

# Stars Over Surrey

## Astronomy &

## Spaceflight News

29<sup>th</sup> May 2020



Variety | Personality | Companionship

# Weather disrupts launched to ISS

- Poor weather overhead and downrange from the launch site caused NASA to cancel Thursday's launch to the ISS
  - flying through rain and also thick anvil and cumulus
  - recovery of crew in event of launch abort
  - recovery of Falcon 9's 1<sup>st</sup> stage on barge
- Fuelling of the 2<sup>nd</sup> stage had begun and so the crew had to wait until the kerosene and liquid oxygen had been drained
- Astronauts Bob Behnken and Doug Hurley now have to wait until the next launch windows on Sat 30<sup>th</sup> or Sun 31<sup>st</sup>
- Their stay aboard the ISS is between 1 and 4 months
  - depends upon how well the Crew Dragon's solar panels stand up to the deterioration caused by exposure in space



# USAF's X-37B Space Plane Launched

- The USAF's clandestine spaceplane was launched by an Atlas V on 17<sup>th</sup> May
- USAF has two of these and this is the 6<sup>th</sup> flight
  - 5 via Atlas V, 1 by Falcon 9
- The launch and orbital operations are handled by the new US Space Force, but the vehicle remains a USAF asset
- Mostly the payload is classified as is the planned duration
  - last mission lasted 780 days
  - this mission does include some announced payloads
    - 2 NASA experiments including a seed experiment
    - an experiment beaming micro-wave energy back to Earth



# Virgin Orbit Fails to Launch

- Virgin Orbit's 1<sup>st</sup> attempt to launch into orbit from under the wing of a Boeing 747 failed on Monday 25<sup>th</sup>.
- “Cosmic Girl” flew from Mojave Air & Space Port to the launch area 100 miles off California coast.
- The 21 metre long rocket is called Launcher One and is carried on a pylon under the wing and is liquid fuelled
- It dropped, the 1<sup>st</sup> stage engine ignited, then an anomaly occurred and safety officers terminated the mission
- Northrop Grumman's Pegasus air launcher is carried aloft by a Tristar, but is not commercially viable
  - solid fuelled, and only launches US DoD payloads



# Tom Cruise to film on ISS?

- NASA has stated that it is working with Tom Cruise and director Doug Liman on a sci-fi film to be shot largely aboard the ISS
- Not confirmed but rumoured that Cruise will fly to ISS with small film crew on a Space X Crew Dragon
- No plot details or timelines have been announced
- Won't be first sci-fi film shot on ISS!
- In 2008 Richard Garriot paid for a visit to the ISS, took a script and camera and shot 5 mins of film featuring 4 of the 6 astronauts on board plus himself.
- The 8 minute film *Apogee of Fear* was released in 2012



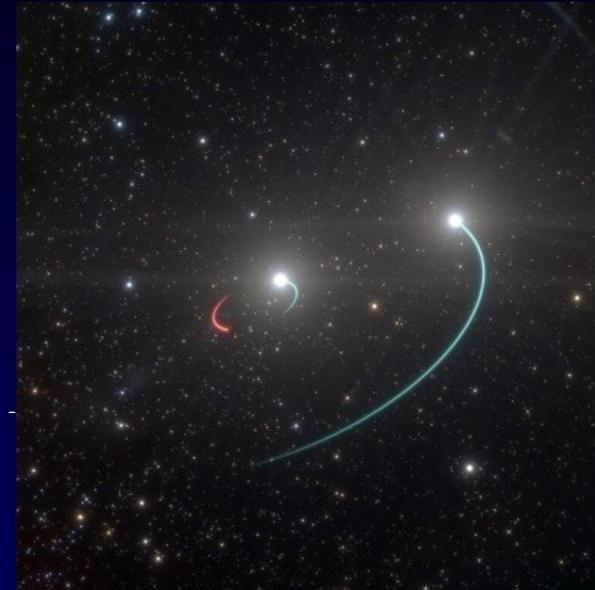
# China tests new manned spacecraft

- The next generation, as yet unnamed spacecraft returned on May 8<sup>th</sup>
- Launched three days earlier on Long March 5B
- 3 large parachutes plus airbags used for landing
- 8.8 metres tall, 4.5 m wide
- can take up to 7 astronauts
- will replace current Shenzhou
- designed to be re-usable and Lunar capable



## Closest Black Hole Discovered

- Scientists using the 2.2 metre telescope ESO's observatory in Chile have discovered the closest black hole to Earth.
- They were studying a known binary star in Telescopium
- They realised that one of the pair was orbiting round an unseen body every 40 days and concluded that this must be a black hole with a mass equal to about four times that of our Sun
- The system is known as HR6819 and is just 1,000 light years away.



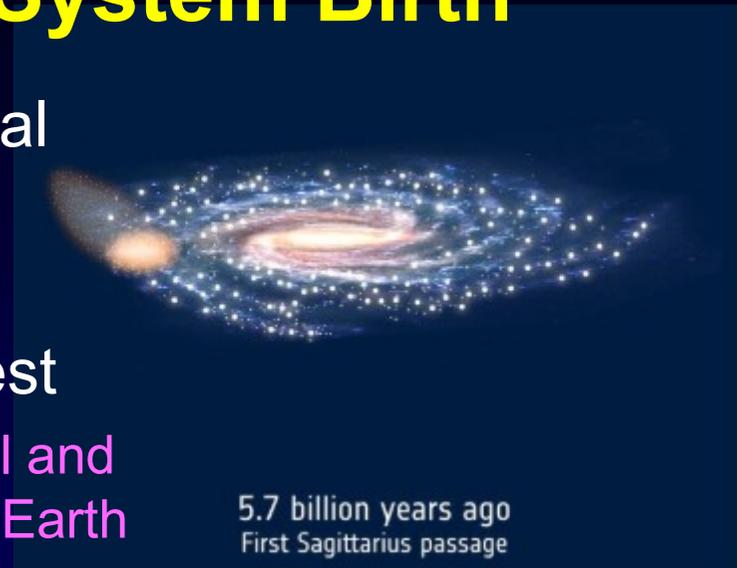
# Early Rotating Disk Galaxy Discovered

- The process and behaviour of galaxy formation in the early universe is far from being completely understood
- Researcher using the ALMA (Atacama Large Millimeter/ sub-millimetre Array) and also Hubble have imaged a galaxy 12.5 B LY away, i.e. when universe was only 1.5 BY old. The galaxy (known as Wolfe Disk) is clearly disk shaped and rotating, and this is far earlier than such shapes were expected to have formed, thinking that so soon after the Big Bang gas would have been too hot to allow such a structure to form.



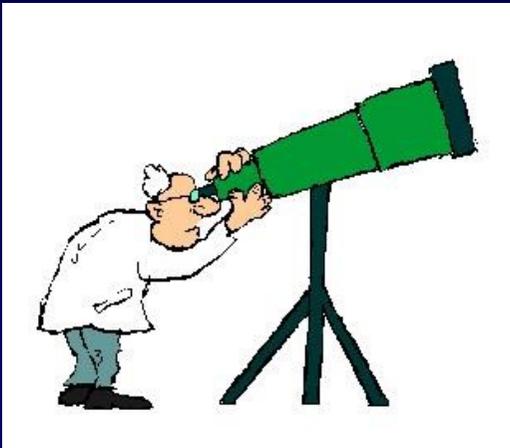
# Dwarf Galaxy : Solar System Birth

- Our Milky Way galaxy has several orbiting attendant dwarf galaxies
- One of these is the Sagittarius Dwarf Galaxy, actually the nearest
  - only discovered in 1994, very small and on far side of Milky Way core from Earth
  - in process of being absorbed by Milky Way and in so doing has passed through the outer edges of the Milky Way three times - 5.7, 1.9 and 1 B years ago
- Scientists using data from ESA's Gaia spacecraft have identified that the gravitational ripples caused by the galaxy's passing caused condensation of gasses in the areas nearby, resulting eventually in star birth. One of those areas includes our Sun and Solar System.



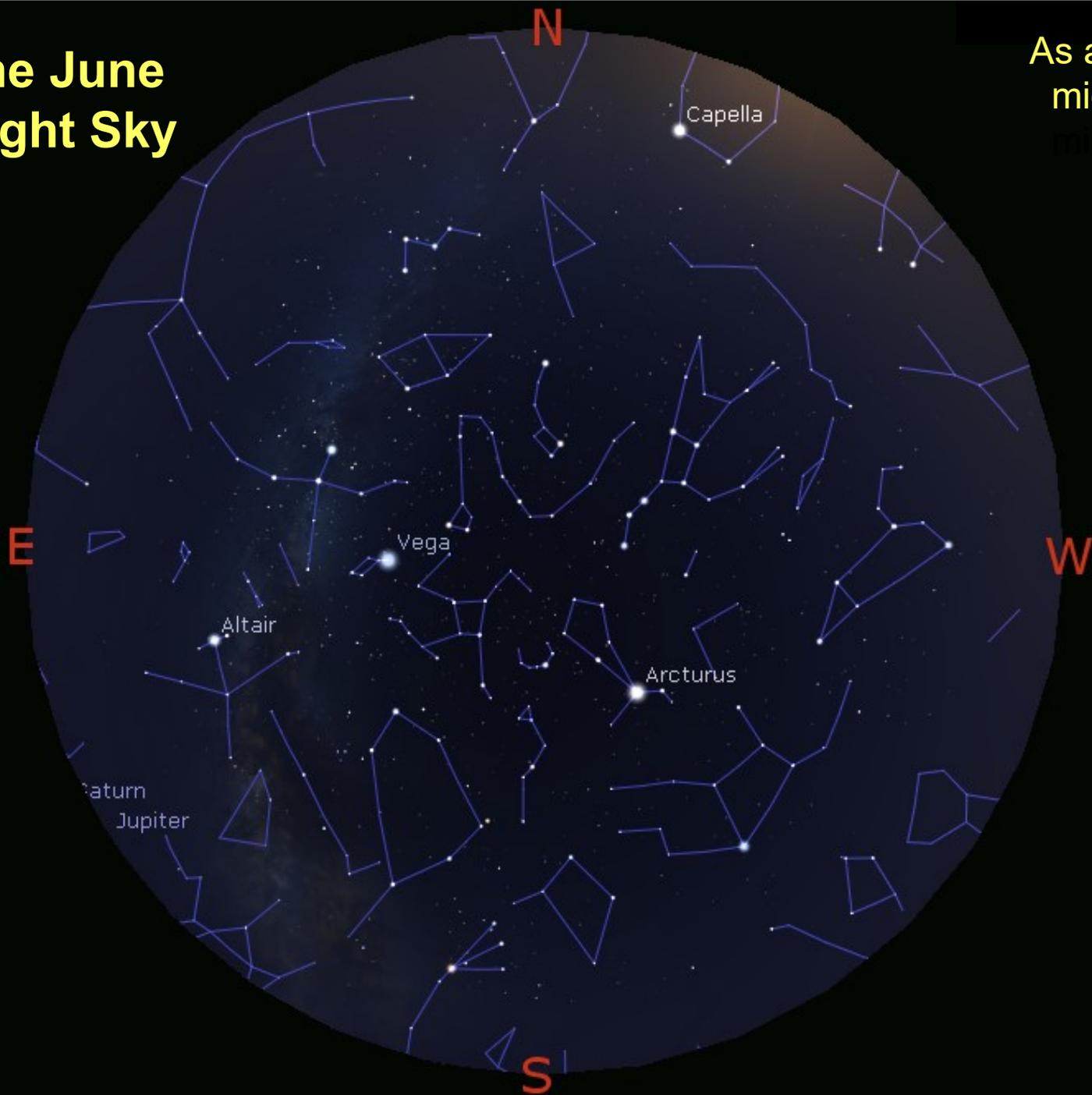
# What's Up!

For June 2020



# The June Night Sky

As at 10 p.m.  
mid-month



# Sun & Moon in June

- **First Quarter** **28<sup>th</sup>**
- **Full Moon** **5<sup>th</sup>**
- **Last Quarter** **13<sup>th</sup>**
- **New Moon** **21<sup>st</sup>**

		Sun	Moon
1 <sup>st</sup>	Rise	04.51	15.26
	Set	21.09	03.24
15 <sup>th</sup>	Rise	04.46	02.23
	Set	21.19	15.03
30 <sup>th</sup>	Rise	04.51	15.56
	Set	21.21	02.13

# What's Up - Planets

- Mercury

- An evening object for the first two weeks, low in the West North West 40 mins after sunset.

- Venus

- Now gone from the evening sky Venus reappears as a brilliant morning object shining at mag -4.3 low in the North East towards the end of the month. Best about an hour before sunrise.

- Mars

- A morning object low in the East South East, the planet is still improving as the month draws on, brightening to magnitude -0.5 by month end.

# What's Up - Planets

- Jupiter

- Visible as a splendid morning object in the South's pre-dawn skies, brightening to mag -2.7.

- Saturn

- A morning object brightening to mag +0.5, low in the South and just to the East of Jupiter.

- Uranus

- Not visible this month

- Neptune

- Starting to become visible once again this month but at only mag +7.9 it is largely swamped by the morning twilight, low in the East South East

# Phenomena in June

- **5<sup>th</sup>** The full Moon rises at 21.30 hrs already part way through a weak penumbral eclipse ending at 22.04 hrs.
- **9<sup>th</sup>** Waning gibbous Moon passes close to Jupiter, and Saturn about 01.00 hrs 
- **12<sup>th</sup>** The last quarter Moon is near Mars in the early hours.
- **19<sup>th</sup>** Venus is occulted by the lit edge of the thin crescent Moon at 08.40 hrs, in daylight but visible through binoculars. It reappears from the dark limb at 09.42 
- **20<sup>th</sup>** The Sun reaches its most northerly point in the sky, i.e. the Summer Solstice
- **24<sup>th</sup>** Comet C/2017 T2 PanSTARRS very close to M106 

Whole Month - watch out for Noctilucent Clouds  
1½ - 2 hrs after sunset, low above NW horizon  
1½ - 2 hrs before sunrise, low above NE horizon

# Comet Swan

- It had been hoped that Comet Atlas would grace May/June skies, but that has faded and broken up.
- However we now have Comet C/2020 F8 (SWAN) which was only discovered on April 12th, using instruments aboard the ESA/NASA spacecraft SOHO.
- Currently (late May) it's in Perseus and will move into Auriga (low in NNW) and should certainly be visible in binoculars as a faint smudge in the first two weeks of month, before getting lost in the twilight murk

# Meetings at Local Societies

- Given the current Covid-19 situation, all meetings at our local astronomical societies have been cancelled until further notice.
- 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.waltonastrogrouop.co.uk/>

# Astronomy on TV

## The Sky at Night

“Title tba”



### The show must go on

Due to the uncertainty surrounding the COVID-19 pandemic and the fact that the UK is currently under lockdown, planning, recording and producing *The Sky at Night* is an uncertain process at the moment. But Maggie, Chris, Pete and the rest of the team are working hard to ensure the programme airs on BBC Four in its regular slot this month, bringing you the latest adventures in spaceflight and practical astronomy.

**BBC Four, 14 June, 10pm** (first repeat)

**BBC Four, 18 June, 7.30pm**

**Check [www.bbc.co.uk/skyatnight](http://www.bbc.co.uk/skyatnight) for more up-to-date information**



*"That's all Folks!"*