

# Stars Over Surrey Astronomy & Spaceflight News

1<sup>st</sup> October 2021



# Inspiration4: First all-private orbital mission

- Billionaire Jared Isaacman funded trip, charity raiser for St.Judes Hospital
- 3 day flight, in higher orbit than ISS, in SpaceX Crew Dragon
- Splashed down 30 miles NE of Cape Canaveral



# Mars: Perseverance & Ingenuity

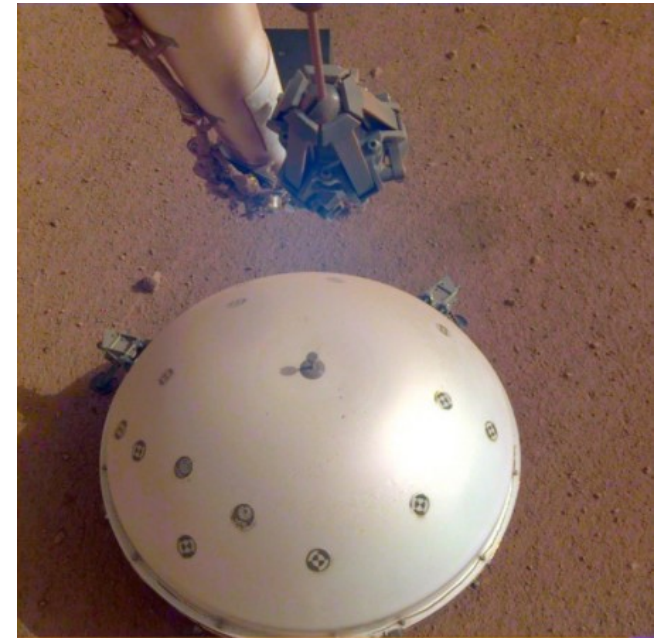
- Perseverance rover has successfully made a 2nd attempt to retrieve a core rock sample drilled out from the Martian surface
- The first attempt failed, mystifying NASA - the retrieval tube was empty after the drill automatically deposited “material” into it
  - It turned out the rock was so fragile it simply crumbled to powder on being drilled
- Ingenuity helicopter has now made a total of 13 flights!
- Its role now is to fly ahead of Perseverance to take stereo images of the ground ahead, helping NASA to plot the best path through to its next destination.
- Perseverance has now flown for a total of almost 25 minutes and about 1.5 miles. It was originally planned to make just 5 test flights



Credit: NASA

# InSight detects largest Marsquake

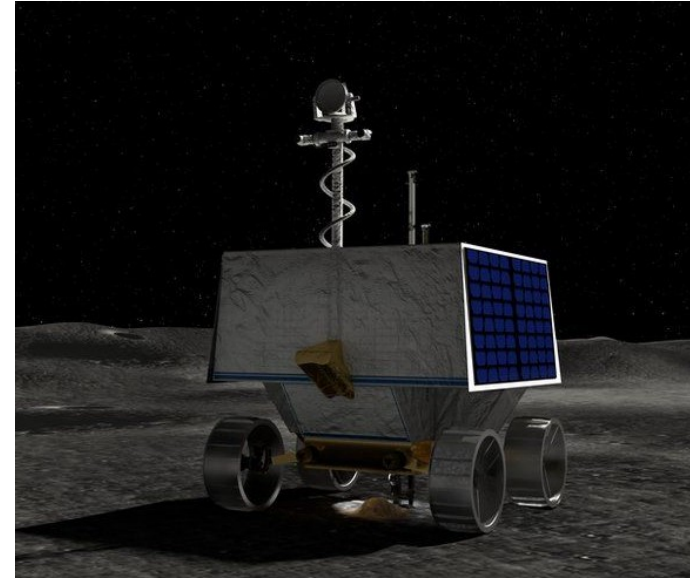
- **NASA's InSight lander has detected three major Marsquakes within a month**
  - One on 18th Sept, was at mag 4.2 and this is five times more powerful than the previous strongest tremor, and lasted for 90 minutes.
  - this happened to be on InSight's 1,000 day (sol) on Mars
- **One of the first two is known to have occurred 5,280 miles away**
  - the previous furthest quake was just 1,000 miles away
- **The latest one's data is being studied but it's thought it could have originated in the Vallis Marineris region, a huge canyon, over 6,000 miles away**
- **By studying data from quakes at different distances researchers can learn more about Mars's internal structure. InSight has already shown us that Mars still has a molten metal core**



Credit: NASA/JPL

# NASA's next Moon rover will hunt ice

- **VIPER - (Volatiles Investigating Polar Exploration Rover)**
- **Golf-cart sized, to be launched on SpaceX Falcon Heavy in 2023**
- **Will land on top of privately built lander (Griffin) made by US company Astrobotics**
- **It will land near the edge of Nobile Crater which is almost permanently in shadow, near the Moon's South Pole**
- **It will descend into the crater to look for ice, feeding results data into the Artemis Moon landing programme**



Credit: NASA

# Misc Spaceflight News

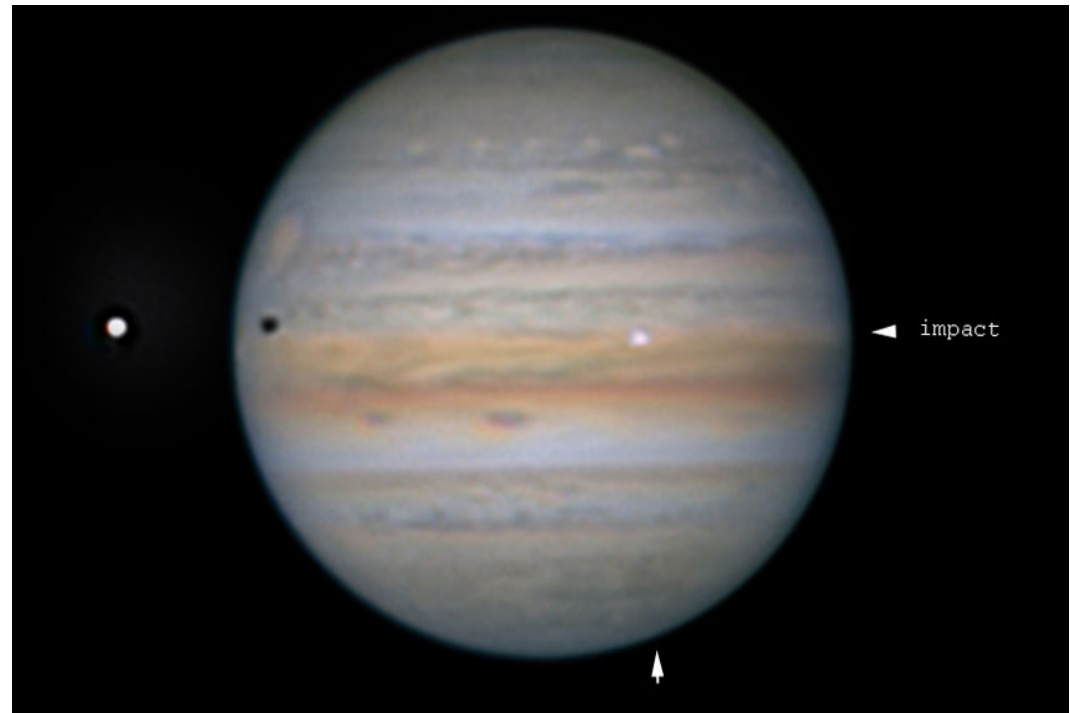
- **Blue Origin's New Shepard's second passenger carrying sub-orbital flight set for Oct 12<sup>th</sup>**
- **While Inspiration4's "Resilience" was in space that made three SpaceX Dragon's in orbit**
  - Crew Dragon "Endeavour" (Crew-2) and cargo Dragon at ISS
- **Record set in September with 14 humans in orbit at same time: 3x Chinese on Tiangong, 4x on Inspiration4 and 7 on ISS (2x Russia, 1x Japan, 1x France, 3x USA)**
- **The three Chinese astronauts landed back on Earth on 17<sup>th</sup> Sept, after a 92 day mission, China's longest.**
  - just three days after that a Tianzhou cargo mission launched with supplies for the next crew launching in Oct for 180 day flight.
- **NASA state Boeing's Starliner will not make its unmanned test flight to ISS until next year.**

# Misc Spaceflight News

- **Russian actress and a film director will launch to ISS on Oct 5<sup>th</sup> in a Soyuz, together with two cosmonauts**
  - 12 day flight, making a film about a doctor saving a cosmonaut's life (beating Tom Cruise who will also fly to film aboard ISS)
- **James Webb Space Telescope to launch on 18<sup>th</sup> Dec**
  - From ESA's launch site at Kourou, French Guiana on Ariane 5
- **Landsat 9 successfully launched Monday 27<sup>th</sup>**
  - from Vandenberg AFB, California on Atlas V
  - arguably the most important satellite ever (global warming)
  - 50 year continuous Earth-study programme
  - looks at city growth, farming spread, changes to coasts, forests, deserts and glaciers.

# Amateurs spot striken on Jupiter

- On 13<sup>th</sup> September three amateurs (Brazil, Romania, Germany) captured images of an object impacting on Jupiter
- They were all imaging the transit of Io's shadow across the disc and spotted the flash which lasted one second
- It's thought that to make a flash that big, and to last as long as one second, the impactor would have been about 100 metres across
  - likely to have been a small asteroid or perhaps a comet



Credit: Harald Paleske



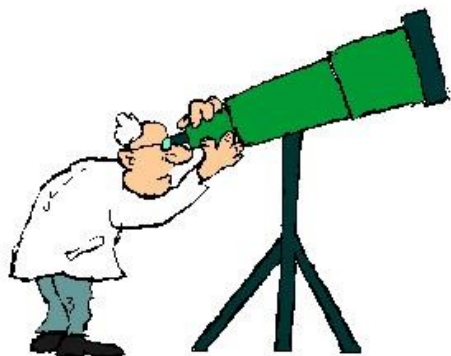
# **“Galactic Britain” ????**

- **This week Boris Johnson stated that the UK would be the first European nation to launch satellites from within Europe, “within a year”**
  - Spaceport Cornwall - Virgin Orbit can launch using Rocket1 which is air-launched from underneath a modified Boeing 747
  - Shetland Space Centre, Unst, base for Lockheed Martin
  - Sutherland Spaceport, A' Mhòine peninsular, base for Orbex
- **UK space industry: £16 B pa, employs 45,000 people**
  - Worldwide space industry expected to double to £500B in decade
- **“The days of the UK space industry idling on the launch pad are over.”**

# Stars Over Surrey

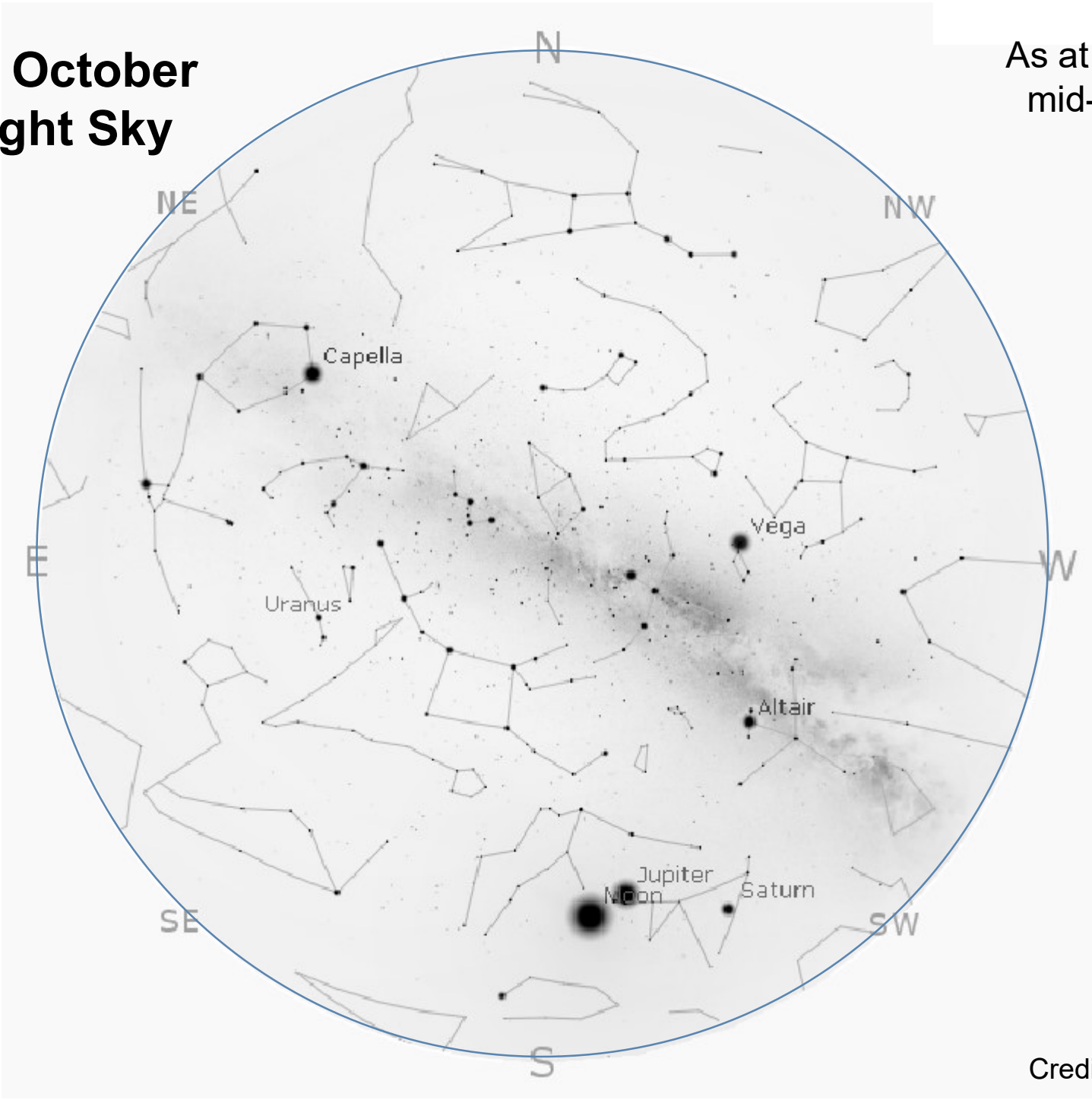
## What's Up!

For October 2021



# The October Night Sky

As at 10 p.m.  
mid-month



Credit: Stellarium

# Sun & Moon in October

- **New Moon**      **6<sup>th</sup>**
- **First Quarter**   **13<sup>th</sup>**
- **Full Moon**      **20<sup>th</sup>**
- **Third Quarter**   **28<sup>th</sup>**

		Sun	Moon
1 <sup>st</sup>	Rise	07.03	00.13
	Set	18.39	17.12
15 <sup>th</sup>	Rise	07.26	16.15
	Set	18.08	02.08*
31 <sup>st</sup>	Rise	06.53	01.35
	Set	16.37	15.22

1<sup>st</sup> & 15<sup>th</sup> times are BST  
31<sup>st</sup> shows GMT

\* following  
day

# The Planets in October

## Mercury

Mercury is a morning object from mid-month, low in ESE, best seen about 60 mins before sunrise. Brightens from magnitude +0.9 to -0.5 by month end.

## Venus

Venus is a brilliant evening object, shining at mag -4.3 in SSW all month from 60 mins after sunset, low, but improving from middle of month onwards.

## Mars

Not visible this month

# The Planets in October

## Jupiter

A brilliant object at mag -2.6, visible from early evening in the SSE and ideal for observing throughout the month.

## Saturn

Saturn too is well placed for observing, slightly lower than Jupiter but only  $15^\circ$  West of it (to the right) in the South, shining at mag +0.5

## Uranus

Actually the best placed planet to observe this month, but binoculars must be used to find this mag +5.7 evening object, nicely placed around  $50^\circ$  high in the South

## Neptune

Visible all month and almost half way between Jupiter and Uranus in our night sky, but at mag +7.8 a telescope is needed

# Astronomical Phenomena in October

<b>4<sup>th</sup></b>	A double transit - Jupiter's moons Ganymede and Callisto cast their shadows onto its surface at the same time, from 18.00 to 23.25, but 20.50 optimum to see both (telescope needed)
<b>8<sup>th</sup></b>	Peak of the Draconids meteor shower, relatively slow meteors and with a favourable Moon. Low usual rate of only 5 per hour, but this shower can have unexpected flurries.
<b>9<sup>th</sup></b>	Thin crescent Moon just 2° from Venus low in SW after sunset
<b>10<sup>th</sup></b>	Peak of the Southern Taurid meteor shower, again a low 5 per hour theoretical rate, but with slow bright trails
<b>14<sup>th</sup></b>	Moon sits about 5° below Jupiter and Saturn, forming a triangle
<b>21<sup>st</sup></b>	Peak of the Orionids meteor shower, the theoretical rate of 20 per hour marred by the near full Moon
<b>29<sup>th</sup></b>	In the early hours the Beehive Cluster (aka Praesepe) can be found approx 3° below and to West of 3 <sup>rd</sup> quarter Moon
<b>31<sup>st</sup></b>	End of BST, we revert to GMT (UCT)

# World Space Week: 4<sup>th</sup>-10<sup>th</sup> October

## *“High Street Takeover”*

Tunsgate, Guildford, Saturday 9<sup>th</sup>  
(organised by local branch of The Institute of Physics)

There'll be local science & space companies involved with demos, talks, music and interactive sessions. There's also a Space-Art competition.

There's a talk in the Odeon Guildford from 5 pm to 7 pm by BBC Sky at Night presenter Chris Lintott together with his co-author Laura Nuttall followed by Q&A

All activities are free of charge and family oriented



# World Space Week Guildford 2021

A high street takeover event to celebrate World Space Week, there will be a variety of daytime activities and evening lectures. It's completely free to attend and fun for all the family.



World Space Week OCTOBER 4-10

**When:** 9<sup>th</sup> October 8.30am – 4pm  
(evening lecture 5pm-7.30pm)

**Where:** Tunsgate Quarter Shopping Centre  
(evening lecture at the University of Surrey)

**Who:** There will be something for everyone!

## IOP Institute of Physics

Physics Demonstrations



Telescopes & Astronomy



Interactive Exhibits



f @IOPSCB  
t @IOPSouthCentral  
i @iopsouthcentral

**Plus:** Live music, a performance from Ensonglopedia, the award ceremony for the Space Art Competition, virtual walk/run/cycle the Solar System challenge, arts and crafts workshops, and more...

## World Space Week 2021 Public Lectures



Prof Chris Lintott



Dr Laura Nuttall



## Virtual walk/run/cycle the Solar System



Hosted by



[www.eventbrite.com](http://www.eventbrite.com) (University of Surrey, World Space Week)

[www.strava.com/clubs/743372](http://www.strava.com/clubs/743372)



# SPACE ART COMPETITION

SUBMISSION DEADLINE: 4PM, 1<sup>ST</sup> OCTOBER 2021  
AWARD CEREMONY: 2PM, 9<sup>TH</sup> OCTOBER 2021

WE ARE SEEKING ARTWORK ON ANYTHING RELATED TO SPACE IN ANY FORM YOU CHOOSE (E.G. PAINTING, SCULPTURE, DIGITAL, ETC).

PRIZES WILL BE AWARDED TO TWO CATEGORIES: KS1-2 AND KS3-4

WE ENCOURAGE ENTRANTS TO ATTEND THE WORLD SPACE WEEK FESTIVAL ON 9<sup>TH</sup> OCTOBER IN GUILDFORD TOWN CENTRE, WITH THE AWARD CEREMONY AT 2PM IN TUNSGATE QUARTER.

YOUR SUBMISSION MUST INCLUDE YOUR NAME, KEY-STAGE GROUP, EMAIL ADDRESS AND 100 WORDS DESCRIBING YOUR ENTRY.

DELIVER YOUR ENTRY TO:

TUNSGATE QUARTER SHOPPING CENTRE, GUILDFORD. ANY DAY BETWEEN 2PM AND 4PM.

ON ARRIVAL CONTACT EVA PAPAIOIKONOMOU (01483 560800) WHO WILL COLLECT ENTRIES.

IF YOU CANNOT SUBMIT YOUR ENTRY IN PERSON AND WOULD LIKE TO SUBMIT DIGITALLY PLEASE CONTACT US USING THE EMAIL BELOW.

\*T&C'S APPLY. FOR MORE INFORMATION: [SOUTHCENTRALBRANCH@PHYSICS.ORG](mailto:SOUTHCENTRALBRANCH@PHYSICS.ORG)

By entering the Competition, entrants agree to the processing of their personal data for the purpose of administering the Competition and in accordance with current UK data protection legislation, including the Data Protection Act and the EU General Data Protection Regulation.

# Celebrate WSW 2021

Women in Space

Register your WSW 2021 Event  
[WORLDSPACEWEEK.ORG](http://WORLDSPACEWEEK.ORG)

OCTOBER 4-10, 2021



World Space Week OCTOBER 4-10



**IOP**  
Institute of Physics

# Meetings at Local Societies

- Given the current Covid-19 situation, most physical meetings at our local astronomical societies have been cancelled until further notice, some continue via Zoom for paid-up members, but some are now returning to physical meetings.
- You might like however to see their websites for items of interest:
  - **Guildford AS** <http://www.guildfordas.org/>
  - **Farnham AS** <https://www.farnham-as.co.uk/>
  - **Croydon AS** <http://www.croydonastro.org.uk/>
  - **Ewell AS** <https://ewellastronomy.org/>
  - **Walton AG** <http://www.waltonastrogroup.co.uk/>

# Meetings at Local Societies

- **Ewell AS** *Nonsuch High School for Girls, Cheam*
  - Friday 8<sup>th</sup> October, 20.00 hrs
    - “Astro Tourism - It’s Alive!”
      - » Nigel Bradbury

# Meetings at Local Societies

- **Croydon AS** *Sandison Room, Trinity School*
  - Friday 8<sup>th</sup> October, 19.30 hrs
    - “The Changing Face Of Amateur Astronomy”
      - » Keith Brackenborough

# Free Meetings & Talks On-line

- **British Astronomical Association:** Zoom webinars
  - “*Live Observing*”
    - Wednesday 13<sup>th</sup> October, 7.00 - 8.30 p.m.
      - Dr David Arditti (Director, BAA Equipment and Techniques)
      - Stag Lane Observatory, Edgware

<https://www.britastro.org/meetings>

(will also be viewable via BAA's YouTube Channel)

# Free Meetings & Talks On-line

- **Society for Popular Astronomy:** (via Zoom)
  - “*Mercury - First Rock From The Sun*”
    - Saturday 30<sup>th</sup> October, 2.00 - 4.00 p.m.
      - Dr Suzie Imber (Uni of Leicester)
  - *Pop Astro Live with Vicky Video*
    - Weekly on SPA’s FaceBook page at 8.00 - 9.00 p.m.
      - Chat show rather than meeting
    - [https://www.popastro.com/main\\_spa1/meetings-and-events/forthcoming-meetings/](https://www.popastro.com/main_spa1/meetings-and-events/forthcoming-meetings/)
- (will also be viewable via SPA's YouTube Channel)

# Free Meetings & Talks On-line

- **British Interplanetary Society:**
  - *“World Space Week: Short Talks”*
    - Saturday 9<sup>th</sup> October via Zoom
      - 10.30: *From Paisley to Perseus*
      - 12.00: *The Pink Side Of The Moon*
      - 13.15: *Women In Space, Scotland*
      - 14.00: *Space Cluster Development*
      - 15.30: *Space Industry Leadership Panel*
  - *“A Modern Day Space Elevator”*
    - Thursday 21<sup>st</sup> Oct at 7.00, Hybrid - Lambeth/Zoom
      - 2 members from International Space Elevator Consortium

<https://www.bis-space.com/events//>



# Meetings & talks on-line

- You can also pay £3.00 to watch these on-line talks run by **GoSpaceWatch**: (book via Eventbrite)
  - *“The NASA Lucy Mission to the Trojan Asteroids”*
    - Wednesday 6<sup>th</sup> Oct, 7.30 - 9.30 pm
      - Dr Cathy Olkin, South West Research Institute, USA
  - *“Mission Mars: Mars Analogue Mission Experiences”*
    - Saturday 9<sup>th</sup> Oct 12.00 -5.00 pm (Free)
  - *“Spaceport America”*
    - Wednesday 20<sup>th</sup> Oct, 7.30 - 9.30 pm
      - Alice Carruth, PR Co-ordinator, Spaceport America

[www.gospacewatch.co.uk/](http://www.gospacewatch.co.uk/)

# Astronomy on TV

## The Sky at Night

### *“The Forgotten Solar System”*

Jupiter, Saturn, Mars, Venus and Mercury have been explored by numerous spacecraft, but Uranus & Neptune have only been glimpsed once, by Voyager 2. Are the ice giants worthy of further investigation? Maggie and Chris find out what missions to the outer Solar System might discover, and the window of opportunity that could see a spacecraft arrive in 2043.

Sunday	10 <sup>th</sup>	Oct	BBC 4, 10.00 pm
Thursday	14 <sup>th</sup>	Oct	BBC 4, 7.30 pm



*That's all Folks!*