STRATFORD ASTRONOMY GROUP

NOVEMBER 1ST, 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
- Software and Imaging Information
- 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 10:

- Michael Burns
- Colleen Devin
- Reg White
- Patrick Hayes
- Peter Tinits
- Paul Bartlett
- Wolfgang Keller
- Hal Jones
- Ken Roberts
- Doug Fyfe

CLUB NEWS AND ACTIVITIES

Group Funds

Total = $812.74

•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

I figured out why our CPC 800 started acting crazy towards the end of our set-up session.

I was our Power Supply; it was is not functioning properly. It was only putting out about 10 volts, then even less. It will not charge up properly. It has given up the ghost (or voltage)

My recommendation is to buy a Celestron 12V power supply designed for Celestron mounts.

Celestron - PowerTank Lithium LT Telescope Battery – Rechargeable Portable 12V Power Supply for Computerized Telescopes - 8 Hour capacity/73.3 Wh - 1 USB Ports

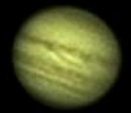
Brand: Celestron

15 ratings

$127.94

Snapshot through camera and our CPC

Image processed…. (I will demonstrate how later)



CLUB Q & A

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

LATEST ASTRONOMY NEWS

NOVEMBER

NASA confirms DART mission impact changed asteroid's motion in space

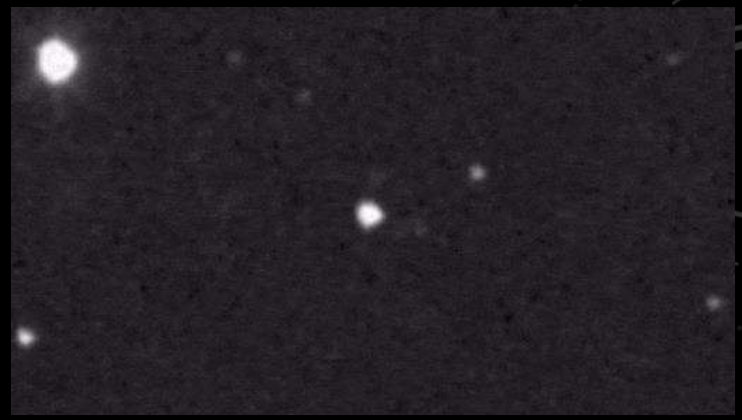
Date: October 11, 2022

Source: NASA

Summary: Analysis of data obtained over the past two weeks by NASA's Double Asteroid Redirection Test (DART) investigation team shows the spacecraft's kinetic impact with its target asteroid, Dimorphos, successfully altered the asteroid's orbit. This marks humanity's first time purposely changing the motion of a celestial object and the first full-scale demonstration of asteroid deflection technology.

NewScientist

Prior to DART's impact, it took Dimorphos 11 hours and 55 minutes to orbit its larger parent asteroid, Didymos. The investigation team has confirmed the spacecraft's impact altered Dimorphos' orbit around Didymos by 32 minutes, shortening the 11 hour and 55-minute orbit to 11 hours and 23 minutes. This measurement has a margin of uncertainty of approximately plus or minus 2 minutes.



The most precise accounting yet of dark energy and dark matter

Date: October 19, 2022

Source: Harvard-Smithsonian Center for Astrophysics

Summary: Analyzing more than two decades' worth of supernova explosions convincingly bolsters modern cosmological theories and reinvigorates efforts to answer fundamental questions.

- Pantheon+ convincingly finds that the cosmos is composed of about two-thirds dark energy and one-third matter -- mostly in the form of dark matter -- and is expanding at an accelerating pace over the last several billion years. However, Pantheon+ also cements a major disagreement over the pace of that expansion that has yet to be solved.

- By putting prevailing modern cosmological theories, known as the Standard Model of Cosmology, on even firmer evidentiary and statistical footing, Pantheon+ further closes the door on alternative frameworks accounting for dark energy and dark matter.

Unprecedented glimpse of merging galaxies

Swirling galaxies unite around red quasar in 'monster' black hole

Date: October 20, 2022

Source: Johns Hopkins University

Summary: Using the James Webb Space Telescope to look back in time at the early universe, astronomers discovered a surprise: a cluster of galaxies merging together around a rare red quasar within a massive black hole. The findings offer an unprecedented opportunity to observe how billions of years ago galaxies coalesced into the modern universe.

"We think something dramatic is about to happen in these systems," said co-author Andrey Vayner, a Johns Hopkins postdoctoral fellow who studies the evolution of galaxies. "The galaxy is at this perfect moment in its lifetime, about to transform and look entirely different in a few billion years.“

The work is in press in *Astrophysical Journal Letters* and available today on the arXiv paper repository.

Traces of ancient ocean discovered on Mars

Date: October 27, 2022

Source: Penn State

Summary: A recently released set of topography maps provides new evidence for an ancient northern ocean on Mars. The maps offer the strongest case yet that the planet once experienced sea-level rise consistent with an extended warm and wet climate, not the harsh, frozen landscape that exists today.

There has long been debate in the scientific community about whether Mars had an ocean in its low-elevation northern hemisphere. Using topography data, the research team was able to show definitive evidence of a roughly 3.5-billion-year-old shoreline with substantial sedimentary accumulation, at least 900 meters thick, that covered hundreds of thousands of square kilometers.

The Moon may have formed just hours after giant impact

New simulations show the Moon may have coalesced within hours of the catastrophic Theia-Earth collision that took place billions of years ago.

•Some 4.5 billion years ago, when the solar system was still forming, a wandering Mars-sized body named Theia slammed into a fledgling, moonless Earth. Traditionally, it is thought that this Theia-Earth collision spewed debris around our planet, which gradually coalesced to form the Moon. This theory for how the Moon formed is known as the Giant Impact Hypothesis.

‘No one has ever seen anything like this’: Scientists report black hole ‘burping’

A study published on Oct. 11 in The Astrophysical Journal suggests the black hole, in a galaxy 665 million lights years away from Earth, is shooting material at half the speed of light after ripping apart a star that wandered too close to it in October 2018.

"This caught us completely by surprise — no one has ever seen anything like this before," lead author Yvette Cendes, a research associate at the Center for Astrophysics, a collaboration between Harvard University and the Smithsonian, said in a news release..

Radio data from the Very Large Array of radio telescopes in New Mexico showed the black hole had reanimated in June 2021, they say. Researchers observed the event while revisiting tidal disruption events (TDE), when encroaching stars are "spaghettified" by black holes

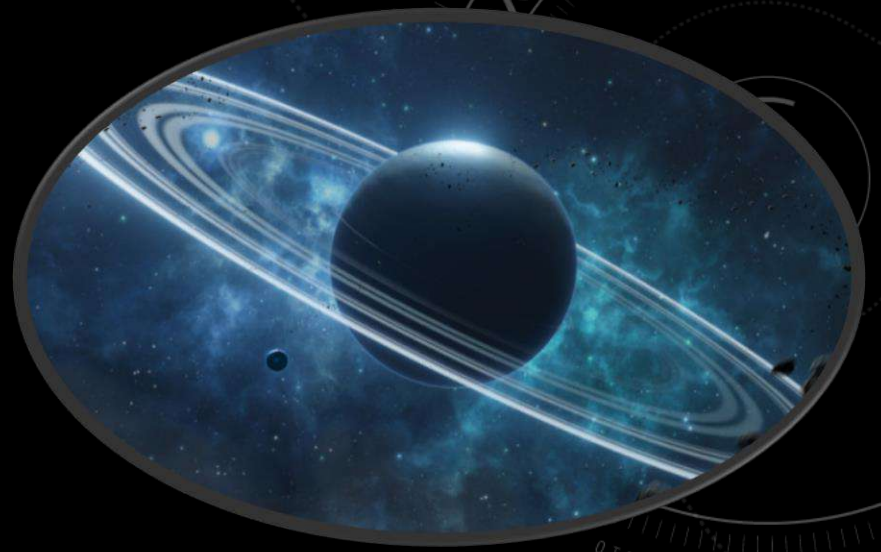
Astronomers have a new theory for why Uranus spins on its side

Uranus must have toppled over some time in the past, and astronomers now think they know why.

One of the most bizarre phenomena in our solar system is the strange way that Uranus spins on its side. That's a puzzle because all the other planets spin upright. What could have happened to make Uranus so different, particularly from its neighbor Neptune, which formed at roughly the same time in similar circumstances?

The conventional thinking holds that soon after the solar system formed, Uranus was knocked on its side by a series of collisions with some of the numerous planetesimals that swept through the region at that time.

The problem with this theory is that Neptune survived the same conditions unscathed. This suggests some other process was responsible for Uranus' bizarre behavior. But what could it be?

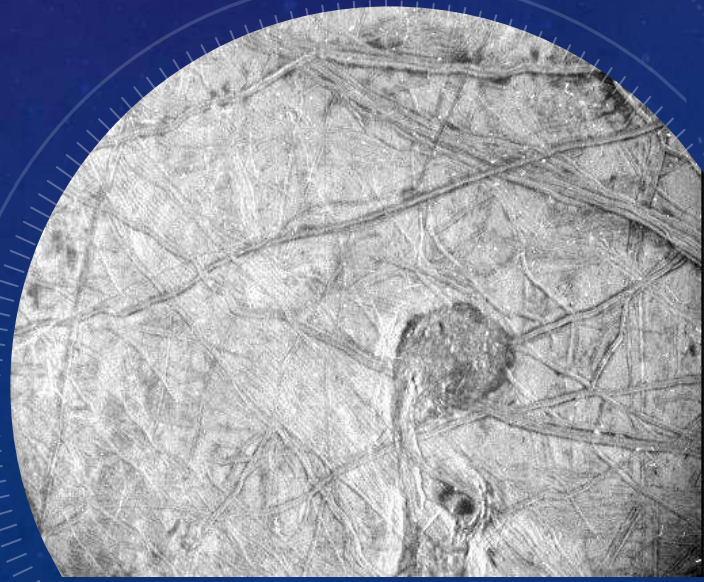


Toppled orbit

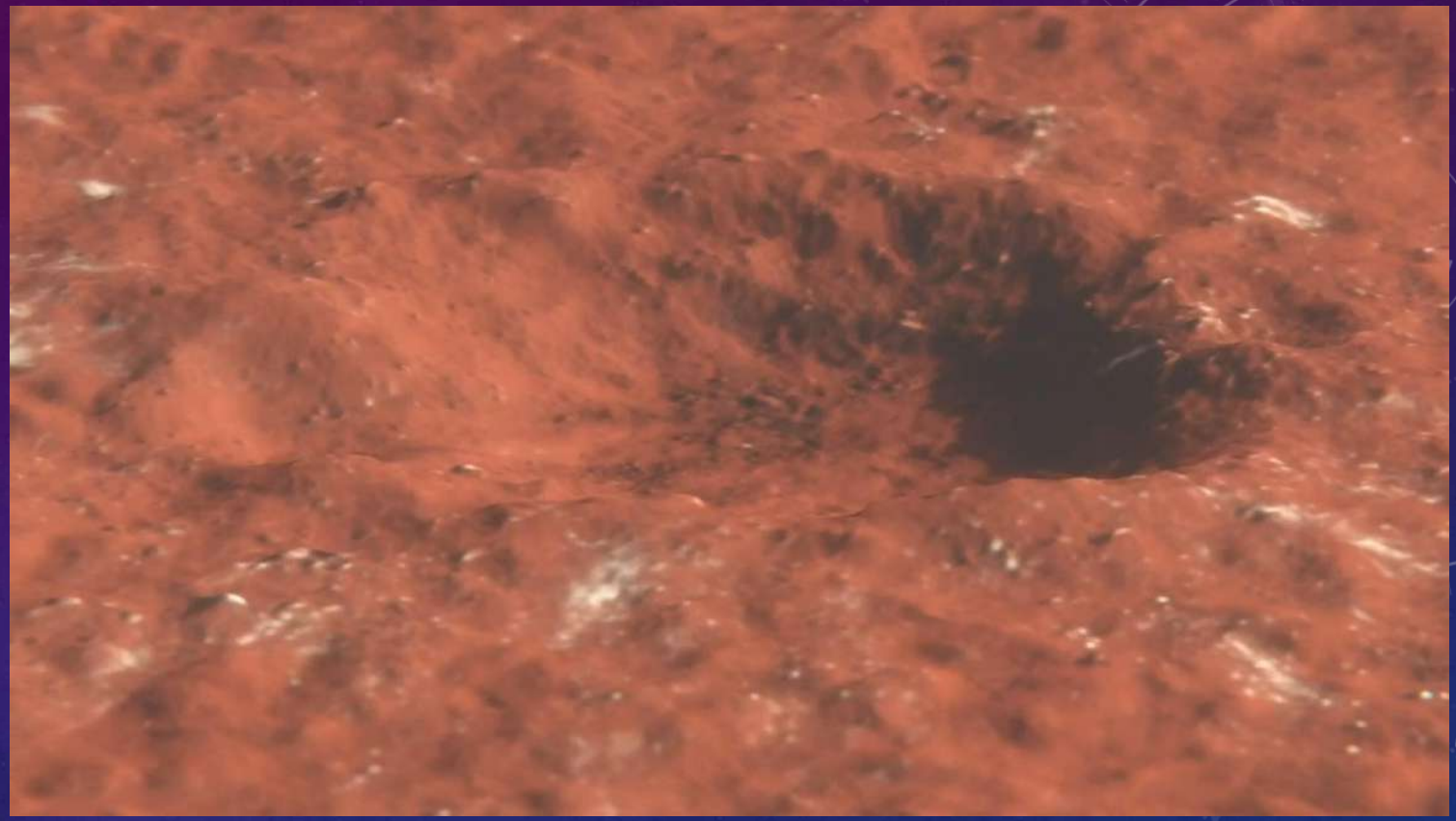
Now we get a potential answer thanks to the work of Melaine Saillenfest at the Paris Observatory in France, and colleagues, who think that Uranus could have become tilted on its side in another way. They say the tilting can be explained if Uranus once had a large ancient satellite whose orbit interacted gravitationally with the planet's own rotation in a way that slowly flipped it on its side.

- **NASA’s Juno mission reveals bizarre details of Europa’s surface**

- *High-resolution ice paths and glassy fields make up this shot of one of Jupiter’s moons.*



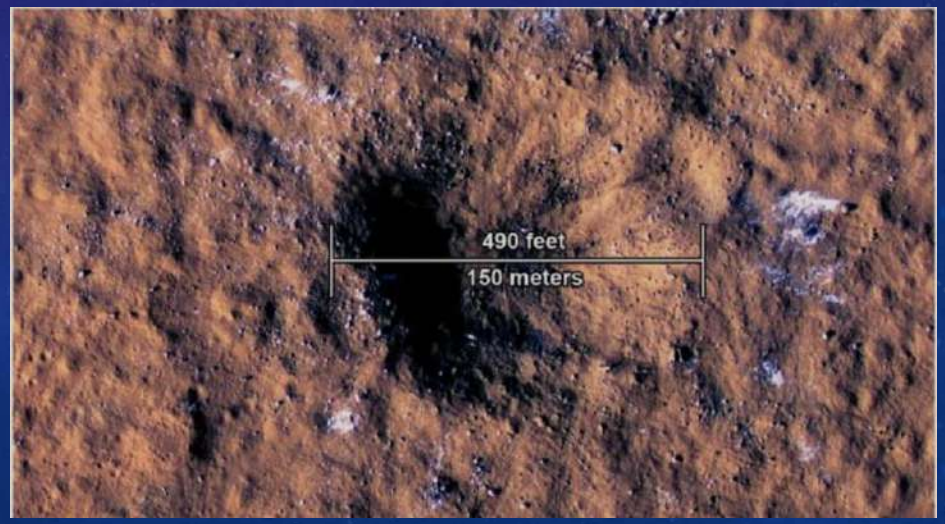
SPACE ROCK SLAMS INTO MARS, FORMING A CRATER THAT REVEALED CHUNKS OF ICE



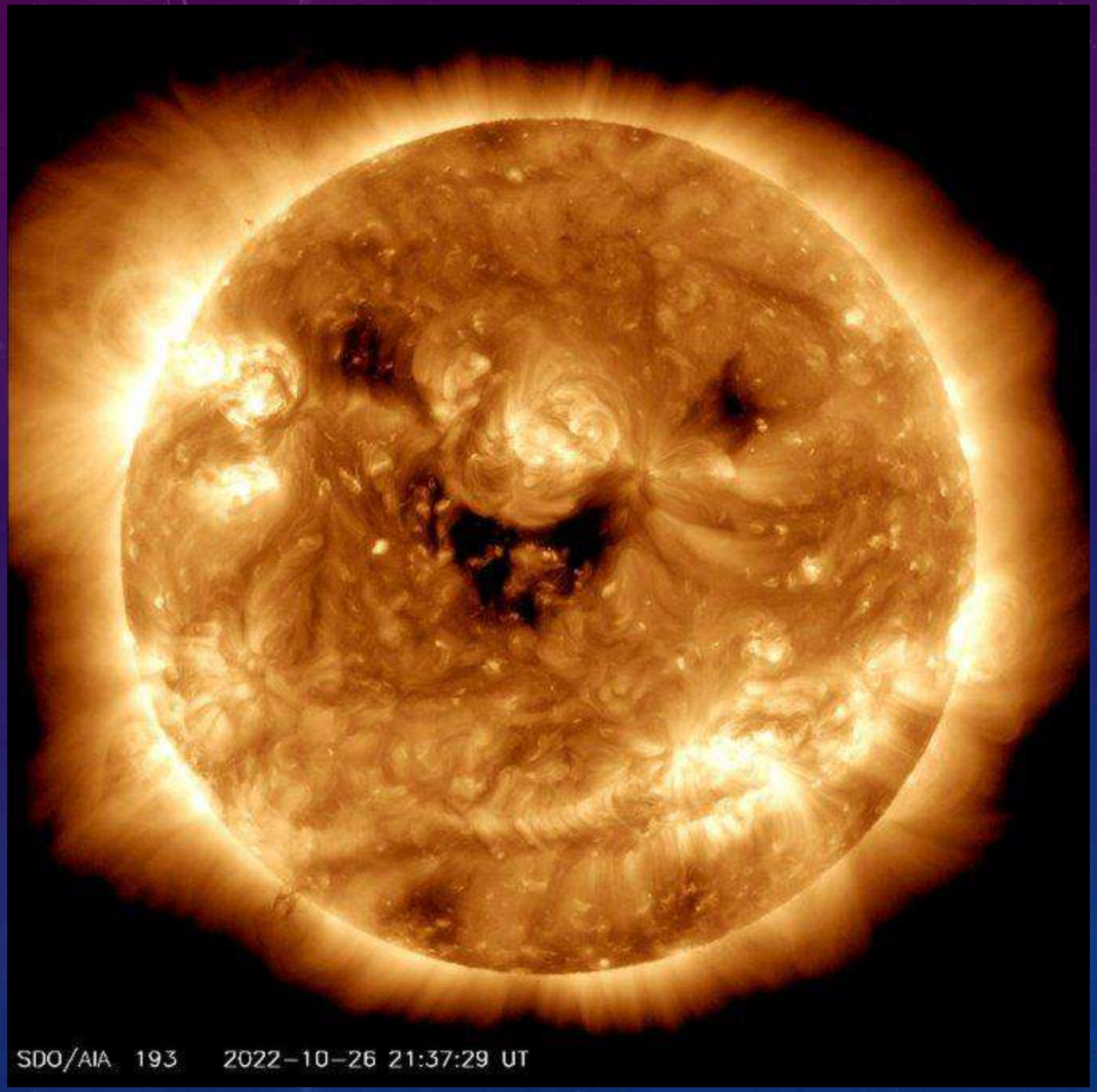
•Christmas came a little early for NASA's InSight mission last December when the lander detected a massive quake on Mars.

•Now, scientists know what caused the red planet to rumble. A meteoroid slammed into Mars 2,174 miles (3,500 kilometers) away from the lander and created a fresh impact crater on the Martian surface.

•The ground literally moved beneath InSight on December 24, 2021, when the lander recorded a magnitude 4 marsquake. Before and after photos captured from above by the Mars Reconnaissance Orbiter, which has been circling Mars since 2006, spotted a new crater this past February.



Sometimes you just have to smile



JAMES WEBB TELESCOPE

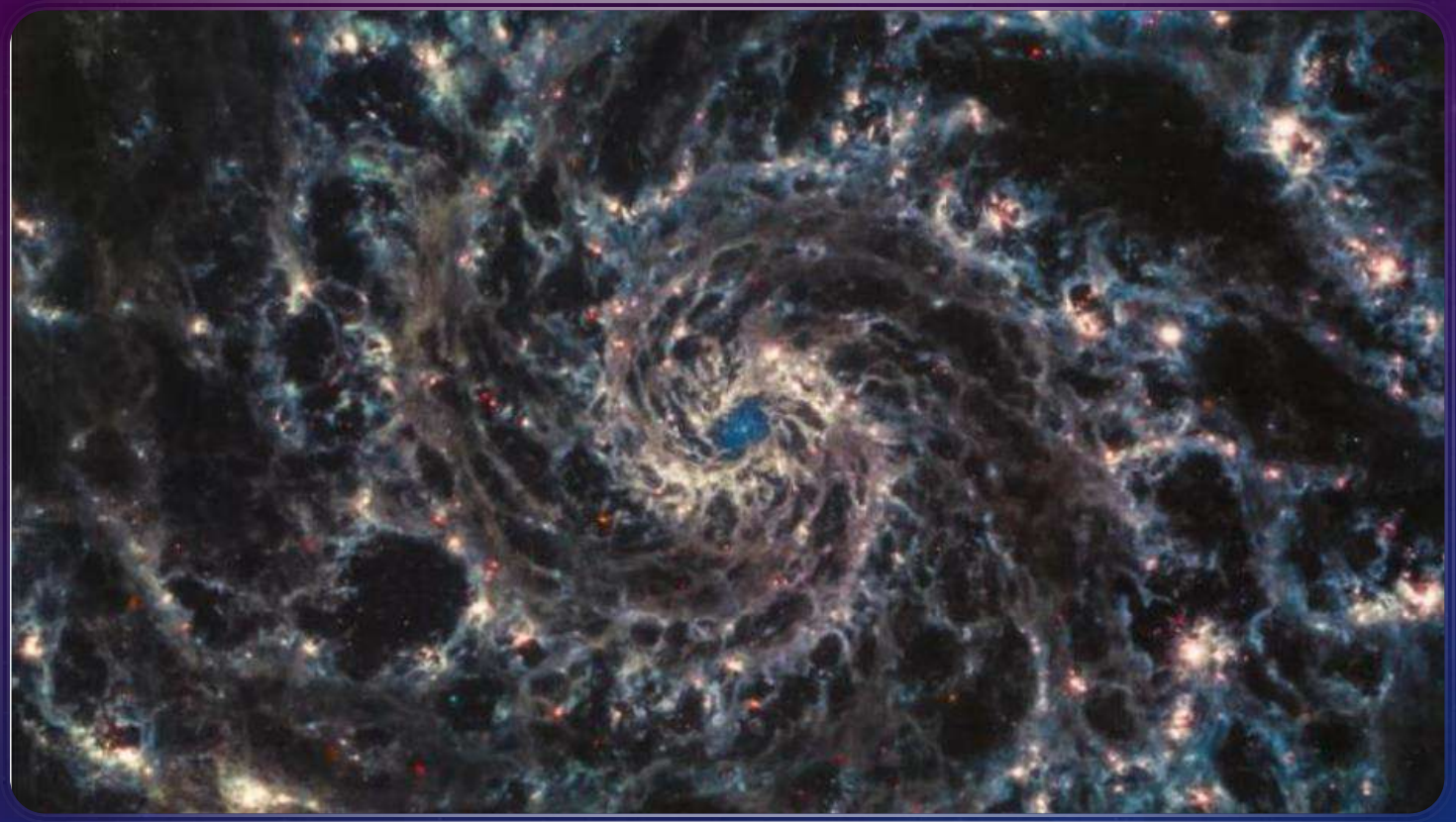
LATEST NEWS

A COSMIC TARANTULA, CAUGHT BY THE WEBB

OCTOBER 12

A new image from NASA's James Webb Space Telescope reveals a remarkable cosmic sight: at least 17 concentric dust rings emanating from a pair of stars. Located just over 5,000 light-years from Earth, the duo is collectively known as Wolf-Rayet 140.

Each ring was created when the two stars came close together and their stellar winds (streams of gas they blow into space) met, compressing the gas and forming dust. The stars' orbits bring them together about once every eight years; like the growth of rings of a tree's trunk, the dust loops mark the passage of time.



THE SPIRAL GALAXY CAPTURED BY THE JAMES WEBB TELESCOPE THAT GIVES YOU GOOSEBUMPS

- NGC 628 is a type of galaxy known as a “Big Design” spiral galaxy. This galaxy has bulging arms, is fully formed, and is relatively open. NGC 628 is only 32 million light-years away, enough to provide too many details to study. And no less important is that spiral galaxies are rich in star-forming gas.
- Astronomers have observed at least three supernovae in NGC 628 since the turn of the millennium.

RELEASED IMAGE FROM JAMES WEBB TELESCOPE REVEALS THE FAMOUS PART OF THE EAGLE NEBULA IN 'AMAZING DETAIL

OCTOBER 21

NASA’s James Webb Space Telescope has captured a lush, highly detailed landscape – the iconic Pillars of Creation – where new stars are forming within dense clouds of gas and dust. The three-dimensional pillars look like majestic rock formations but are far more permeable. These columns are made up of cool interstellar gas and dust that appear – at times – semi-transparent in near-infrared light.
Webb’s new view of the Pillars of Creation, which were first made famous when imaged by NASA’s Hubble Space Telescope in 1995, will help researchers revamp their models of star formation by identifying far more precise counts of newly formed stars, along with the quantities of gas and dust in the region. Over time, they will begin to build a clearer understanding of how stars form and burst out of these dusty clouds over millions of years.

WHAT'S UP

STRATFORD ASTRONOMY GROUP

WHAT'S UP FOR NOVEMBER

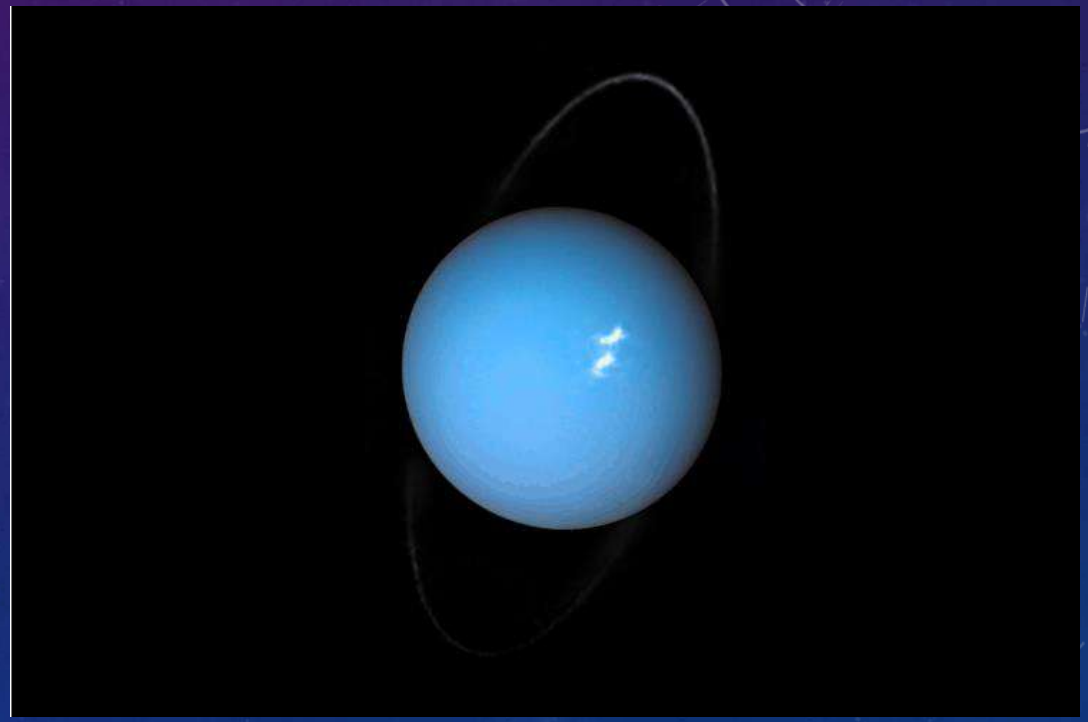
Month has only a few events, but one or two will be amazing (weather permitting

NOVEMBER 8 : TOTAL LUNAR ECLIPSE

- November kicks off with a bang – despite the first event in the November night sky not taking place until a week into the month. On the night of November 8th there will be a total lunar eclipse across much of the western hemisphere (and part of the eastern hemisphere, too!).
- For most those viewing from the western hemisphere, the lunar eclipse can be seen early on the 8th; if you're viewing in eastern hemisphere, it will be visible late on the 8th or early on the 9th. The total phase of the lunar eclipse begins at 5:16 EST on November 8th, and the total eclipse ends at 6:41 UTC. This means there's a ~1.5 hour window in which you can see the total lunar eclipse.

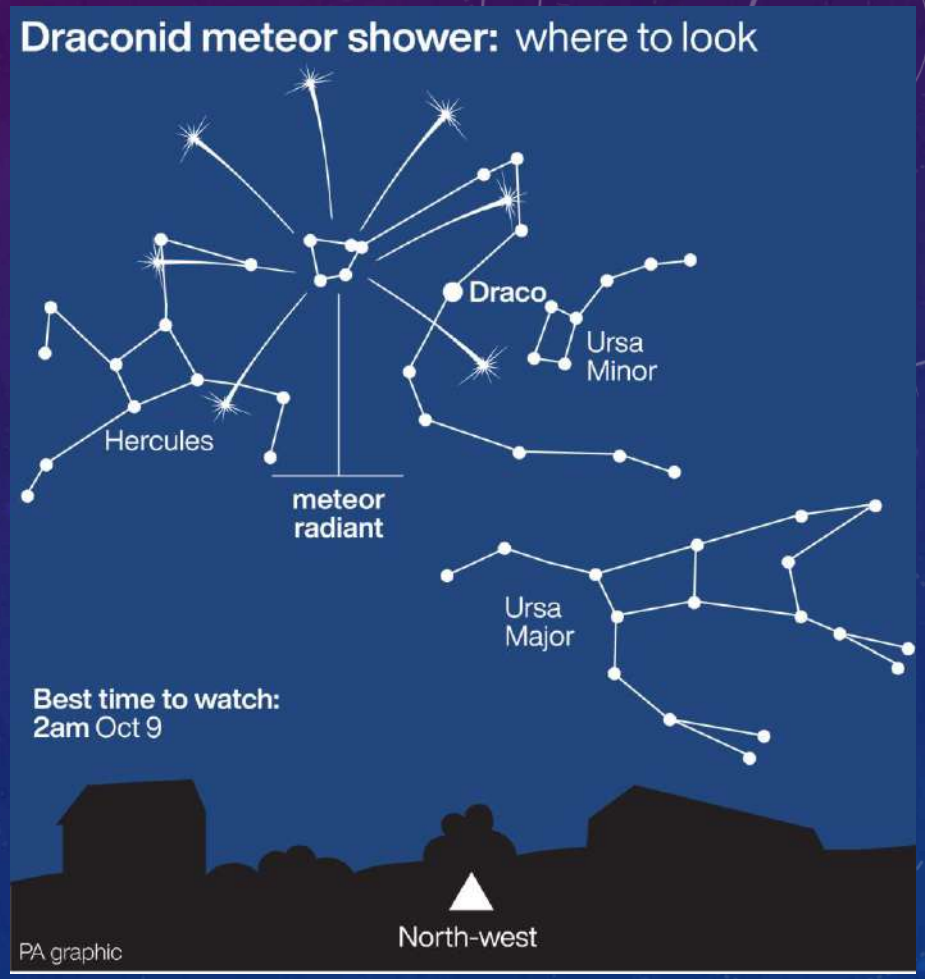
NOVEMBER 8 : LUNAR OCCULTATION OF URANUS

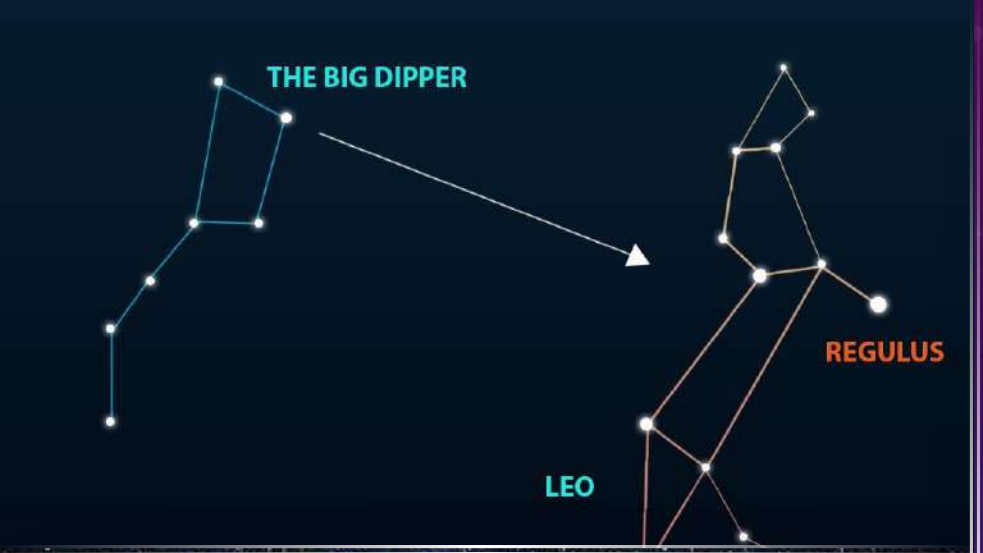
- I know, I know, I've been hyping up these lunar occultations of Uranus all year long – but we're finally coming into the time of year when it's actually exciting for those willing to do the work to try and spot distant Uranus as it slides behind the Moon. This also happened last month, so in case you missed it, you should book your flight now.
- It will be visible to those in Alaska, eastern Russia, eastern China, eastern Mongolia, and all of Korea and Japan. I don't know how many of you have money and time, but if you do, go for it.



NOVEMBER 12: PEAK OF THE NORTHERN TAURIDS METEOR SHOWER

- On the night of November 12th, head outside to try and spot the Northern Taurids meteors as this shower peaks in activity on the 12th. The Taurids run from approximately October 20th to November 30th. On the night of peak activity, you can spot up to 10 meteors per hour; unfortunately, the moon will not be at a great phase, nearly full and 78% illuminated.
- Look for the Taurids radiant point in the constellation of Taurus. For most people, it will be in the eastern or southern sky depending on your location. Keep your eyes peeled in the general direction of Taurus, but look around that area of the night sky to spot meteors with longer tails.





NOVEMBER 17: PEAK OF THE LEONIDS METEOR SHOWER

- As the end of the calendar year gets closer, there are more meteor showers to enjoy! Why? That's just how our orbit works, as we cross the debris paths of comets and asteroids during our celestial dance.
- The Leonids meteor shower occurs in the November night sky for most of the month, but the night of peak activity is November 17th this year. If you're out this night, look for up to 15 meteors per hour depending on your location. It's also possible to see Leonids each night between November 15th and 20th.
- The Leonids appear from a radiant point in the constellation Leo, which will be in the northeastern sky for most people. If you can spot the Big Dipper, you're in the right part of the sky to spot some shooting stars.

SHOW AND TELL

EQUIPMENT LESSONS

SOFTWARE AND IMAGING LESSONS