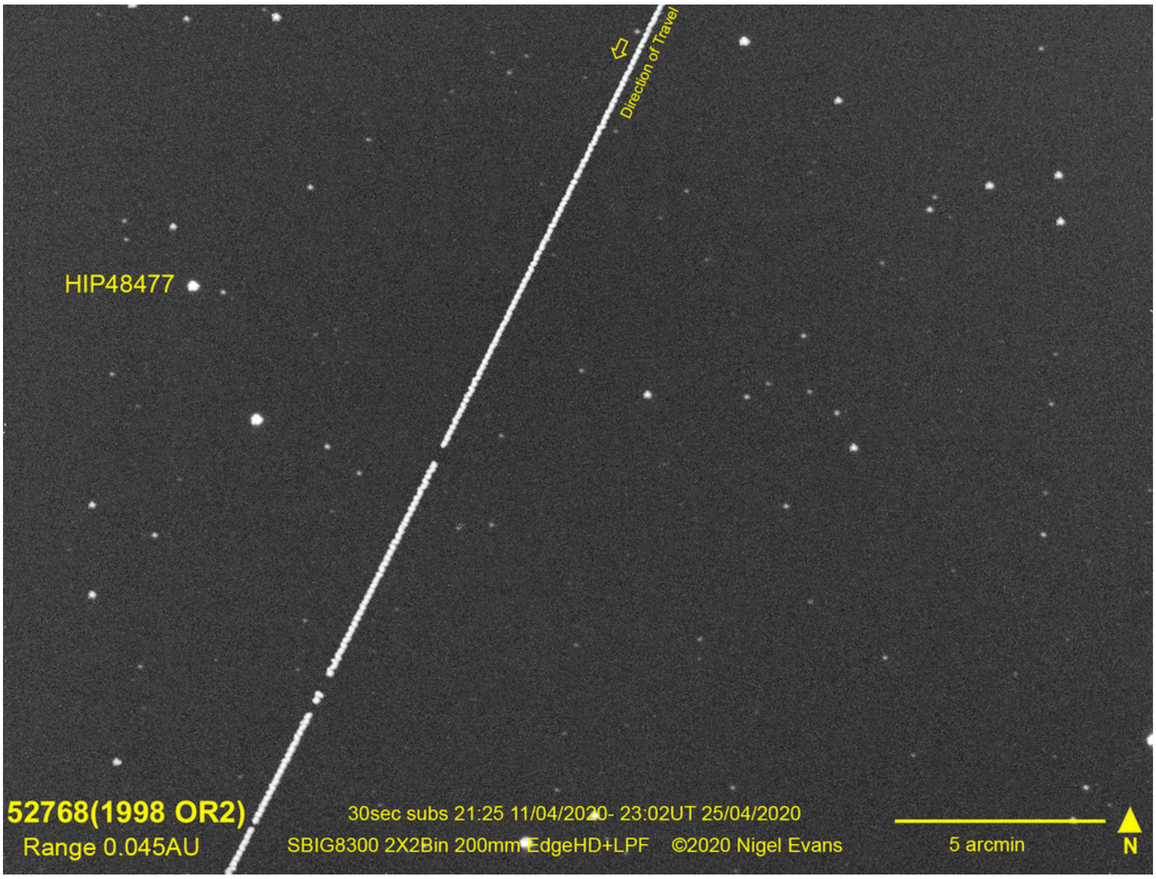
Direction of Travel
HIP48477
52768(1998 OR2)
Range 0.045AU
30sec subs 21:25 11/04/2020- 23:02UT 25/04/2020
SBIG8300 2X2Bin 200mm EdgeHD+LPF ©2020 Nigel Evans
5 arcmin
N

M101

Edward Crampton

Taken with a Phillips Optics 80 and the clubs Attik Infinity 30 minutes of stacking at 10 second exposures with a little bit of processing in Affinity Photo from a complete novice.

The mount is an EQ8-R - slightly David and Goliath but a beautiful mount and well up to my future ambitions – best of all it has a built in usb hub and RJ mirrored sockets so almost no wires moving parts!