

# Stars Over Surrey Astronomy & Spaceflight News

4<sup>th</sup> February 2022



# **JWST Has Arrived!**

- **James Webb Space Telescope was placed into its parking orbit around Lagrange Point 2 on 24<sup>th</sup> Jan**
- **Launch by ESA's Ariane 5 was so accurate that it will add years to instrument's life**
  - The thruster firing to nudge the spacecraft into the right orbit required just a short 4 min 57 sec burn which increased its speed by just 3.6 mph, into a six-month orbit around L2
  - Tiny thruster firings required every three weeks for adjustment
- **There were 344 “single point of failures”!**
- **Scope has now cooled down to -347<sup>o</sup> F, target -390<sup>o</sup> F**
- **There'll now be a calibration & testing phase and cooling period, “first light” in June**
  - Each of the 18 mirror segments have 6 actuators to refine its alignment, currently at 1mm, but target is 1/10,000 of human hair!

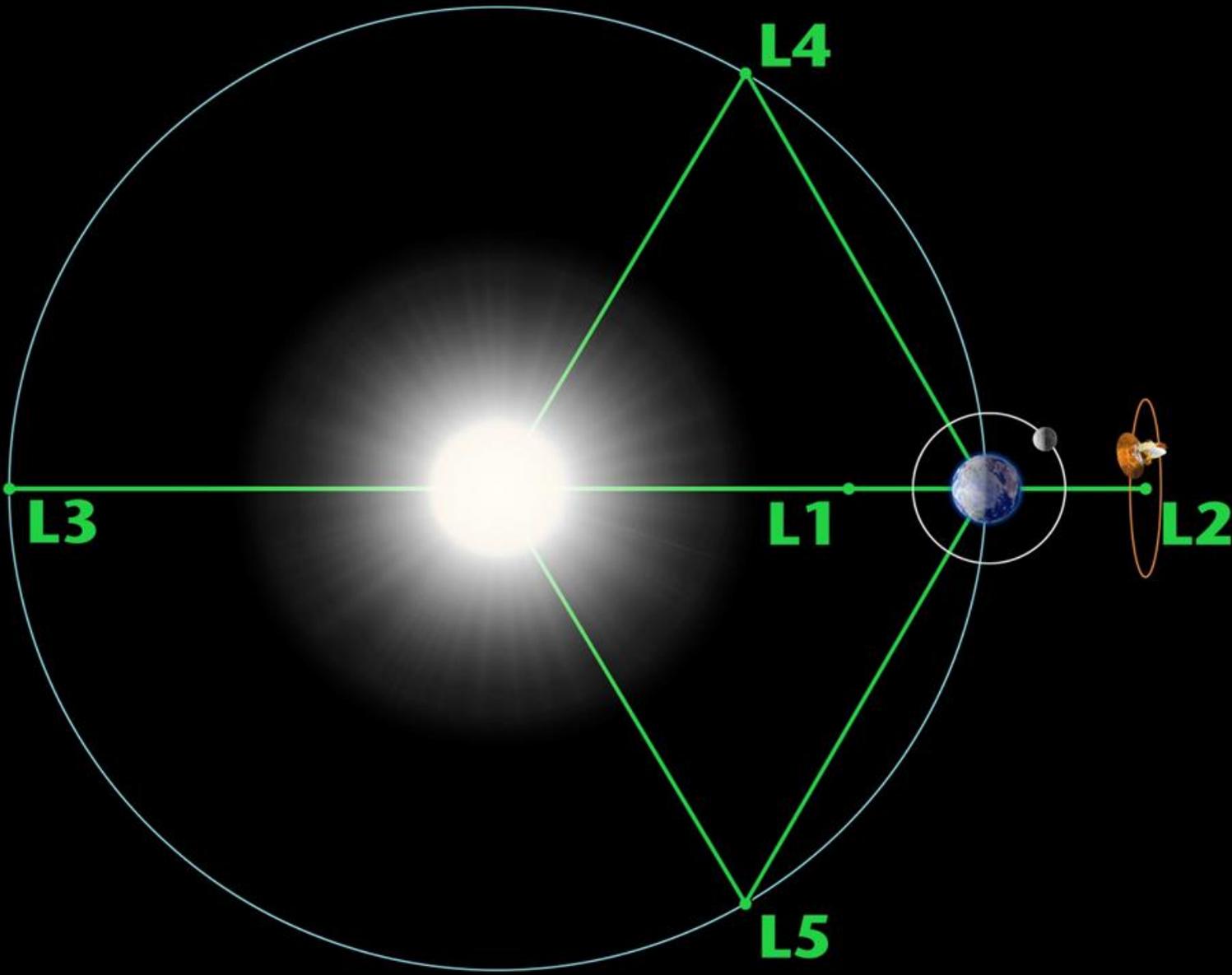
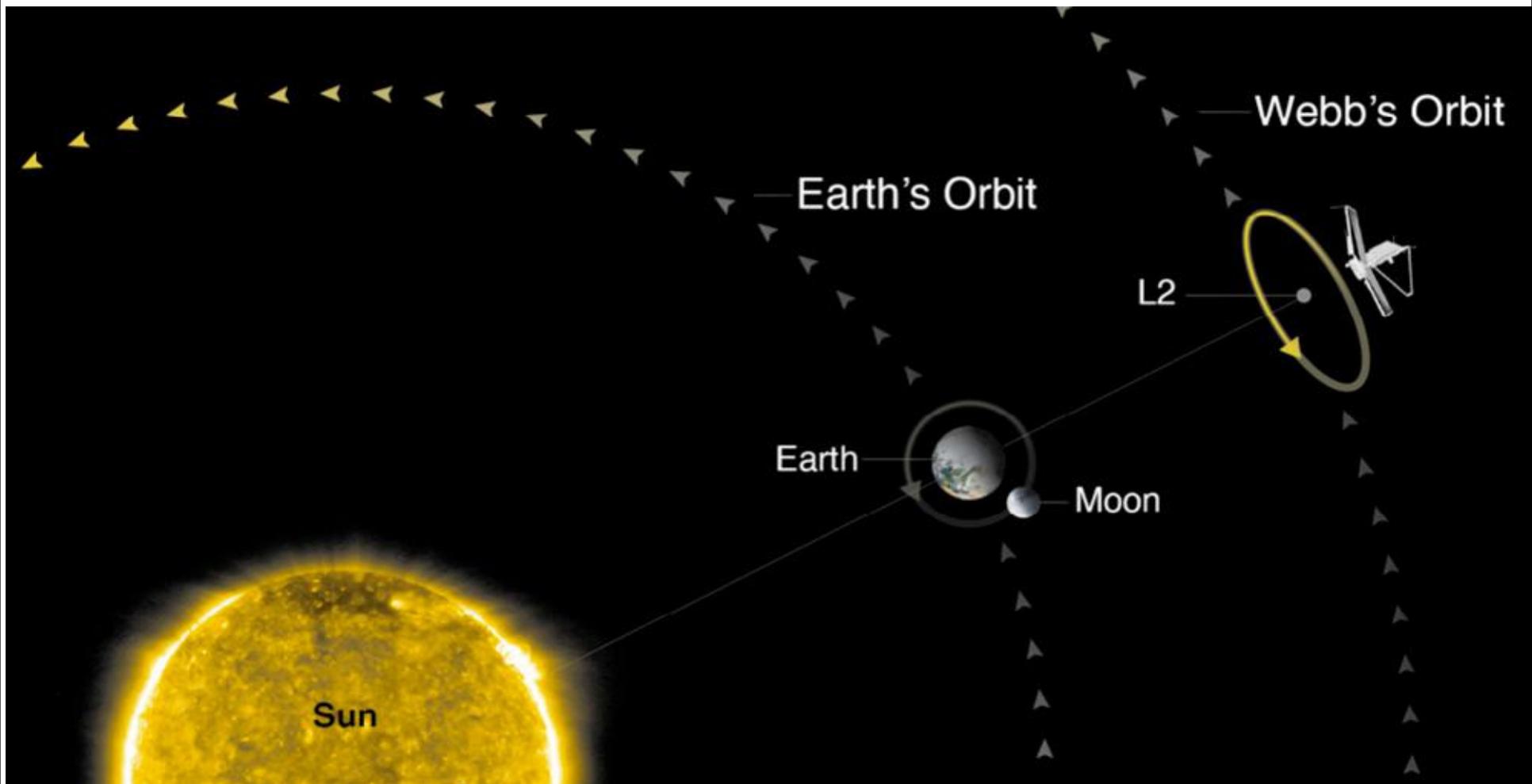


Diagram  
of  
Lagrange  
Points  
(not to scale).

L1 and L2  
are about  
a million  
miles from  
Earth

L4 and L5  
are about  
93 million  
miles from  
the Earth.



Credit: NASA

# Virgin Orbit - 3<sup>rd</sup> Success-in-a-row

- On 13<sup>th</sup> Jan Virgin Orbit celebrated its third successful launch mission in a row
- The converted Boeing 747 “Cosmic Girl” air launched its two-stage rocket LauncherOne off the California coast after taking off from Mojave Air and Space Port
- It carried seven small satellites into orbit for three customers, including the US military
  - LauncherOne was released from the 747 by RAF fighter pilot Flt Lt Matthew Stannard, on secondment to Virgin Orbit
  - one of the satellites was made in Glasgow by Spire Global
- LauncherOne is powered by kerosene and liquid oxygen, is 21 metres long and can launch up to 500kg into orbit
- Five more launches are planned for this year, including two from Space Port Cornwall in the summer
  - will be the first satellite launches not just from UK but from Europe



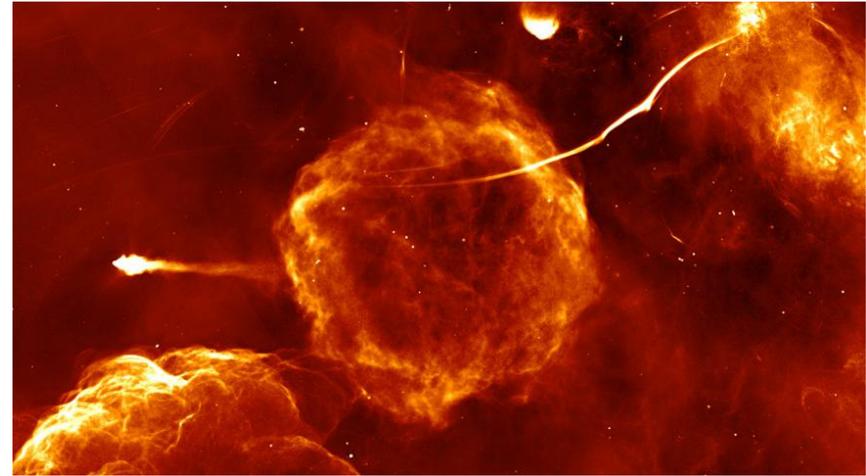
Credit: Virgin Orbit

# Earth Has New “Companion”

- Asteroids occupying Jupiter’s L4 & L5 Lagrange points were first discovered in 1906. They were named after mythical figures and are known as Trojan Asteroids
  - nearly 10,000 have been discovered so far and NASA’s Lucy Mission is en route to study them
- Earth has these same Lagrange Points and an asteroid has just been confirmed as orbiting our L4 point.
  - first observed in 2020 but it’s taken an international team to study its orbit and confirm it as a Trojan
  - Only one other like this has been discovered previously, and this one at  $\frac{3}{4}$  mile is three times as big
- It’s been named 2020 XL<sub>5</sub>, is carbon-rich and dark
- “they might become ideal bases for an advanced exploration of the solar system, or they could even be a source of resources” (NASA spokesman)

# New Radio Telescope First Results

- The MeerKAT radio telescope has 64 antennae, is based in South Africa, and has just conducted commissioning observations
- Its initial results have painted an image of the centre of the Milky Way with objects hitherto unknown
  - supernova remnants, huge magnetised radio filaments and the “inferno” surrounding the super massive black hole at the centre
- The image shows a runaway pulsar known as “the mouse”, presumably ejected from the supernova remnant at centre, plus the enormous radio filament known as “the snake”

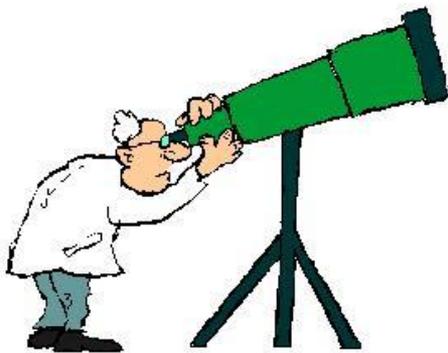


Credit: I. Heywood, SARA0

# Stars Over Surrey

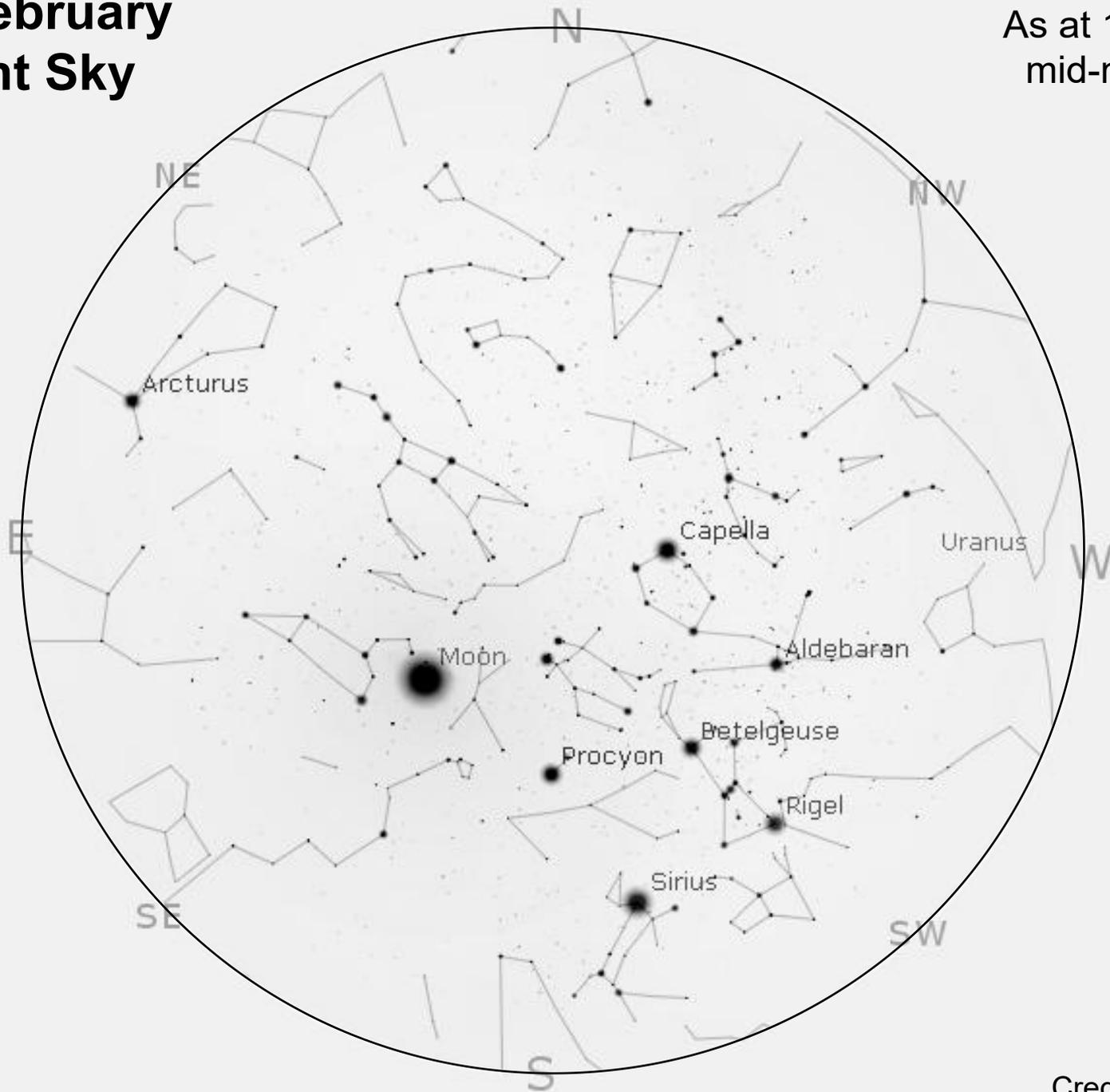
## What's Up!

For February 2022



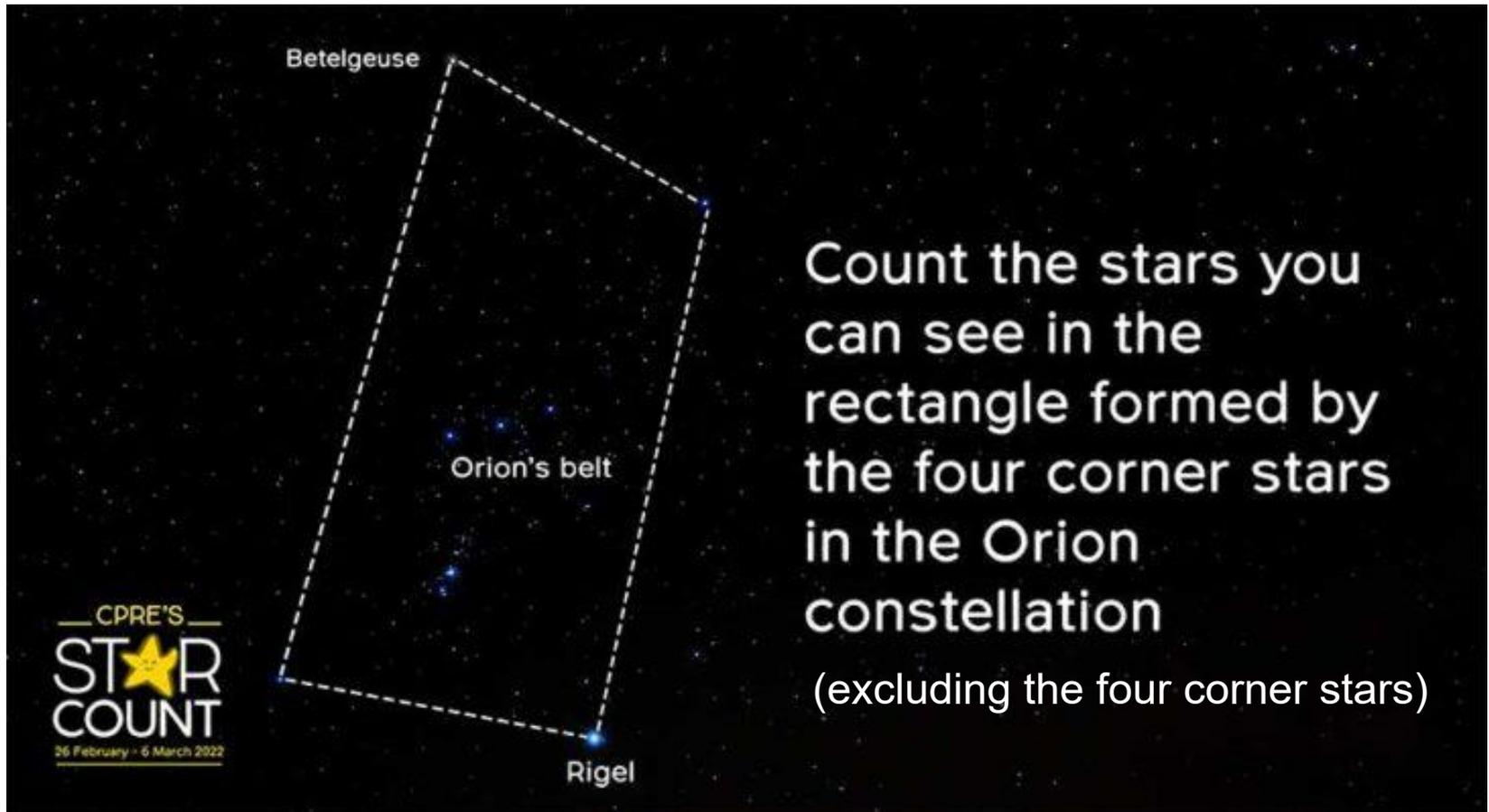
# The February Night Sky

As at 10 p.m.  
mid-month



Credit: Stellarium

# Join in the CPRE Star Count



- **26<sup>th</sup> Feb to 6<sup>th</sup> March**
- **[www.cpre.org.uk](http://www.cpre.org.uk)**

# Sun & Moon in February

- **New Moon** 1<sup>st</sup>
- **First Quarter** 8<sup>th</sup>
- **Full Moon** 16<sup>th</sup>
- **Third Quarter** 23<sup>rd</sup>

		Sun	Moon
1 <sup>st</sup>	Rise	07.39	08.25
	Set	16.52	16.59
15 <sup>th</sup>	Rise	07.15	15.39
	Set	17.17	07.43*
28 <sup>th</sup>	Rise	06.49	06.23
	Set	17.40	14.30

All times are GMT

\* following day

# The Planets in February

## Mercury

Best seen in the first week of the month just before sunrise in the SE.

## Venus

Venus is a brilliant but low morning object in the SE, rising approx 2 hours before the Sun. Through a telescope Venus appears as a crescent.

## Mars

Another morning object but very low in the SE, easier to find towards the end of the month when it rises about 1½ hrs before the Sun.

# The Planets in February

## Jupiter

Only visible for the first half of the month, low in SW, still bright at Mag -1.9, but gets swamped by the increasing evening twilight

## Saturn

Not visible this month

## Uranus

Still the best placed of the planets, being  $50^\circ$  high in the SSW at the start of the month, but binoculars must be used to find this mag +5.7 evening object

## Neptune

An evening object starting the month at  $14^\circ$  in the WSW, but at mag +7.9 a telescope is needed. It succumbs to the twilight by month end.

# Astronomical Phenomena in February

<b>8<sup>th</sup></b>	The clair-obscur effect of the Lunar X and Lunar V appear on the Moon's terminator at 17.52 hrs.
<b>18<sup>th</sup></b>	Venus and Mars are just 6° apart this morning about 1 hr before sunrise.
<b>27<sup>th</sup></b>	Venus, Mars and the waning crescent moon form a nice group before sunrise.

# 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.waltonastrogroun.co.uk/>

# Meetings at Local Societies

- **Ewell AS** *Nonsuch High School for Girls, Cheam*
  - Friday 11<sup>th</sup> February, 20.00 hrs
    - “*A Window Through The Universe*”
    - Prof Peter Bull, Uni of York

# Meetings at Local Societies

- **Croydon AS** *Sandison Room, Trinity School*
  - Friday 4<sup>th</sup> February, 19.30 hrs
    - “*tba*”
      - » tba
  - Friday 18<sup>th</sup> February, 19.30 hrs
    - “*tba*”
      - » tba

# Free Meetings & Talks On-line

- **The Royal Society:**

- Webinar - “*Space Weather and Implications for Life on Other Worlds*”

- Wednesday 9<sup>th</sup> February, 6.30 - 7.30 p.m. via Zoom

- Dr Suzanne Imber

- Department of Physics and Astronomy, Leicester University

<https://royalsociety.org/science-events-and-lectures/2022/02/rosalind-franklin/>

# Meetings & Talks On-line

- **British Interplanetary Society:**
  - *“Considering Off World Living, From Romantic Notion to Harsh Reality”*
    - Professor Andrew Edkins via CrowdCast
      - free to members, otherwise £10.00
      - Wednesday 9<sup>th</sup> February, 19.00 to 20.30:

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

# Meetings & talks on-line

- You can also pay £3.00 to watch this on-line talk run by **GoSpaceWatch**: (book via Eventbrite)
  - *“Extra Galactic Astronomy”*
    - Wednesday 16<sup>th</sup> February, 7.30 - 9.30 pm
      - Dr Anna Mcloud (Uni of Durham)

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

# **Astronomy on TV**

## **The Sky at Night**

....takes a break in February  
and March, but returns in April



*That's all Folks!*