

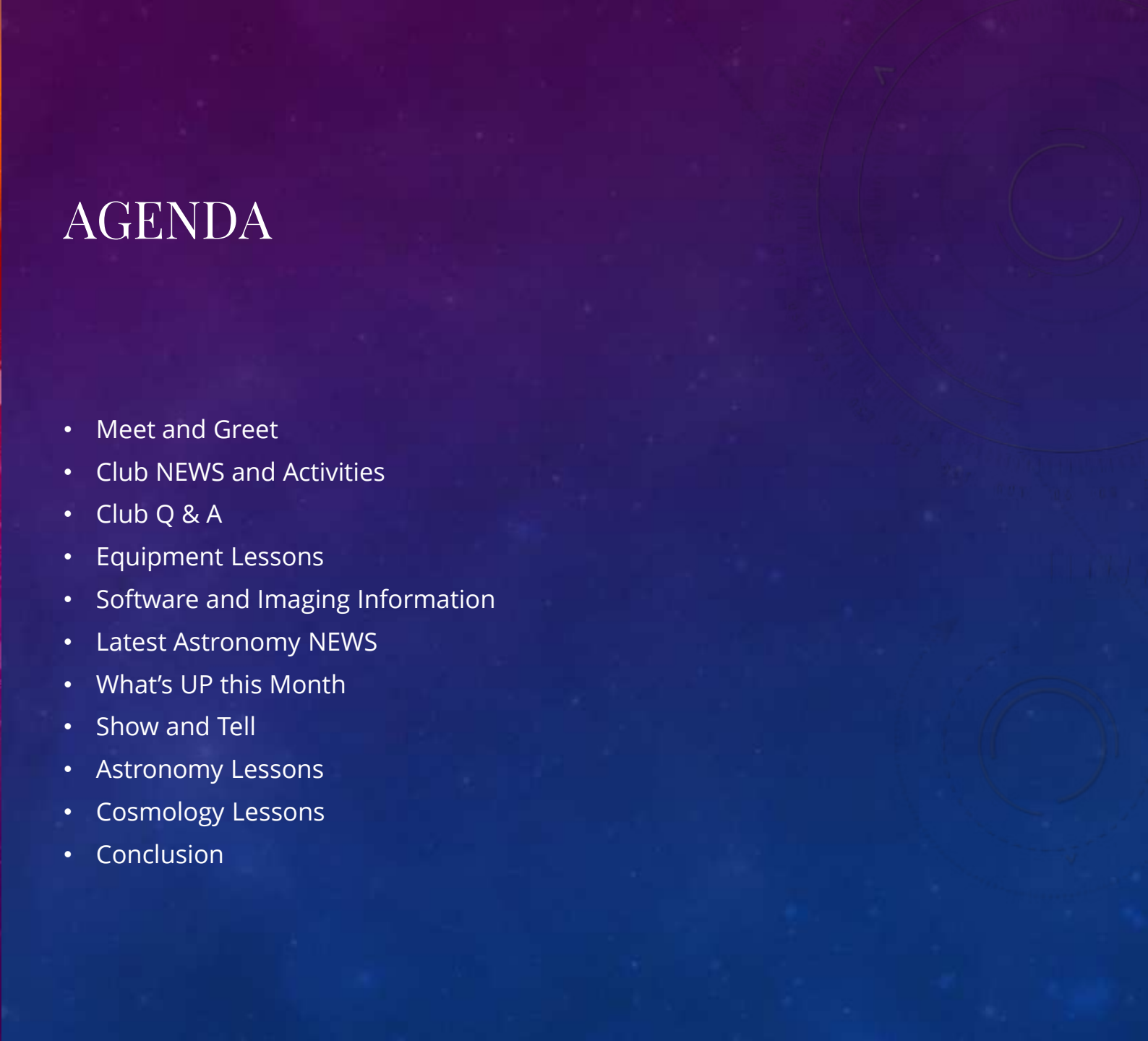
STRATFORD ASTRONOMY GROUP

OCTOBER 1ST, 2024





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

:



Ken Roberts
Mary Montizambert
Patrick Hayes
Peter Timits
Bruce Simpson
Brent Pollock
Wolfgang Keller
Bob Greer
Tom Kimber
Richard Rosenthal
Jamie Page
Michael Burns

UPCOMING MEETINGS

NEXT MEETING DATES

| Date | Room | Location |
|---------------------------------------|----------------|--------------------------|
| Sept 17th, 2024 | 104 | St. Michael's |
| Oct 1st, 2024 | 104 | St. Michael's |
| Nov 5 th , 2024 | 104 | St. Michael's |
| Dec 3 rd , 2024 | 104 | St. Michael's |
| Jan 7 th , 2025 | 104 | St. Michael's |
| Feb 4 th , 2025 | 104 | St. Michael's |
| March 4 th , 2025 | 104 | St. Michael's |
| April 1 st , 2025 | 104 | St. Michael's |
| May 6 th , 2025 | 104 | St. Michael's |
| June 3 rd , 2025 | 104 | St. Michael's |

CLUB NEWS AND ACTIVITIES

Group Funds

Total = \$????.??

- 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

New Equipment Donation: Tim

CLUB NEWS AND ACTIVITIES

- **New Web site:** (<https://stratfordastronomy.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



LATEST ASTRONOMY NEWS

MAY



WHAT'S UP

STRATFORD ASTRONOMY GROUP

WHAT'S UP FOR OCTOBER



| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--|---|---|---|--|---|--|
| 29  | 30  | 1  New Visible: 2% ↓ Age: 28.38 days | 2  New Visible: 1% ↓ Age: 29.28 days | 3  New Visible: 1% ↑ Age: 0.64 days | 4  Waxing crescent Visible: 3% ↑ Age: 1.53 days | 5  Waxing crescent Visible: 7% ↑ Age: 2.43 days |
| 6  | 7  | 8  | 9  | 10  | 11  | 12  |
| Waxing crescent Visible: 13% ↑ Age: 3.33 days | Waxing crescent Visible: 20% ↑ Age: 4.25 days | Waxing crescent Visible: 28% ↑ Age: 5.18 days | First quarter Visible: 37% ↑ Age: 6.13 days | First quarter Visible: 48% ↑ Age: 7.10 days | First quarter Visible: 58% ↑ Age: 8.10 days | Waxing gibbous Visible: 69% ↑ Age: 9.14 days |
| 13  | 14  | 15  | 16  | 17  | 18  | 19  |
| Waxing gibbous Visible: 79% ↑ Age: 10.21 days | Waxing gibbous Visible: 88% ↑ Age: 11.32 days | Waxing gibbous Visible: 95% ↑ Age: 12.47 days | Full moon Visible: 99% ↑ Age: 13.63 days | Full moon Visible: 100% Age: 14.80 days | Full moon Visible: 99% ↓ Age: 15.96 days | Waning gibbous Visible: 94% ↓ Age: 17.11 days |
| 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Waning gibbous Visible: 88% ↓ Age: 18.22 days | Waning gibbous Visible: 79% ↓ Age: 19.29 days | Waning gibbous Visible: 69% ↓ Age: 20.33 days | Last quarter Visible: 59% ↓ Age: 21.32 days | Last quarter Visible: 49% ↓ Age: 22.29 days | Last quarter Visible: 39% ↓ Age: 23.22 days | Waning crescent Visible: 30% ↓ Age: 24.14 days |
| 27  | 28  | 29  | 30  | 31  | 1  | 2  |
| Waning crescent Visible: 22% ↓ Age: 25.04 days | Waning crescent Visible: 14% ↓ Age: 25.93 days | Waning crescent Visible: 9% ↓ Age: 26.82 days | Waning crescent Visible: 4% ↓ Age: 27.71 days | New Visible: 1% ↓ Age: 28.61 days | | |

HEY, THERE BE A MOON OVERHEAD

MOON PHASES FOR THE
MONTH OF OCTOBER

« **October 2024** »

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--|---|---|---|--|---|--|
| | | 1 The Andromeda Galaxy is well placed | 2 Annular solar eclipse New Moon The Moon at apogee 136472 Makemake at solar conjunction | 3 NGC 253 is well placed | 4 The Small Magellanic Cloud is well placed NGC 300 is well placed | 5 October Camelopardalid meteor shower 2024 Close approach of the Moon and Venus The Moon at perihelion Conjunction of the Moon and Venus |
| 6 NGC 362 is well placed | 7 Asteroid 39 Laetitia at opposition Lunar occultation of Antares | 8 Draconid meteor shower 2024 | 9 Jupiter enters retrograde motion | 10 Southern Taurid meteor shower 2024 Moon at First Quarter | 11 δ-Aurigid meteor shower 2024 | 12 Comet C/2023 A3 (Tsuchinshan-ATLAS) passes perigee |
| 13 | 14 Close approach of the Moon and Saturn Lunar occultation of Saturn Conjunction of the Moon and Saturn The Triangulum Galaxy is well placed | 15 The Moon at aphelion Lunar occultation of Neptune | 16 The Moon at perigee | 17 Full Moon Asteroid 19 Fortuna at opposition 136199 Eris at opposition | 18 ε-Geminid meteor shower 2024 | 19 Close approach of the Moon and M45 |
| 20 | 21 Orionid meteor shower 2024 Close approach of the Moon and Jupiter Conjunction of the Moon and Jupiter Lunar occultation of Beta Tauri | 22 | 23 Mercury at aphelion Conjunction of the Moon and Mars Close approach of the Moon and Mars | 24 Leonis Minorid meteor shower 2024 Moon at Last Quarter 136108 Haumea at solar conjunction | 25 | 26 The Perseus Double Cluster is well placed |
| 27 Asteroid 1036 Ganymed at opposition | 28 | 29 The Moon at apogee | 30 Venus at aphelion | 31 | | |

C/2023 A3 (Tsuchinshan-ATLAS)—or just 2023 A3

- In the next two weeks, a recently discovered comet will almost certainly become bright enough to see without optical aid; just your eyes and a dark site will suffice. It might even briefly brighten so much that you'll be able to see it *during the day*.
- Or it might not. Comets are irritating that way. As Canadian comet hunter David Levy once quipped, "Comets are like cats: they have tails, and they do precisely what they want."
- The object in question is called C/2023 A3 (Tsuchinshan-ATLAS)—or just 2023 A3, to save typing. Astronomers discovered it in January 2023 as an asteroidlike dot in images of the sky taken at the Purple Mountain Observatory in China. It was very faint and in subsequent weeks wasn't seen again, so it was presumed lost.
- But the following month other astronomers spotted it again, this time in images from the automated Asteroid Terrestrial-Impact Last Alert System (ATLAS), a NASA-funded collection of telescopes that scan the sky looking for uncataloged celestial objects that change brightness or position. In those images, the target could be seen to have a faint tail—the formal hallmark of a comet. With its cometary status confirmed, the object was given its official name, giving credit to both observatories. (Comets discovered by the Purple Mountain Observatory are given the traditional name Tsuchinshan.)



Comet C/2023 A3 (Tsuchinshan-ATLAS)

The table below lists the times when C/2023 A3 (Tsuchinshan-ATLAS) will be visible from Stratford day-by-day through its apparition:
 A more detailed table of C/2023 A3 (Tsuchinshan-ATLAS)'s position on each night is [available here](#). A diagram of the orbit of C/2023 A3 (Tsuchinshan-ATLAS) is [available here](#).

| Date | Constellation | Comet visibility |
|-------------|-------------------------------|--|
| 21 Sep 2024 | Sextans | Not observable |
| 23 Sep 2024 | Sextans | Not observable |
| 25 Sep 2024 | Sextans | Not observable |
| 27 Sep 2024 | Sextans | Not observable |
| 29 Sep 2024 | Leo | Not observable |
| 01 Oct 2024 | Leo | Not observable |
| 03 Oct 2024 | Leo | Not observable |
| 05 Oct 2024 | Virgo | Not observable |
| 07 Oct 2024 | Virgo | Not observable |
| 09 Oct 2024 | Virgo | Not observable |
| 11 Oct 2024 | Virgo | Not observable |
| 13 Oct 2024 | Virgo | Not observable |
| 15 Oct 2024 | Serpens Caput | Not observable |
| 17 Oct 2024 | Serpens Caput | Visible from 19:37 until 20:09 Highest at 19:37, 21° above W horizon |
| 19 Oct 2024 | Ophiuchus | Visible from 19:35 until 20:33 Highest at 19:35, 26° above SW horizon |
| 21 Oct 2024 | Ophiuchus | Visible from 19:34 until 20:49 Highest at 19:34, 29° above SW horizon |
| 23 Oct 2024 | Ophiuchus | Visible from 19:34 until 21:00 Highest at 19:34, 31° above SW horizon |
| 25 Oct 2024 | Ophiuchus | Visible from 19:32 until 21:06 Highest at 19:32, 33° above SW horizon |
| 27 Oct 2024 | Ophiuchus | Visible from 19:29 until 21:10 Highest at 19:29, 35° above SW horizon |
| 29 Oct 2024 | Ophiuchus | Visible from 19:27 until 21:11 Highest at 19:27, 36° above SW horizon |
| 31 Oct 2024 | Ophiuchus | Visible from 19:24 until 21:10 Highest at 19:24, 36° above SW horizon |

<https://in-the-sky.org/data/comets.php>

All times computed for Stratford (latitude 43.37°; longitude -80.95°) and expressed in Stratford time.

Ephemeris for [C/2023 A3 \(Tsuchinshan-ATLAS\)](#)

| Date | Time | Age of Moon | Right Ascension | Declination | Rise | Culm | Set | Approx Mag. | Observable (hover mouse) | Constellation | | |
|------|------|-------------|-----------------|-------------|---|------------|-------|-------------|--------------------------|---------------|----------------------|-------------------------------|
| 2024 | Sep | 29 | 20:00 EDT | 27 days | 10 ^h 57 ^m 25 ^s | -05°52'17" | 06:04 | 11:45 | 17:26 | 3.9 | Not observable | Leo |
| 2024 | Sep | 30 | 20:00 EDT | 27 days | 11 ^h 03 ^m 47 ^s | -05°44'31" | 06:06 | 11:48 | 17:29 | 4.1 | Not observable | Leo |
| 2024 | Oct | 01 | 20:00 EDT | 28 days | 11 ^h 11 ^m 22 ^s | -05°34'45" | 06:09 | 11:51 | 17:33 | 4.2 | Not observable | Leo |
| 2024 | Oct | 02 | 20:00 EDT | 00 days | 11 ^h 20 ^m 19 ^s | -05°22'47" | 06:13 | 11:56 | 17:39 | 4.4 | Not observable | Leo |
| 2024 | Oct | 03 | 20:00 EDT | 01 days | 11 ^h 30 ^m 46 ^s | -05°08'22" | 06:19 | 12:03 | 17:46 | 4.7 | Not observable | Leo |
| 2024 | Oct | 04 | 20:00 EDT | 01 days | 11 ^h 42 ^m 49 ^s | -04°51'15" | 06:26 | 12:11 | 17:56 | 5.1 | Not observable | Virgo |
| 2024 | Oct | 05 | 20:00 EDT | 02 days | 11 ^h 56 ^m 37 ^s | -04°31'11" | 06:35 | 12:21 | 18:07 | 5.5 | Not observable | Virgo |
| 2024 | Oct | 06 | 20:00 EDT | 03 days | 12 ^h 12 ^m 11 ^s | -04°07'56" | 06:45 | 12:32 | 18:20 | 6.2 | Not observable | Virgo |
| 2024 | Oct | 07 | 20:00 EDT | 04 days | 12 ^h 29 ^m 32 ^s | -03°41'23" | 06:56 | 12:46 | 18:35 | 7.1 | Not observable | Virgo |
| 2024 | Oct | 08 | 20:00 EDT | 05 days | 12 ^h 48 ^m 33 ^s | -03°11'36" | 07:10 | 13:01 | 18:52 | 8.3 | Not observable | Virgo |
| 2024 | Oct | 09 | 20:00 EDT | 06 days | 13 ^h 09 ^m 01 ^s | -02°38'53" | 07:24 | 13:17 | 19:10 | 8.2 | Not observable | Virgo |
| 2024 | Oct | 10 | 20:00 EDT | 07 days | 13 ^h 30 ^m 37 ^s | -02°03'54" | 07:39 | 13:35 | 19:30 | 7.0 | Not observable | Virgo |
| 2024 | Oct | 11 | 20:00 EDT | 08 days | 13 ^h 52 ^m 52 ^s | -01°27'34" | 07:55 | 13:53 | 19:51 | 6.2 | Not observable | Virgo |
| 2024 | Oct | 12 | 20:00 EDT | 09 days | 14 ^h 15 ^m 17 ^s | -00°51'02" | 08:11 | 14:11 | 20:11 | 5.7 | Not observable | Virgo |
| 2024 | Oct | 13 | 20:00 EDT | 10 days | 14 ^h 37 ^m 21 ^s | -00°15'28" | 08:27 | 14:29 | 20:32 | 5.3 | Not observable | Virgo |
| 2024 | Oct | 14 | 20:00 EDT | 11 days | 14 ^h 58 ^m 36 ^s | +00°18'03" | 08:42 | 14:47 | 20:51 | 5.1 | Not observable | Virgo |
| 2024 | Oct | 15 | 20:00 EDT | 13 days | 15 ^h 18 ^m 42 ^s | +00°48'49" | 08:57 | 15:03 | 21:09 | 5.0 | Not observable | Serpens Caput |
| 2024 | Oct | 16 | 20:00 EDT | 14 days | 15 ^h 37 ^m 24 ^s | +01°16'22" | 09:10 | 15:18 | 21:25 | 4.9 | Not observable | Serpens Caput |
| 2024 | Oct | 17 | 20:00 EDT | 15 days | 15 ^h 54 ^m 36 ^s | +01°40'34" | 09:21 | 15:31 | 21:40 | 4.9 | 19:44 until 19:47 | Serpens Caput |
| 2024 | Oct | 18 | 20:00 EDT | 16 days | 16 ^h 10 ^m 17 ^s | +02°01'30" | 09:32 | 15:42 | 21:53 | 4.9 | 19:42 until 19:59 | Serpens Caput |
| 2024 | Oct | 19 | 20:00 EDT | 17 days | 16 ^h 24 ^m 30 ^s | +02°19'24" | 09:41 | 15:53 | 22:05 | 5.0 | 19:41 until 20:10 | Ophiuchus |
| 2024 | Oct | 20 | 20:00 EDT | 18 days | 16 ^h 37 ^m 20 ^s | +02°34'36" | 09:49 | 16:02 | 22:14 | 5.1 | 19:39 until 20:19 | Ophiuchus |
| 2024 | Oct | 21 | 20:00 EDT | 19 days | 16 ^h 48 ^m 55 ^s | +02°47'27" | 09:55 | 16:09 | 22:23 | 5.2 | 19:38 until 20:26 | Ophiuchus |
| 2024 | Oct | 22 | 20:00 EDT | 20 days | 16 ^h 59 ^m 22 ^s | +02°58'15" | 10:01 | 16:16 | 22:30 | 5.3 | 19:36 until 20:32 | Ophiuchus |
| 2024 | Oct | 23 | 20:00 EDT | 21 days | 17 ^h 08 ^m 48 ^s | +03°07'20" | 10:06 | 16:21 | 22:36 | 5.4 | 19:35 until 20:37 | Ophiuchus |

All times computed for Stratford (latitude 43.37; longitude -80.95) and expressed in Stratford time.

Ephemeris by Dominic Ford – <https://in-the-sky.org/ephemeris.php>

AND THEN THERE WERE TWO

- Earth has a new “mini-moon” after an asteroid has joined our orbit. The object, known as 2024 PT5, has been chasing after us for years. Now, it has become close enough to be pulled in by our gravity.

- It will stay with us until November, when it will stop being bound to Earth and we will leave it behind. Then it will stay on its new orbit around the Sun.

- Unfortunately, during its occupation around Earth, 2024 PT5 won't be visible to the vast majority of skywatchers.

"The object is too small and dim for typical amateur telescopes and binoculars. However, the object is well within the brightness range of typical telescopes used by professional astronomers," Marcos said. "A telescope with a diameter of at least 30 inches plus a CCD or CMOS detector are needed to observe this object, a 30 inches telescope and a human eye behind it will not be enough."



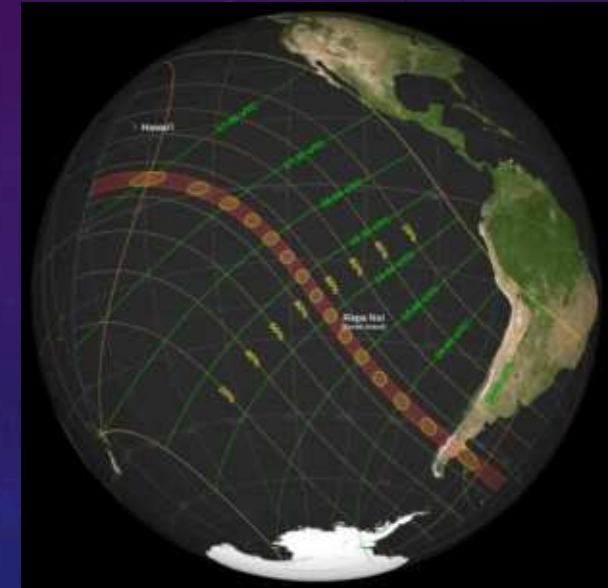
Any day now, our night sky will host a guest star. Stargazers and astronomers around the world continue to gaze toward the Corona Borealis constellation 3,000 light-years from Earth, where a long-dead star is expected to reignite in an explosion so powerful it will briefly rival the brilliance of Polaris, the North Star. The stellar corpse last turned on almost 80 years ago and will not reignite for another 80 years, making this a nearly once-in-a-lifetime experience.

Already, the stellar remnant, a white dwarf called T Coronae Borealis that's feasting on material from a nearby red giant star, has revealed a tell-tale dip in brightness that "is right on top" of the one that preceded its previous outburst in 1946. Astronomers don't yet know for sure what's causing the dip, but they say it's just a matter of time before the nova satiates its hunger and explodes into a spectacular nova. "We know it's going to go off — it's very obvious," Edward Sion, a professor of astronomy and astrophysics at Villanova University in Pennsylvania.



Annular Solar Eclipse : October 2 (but you need a Plane Ticket to see it)

On Wednesday, Oct. 2, the sun will be transformed into a dramatic "ring of fire" as an annular solar eclipse sweeps over parts of the Pacific Ocean, including Hawaii, southern Chile, and southern Argentina, then reaching. An annular solar eclipse happens when the moon passes between the sun and our planet, casting a shadow on Earth's surface. The trajectory this shadow traces over the Earth is the path of the eclipse.

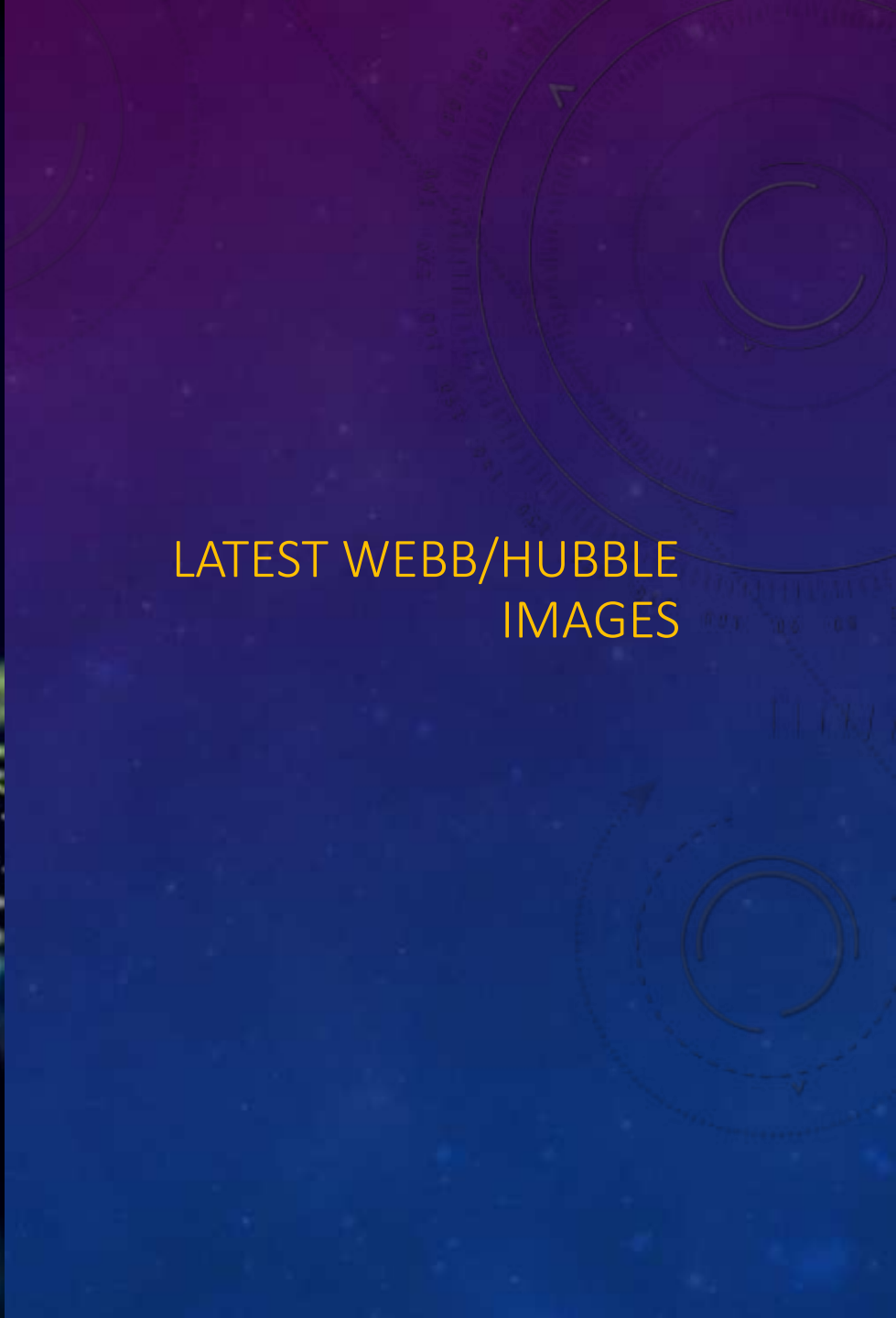


The difference between an annular eclipse and a total eclipse like that experienced in April this year is that during an annular eclipse, the moon is closer to Earth and further from the sun. That means that the face of our star isn't completely obscured by Earth's lunar companion as it is during a total eclipse. During an annular solar eclipse, the sun appears as a glowing, fiery ring during an annular eclipse.



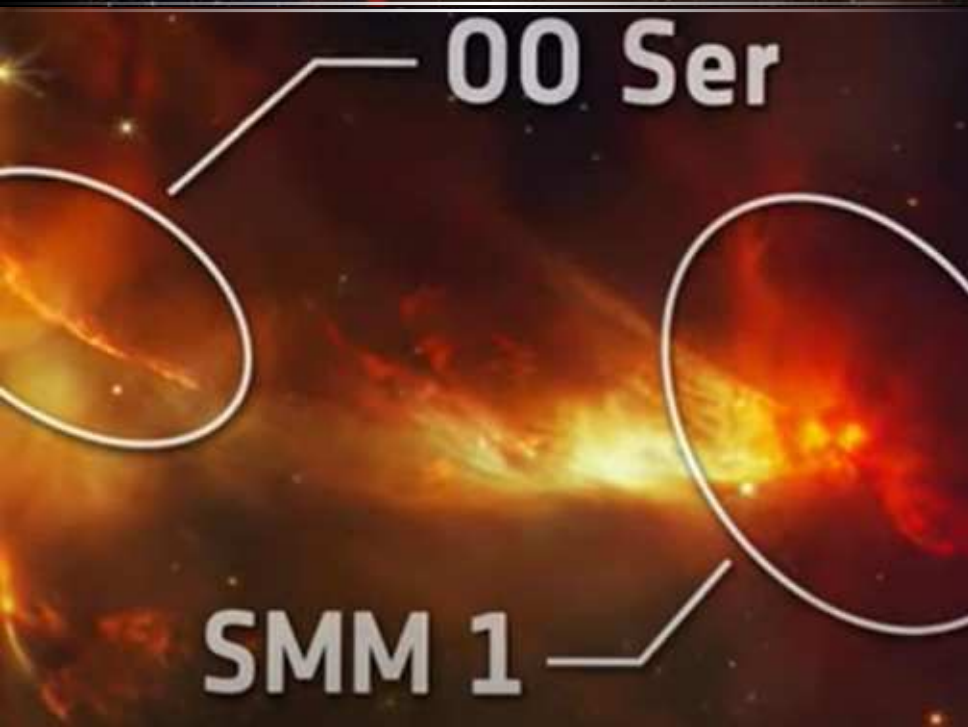


LATEST WEBB/HUBBLE
IMAGES



In September 2024 Webb released an image of Arp 107 (Arp 107 is 465 million lightyears from Earth in the constellation Leo Minor.) , the name given to two galaxies in the process of merging. The merging is occurring between elliptical galaxy and a spiral galaxy, and Webb has given astronomers a unique view of the event.

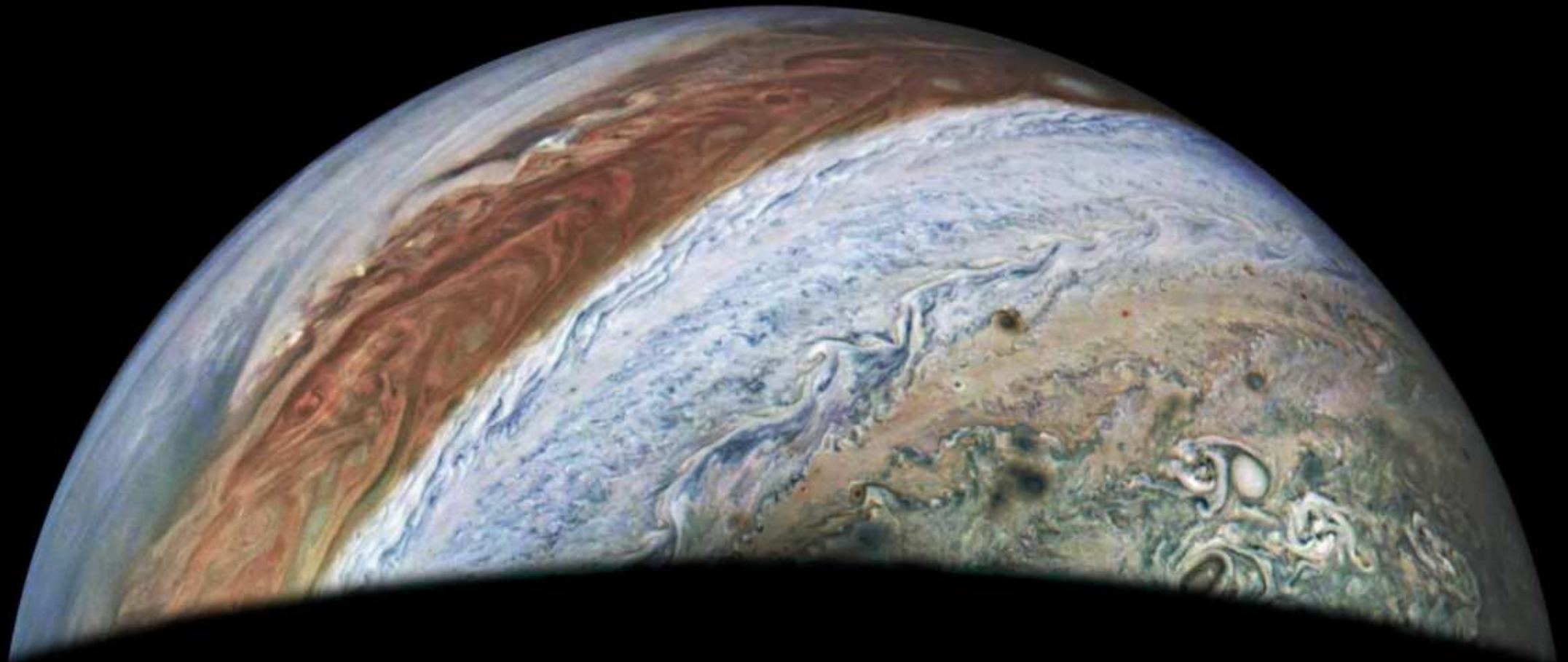




James Webb Space Telescope image of the Serpens Nebula

The Serpens Nebula, located 1300 light-years from Earth), showing shockwaves caused by jets from new stars colliding with cosmic gas and dust. The Serpens Nebula is 1 or 2 million years old, which is relatively young in astronomical terms. It's home to a dense cluster of newly forming stars (around 100,000 years old), which can be seen at the centre of the image, and some of these may grow to the mass of our Sun.

- The Serpens Nebula is a reflection nebula, which means it glows because it's reflecting the light of stars within or close to the nebula.



Jupiter from Juno's 62nd flyby Jupiter as seen by NASA's Juno spacecraft during its 62nd flyby of the giant planet.



Perseverance leaving Bright Angel
NASA's Perseverance
rover as it departed the
"Bright Angel" region of
Jezero Crater on Mars

SHOW AND TELL

COSMOLOGY TALK