



# The Eyepiece

SW FL Astronomical Society, Inc.  
3236 Forum Blvd #1160  
Fort Myers, FL 33905



## The Jellyfish Nebula

By Don Bishop

See Don's article on page 8



**Editor - Mike Jensen**

Hi Everyone

We have much on our calendar now with the announcement of our Star Parties and a few community outreach events. See Brian's "Prez Notes" on page 3. Also, as members, please try to get out to these events to support our volunteer members and our club. Perhaps you might even consider volunteering yourself.

I want to thank two of our members for stepping up to present at two of our general membership meetings in January and February. Thanks go out to Dr. Mario Motta and Joe Dermody. Mario gave an inspired and informed talk on the life of Russell Porter and the be-

ginning days of Stellafane. It was stocked full of anecdotes and old photos! Thanks Mario!

In February our speaker is Joe Dermody who is one of our experts on eclipses. He'll speak on his experience viewing eight solar eclipses! Thanks to you Joe!

By the way, please try to get out in person at the planetarium to support our members when they speak! It's a much better experience in person.

Our next two speakers come from my Alma Mater, the University of Florida! Go Gators!

Unless someone else steps up, we will most likely not have a pre-meeting dinner in Feb. or March. I will miss both the Feb. and March meetings so I can't coordinate. Any volunteers?

If it does clear up, Feb. is a great month to view both M81 (Bode's Galaxy) and M82 (Cigar Galaxy) both located in Ursa Major near the Big Dipper/Plough.

Finally, our mentor, good friend and member Linwood Fergu-

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son is moving to North Carolina to be closer to family, better skies and no HOA's. We'll still see Linwood on Zoom, hopefully for meetings and SIG meetings, but we'll miss him at pre meeting dinners as well as his HUGE knowledge base about our craft. We won't say goodbye, but we'll be seeing you! Enjoy!

## Club Officers & Positions

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## Monthly Meetings

Our monthly meetings are held on the **first Thursday of each month.**  
**The meetings begin at 7:00pm.**

***Each meeting is usually a combined live and Zoom meeting.***

The in person meeting is held at:  
Calusa Nature Center/Planetarium  
3450 Ortiz Ave,  
Fort Myers, FL 33905

Each meeting will have the same  
Zoom link/meeting ID.

Below are the dates for the meet-  
ings of 2024:

Feb. 1, 2024  
Mar. 7, 2024  
April 4, 2024

Link to join Zoom meeting:  
<https://widener.zoom.us/j/91008062016>

## Port Charlotte/Punta Gorda Observing Dates

Night Sky Observing At Moore Obser-  
vatory & Solar Observing In PG & PC

Our Observatory Team opens up the  
Moore Observatory at FSW Charlotte  
Campus (26000 Airport Road, Punta  
Gorda) on the second Friday of each  
month. Observation sessions typically  
begin about 30-45 minutes after it is  
dark enough to see the stars and con-  
tinue as long as stargazers linger. Prior  
to complete darkness, visitors can not  
be admitted into the observatory as  
the equipment needs to be setup and  
aligned with the stars each time but  
early arrivers are welcome to enjoy  
views of the lake and the scenery of  
the campus from the lakeside picnic  
tables. The public sessions are free  
and held weather permitting.

Here is the schedule for 2024:

- Feb 9, 2024
- Mar 8, 2024
- Apr 12, 2024
- May 10, 2024

Our observing team also sets up solar  
telescopes on the 4th Saturday of the  
month (from 9am - Noon) to look  
at the Sun, looking for solar flares,  
prominences and other solar phenom-  
ena. All events are in Port Charlotte or  
Punta Gorda.

### Solar Observing/Park

Feb 24, 2024 Gilchrist  
Mar 23, 2024 Ponce deLeon  
Apr 27, 2024 Bayshore Live Oak  
May 25, 2024 Gilchrist

## President's Report

Brian Risley - President

We now have the **Seahawk Star Parties** scheduled for 2024. **March 2nd, Apr 6th, May 4th, Sep 28th, Oct 5th (Lunar observing), Nov 2nd, Dec 7th (Lunar Observing)**

This month we have several public events.

**STEMtastic** is downtown at the Caloosa Sound convention center/Centennial Park on Feb 10th. I could use some help with this solar event. On the 24th we have the **Burrowing Owl Festival** at Rotary Park in South Cape Coral. This is again a Solar event but with the eclipse coming in April, it is a great fit. We also have the Rotary Park Star Party on March 8th and the timing is perfect for promoting that. It is Dues time.

Annual Dues for 2024 are \$30.00 and can be paid online at <https://theyeyepiece.org/membership/> If you want to mail dues information is also available on that webpage.

The schedule for the Big Cypress Astronomy nights is: 2/10/24, 3/9/24. I will probably not be at the 2/10 event as I will be at STEMtastic all day.

Our speaker this month is Joe Dermody, an avid amateur astronomer and a member of the Society at 7:00 pm on Thursday February 1, 2024 at the Calusa Nature Center Planetarium. Joe participates in many astronomy related outreach events across the country as a NASA Solar System Ambassador. He has personally viewed eight total solar eclipses and will be traveling to a location off the Mexican coast for the next upcoming one in April. Joe will deliver a talk on his experiences viewing eclipses and how to prepare to get the most unforgettable experience.

## Feb. 1, 2024

### GUEST SPEAKER PRESENTATIONS SERIES

We are excited to announce the initiation of the new "SWFAS Guest Speaker Presentations" series of talks. These will cover astronomical science and space exploration along with practical astronomy and astrophotography talks by various subject matter experts. We are lining up prominent scientists and researchers to explain the science and technology behind the exciting discoveries being made in recent years in astronomy.

The following presentations are already scheduled and we will be firming up talks in 2024 on a month-to-month basis.:

Feb 1, 2024                      Joe Dermody - Eclipses

Mar 7, 2024                      Dr. Rana Essedine - University of Florida, Dr. Rana Ezzedine is an Assistant Professor of Astronomy at the University of Florida where she researches topics in stellar astrophysics. Her research focuses on observing and interpreting the physical and chemical properties of first and second generation stars.

Apr 4, 2024                      Dr. Amy Williams - University of Florida, Her research focuses on the interaction between microbial life, the geochemical environment, and the rock record on Earth, and how to recognize habitable environments and potentially preserved microbial life on Mars and the outer world moons.



**Joe Dermody, NASA Solar System Ambassador. Experiences in viewing 8 solar eclipses! Presented In Person at the Planetarium! Feb. 1, 2024**

## Upcoming Speakers

### Experiences Viewing Eight Solar Eclipses

Presented by Joe Dermody

Feb. 1, 2024



Joe Dermody divides the year between his home state of Michigan and Florida. His education ranged widely from international broadcasting to physics and mathematics. The high point of Joe's career was building custom hybrid micro-electronic circuits by hand under a stereomicroscope in a clean room. A few of those one of a kind circuits continue to orbit the Earth in military communications and surveillance satellites. For the past two years, Joe has been a NASA "Solar System Ambassador" in their volunteer educational outreach program co-sponsored by the Jet Propulsion Laboratory and the California Institute of Technology. An avid amateur astronomer for more than 60 years, Joe has experienced eight total solar eclipses and will share stories and advice based on

### Stellar Astrophysics - Observing and Interpreting The Properties of 1st & 2nd Gen Stars

Presented by Dr. Rana Ezzedine

March 7, 2024



Dr. Amy Williams is an Assistant Professor of Geology in the Department of Geological Sciences at the University of Florida. Prior to joining the University of Florida in 2018, she was an Assistant Professor of Geology at Towson University, and a postdoctoral research associate at NASA Goddard Space Flight Center. Her research interests include the formation and preservation of physical and molecular biosignatures in terrestrial environments as an analog for putative biosignature formation on Mars. She has been a member of the NASA Curiosity rover science team since 2009, and currently works with the Sample Analysis at Mars

(SAM) instrument team to explore the distribution of organic molecules on Mars' surface. She also joined the NASA Perseverance rover science team as a Participating Scientist.

Her research focuses on the interaction between microbial life, the geochemical environment, and the rock record on Earth, and how to recognize habitable environments and potentially preserved microbial life on Mars and the outer world moons.

### How To Recognize Habitable Environments and Potentially Preserved Microbial Life on Mars

Presented by Dr. Amy Williams

April 4, 2024



Dr. Amy Williams is an Assistant Professor of Geology in the Department of Geological Sciences at the University of Florida.

Her research interests include the formation and preservation of physical and molecular biosignatures in terrestrial environments as an analog for putative biosignature formation on Mars. She has been a member of the NASA Curiosity rover science team since 2009, and currently works with the Sample Analysis at Mars (SAM) instrument team to explore the distribution of organic molecules on Mars' surface. She also joined the NASA Perseverance rover science team as a Participating Scientist.

## The Astronomical League Report



### The Astronomical League

Submitted monthly by John MacLean

As a member of the Southwest Florida Astronomical Society you are automatically also a member of the Astronomical League, a nationwide affiliation of astronomy clubs. Membership in the AL provides a number of benefits for you including receipt of The Reflector, the AL's quarterly newsletter, use of the Book Service, through which you can buy astronomy related books at a 10% discount. You can also participate in the Astronomical League's Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others. To learn more about the Astronomical League and its benefits for you, visit <http://www.astroleague.org>

### RASC 2024 Observer's handbooks & Calendars

The Astronomical League announced in late September that the USA Version of the RASC (Royal Astronomical Society of Canada) 2024 Observer's Handbooks and Calendars are available for PRE-ORDER on the League Sales web store at <https://store.astroleague.org/> [https://store.astroleague.org/index.php?main\\_page=index&cPath=12](https://store.astroleague.org/index.php?main_page=index&cPath=12)

The Astronomical League sells these items each fall at a fantastic price with their members in mind. Stock will arrive in typically in November and typically ship in December in time for Christmas.

The League suggests ordering early to ensure availability, as stock will be limited once the order comes in. Clubs may place group orders with versions of the RASC Calendar for 6+ units and for the RASC Handbook for 10+ units, both on the League Sales web store. Free shipping and discounted prices apply.

### Reflector Magazine

The latest December 2023 copy of the Reflector magazine was emailed on December 13. It is also available via the web at <https://www.astroleague.org/reflector>



### Monthly highlight of the Astronomical League Observing Programs (Article prepared by SWFAS Astronomical League Coordinator John MacLean)

#### The Astronomical League Globular Cluster Observing Program

Globular clusters are frequent targets during our public star parties. The Messier List includes 29 of them and the Herschel 400 has a total of 62.

The goal of the Globular Cluster Observing Program is to provide an in-depth introduction to this class of objects, allowing the observer to observe or image and compare the structures of globular clusters. The use of any kind of computer aided Go-To technology is allowed, as is of course manual star-hopping using a finder scope. Remote telescopes are also allowed. A minimum of 8 inches aperture is recommended but larger scopes will definitely provide more detail. A 12.5 inch scope was used for validating the entire list of 190 potential targets.

The League strongly advises the purchase of their publication "A Guide to the Globular Cluster Observing Program" available on the League webstore which contains the listing of 190 objects which extend into the southern hemisphere. The Guide contains background information on globular clusters along with specific information about each of the 190 targets. To obtain an award, observers must select a minimum of any 50 globular clusters from the entire list of 190

objects cataloged in the Guide. This allows for customization of an observing list suitable to the observer's interests, skies, and equipment.

The program goes beyond just observing the selected globulars, however, and requires both visual and imaging observers to identify the Shapley-Sawyer concentration class of each cluster observed. The Guide explains the mechanics of how to do this.

The Guide designates certain members of the entire 190 object list as challenge objects. Some of these are globulars within the M31 and M33 galaxies which appear as stellar type point objects in amateur scopes. Visual observers are required to include 1 challenge object in their selection of 50 objects. Imaging observers must select 3 challenge objects.



**M45 - The Pleiades by Don Bishop**

## Astro Sig Schedule 2024

All Meetings at 6:30pm

February 13th  
March 19th  
April 16

### ASTRO SIG MEETING ZOOM LINK

<https://us02web.zoom.us/j/86238788613?pwd=aHhKa-jluQ2hNejI4YVFyczIxM1R4QT09>

Meeting ID: 862 3878 8613  
Passcode: 730698

### ABOUT THE ASTRO SIG

*Every month we get together on a Zoom call with a pretty loose agenda and manage to have an absolute blast talking about Astrophotography. I hope you'll join us if you're interested in Astrophotography.*

### IMAGING TRIPS TO BIG CYPRESS

Big Cypress National Park is about a 75 minute drive from Ft. Myers and it is probably one of the darkest areas in the state of Florida. We have a great place to set up and frequently meet astrophotographers and observers from other parts of the state.

The best way to stay tuned in to our impromptu field trips is to get on our Astro SIG Google Groups email list. [Contact Mike Jensen.](#)

## The Astrophotography SIG

Our Astro SIG group is really growing in strength. From a meeting perspective, we are small, but our email list is about 40 and of those about 10 consistently contribute images for use on our website and in the newsletter. I truly believe that some of our images are unequalled in quality.

Many of our group are out imaging almost every possible night and reporting the results on our email group.

I am especially proud at the way our group shares lessons learned and methods taken to get the best out of their gear and the best images. Please see our images beginning on the next page.



### What's Going On in the SIG Group?



By Mike Jensen,  
SIG Founder/Leader

We continue to be hampered by the El Nino effect here in Southwest Florida. I have managed to get a few decent images of the Moon and a few sequences of different channels of one or another, but nothing to write home, or you about. I know I have asked our members if they have any images to show off. Many laughed, but we do have a few images to show off! Congrats to them!

If you haven't attended one of our meetings (on Zoom), we spend a fair amount of time trouble shooting different issues of one member or another, so if you're experiencing some problems, please join us and hopefully we can help you out!

From what I've researched, the El Nino effect will remain until at least April. A good time to download some data from Telescope Live or collaborate with a friend on co-processing.

I hope you can join us at our next general membership meeting and our SIG meeting on Feb. 13th.

Mike

## Astrophotography Rig of the Month

By Don Bishop



I have always been interested in astronomy, going back to my days as a Boy Scout. As a scoutmaster I taught it to the scouts in the troop and as a sailor I learned celestial navigation.

About five and a half years ago my wife was slated to have a knee replacement so realizing we wouldn't be traveling that year, I decided to dig out my Televue 85 refractor and do some visual and to try doing Electronically Assisted Astronomy or EAA. As so often happens in this hobby, the initial results whetted my appetite to achieve better results, and so my journey into astrophotography began.

I started out simply with a non-goto mount, a Williams Optics 61mm scope and a Nikon DSLR. As my skills improved and I learned more about the hobby, I was fortunate to be able to add to and upgrade my gear such that I now have several rigs, all with somewhat different purposes.

This past year I put together the rig you see in the picture. The blue and black mount, sitting on the tripod is one of the new technology designs that has recently come to the hobby. Born from the robotics industry, it is based on strain-wave motors which have virtually no backlash and they are very strong for their size. This mount is a Pegasus NYX-101. It has a capacity to carry a 44# payload without a counterweight and quite a bit more with one. The counterweight is actually only needed to keep the rig stable when the scope is off to the side, the motors can handle the weight without a problem. I have seen a video of a 200# man standing on the mount as it was slewing with no problem!

The telescope is a Stellarvue SVX-102T-R, which is a 102mm aperture triplet design, manufactured in California with a focal length of 714mm. It has amazingly sharp and color free optics. The focuser is controlled by an Optec electronic focuser that is on the back side, out of view. Most refractors have an inherent curvature to their field of view, so just behind the focuser is a field flattener to remove that curvature.

The camera is an ASI2600MM-P which is a monochrome camera, so in front of it is a ZWO electronic filter wheel or EFW. The filter wheel holds seven filters, four are used to capture images in luminance, red, blue and green which when combined will produce a full color image. The other three are narrow-band filters which only pass a very small range of frequencies in the light spectrum. The filters capture light from hydrogen alpha gas emissions, oxygen III



*This is the rig on my back patio in Babcock Ranch. The sky in Babcock Ranch is a Bortle 4/5, particularly to the East, North and West with a significant light pollution dome from Fort Myers to the South.*



and sulfur II. These gases, when bombarded with high intensity radiation from nearby stars actually glow at specific wavelengths of light which these filters then pass through to the camera. These astro cameras are much different from the normal cameras we are familiar with. They don't have shutters like a conventional camera since they gather light for a much longer time, often between 30 to 300 seconds, or sometimes longer. Most of them also have a cooling plate behind the sensor. We generally run them from around 0° F to -20°F. These low temperatures reduce the electronic noise that is present in the camera sensor.

On top of the telescope is a smaller telescope and camera that is used to track the stars near the target area and if the stars appear to move, the mount computer measures this and then makes minute corrections to the tracking of the mount.

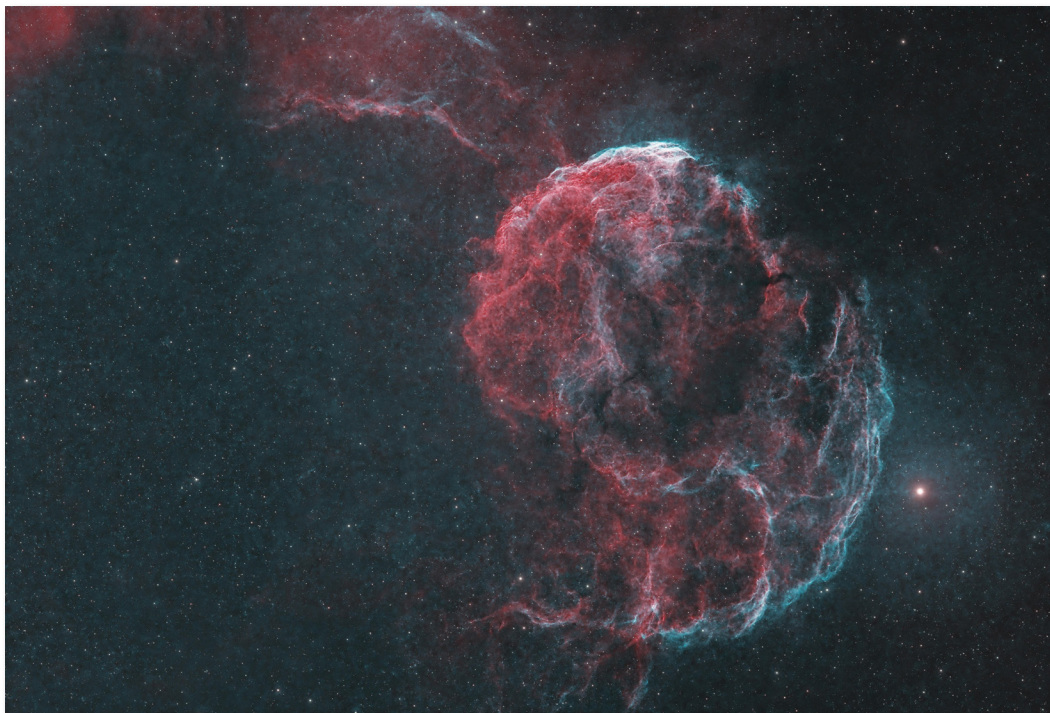
This scope is called a guide scope due to its function. It is a 10x60 Baader finder scope with a focal length of 250mm with an ASI290mm guide camera.

The final piece to this setup is a headless mini computer attached to a leg of the tripod along with a small travel router. This allows me to operate the rig from the comfort of my home via WiFi and to set up imaging sequences that then automatically control the mount and camera to take a series of images. For those of you not familiar with astrophotography, this is a fascinating process to watch. The computer decides when it can start a run, it slews to the target and fine tunes the positioning. It then auto focuses and starts auto guiding on the nearby stars. It then starts shooting images and sequences through the appropriate filters. It can do this until the target is no longer in sight or it may stop at some pre-determined point.

Here is my latest image shot with this setup. This is IC443 or more commonly known as the Jellyfish Nebula. This is a galactic supernova remnant located in the constellation Gemini. It is roughly 5,000 light years away from us and astronomers think it may have occurred 30,000 to 35,000 years ago when a star exploded. This image was taken with Hydrogen alpha and Oxygen III narrowband filters where the red is the Ha and the blue is the OIII.



The Cygnus Wall





*John Udart*  
ASTROPHOTOGRAPHY

### **The Flaming Star Nebula by John Udart**

Brand/Type of Telescope/Lens: William Optics GT71, 71mm Lens, 336mm Focal Length

Mount: Sky-Watcher EQ6-R Pro

Exposures:72x300s (6 hours), OSC, Optolong L-eXtreme

Processing Software: PixInsight



### **The Moon - Waxing Gibbous 76.8% by Mike Jensen**

Brand/Type of Telescope/Lens: William Optics GT61, 61mm Lens, 380mm Focal Length

Camera: ZWO 1600 Mono, shot through an Ha filter

Mount: Sky-Watcher EQ6-R Pro

Exposures: 30 secs of video shot at 1080 res.

Processing Software: Processed/Stacked using ASI Studio Planetary Stacking. A few enhancements in PS.



### **M33 Pinwheel Galaxy by Linwood E Ferguson**

Brand/Type of Telescope/Lens: Stellarvue SVX152T

Mount: AP1100AE

Exposures: About 13.5 hours each of R, G, B and 18.5 hours of Ha.

Processing Software: Pixinsight



### **Interacting Galaxies NGC 4490 and NGC 4485 in Canes Venatici by Scott Cruzen**

Brand/Type of Telescope/Lens: Astro-Tech 130mm EDT APO Triplet Refractor with 0.8x focal reducer/field flattener

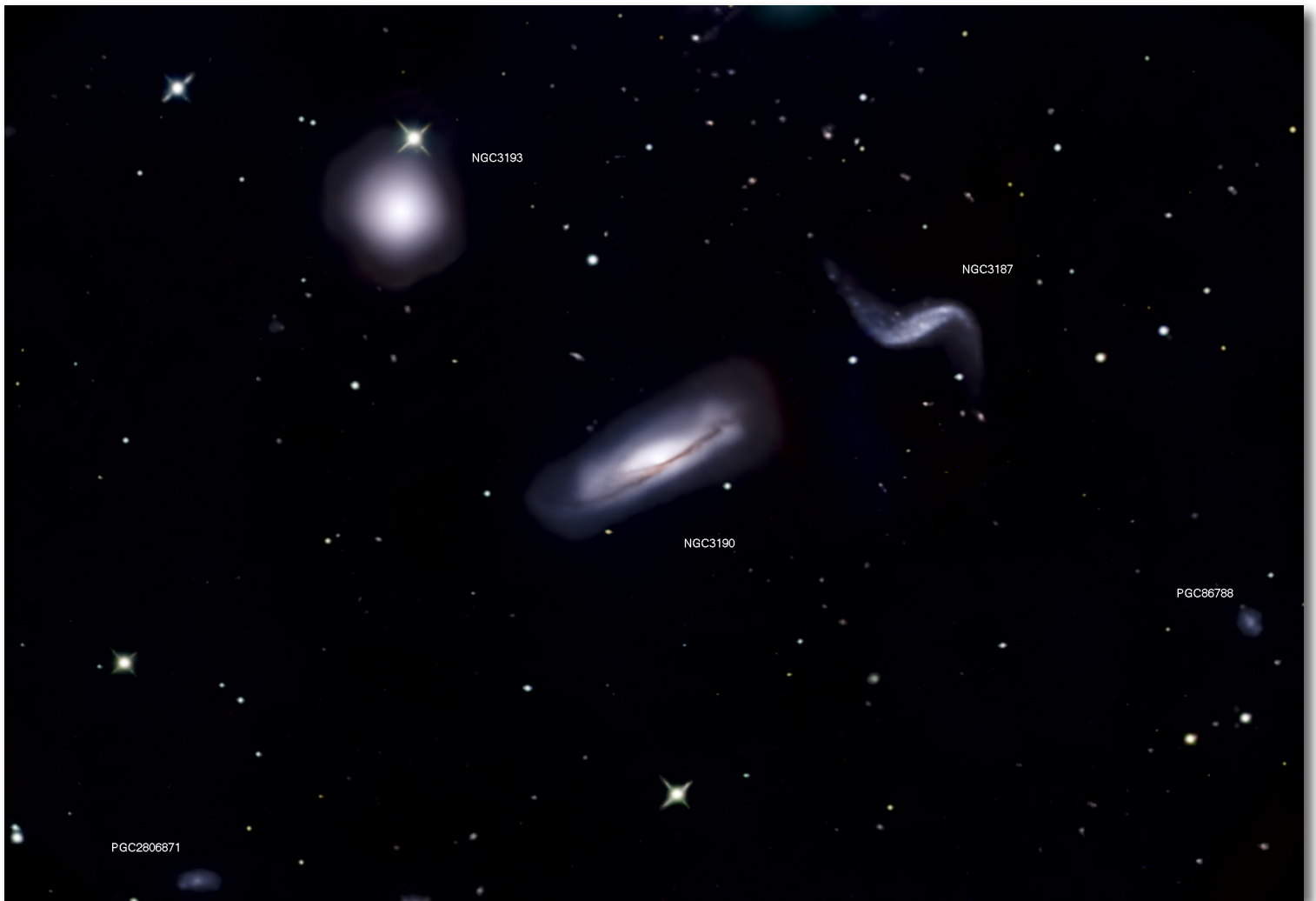
Mount: SkyWatcher EQ6-R Pro, ASIAir Plus

Exposures: 120 x 180sec subs

ASI533MC Pro Camera

Optolong UV/IR Filter

Processing Software: SiriL/SiriLic, GIMP, DarkTable, Topaz



### NGC 3190 and “friends” by Dr. Mario Motta

Includes a spectacularly distorted companion galaxy NGC 3187, 80 MLY away, a trio of interacting galaxies.

taken with my 32 inch, RGB filters



**NGC 1579 by Dr. Mario Motta**

A reflection and emission nebula in Perseus, taken with my 32 inch scope, Ha, and RGB filters

## NASA Delays Artemis

### More delays for NASA's astronaut moonshots, with crew landing off until 2026

[From the AP - By Marcia Dunn](#)

CAPE CANAVERAL, Fla. (AP) — Astronauts will have to wait until next year before flying to the moon and at least two years before landing on it, under the latest round of delays announced by NASA on Tuesday.

The space agency had planned to send four astronauts around the moon late this year, but pushed the flight to September 2025. The first human moon landing in more than 50 years also got bumped, from 2025 to September 2026. NASA cited safety concerns with its own spacecraft, as well as development issues with the moon-suits and landers coming from private industry.



“Safety is our top priority,” said NASA Administrator Bill Nelson. The delays will “give Artemis teams more time to work through the challenges.”

Launched Monday as part of NASA's commercial lunar program, Astrobotic Technology's Peregrine lander was supposed to serve as a scout for the astronauts. A Houston company will give it a shot with its own lander next month.

NASA is relying heavily on private companies for its Artemis moon-landing program for astronauts, named after the mythological twin sister of Apollo.

SpaceX's Starship mega rocket will be needed to get the first Artemis moonwalkers from lunar orbit down to the





surface and back up. But the nearly 400-foot (121-meter) rocket has launched from Texas only twice, exploding both times over the Gulf of Mexico. A third test flight is planned for February.

The longer it takes to get Starship into orbit around Earth, first with satellites and then crews, the longer NASA will have to wait to attempt its first moon landing with astronauts since 1972. During NASA's Apollo era, 12 astronauts walked on the moon. The competition back then was the Soviet Union; now it's China. Nelson told reporters he's not worried that China will beat America to the moon with a crew, even with the latest delay. Even so, "we don't fly until it's ready," he stressed.

The Government Accountability Office warned in November that NASA was likely looking at 2027 for its first astronaut moon landing, citing Elon Musk's Starship as one of the many technical challenges. Another potential hurdle: the development of moonwalking suits by Houston's Axiom Space.

"We need them all to be ready and all to be successful in order for that very complicated mission to come together," said Amit Kshatriya, NASA's deputy associate administrator. He added that even with the delay, a 2026 moon landing represents "a very aggressive schedule."

NASA has only one Artemis moonshot under its belt so far. In a test flight of its new moon rocket in 2022, the space agency sent an empty Orion capsule into lunar orbit and returned it to Earth. To engineers' surprise, some charred material came off the capsule's heat shield during reentry. Later, testing of another capsule uncovered a design flaw in the life-support electronics, and separate battery issues popped up.

It's the same kind of capsule that will carry astronauts to and from the moon, linking up with Starship in lunar orbit for the trip down to the surface and back up.

## NASA Discovers Lava World

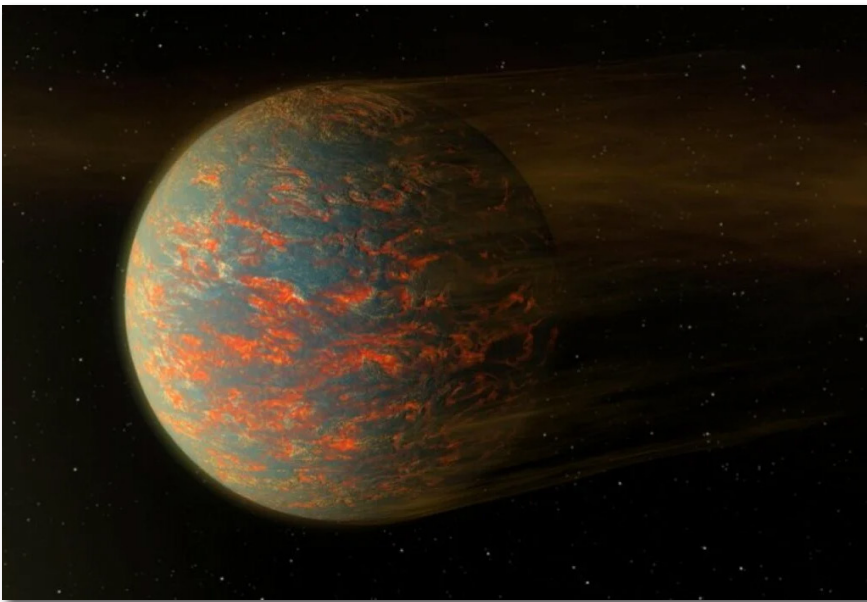
### NASA telescope discovers a bizarre, half-lava world

[From Mashable - By Elisha Sauers](#)

Scientists have discovered a world that is almost identical in size to Earth, with a star almost identical to our sun.

But that's pretty much where the similarities end. The exoplanet, a world outside our solar system, is 10 times younger, exponentially hotter, and likely half-soaked in molten lava seas.

Astronomers found the new planet, HD 63433 d, using NASA's TESS probe, short for Transiting Exoplanet Survey Satellite. The mission was designed to discover thousands of exoplanets in orbit around the brightest dwarf stars in space.



The scorched world is the smallest and closest known young exoplanet, at only 73 light-years away. Scientists estimate it's about 400 million years old, a mere whippersnapper compared to our 4.5 billion-year-old home planet.

"Young terrestrial worlds are critical test beds to constrain prevailing theories of planetary formation and evolution," the discoverers said in a new paper published in *The Astronomical Journal*.

The number of confirmed exoplanets has risen to 5,569, with over 10,000 other candidates under review. Statistically speaking, the growing tally only scratches the surface of planets believed to be in space. With hundreds of billions of galaxies, the universe likely teems with many trillions of stars. And if most stars have one or more planets around them — well, that's an unfathomable number of hidden worlds.

HD 63433 d is intriguing because one of its sides is always facing its star. Furthermore, it is much closer to its star than Earth is to the sun: In fact, it's eight times closer to its host star than Mercury is to the sun. That makes the exoplanet's orbit so snug that its year is only four days long. As any experienced sunbather knows, if you don't turn over, one side is going to get seriously burned.

Astronomers believe the side facing the star is subjected to temperatures of about 2,300 degrees Fahrenheit. But the backside of the planet that never receives starlight is a mystery, something the research team hopes to learn more about in the future. The James Webb Space Telescope, the most powerful infrared telescope in the cosmos, could reveal more details about this young world, as well as search for hints of an atmosphere.

"Young planets are exciting because we can study how planets change over time by measuring their properties at different ages," said Andrew Vanderburg, one of the co-authors, on X. "This is kind of like studying how humans age by observing a baby, a child, a teenager, and an adult, without waiting for the baby to grow up."

## *If The Earth Stopped Spinning*

### **What Would Happen If The Earth Stopped Spinning?**

Space.com - By Rebecca Sohn

Even though Earth is always spinning, we can't feel it, and you probably take it for granted. But what would happen if it stopped?

If Earth suddenly stopped spinning, it would be catastrophic. Almost everyone and everything not attached to the planet would continue to move at the current speed of Earth's rotation, around 1,000 mph (1,600 km/h) at its fastest, which is along the equator.

"The momentum of all the material that's normally rotating — the water, the air, all the buildings and things like that — would cause them to keep going," said Andrew Layden, a professor of physics and astronomy at Bowling Green State University in Ohio. "So they [would] split off the surface and just keep going around and around, basically, in a low orbit around the Earth."

The only parts of our planet that would likely be less affected would be at or near the poles, which rotate little or not at all. Still, the extreme force would likely trigger tsunamis and earthquakes, so things would be pretty bad for the entire Earth.

If Earth were to slow down and stop more gradually, life would still change drastically. For instance, the length of our days and nights would become longer until each lasted six months. It would also change our weather, Layden said, since air and ocean currents are strongly influenced by Earth's rotation.

It's possible that a lack of rotation would affect how well life could survive on Earth, said Layden. Our planet generates a magnetic field, which protects us from harmful radiation from space. Scientists think the Earth's magnetic field is linked to flowing liquid metal in our planet's outer core, which generates electrical currents and a resulting magnetic field due to Earth's rotation. Some researchers think that the loss of Mars's magnetic field in the distant past contributed to the planet becoming uninhabitable, said Layden.

The good news is that it is very unlikely that Earth will ever stop rotating, scientists say. Every planet we know of rotates, and even stars rotate slowly. Stars form from huge, circling masses of gas and dust that condense together gradually. Because the solar system formed out of a huge disk of debris around the burgeoning sun, the material that formed the solar system was also circling. This is why most planets in the solar system rotate in the same direction.

Planets also spin because objects hit them, often during the planets' formation. Much like billiard balls, unless the objects hit each other head-on, one or both will start spinning.

r system. [More at Space.com...](https://www.space.com/3811-what-would-happen-if-earth-stopped-spinning.html)



## Are the JWST Images Real?

### Are the James Webb Space Telescope's images real?

*With so much processing applied to the raw data from space, it's the question many will wonder about.*

From BBC Sky at Night - By Joe DePasquale

Given the drama of the James Webb Space Telescope's images, it's only natural to question whether what we are seeing is real.

I can answer most emphatically that everything you see in the images from Webb is 100% real!

James Webb Space Telescope sees the Universe in infrared wavelengths, a kind of light that is beyond what our eyes are capable of perceiving.

See the latest James Webb Space Telescope images and read my guide [Process your images like a James Webb Space Telescope scientist](#)

As image processors, we take advantage of the way our eyes see colour to translate these infrared wavelengths into colours that our eyes can perceive. It's not unlike transposing music from one octave to another.

The relative pitches between notes stay the same, but overall the music shifts to either higher or lower notes. This method of colourising the data – what we refer to as representative colour – gives us a powerful tool to explore the Universe in many wavelengths beyond visible light.

### *The meaning of color in astro images*

As beautifully vibrant and detailed as images from Webb are, the colors **are not arbitrarily chosen**. They have real scientific value.

The process of applying color chromatically according to wavelength gives us more information in the final image than we would have from a single grayscale image.

For example, in deep-field images littered with galaxies, colours play a vital role in giving us a visual cue to the most distant galaxies in an image.

The faintest red smudges are likely very distant galaxies formed within a few hundred million years after the Big Bang.

Similarly, in images of nebulae within our Galaxy, colours clue us in to the different chemical processes taking place within the nebula.

We can get a sense of the distribution of different elements within the nebula through the use of chromatically ordered colour.

It's more than just a pretty picture!



## How Do We Know?

### How do we know what the Milky Way looks like?

From Space.com - By Paul Sutter

It wasn't until the early 1900s that we really started to piece together the true nature of our galaxy.

Although our telescopes have captured some truly stunning images of the Milky Way, astronomers have only a vague understanding of our home galaxy. It took a lot of work even to get that sketch, and it's amazing what we've been able to learn from our limited vantage point.

Here on Earth's surface, the Milky Way galaxy appears to the naked eye as a nebulous band across the sky. While astronomers and philosophers have debated the true nature and location of the Milky Way for ages, the great astronomer, physicist and all-around genius Galileo Galilei was the first to discover the galaxy's true nature: countless stars so small that their light blends together.

In the mid-1700s, philosopher Immanuel Kant correctly guessed that the Milky Way was a rotating disk of stars, and because we were embedded in that disk, it appeared as a band to us. A few decades later, astronomer William Herschel attempted to create a map of the universe, with little success.

It wasn't until the early 1900s that we really started to piece together the true nature of our galaxy. That's when astronomer Edwin Hubble discovered that the Andromeda nebula was, in fact, the Andromeda galaxy, an "island universe" sitting millions of light-years from us. The Milky Way wasn't just a disk of nearby stars. It formed the bulk of our own galaxy, so our galaxy took on the name of that familiar sky feature.

Observations of other galaxies helped us piece together what our home galaxy looked like. Most disk galaxies host spiral arms and a dense central bulge, so it's natural to assume that the Milky Way has those features as well. But directly mapping the Milky Way is an extremely challenging task. For one, it's big — roughly 100,000 light-years at its widest point. And there's a lot of stuff inside it — somewhere between 100 billion and 400 billion stars, hundreds of thousands of star-forming regions, and countless planets, black holes, neutron stars and lots more. So surveys of even small portions of the Milky Way require enormous amounts of resources.

And then there's dust. Hanging out in interstellar space, dust has the annoying property of dimming and scattering light. Because we are embedded in the Milky Way, the farther we try to look, the more our view is obscured by dust. Even the most powerful telescopes in the world can't directly examine regions on the opposite side of the galaxy.

So, to map the Milky Way, researchers use many kinds of observations and combine those with comparisons with other galaxies and clever theoretical modeling to put together a complete picture. For example, globular clusters orbit the center of the Milky Way in a roughly spherical arrangement. By plotting their positions in three-dimensional space, we can find where the center is — roughly 25,000 light-years away





from us.

We can also examine the motions of stars as they orbit the center and use our understanding of gravity to model what the core must look like. It's through this technique that we think our galaxy is a "barred" spiral — the core is elongated, and maybe even peanut-shaped. This is confirmed by observations showing that a certain kind of red giant star that lies near the core is split into two populations and that infrared light coming from the core isn't symmetrical.

The Gaia spacecraft, launched in 2013, has one main mission: to create

a census of as many stars as possible, recording their distances, motion, brightness and colors. To date, that mission has cataloged nearly 2 billion stars, which, while impressive, still represents only roughly 1% of all the stars in the Milky Way.

Still, that gives astronomers an enormous repository of information about our local patch of the galaxy. Besides providing an accurate map of our galactic neighborhood, these data can be used as a baseline for comparing and contrasting other, much narrower but deeper surveys to look for anything suspicious that might help us build a map of the larger galaxy.

Take the spiral arms. Despite their dramatic appearance, they are only about 10% denser than their surroundings. Instead, they appear visually striking because they are regions of active star formation, hosting lots of newly formed, big, bright stars. Because we have a detailed map of our local galactic patch, which is not all that active with star formation, we can look for higher concentrations of star formation to sketch out the spiral arms.

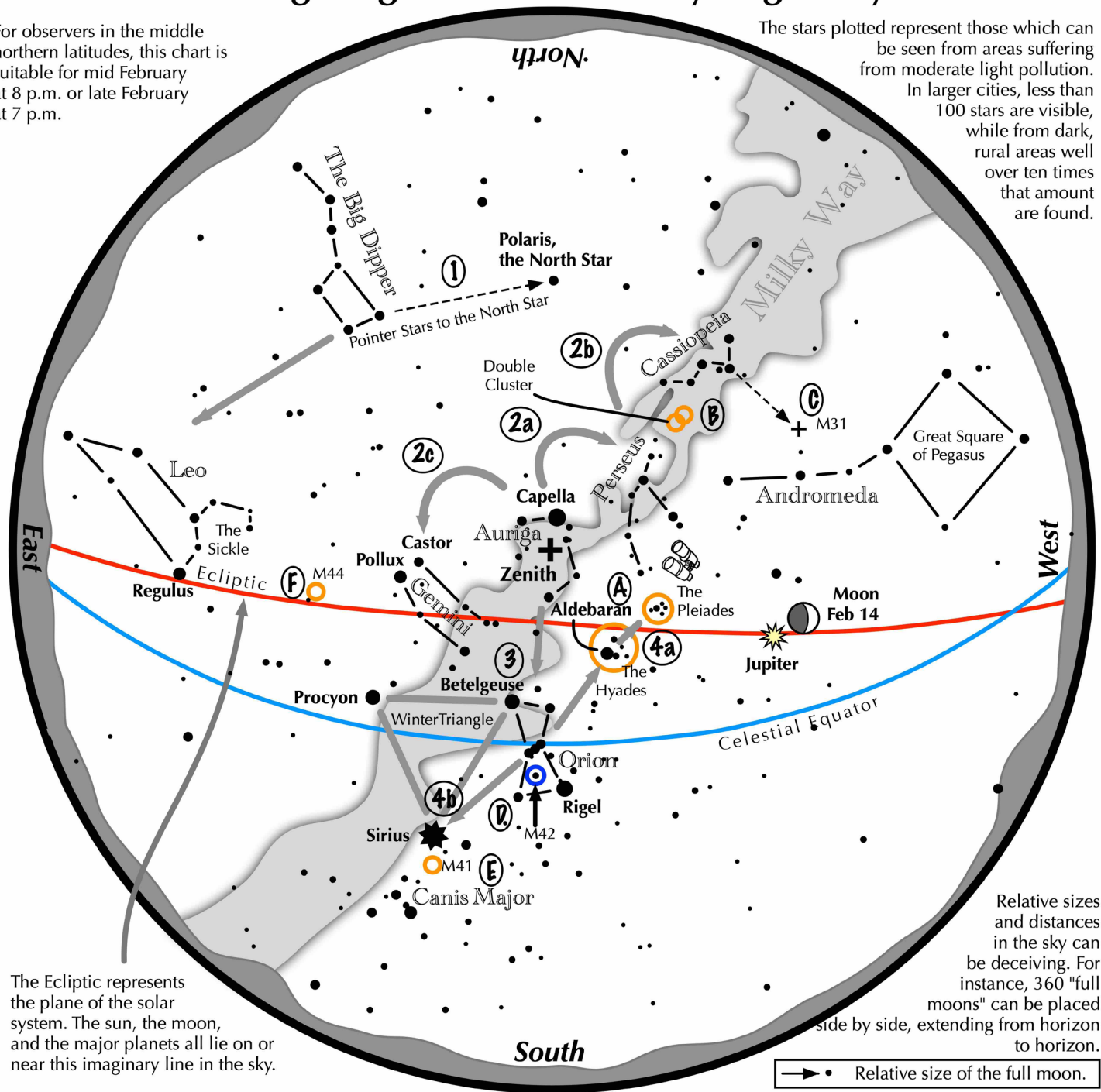
Through these techniques, we know that the Milky Way has at least two prominent spiral arms, and those arms are anchored on a central bar- or peanut-like core in a giant S shape. Beyond that, however, things are a little fuzzier. The galaxy might have two additional medium-intensity arms, or just a tangled mess of spurs and branches. Any "map" you might encounter of the Milky Way is mostly conjecture and will likely change every few years as we improve our techniques and gain a better understanding.

# Sky Chart

# Navigating the mid February Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid February at 8 p.m. or late February at 7 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

## Navigating the February night sky: Simply start with what you know or with what you can easily find.

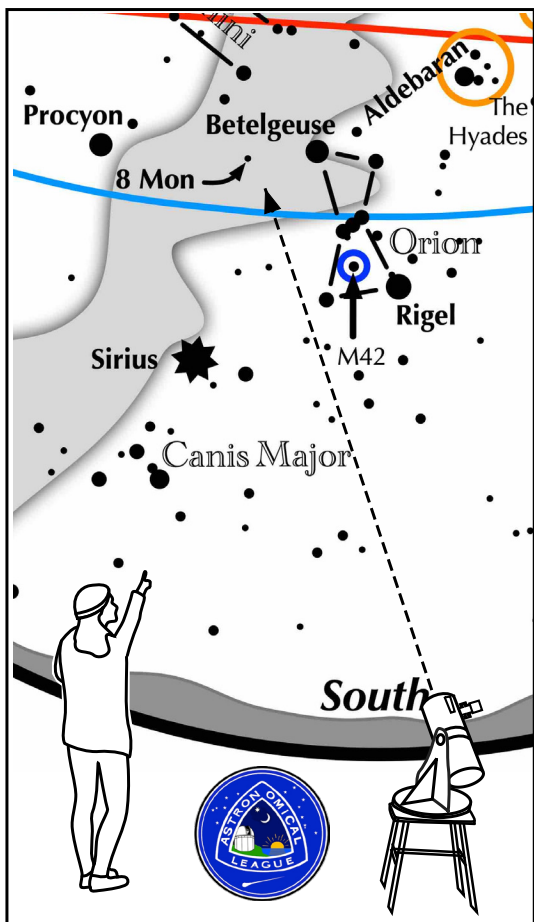
- 1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
- 2 Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
- 3 Directly south of Capella stands the constellation of Orion with its three Belt stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
- 4 Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius, a member of the Winter Triangle.

### Binocular Highlights

- A: Examine the stars of two naked eye star clusters, the Pleiades and the Hyades.
- B: Between the "W" of Cassiopeia and Perseus lies the Double Cluster.
- C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
- D: M42 in Orion is a star forming nebula. E: Look south of Sirius for the star cluster M41. F: M44, a star cluster barely visible to the naked eye, lies southeast of Pollux.



# ASTRONOMICAL LEAGUE Double Star Activity



## Other Suns: Epsilon (8) Monocerotis

### How to find Epsilon Monocerotis on a February evening

Face south. Look for the Winter Triangle stars of Betelgeuse and Procyon. Epsilon Monocerotis is about 1/3 between Betelgeuse and Procyon. It is a 4.3 magnitude star so dark skies are needed to spot it.

Suggested magnification: >20x  
Suggested aperture: >3 inches

### Epsilon (8) Mon

A-B separation: 12 sec

A magnitude: 4.4

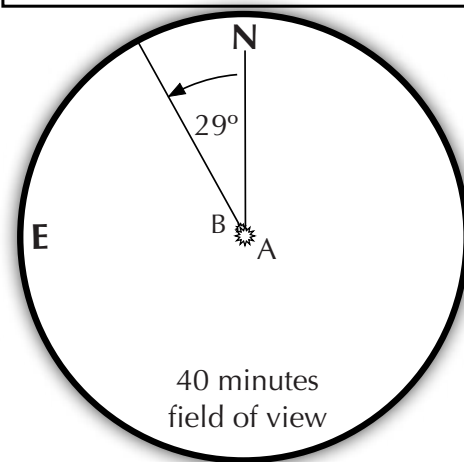
B magnitude: 6.6

Position Angle: 29°

Colors:

white

lilac





## Meeting Minutes

Southwest Florida Astronomical Society, Inc. member minutes January 4, 2024 Calusa Nature Center Planetarium and Zoom meeting.

Opening comments: President Risley welcomed all to the January meeting at 7:11PM and introduced the new attendees: Mike Neal, Paul Leapole, David Westcot, Ralph Rafter and David Bering. President Risley thanked Tom Klein for his computer assistance and advised that program chairman John MacLean scheduled Doctor Mario Motta as tonight's guest speaker.

John was unable to attend, so President Risley introduced Dr. Mario Motta...member of the AMA Board of Trustees from 2010 to 2022, graduate of Tufts Medical School in Boston, praised by the AMA for his many attributes in Cardiology and Nuclear Cardiology as professor of medicine at Tufts University.

Dr. Motta is an astronomer with the America Association of Variable Star Observers, Harvard-Smithsonian Center for Astrophysics, and MIT. Well known for his home made telescopes, Dr. Motta has an asteroid (133537 Mariomotta) named after him.

Program 1: The Life and Legacy of Russell Porter and the early days of Stellafane presented by Doctor Mario Motta..... 2023 marked 100 years since the first gathering of Springfield Telescope makers on Breezy Hill Vermont. Russell Porter (1871-1949) was the founding father and prime mover of The Pink (name given the building due its color of donated mixed paints). Porter was lived an amazing career from arctic explorer, architect, artist, and engineer on the Mount Palomar 200 inch Hale telescope. Porter foster amateur telescope making allowing the average man to participate in astronomy. Sailed to Greenland on the ship Dianna in 1900, caught in the Arctic ice for the winter on the SS Hope of Cumberland, architect and builder of Port of Clyde Maine lodge, crafted many sundials and compasses. Porter was friends with Frank Whitney, Oscar Fullam, Albert Ingalls, John Pierce, Clarendon Ions and William Ellison. Many photos of the annual gatherings at Stellafane were shown along with Porter's article in Scientific American November 1925.

Doctor Motta received two rounds of applause after answering many questions. President Risley and Vice President Jensen thanked him.

Program 2: Crafted by Vice President Mike Jensen, a slide illustration was presented showing some of the best astrophotographers around, our own SWFAS members: Mike Jensen, Ray Bratton, Linwood Ferguson, Phil Jansen, Don Bishop, and Scott Cruzen. These members have formed a SIG (Special Interest Group) and promise more slides of planets, stars, eclipse, novae and all things astrophysical. Well received by the members with applause.

Review of past events:

Charlotte County....Tom Segur advised that FSW Observatory December 8, 2023 event was a dud given the totally clouded skies.

Tom also stated that the Ponce De Leon Park Solar observing event on December 23rd was OK, but not well attended given the Holidays.

Lee County..... Brian Risley advised that the Big Cypress December 9th event was well attended, mostly clear with Rangers presentations.

Brian further advised that the December 16th Seahawk Park Star Party was clouded out.

Upcoming Outreach Events:

Charlotte County.....Tom Segur states that the FSW Observatory event will be held on January 12, 2024. Rain and cloudy skies are predicted, so he will have to wait to see if the event takes place.

Tom was really excited about a commitment he has received from the newly built Sunseeker Resort to view the sky from their penthouse

patio on January 27th for the normal Solar viewing at Bayshore Live Oak Park. However, Tom cautioned that such might not take place this month given Sunseeker's parking on the grass (now mud) issue. Tom believes that the event will still be held at Bayshore Park until Sunseeker's parking problem is corrected.

Lee County..... Brian Risley stated that he has not set a date for the monthly Seahawk Park Star Party as it is questionable given the weather conditions predicted.

Brian reminded all of the upcoming Big Cypress Observing Nights (1-13-24, 2-10-24, 3-9-24), the January 13th one to be held by the Park Rangers presentation.

Brian was excited about the February 10th STEMtastic Caloosa sound Convention Center combined with the schools and Edison Festival events.

Both the Borrowing Owl Festival on February 24th and the Rotary Park Star Party on March 8th are in the planning stage and Brian Risley will report on them at our next meeting.

#### Officer and Committee Reports:

Vice President.....Mike Jensen advised that he cannot attend the February and March meetings given his traveling schedules. He asked that all participating in the monthly newsletter get his photos and articles quickly.

Secretary's report....Dan Dannenhauer reminded everyone of the February 5th to 10th Winter Star Party at the Scout camp North of Big Pine Key and stated that he and fellow SWFAS member Tony Costanzo will attend.

Dan then asked for approval of the December 7, 2023 minutes outlined in the January newsletter. Ray Bratton moved the motion, seconded by Tony Costanzo and approved unanimously.

Treasurer's report.....President Risley rendered John MacLean's well structured December report. Beginning Balance including reserve funds was \$2,769.38 with ending balance of \$3,164.38. Risley advised that this condensed version is on the SWFAS website and that no motion was needed.

Social Membership report.....was given by Vice President Jensen, who advised that 9 members met for dinner at Buffalo Wings restaurant east of I-75 on Colonial Blvd. Mike advised that as he will be out for both February and March meetings, someone else will need to step up as Eva Frankenberger, Social director, is not responding. No one volunteered. Mike said, we really need help in this area of our operations.

Equipment Coordinator.....Brian Risley advised that he had met with Tony Costanzo regarding the sale of certain pieces at the February Winter Star Party where Tony is a vendor. Both are working on this action or some sort of on-line sales event. More to follow.

Program Committee Coordinator ..... President Risley complimented John MacLean for fielding excellent speakers and stated that on February 1, 2024 our member Joe Dermody will present Experiences Viewing Eight Solar Eclipses. That Joe is a NASA Solar System Ambassador and that all should attend.

Adjournment....at 8:34PM President Risley asked for a motion to adjourn.....so moved by Mike Jensen and seconded by Phil Jansen, which passed unanimously.. ....Secretary Dan Dannenhauer