STRATFORD ASTRONOMY GROUP

APRIL 4TH, 2023

AGENDA

- Meet and Greet
- Club NEWS and Activities
- Club Q & A
- Equipment Lessons
- Software and Imaging Information
- Latest Astronomy NEWS
- What's UP this Month
- Show and Tell
- Astronomy Lessons
- Cosmology Lessons
- Conclusion

MEET AND GREET

Welcome

New Visitors

Regrets

PREVIOUS MEETING REVIEW

Meeting attended by 14:

Nick Assioras
Paul Bartlett
Michael Burns
Colleen Devine
Doug Fyfe
Rob Greer
Patrick Hayes
Wolfgang Keller
Tom Kimber
Jamie Page
Tim Pauli
Ken Roberts
Bill Thompson
Reg White

CLUB NEWS AND ACTIVITIES

Group Funds

Total = $1294.45

- If you would like to contribute to the group, then please e-transfer Tim at:

timannemariepauli@gmail.com

or by cheques:

Tim Pauli

96 Front Street

Stratford, ON

N5A4H2

CLUB NEWS AND ACTIVITIES

EQUIPMENT:

STRATFORD ASTRONOMY CLUB EQUIPMENT

CLUB EQUIPMENT LOCATION:

Paul Bartlett is now storing all the group's equipment. If you wish to borrow an item, then please contact him at:

1948paul.bartlett@gmail.com

519-274-2010

UPCOMING MEETINGS

NEXT MEETING DATES

Bookings

Status: Approved

Total hours: 20

Status	Date	Start	End	Facility and spaces
Approved	Tue, Sep 06, 2022	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*
Approved	Tue, Oct 04, 2022	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*
Approved	Tue, Nov 01, 2022	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*
Approved	Tue, Dec 06, 2022	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*
Approved	Tue, Jan 10, 2023	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*
Approved	Tue, Feb 07, 2023	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*
Approved	Tue, Mar 07, 2023	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*
Approved	Tue, Apr 04, 2023	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*
Approved	Tue, May 02, 2023	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*
Approved	Tue, Jun 06, 2023	7:00pm	9:00pm	St. Michael CSS *in Classroom 2 - Room 104*

CLUB NEWS AND ACTIVITIES

EQUIPMENT:

STRATFORD ASTRONOMY CLUB EQUIPMENT

- New Web site: (https://awptest.espubs.com/)
  Tim Pauli - Owner/Administrator
  Ken Roberts - technical contact
  Tom Kimber - Administrator/Editor
  Doug Fyfe - Administrator
  Michael Burns- Administrator
  Tom will build it on WordPress.

CLUB Q & A

- Tim and next Museum presentation
- Let’s open this up for any Questions and Answers. This can include events that you are aware of .

LATEST ASTRONOMY NEWS

MARCH-APRIL

MARCH 15TH: STAR ON THE BRINK OF GOING SUPERNOVA

•The James Webb Space Telescope (JWST) has captured a stunning view of an exceptionally massive and hot star that's well on its way to going supernova. The star, Wolf-Rayet 124 (WR 124), is located some 15,000 light-years away in the constellation Sagitta the Arrow.

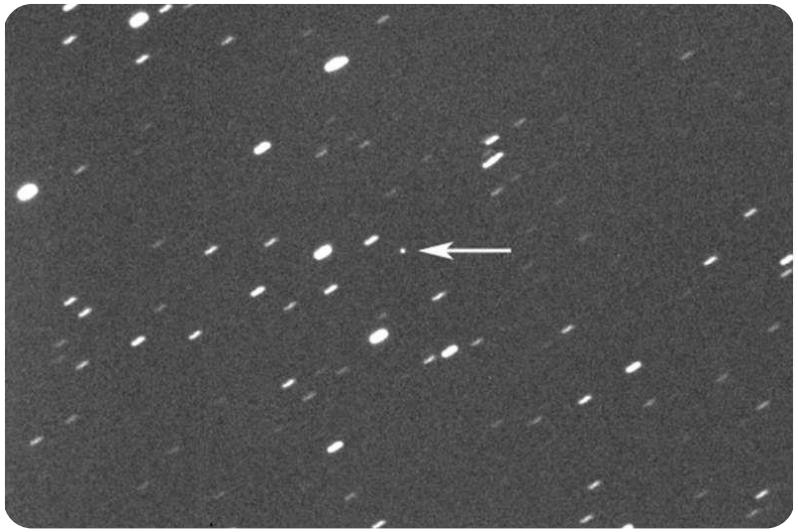
•Wolf-Rayet stars like WR 124 are a special breed. These objects are some of the brightest, most massive, and hottest stars in the modern-day universe. They also sport intense stellar winds that can clock in at speeds of millions of km per hour.

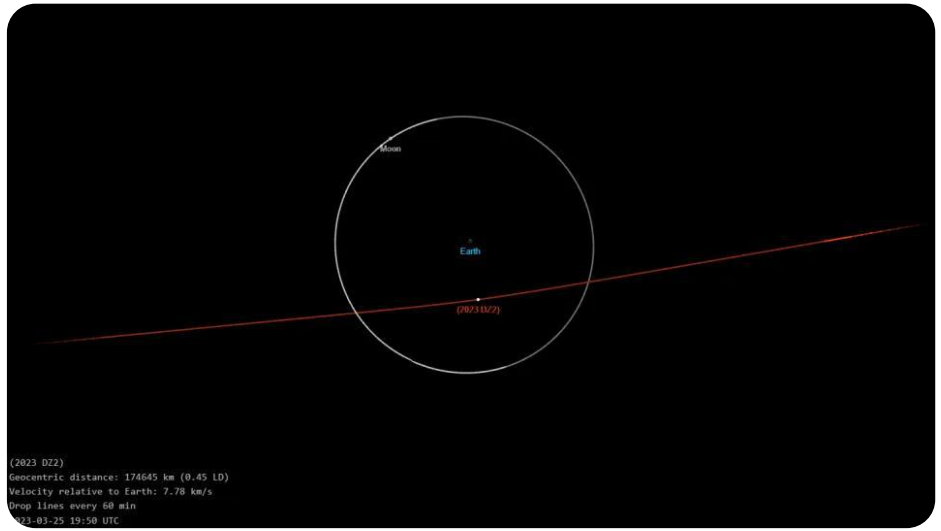
•Such strong stellar winds mean Wolf-Rayet stars shed their outer layers at an astonishing rate. This means that Wolf-Rayet stars typically only live about a million years before collapsing in on themselves and exploding as supernovae

MARCH 23RD: LARGE ASTEROID COMING CLOSE, BUT ZERO CHANCE OF HITTING US

•Saturday's close encounter by asteroid known as 2023 DZ2 offered astronomers the chance to study a space rock from just over 168,000 kilometers away. That's less than half the distance from here to the moon, making it visible through binoculars and small telescopes.

•While asteroid flybys are common, NASA said it's rare for one so big to come so close—about once a decade. Scientists estimate its size somewhere 40 meters and 90 meters.





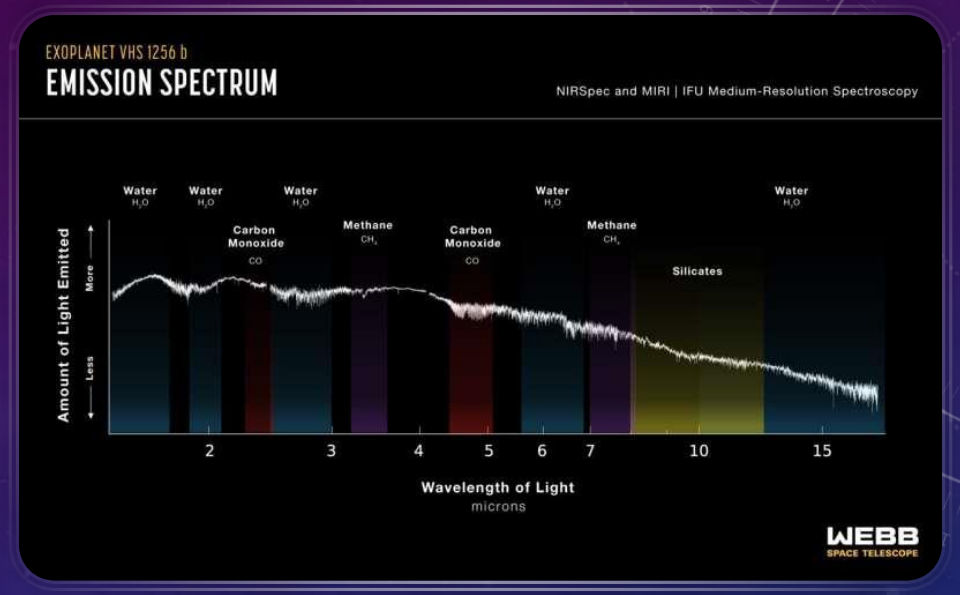
MARCH 22: A SURPRISINGLY SIMPLE EXPLANATION FOR 'OUMUAMUA'S WEIRD ORBIT

- In 2017, a mysterious comet dubbed 'Oumuamua fired the imaginations of scientists and the public alike. It was the first known visitor from outside our solar system, it had no bright coma or dust tail, like most comets, and a peculiar shape—something between a cigar and a pancake—and its small size more befitted an asteroid than a comet.

- But the fact that it was accelerating away from the sun in a way that astronomers could not explain perplexed scientists, leading some to suggest that it was an alien spaceship.

- Now, a University of California, Berkeley, astrochemist and a Cornell University astronomer argue that the comet's mysterious deviations from a hyperbolic path around the sun can be explained by a simple physical mechanism likely common among many icy comets: outgassing of hydrogen as the comet warmed up in the sunlight.

MARCH 22ND: JAMES WEBB SPOTS SWIRLING, GRITTY CLOUDS ON REMOTE PLANET



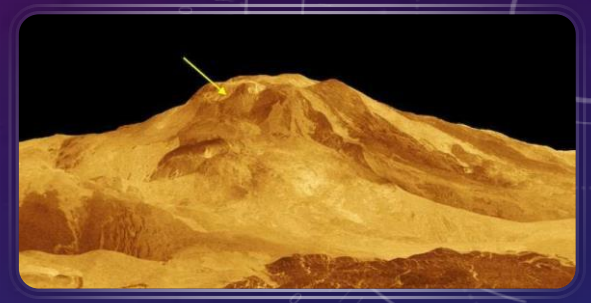
- Researchers observing with NASA's James Webb Space Telescope have pinpointed silicate cloud features in a distant planet's atmosphere. The atmosphere is constantly rising, mixing, and moving during its 22-hour day, bringing hotter material up and pushing colder material down.
- The resulting brightness changes are so dramatic that it is the most variable planetary-mass object known to date. The team, led by Brittany Miles of the University of Arizona, also made extraordinarily clear detections of water, methane and carbon monoxide with Webb's data, and found evidence of carbon dioxide. This is the largest number of molecules ever identified all at once on a planet outside our solar system.
- Cataloged as VHS 1256 b, the planet is about 40 light-years away and orbits not one, but two stars over a 10,000-year period. VHS 1256 b is about four times farther from its stars than Pluto is from our Sun.

MARCH 20TH: NASA'S INGENUITY HELICOPTER SEES A BEAUTIFUL SUNSET ON MARS

•Ingenuity, the helicopter that launched with the Perseverance rover and has now been on Mars for almost two years, has completed over 45 flights at the time of writing. Some of those flights have even been captured by Perseverance, which occasionally also catches glimpses of its airborne companion on the ground awaiting its next go-around.

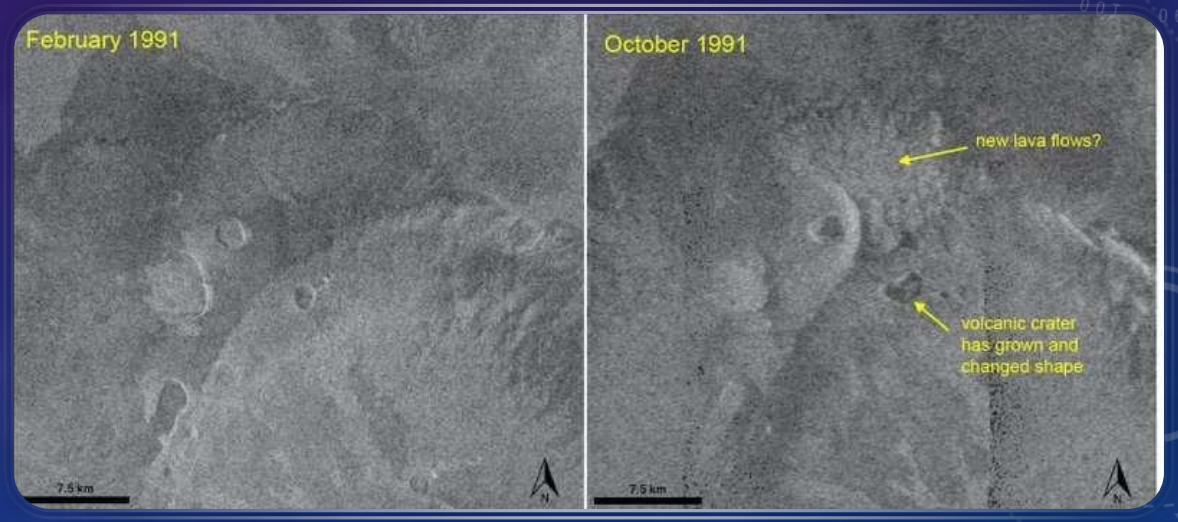
•On February 22, 2023, the day of its 45th flight, Ingenuity captured an image of the sun as it approached a dune on the Martian horizon. It used its high-resolution color camera, in which the sun appears almost white, as it would in space. An artifact of the image-capturing process makes it look like actual sunbeams are falling onto the dune's surface.

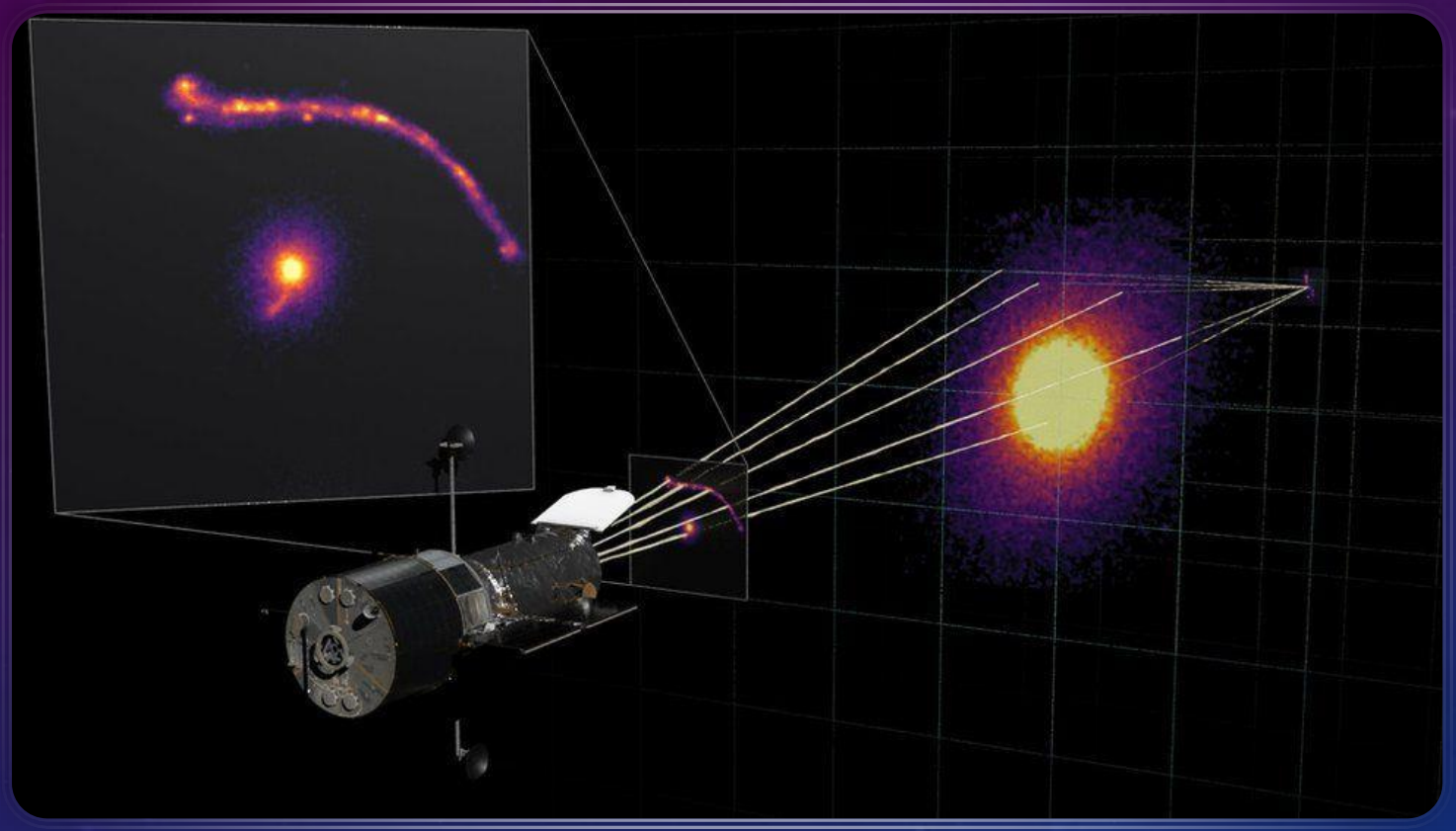
MARCH : VENUS: PROOF OF ACTIVE VOLCANOES—AT LAST



•Venus is almost the same size, mass and density as Earth. So, it should be generating heat in its interior (by the decay of radioactive elements) at much the same rate as the Earth does. On Earth, one of the main ways in which this heat leaks out is via volcanic eruptions. During an average year, at least 50 out of the 85,000 volcanoes erupt.

•But despite decades of looking, we've not seen clear signs of volcanic eruptions on Venus—until now. A new study by geophysicist Robert Herrick of the University of Alaska, Fairbanks, which he reported this week at the Lunar & Planetary Science Conference in Houston and published in the journal *Science*, has at last caught one of the planet's volcanoes in the act.





MARCH : 'ULTRAMASSIVE' BLACK HOLE DISCOVERED

- Scientists at Durham University discovered the "ultramassive" black hole by observing its pull on passing light, called gravitational lensing.

- Dr James Nightingale who led the study said even he struggled to "comprehend how big this thing is".

- Their findings have been published in the journal Monthly Notices of the Royal Astronomical Society.

- The academics said the black hole was 30 billion times the size of our Sun and was the first to be measured using gravitational lensing.

March 29: NASA, Boeing aiming for July launch of Starliner space capsule

The first crewed flight of Boeing's Starliner space capsule to the International Space Station (ISS) will take place in July, Boeing and NASA officials said Wednesday.

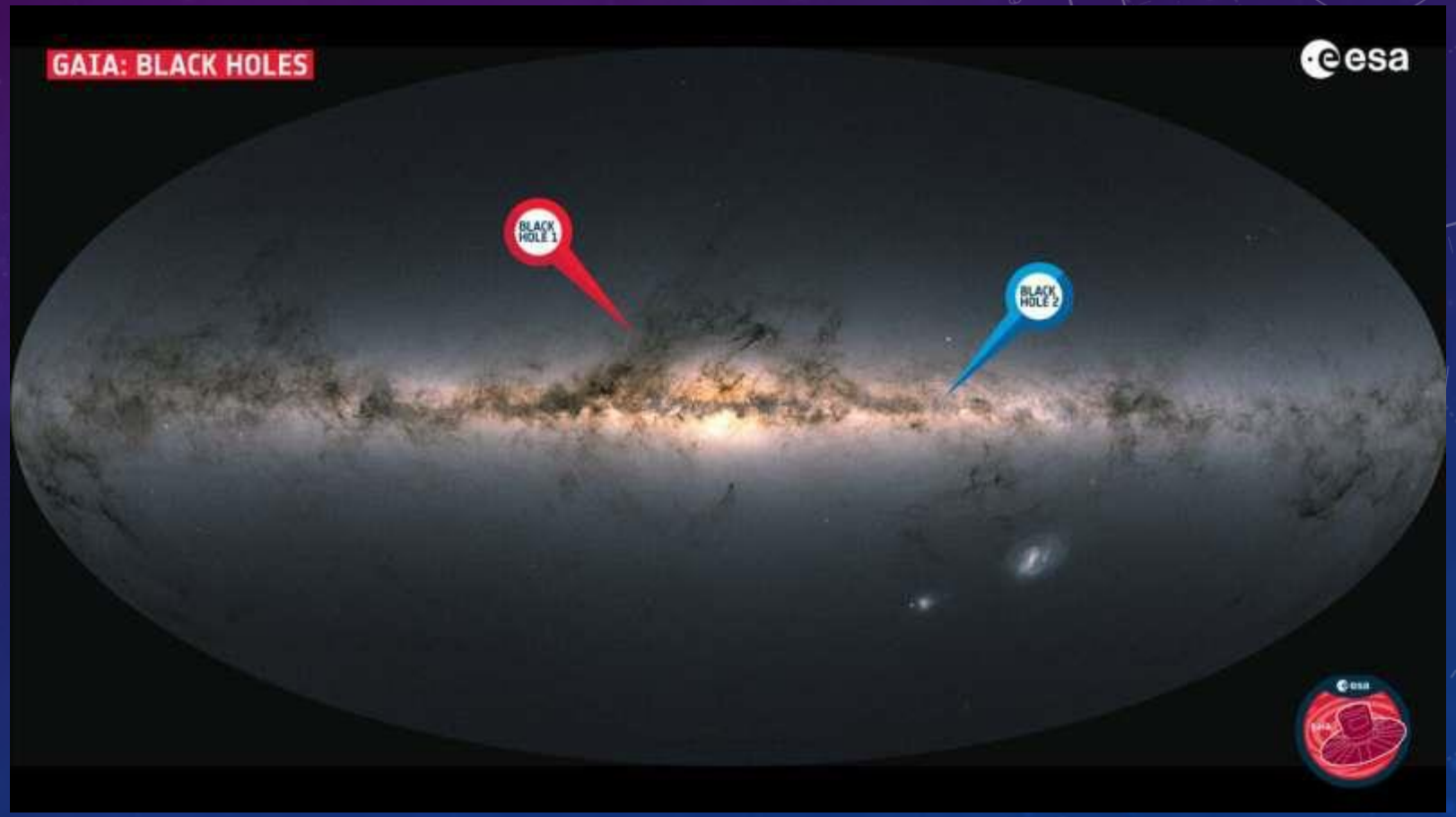
The CST-100 Starliner mission, which had previously been planned for April, will take place no earlier than July 21, the officials said.

Stich said more time was needed to certify the parachute system designed to bring the astronauts and the spacecraft safely back to Earth, and a ground test of the parachutes will be conducted in May.

The Starliner will carry two NASA astronauts, Barry Wilmore and Sunita Williams to the ISS, where they are expected to stay for at least eight days.

April 3rd: Gaia discovers a new family of black holes

Using data from ESA's Gaia mission, astronomers have discovered not only the closest but also the second closest black hole to Earth. The black holes, Gaia BH1 and Gaia BH2, are respectively located just 1,560 light-years away from us in the direction of the constellation Ophiuchus and 3,800 light-years away in the constellation Centaurus. In galactic terms, these black holes reside in our cosmic backyard.



April 3rd : Canadian Jeremy Hansen named to NASA’s Artemis II mission around the moon

- Jeremy Hansen will join the Artemis II mission set to orbit the moon in 2024. The announcement was made Monday from NASA Johnson Space Center's Ellington Field in Houston, Texas. Jeremy Hansen will soon stand alone in Canadian space history.

- Serving as a mission specialist, Hansen will be one of four astronauts assigned to the 10-day mission that is scheduled for launch in November 2024, NASA and Canadian Space Agency officials said. The other three astronauts on the mission are all American: Christina Hammock Koch, Victor Glover and G. Reid Wiseman.

WHAT'S UP

STRATFORD ASTRONOMY GROUP

WHAT'S UP FOR MARCH

This is a month of "Almost for us"

<< March | April 2023 | May >>

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	31	1  Waxing gibbous Visible: 80% ↑ Age: 10.41 days
2  Waxing gibbous Visible: 88% ↑ Age: 11.31 days	3 Waxing gibbous Visible: 93% ↑ Age: 12.22 days	4 Waxing gibbous Visible: 98% ↑ Age: 13.14 days	5 Full moon Visible: 100% ↑ Age: 14.09 days	6 **Full moon** **Visible: 100%** **Age: 15.05 days**	7 Full moon Visible: 99% ↓ Age: 16.04 days	8 Waning gibbous Visible: 95% ↓ Age: 17.04 days
9  Waning gibbous Visible: 89% ↓ Age: 18.06 days	10 Waning gibbous Visible: 81% ↓ Age: 19.10 days	11 Waning gibbous Visible: 71% ↓ Age: 20.15 days	12 Last quarter Visible: 60% ↓ Age: 21.21 days	13 **Last quarter** **Visible: 49% ↓** **Age: 22.28 days**	14 Last quarter Visible: 38% ↓ Age: 23.38 days	15 Waning crescent Visible: 27% ↓ Age: 24.44 days
16  Waning crescent Visible: 17% ↓ Age: 25.54 days	17 Waning crescent Visible: 10% ↓ Age: 26.64 days	18 Waning crescent Visible: 4% ↓ Age: 27.73 days	19 New Visible: 1% ↓ Age: 28.81 days	20 **New** **Visible: 1% ↑** **Age: 0.34 days**	21 New Visible: 3% ↑ Age: 1.38 days	22 Waxing crescent Visible: 7% ↑ Age: 2.38 days
23  Waxing crescent Visible: 13% ↑ Age: 3.36 days	24 Waxing crescent Visible: 20% ↑ Age: 4.31 days	25 Waxing crescent Visible: 28% ↑ Age: 5.23 days	26 First quarter Visible: 37% ↑ Age: 6.14 days	27 **First quarter** **Visible: 47% ↑** **Age: 7.03 days**	28 First quarter Visible: 56% ↑ Age: 7.92 days	29 First quarter Visible: 66% ↑ Age: 8.82 days
30  Waxing gibbous Visible: 74% ↑	1 	2 	3 	4 	5 	6

HEY, THERE BE A MOON OVERHEAD

MOON PHASES FOR THE MONTH OF APRIL

APRIL 11 – MERCURY AT ITS EVENING PEAK

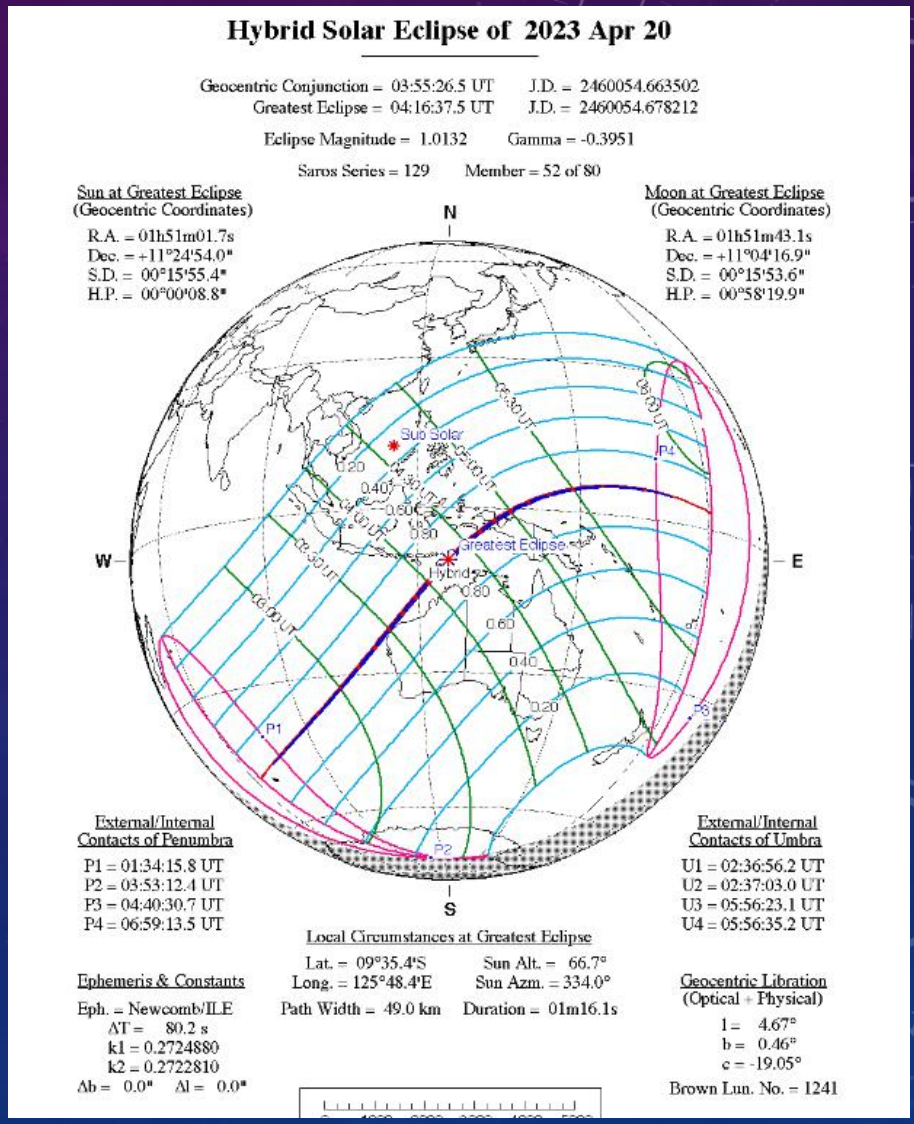
- April is going to be a great month for planetary viewing options, starting off with the smallest and closest to the sun. Since Mercury is so close to the sun, we can only observe it when it reaches its “highest” aka visually furthest from the sun. This occurs cyclically as part of Mercury’s 88-day orbit; sometimes Mercury reaches its “peak” in the morning, then in the evening.
- In any case, on April 28th, you’ll be able to see Mercury about 17° above the western horizon just after sunset. This is a great opportunity to head out and try to spot the smallest planet. This is when Mercury reaches greatest eastern elongation of 19.5 degrees from the Sun.

APRIL 15 – CLOSE APPROACH OF THE MOON & SATURN

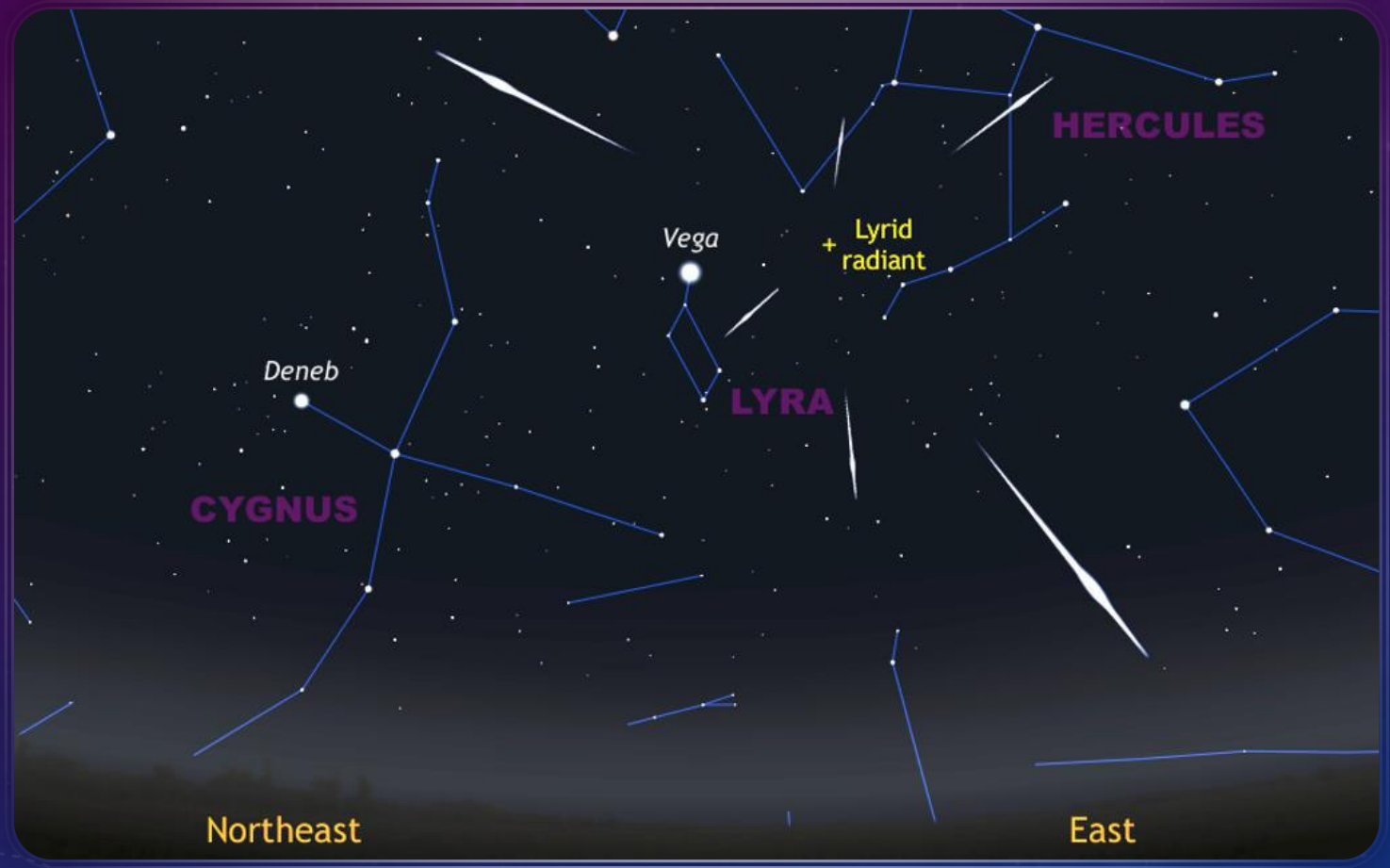
- From a tiny planet to a very big one – April is certainly an interesting month, astronomically speaking. After spotting Mercury a few nights earlier, there will be a nice chance to view ringed Saturn overnight from April 15th-16th. This night, the Moon and Saturn will have a close visual approach, appearing just 3°11′ apart.
- They will appear at their closest at about 2am EDT, but both solar system bodies will be big and easy to spot in the hours leading up to (and following) their moment of closest appearance. In any case, you'll be able to spot them without binoculars or telescope – but the latter will help you differentiate the rings of Saturn if you've never seen them befor

APRIL 20 – HYBRID SOLAR ECLIPSE

- **A hybrid solar eclipse occurs when the Moon is almost too close to the Earth to completely block the Sun. This type of eclipse will appear as a total eclipse to some parts of the world and will appear annular to others. The eclipse path will begin in the southern Indian Ocean and move across parts of western Australia and southern Indonesia. A partial eclipse will be visible throughout most of Indonesia and Australia.**



APRIL 23 – PEAK OF THE LYRID METEOR SHOWERS



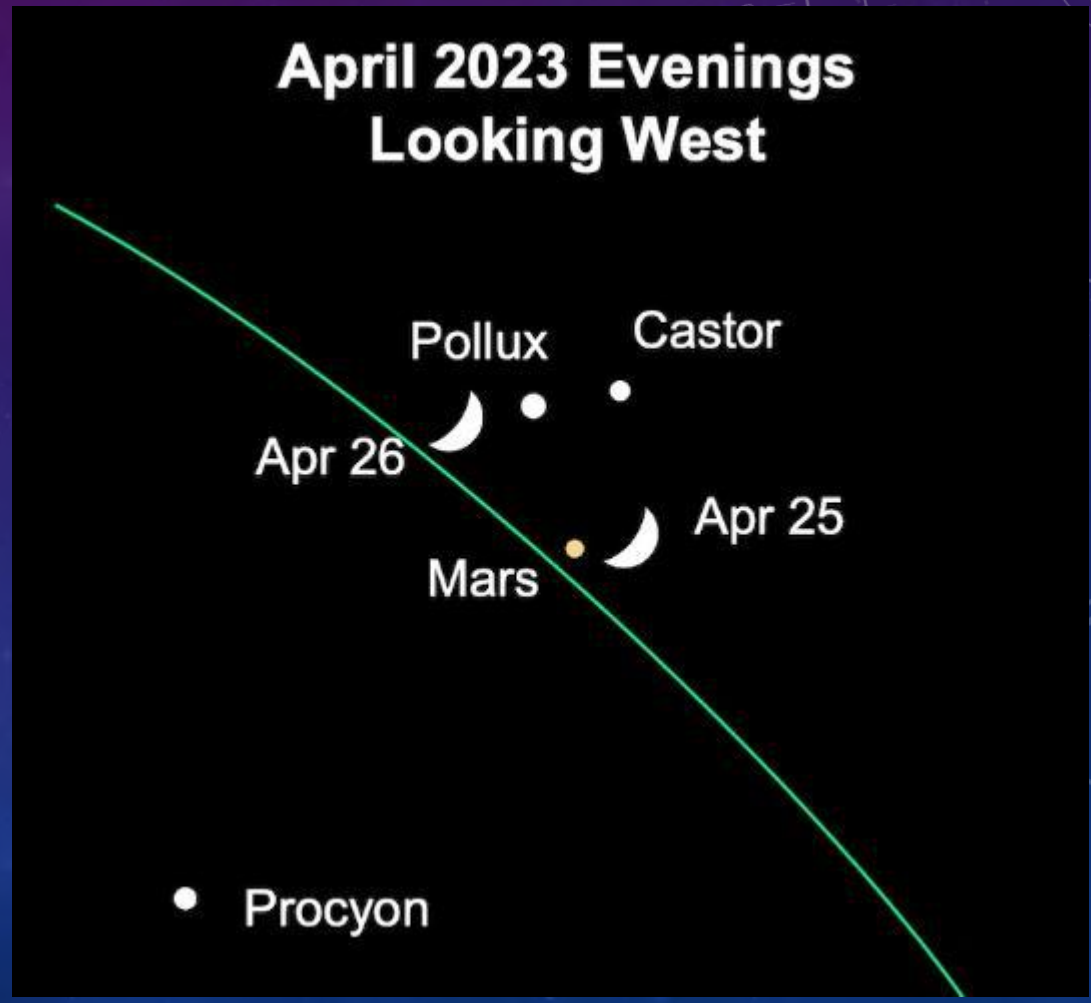
- In the early morning hours of April 23rd, head out for a night sky show of meteoric proportions. The year's first major meteor shower in the northern hemisphere, the Lyrids, will peak around dawn on the 23rd, so your best viewing prospects will be in the pre-dawn hours. The Lyrids typically produce a Zenith Hourly Rate (ZHR) around 18 on the night of peak activity.
- Despite their name, look for them from the radiant point in the constellation Hercules; this will be visible most of the night for stargazers in the northern hemisphere. Best of all, the moon will be very dim, just a 13% illuminated waxing crescent moon; it won't present much interference to spotting Lyrids as they shoot across the sky. You will notice meteors from the 5th to the 29th.

APRIL 23 – CLOSE APPROACH OF THE MOON & VENUS

- **April 23rd is also a good night to spot the planet Venus, if you're out looking for Lyrids. On this night, the Moon and Venus will make a close visual approach, appearing just 1°17′ apart. This is quite close – but not close enough to be visible in a single telescope view or binoculars; you will be easily able to spot the tiny waxing crescent Moon and bright Venus and hop between them if you do have equipment set up.**

APRIL 25 – CLOSE APPROACH OF THE MOON & MARS

Next, the Moon and Mars share an evening together. After sunset on April 25th, the Moon and Mars will appear just 3°13' apart, so easy to spot and enjoy with the unaided eye. Binoculars or a telescope will only make the evening more enjoyable but aren't essential.



ASTRONOMY LESSONS

SHOW AND TELL

EQUIPMENT LESSONS

SOFTWARE AND IMAGING LESSONS