STRATFORD ASTRONOMY GROUP

DECEMBER 6TH, 2022

AGENDA

- Meet and Greet
- Previous Meeting's Minutes
- Club NEWS and Activities
- Club Q & A
- Latest Astronomy NEWS
- WEBB NEWS
- What's UP this Month
- Show and Tell
- Equipment Lessons (connect battery and camera)
- Software and Imaging Information (running MallincamSky)
- Astronomy Lessons
- Cosmology Lessons
- Conclusion

MEET AND GREET

Welcome
New Visitors

Regrets

Positions to be filled:
Webmaster (advertising, publicity) Facebook site – Tom Kimber offered to help. Anyone else?

PREVIOUS MEETING REVIEW

Meeting attended by 9:

- Michael Burns
- Tim Pauli
- Doug Fyfe
- Jim Kelly
- Bob Greer
- Ken Roberts
- Patrick Hayes
- Paul Bartlett
- Peter Tinits

CLUB NEWS AND ACTIVITIES

Group Funds

Total = $900.67

•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

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

We received our Celestron Power Supply for the Celestron CPC800 (we will set it up at the end of the meeting).

CLUB Q & A

- Let’s open this up for any Questions and Answers. This can include events that you are aware of .
- Our Post Christmas dinner
- Tim will talk about potential dates for the Stratford museum on either January 13 or 20 2023.

LATEST ASTRONOMY NEWS

DECEMBER

Liftoff! NASA's Artemis I mega rocket launches Orion to Moon

Date: November 16, 2022

Source: NASA

Summary: Following a successful launch of NASA's Space Launch System (SLS), the most powerful rocket in the world, the agency's Orion spacecraft is on its way to the Moon as part of the Artemis program. Carrying an uncrewed Orion, SLS lifted off for its flight test debut at 1:47 a.m. EST Wednesday from Launch Pad 39B at NASA's Kennedy Space Center in Florida.

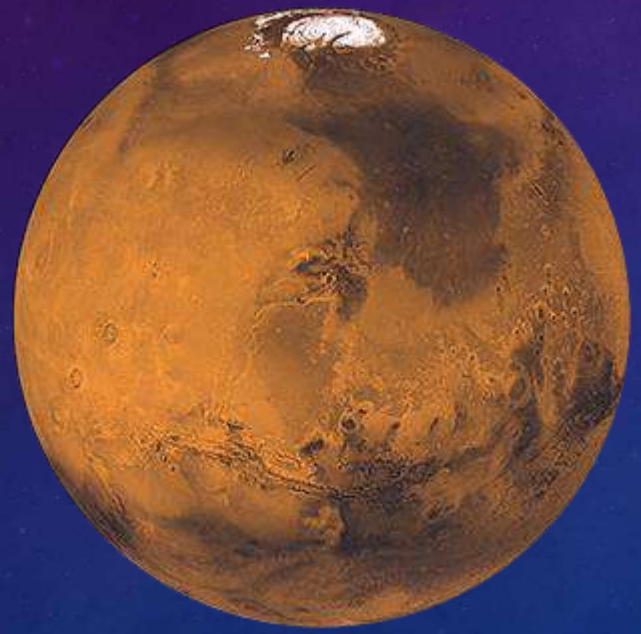
The launch is the first leg of a mission in which Orion is planned to travel approximately 65,000 km beyond the Moon and return to Earth over the course of 25.5 days. Known as Artemis I, the mission is a critical part of NASA's Moon to Mars exploration approach, in which the agency explores for the benefit of humanity. It's an important test for the agency before flying astronauts on the Artemis I mission.

Mars's crust more complex, evolved than previously thought

Date: November 4, 2022

Source: University of Iowa

Summary: A new study finds the original crust on Mars is more complex, and evolved, than previously thought. Researchers have determined the Martian crust has greater concentrations of the chemical element silicon, which may mean Mars' original surface may have been similar to Earth's first crust.



Scientists believe Mars formed about 4.5 billion years ago. Exactly how the Red Planet came into being is a mystery, but there are theories. One idea is that Mars formed via a titanic collision of rocks in space that, with its intense heat, spawned an entirely liquefied state, also known as a magma ocean. The magma ocean gradually cooled, the theory goes, yielding a crust, like a layer of skin, that would be singularly basaltic.
But if that magma ocean was not all-encompassing, and that parts of the first crust on Mars had a different origin, one that would show silica concentrations different from basaltic.
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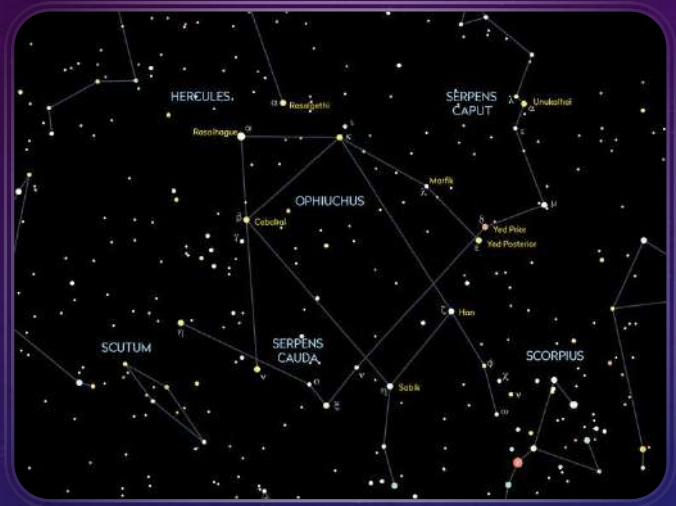


Astronomers using the Gemini North telescope on Hawai'i, one of the twin telescopes of the International Gemini Observatory, operated by NSF's NOIRLab, have discovered the closest black hole to Earth, which the researchers have dubbed Gaia BH1. This dormant black hole is about 10 times more massive than the Sun and is located about 1600 light-years away in the constellation Ophiuchus, making it three times closer to Earth than the previous record holder,

Astronomers discover closest black hole to Earth

Gemini North telescope on Hawai'i reveals first dormant, stellar-mass black hole in our cosmic backyard

Date: November 4, 2022

Source: Association of Universities for Research in Astronomy (AURA)

Summary: Astronomers have discovered the closest-known black hole to Earth. This is the first unambiguous detection of a dormant stellar-mass black hole in the Milky Way. Its close proximity to Earth, a mere 1600 light-years away, offers an intriguing target of study to advance our understanding of the evolution of binary systems.

Mysteriously bright flash is a black hole jet pointing straight toward Earth, astronomers say

Date: November 30, 2022

Source: University of Birmingham

Summary: Astronomers have determined the source of an incredibly bright X-ray, optical and radio signal appearing from halfway across the Universe.

The signal, named AT 2022cmc, was discovered earlier this year by the Zwicky Transient Facility in California. Findings published today in *Nature Astronomy,* suggest that it is likely from a jet of matter, streaking out from a supermassive black hole at close to the speed of light.

The team, including researchers from MIT and the University of Birmingham, believe the jet is the product of a black hole that suddenly began devouring a nearby star, releasing a huge amount of energy in the process. Their findings could shed new light on how supermassive black holes feed and grow.

Astronomers have observed other such "tidal disruption events," or TDEs, in which a passing star is torn apart by a black hole's tidal forces. However AT 2022cmc is brighter than any TDE discovered to date, and is also the farthest TDE ever detected, at some 8.5 billion light years away.

Modern photography of our universe collected with powerful lenses aboard the James Webb Space Telescope and its predecessor, the Hubble Space telescope, provide us stunning views of distant regions of space. However, much of the universe remains conceivable only in our imaginations, even despite the reach of modern space science observatories.

Now, thanks to a team of astronomers from Johns Hopkins University who have been compiling data over the last two decades, armchair astronomers around the world will be treated to one of the most comprehensive displays detailing a map of the universe ever made available.

Using data collected over close to 15 years from the Sloan Digital Sky Survey (SDSS), the new map will offer the general public glimpses of the universe in its near totality and in ways once accessible only to professional astronomers like the Johns Hopkins team.

Displaying galaxies in unprecedented detail, the map features these distant collections of billions of stars in authentic coloration and actual position.

Website:
https://mapoftheuniverse.net/

METEORS ALL OVER

OVER THE LAST WEEK GREEN METEORS HAVE BEEN SEEN ALL OTHER THE WORLD (MEMBERS OF THE PERSEIDS).

JAMES WEBB TELESCOPE

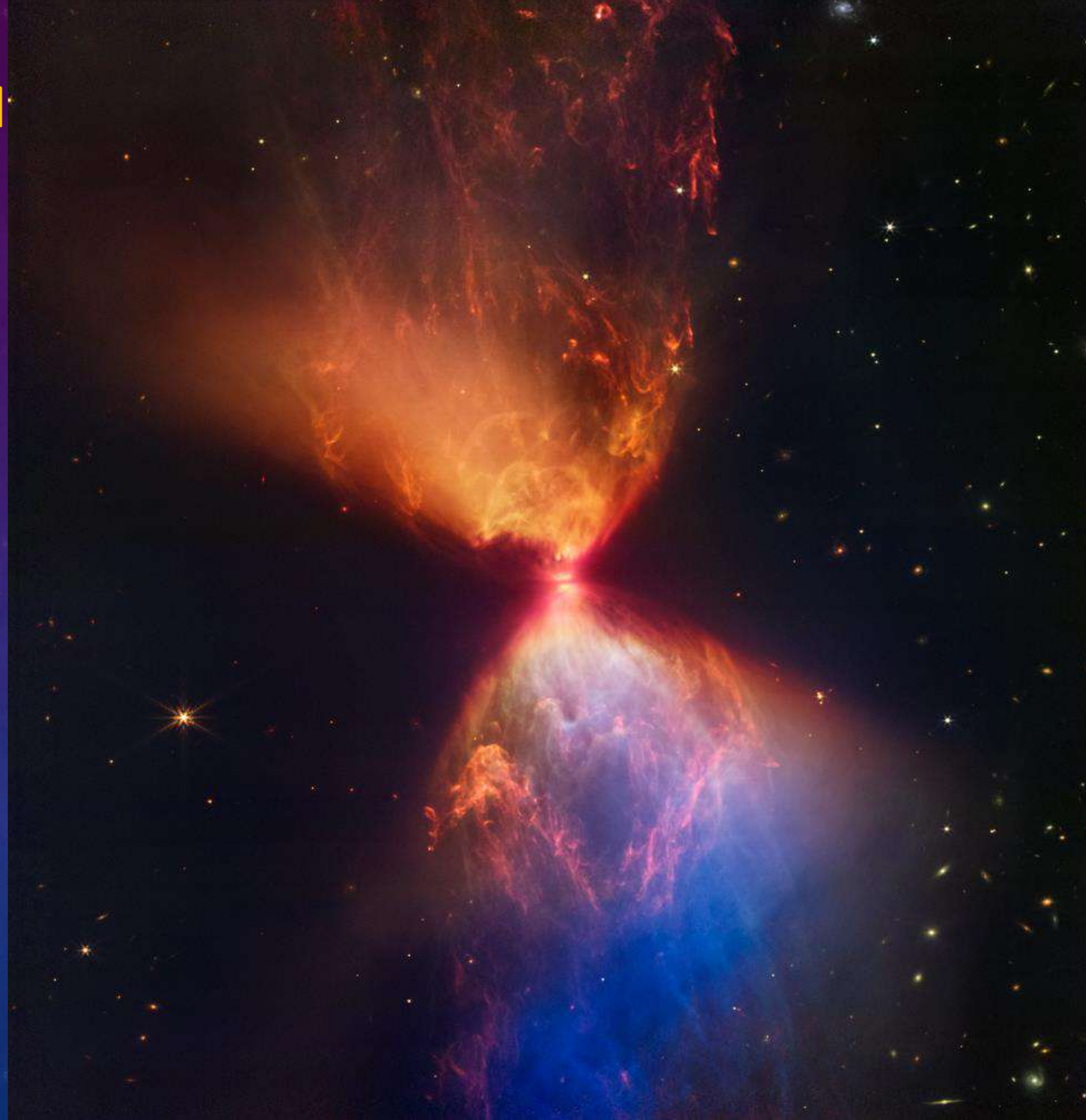
LATEST NEWS

NASA’S WEBB CATCHES FIERY HOURGLASS AS NEW STAR FORM

NOVEMBER 16

The protostar within the dark cloud L1527, shown in this image from NASA’s James Webb Space Telescope Near-Infrared Camera (NIRCam), is embedded within a cloud of material feeding its growth.

Ejections from the star have cleared out cavities above and below it, whose boundaries glow orange and blue in this infrared view. The upper central region displays bubble-like shapes due to stellar “burps,” or sporadic ejections.



NOVEMBER 30

A GALACTIC GET TOGETHER

A merging galaxy pair cavort in this image captured by the James Webb Space Telescope, an international mission led by NASA with its partners ESA (European Space Agency) and CSA (Canadian Space Agency). This new Webb image of a pair of galaxies, known to astronomers as II ZW 96

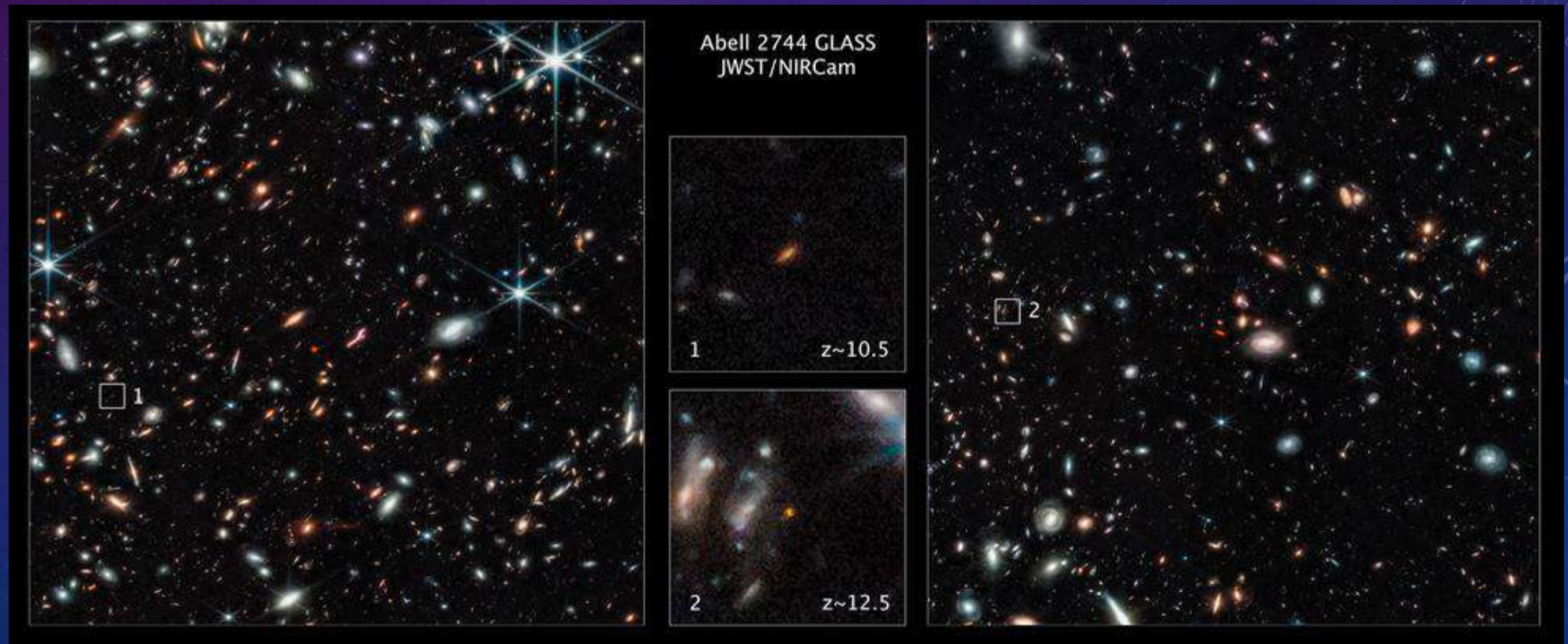
II ZW 96 is roughly 500 million light-years from Earth and lies in the constellation Delphinus, close to the celestial equator. As well as the wild swirl of the merging galaxies, a menagerie of background galaxies are dotted throughout the image.

The two galaxies are in the process of merging and as a result have a chaotic, disturbed shape. The bright cores of the two galaxies are connected by bright tendrils of star-forming regions, and the spiral arms of the lower galaxy have been twisted out of shape by the gravitational perturbation of the galaxy merger.

NASA’S WEBB DRAWS BACK CURTAIN ON UNIVERSE’S EARLY GALAXIES

NOVEMBER 30

Two of the farthest galaxies seen to date are captured in these Webb Space Telescope pictures of the outer regions of the giant galaxy cluster Abell 2744. The galaxies are not inside the cluster, but many billions of light-years farther behind it. The galaxy labeled (1) existed only 450 million years after the big bang. The galaxy labeled (2) existed 350 million years after the big bang. Both are seen really close in time to the big bang which occurred 13.8 billion years ago. These galaxies are tiny compared to our Milky Way, being just a few percent of its size, even the unexpectedly elongated galaxy labeled (1).over millions of years.



DECEMBER 2

JAMES WEBB TELESCOPE TURNS GAZE TO SATURN'S STRANGE MOON TITAN

The new images show seasonal clouds in the complex moon's northern hemisphere, confirming researchers' predictions.

WHAT'S UP

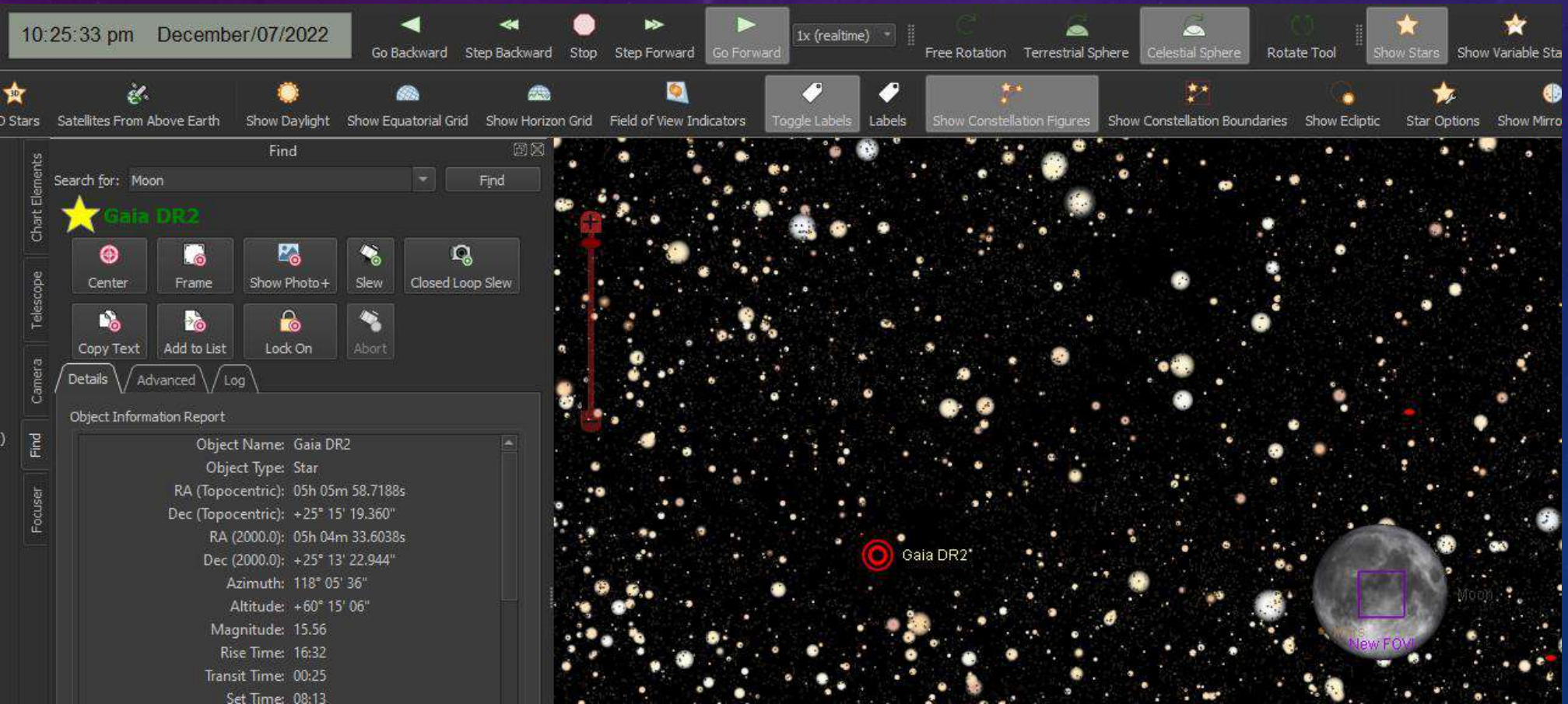
STRATFORD ASTRONOMY GROUP

WHAT'S UP FOR NOVEMBER

Month has only a few events, but one or two will be amazing (weather permitting

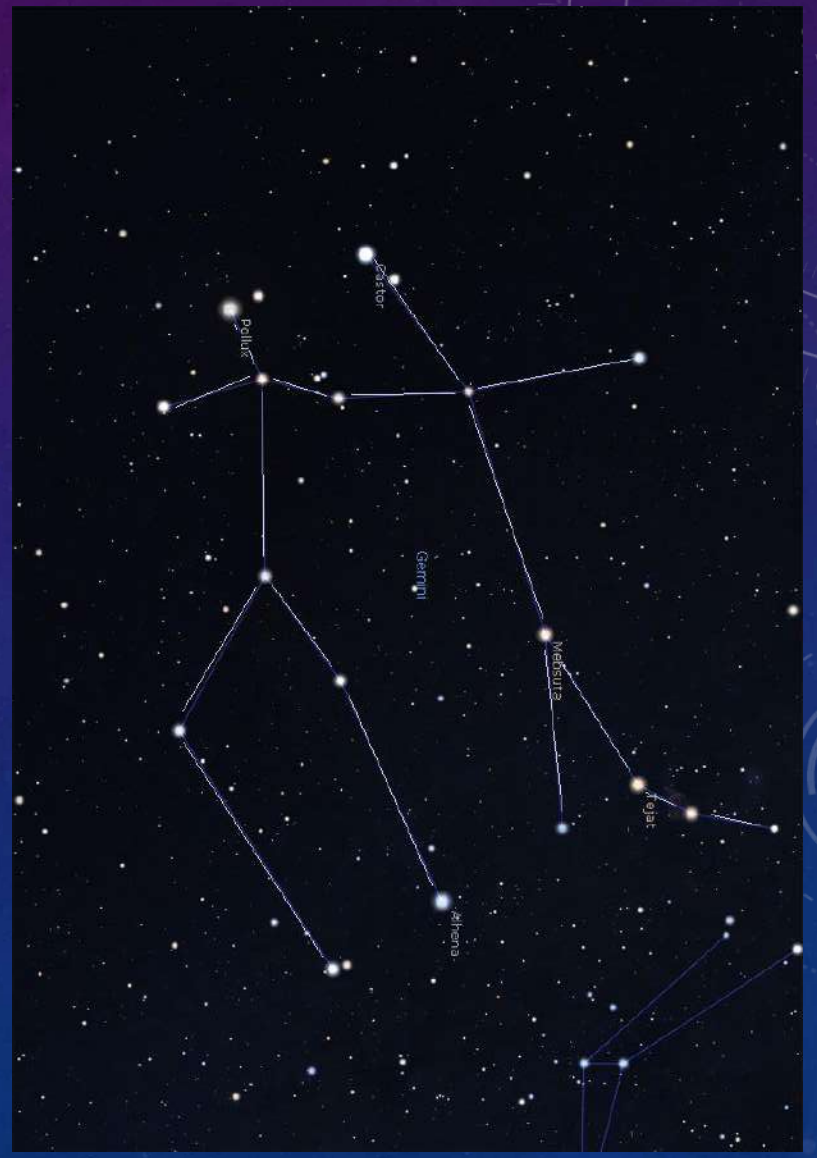
DECEMBER 7 – LUNAR OCCULTATION OF MARS

- In the morning hours of December 7th, the moon will pass in front of Mars for some viewers; for others they will appear very close together in the sky.
- The lunar occultation of Mars will be visible to those in most of North America and parts of western Europe, sort of the opposite of the lunar occultation of Uranus a few days earlier. Everywhere else, look for Mars to be within 1° of the moon at their closest approach. Best of all, the pair will be easy to spot: the moon is full on December 7th too, and Mars will be at opposition on December 8th and thus brightly lit and orangish in colour.



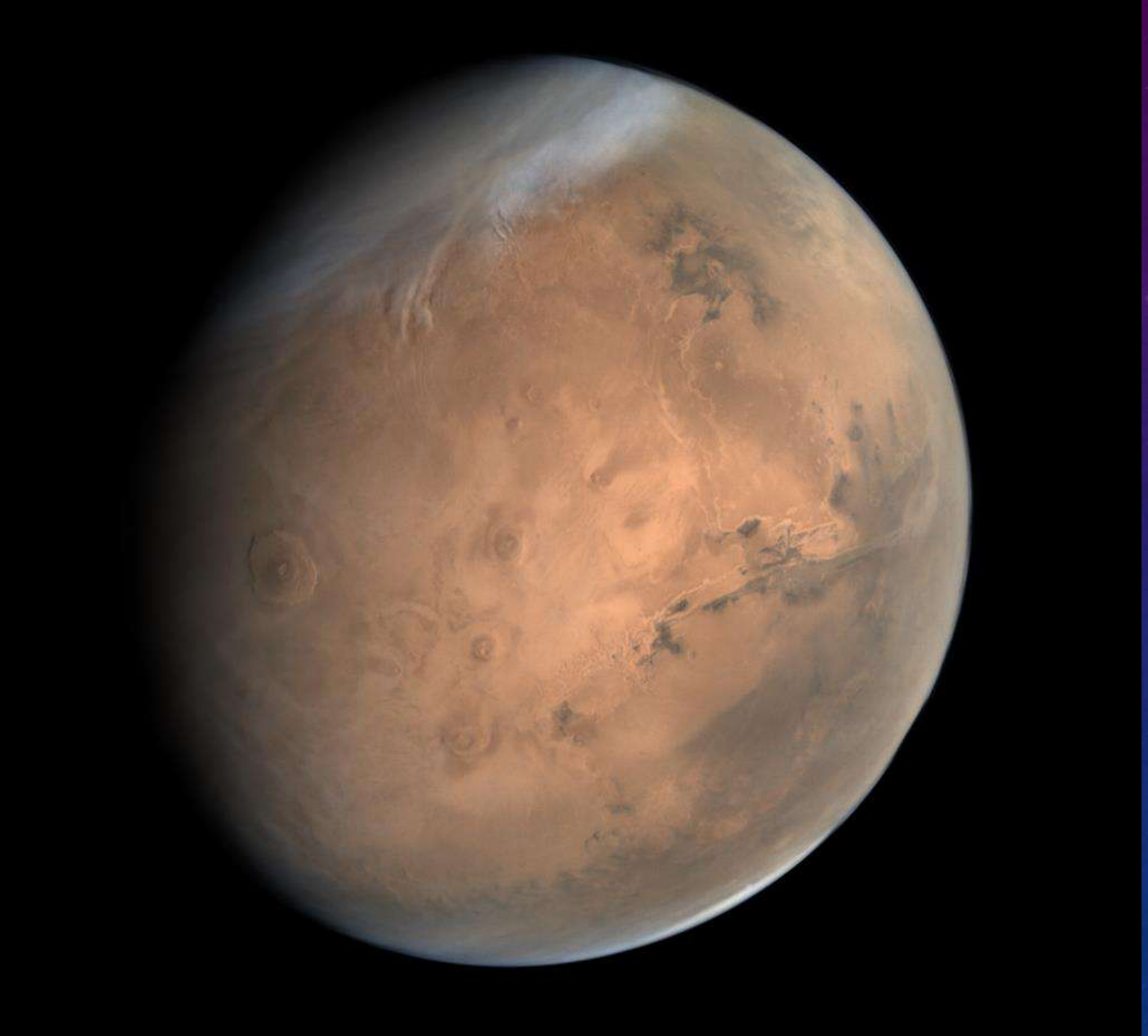
DECEMBER 13 – PEAK OF THE GEMINID METEOR SHOWER

- If you haven't seen any of the meteor showers so far month, December 13th-14th is the night for it! On this night, the Geminid meteor shower will peak with up to 120 meteors per hour – but we probably won't see that many.
- Look for meteors coming from the constellation of Gemini. Use the bright stars of Castor and Pollux to spot the constellation in the Northern sky (for most viewers). Meteor activity is expected to peak around in the pre-dawn hours of the 14th, but will be seen throughout the night of the 13th-14th. (Gemini rises around 6:30pm on the 13th, so it's possible to spot them all night after that.
- Unfortunately, the moon will be 60% and in its waning gibbous phase; this means it will likely present some challenges to spotting all of the meteors that occur this night. If you have your heart set on heading out for the Geminids – moonshine or not –



DECEMBER 24 – MERCURY AT ITS EVENING PEAK

- While there won't be a Christmas comet or Great Conjunction this year, Mercury will sub-in to mark the major December holiday: on Christmas Eve, you'll have a chance to spot tiny Mercury after the sun dips below the horizon. Note: it is in phase at half lamination.
- 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 December 24th, you'll be able to see Mercury at 12° above the western horizon just after sunset. This is a great opportunity to head out and try to spot the smallest planet.



DECEMBER 8: MARS AT OPPOSITION

- **Mars** reaches its spectacular opposition Dec. 8 and is visible all night. Located in Taurus, the Red Planet stands 9.5° from Aldebaran that night. Mid-latitude observers in the Northern Hemisphere see Mars crest at more than 70° high — its best altitude for years. The Red Planet glows at magnitude –1.9 the first week of December and dims to –1.3 by the 31st.

SHOW AND TELL

EQUIPMENT LESSONS

SOFTWARE AND IMAGING LESSONS