



The Eyepiece

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



Earthrise 2.0 by the Artemis II Crew



Mike Jensen - Newsletter Editor

Hi Everyone! First things first. This issue of the newsletter is for May and June. The same Zoom link works for both months if you're Zooming in the the general meetings. We have two different links for the Astro Sig meetings.

I know many of our snowbird members have "flown the coop" but we see them on Zoom and we hope you are enjoying your northern home while we enter Florida's baking season.

May finishes up our outreach season with a our observatory gathering on May 15 and our star party on May 16. As members we look forward to seeing you and we'd love to have you help volunteer at these events.

Please come to the planetarium in person or Zoom in for two fantastic speakers in May and June. See page 4 for some info on both. BTW, we're always looking for some well informed or experienced members to present to the club. Just let one of our officers know if you're interested.

Summertime in Florida is typically a challenging time to be in our area of interest whether you're observing or photographing. The forecast becomes much more undependable but I'm an "all in" kind of guy. If I can get 3-4 hours of imaging in before the clouds

come in, that's good for me. If I can get a full night in from May - September, that's a GREAT night! I overheard someone say recently that they preferred having a good 2-3 or more nights before setting up their whole rig. My rig takes about 15 minutes to haul out and assemble and about 10 to breakdown. If I can get a half night or even a full night this time of the year, that's worth the effort in my book. I still have 4-5 targets I haven't processed from winter and at least 4-5 from galaxy season, so I'll have a lot to do when we get the real rainy season. If you're like me, you need to target multiple targets to image or view around backyard trees, neighbor's lights etc. As the old saying goes, if it's worth doing, it's worth doing well!

Monthly Meetings

Our monthly meetings are held on the first Thursday of each month unless otherwise noted (like this month). The meetings begin at 7:00pm.

Each meeting is usually a combined live and Zoom meeting.

Below are the next three dates for the meetings of 2026:

May 7, 2026

June 4, 2026

July 2, 2026

This is the **General Meeting** Zoom link for 2026

Here's the Zoom link: <https://zoom.us/j/98284448774?pwd=qDhf7GCqgzVyNk8easeJfcXOB217sy.1>

Meeting ID: 982 8444 8774

Passcode: 910802

Speakers Series Schedule For General Meetings

May - Elana Alevy, PTYS Graduate Student- Lunar Geology in the Artemis Era

June - Sarah Elizabeth Mccandless - Navigation Engineer, JPL in Pasadena. NEO Surveyor Mission

July - Dr Mario Motta

2026 Astro Sig Schedule

All Meetings at 7:00pm

Please note, the links for May and June will be different. They are listed below.

Astro SIG Zoom Link

May 19, 2026 Hosted by John Udart

Here' the Zoom Link:

<https://us06web.zoom.us/j/7900508233?pwd=enVNcFMxUi9KZ1dlOHBLSupkNWk5UT09&omn=84125643390>

Meeting ID: 790 050 8233

Topics to include: NEAF 2026: Stand Outs & Oddities, Affinity Astrophotography Feature, PixInsight: Tips & Tricks for Beginners, Group survey (polling) on Light Pollution, Integration Time, and Image Quality.

Free beer and pretzels for the first 10 attendees (Redeem with John!)

June 16, 2016 Hosted by Mike Jensen

Here's the Zoom Link:

<https://zoom.us/j/97133837720?pwd=tbU4UzraBmSgiVxWpX5iPbtzBhG5Wq.1>

Passcode 080023

All Astro SIG meetings are Zoom Only

President's Message

Brian Risley

On April 18th we had the Calusa Nature Center Earth Day celebration. I setup the CPC-800 and PST. I had help from Tony Buscemi. Had good discussion with Bill Hammond on possible Babcock Ranch events and FGCU plans for possibly moving their observatory.

On the 18th we had a Seahawk Park star party. About a dozen people showed up. Weather was ok, with some clouds but Venus and Jupiter poked through. Jupiter's moons put on a good show. Tony Buscemi and Joe Dermody came out (long day for all 3 of us as Tony was with me at CNCP and Joe had a NASA Ambassador Program in Charlotte County earlier in the day). We had several other members show up.

If you haven't renewed your membership for 2026, you won't be getting a newsletter after this one. All Dues information is on the website.

We are winding down events for the season. The May events are it until September.

Solar observing at Punta Gorda Library in Punta Gorda is on the 2nd. We have a SeaHawk Park Star Party on May 16th.

FSW Punta Gorda Moore Observatory viewing is on May 15th.
Note: Please use the Zoom link from the newsletter (or sent with the agenda)

Our upcoming speakers are:
Elana Alevy- Lunar & Planetary Lab, University of Arizona "Lunar Geology in the Artemis Era." 5/7/2026

Sarah Elizabeth Mccandless - Navigation Engineer, JPL in Pasadena.
NEO Surveyor Mission 6/4/2026

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May June Speakers



May - Elana Alevy - Lunar Geology in the Artemis Era

Elana Alevy is a PhD student in the Lunar and Planetary Laboratory at the University of Arizona. She holds a bachelor's degree in geology from Colby College, where she researched primitive chondritic meteorites through laboratory analyses. At the University of Arizona, she develops new methodologies to study lunar samples in order to better understand the geologic evolution of the Moon.

Current Research: At the University of Arizona, her work includes high-resolution 3D imaging of diamonds and geological materials using advanced multiphoton microscopy.

Key Projects:

Lunar Sample Analysis: Part of the Apollo Next-Generation Sample Analysis (ANGSA) consortium, studying soils and particles from the Apollo 17 mission.

Meteorite Classification: Previously interned at the Maine Mineral & Gem Museum, where she worked on unraveling deep-space mysteries through meteorite petrography.



June - Sarah Elizabeth McCandless - Navigation Engineer, JPL in Pasadena. NEO Surveyor Missi

Sarah Elizabeth McCandless is an interplanetary navigation engineer at NASA's Jet Propulsion Laboratory (JPL). Often describing her role as "interplanetary Google Maps," she calculates trajectories and tracks the positions of spacecraft to ensure they successfully reach and orbit distant planets or moons.

Key Career Highlights

Mission Navigator: She has supported 11 different missions, including the Mars Perseverance rover, Artemis I, Psyche, and the NEO Surveyor.

Europa Clipper: She serves as a primary navigator for the Europa Clipper mission, which launched in October 2024 to study Jupiter's moon Europa.

Planetary Defense: McCandless worked on the DART (Double Asteroid Redirection Test) mission, which successfully impacted an asteroid in September 2022.

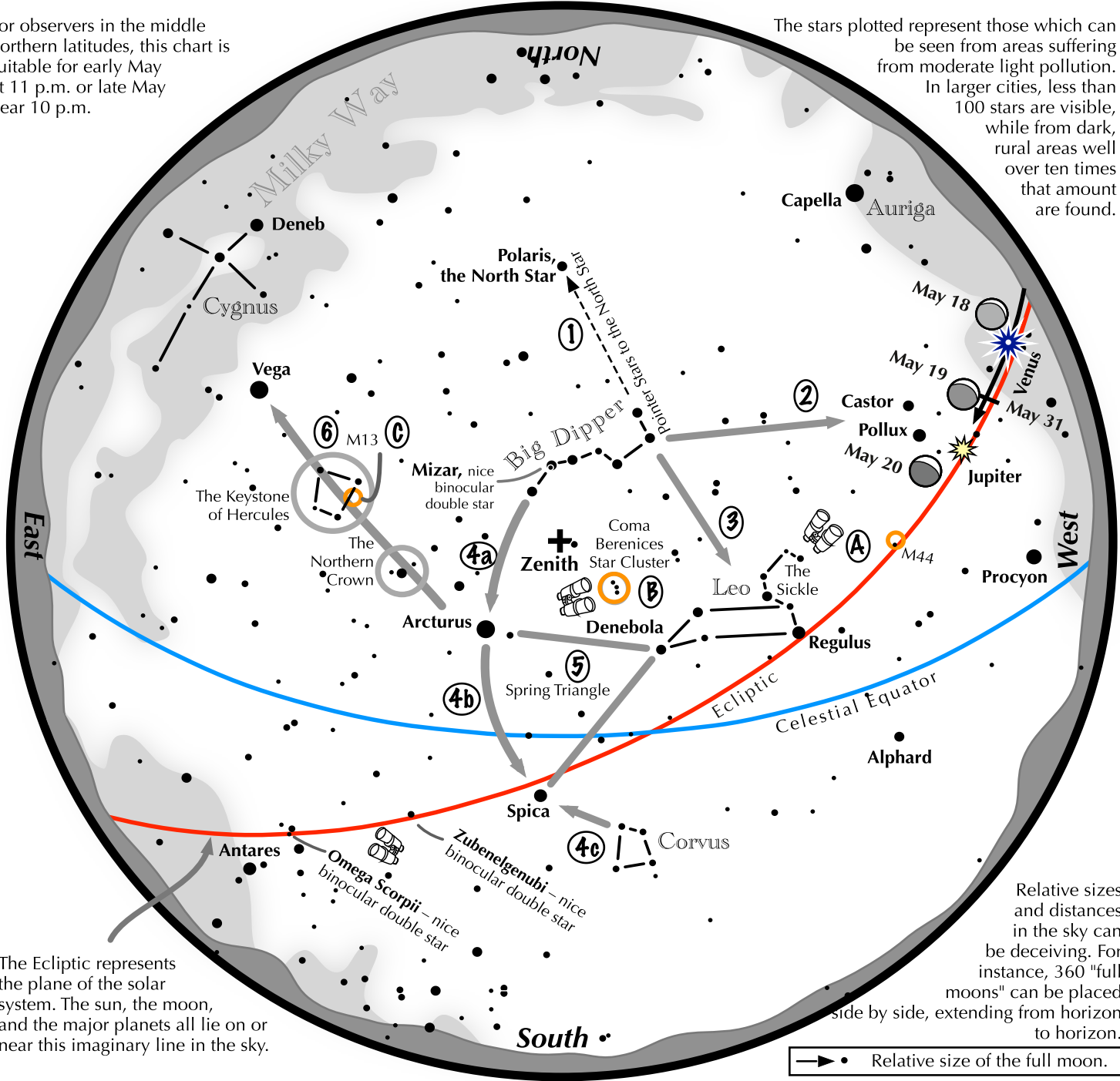
Analog Astronaut: In 2024, she was selected for NASA's HERA (Human Exploration Research Analog) Campaign 7 Mission 3. She lived in a 650-square-foot habitat for 45 days at Johnson Space Center to simulate a mission to Mars.

Navigating the May Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for early May at 11 p.m. or late May near 10 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.



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.

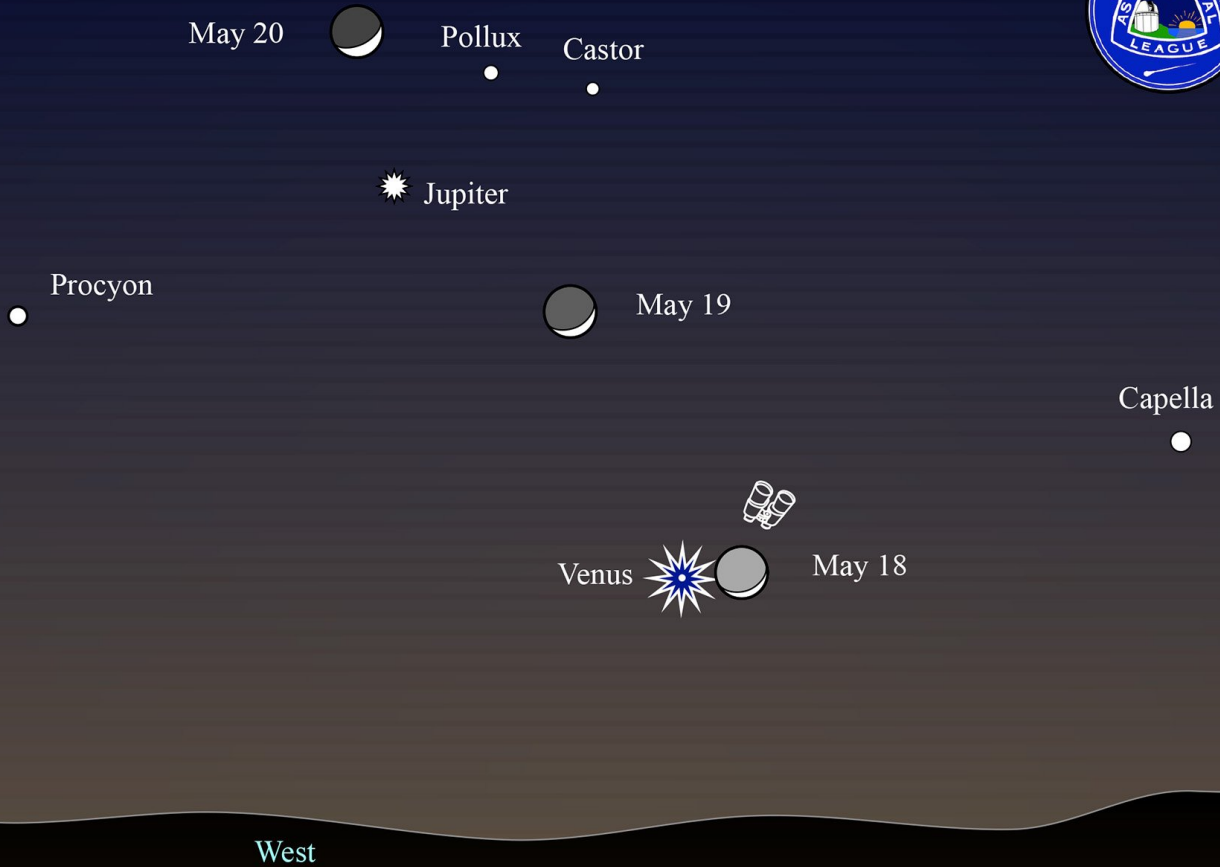
Navigating the May night sky: Simply start with what you know or with what you can easily find.

- 1 Extend a line northward from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
- 3 Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
- 4 Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica. Confirm Spica by noting that two moderately bright stars just to its southwest form a straight line with it.
- 5 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 6 Draw a line from Arcturus to Vega. One-third of the way sits "The Northern Crown." Two-thirds of the way hides the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.

Binocular Highlights

A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **B:** Look near the zenith for the loose star cluster of Coma Berenices. **C:** M13, a round glow from a cluster of over 500,000 stars.





**If you can see only one celestial event this month,
see this one.**

The crescent moon passing Venus then Jupiter

Look to the west-northwest 60 minutes after sunset on May 18, 19, and 20.

- On the first evening, the crescent moon full with earthshine glows immediately next to brilliant Venus.
- The next evening finds a somewhat thicker crescent moon sitting midway between Venus and Jupiter.
- On May 20, the moon lies above Jupiter and in a line with Castor and Pollux.
- The bright stars Capella and Procyon act as boundaries helping frame the scene.

End your day with this magical scene!

The Astronomical League

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>

Reflector Magazine

The latest – March 2026 edition of the Reflector magazine was emailed on February 19. It is also available via the web at <https://www.astroleague.org/reflector>

What's up with the Astronomical League – March 2026

In this Issue the following items are covered...

- In this Issue...
- NCRL Eastern Iowa Cosmic Conference, May 15-17
- MSRAL (Mid States) Convention, June 26-28
- ALCon 2026, August 12-15

James Webb telescope spots 'stingray' galaxy system that could solve the mystery of 'little red dots'

A study of the fascinating galaxy system nicknamed "The Stingray" suggests that mysterious little red dots could be a phase in the evolution of galaxies powered by actively feeding black holes, rather than a distinct class of objects.

By Shreejaya Karantha published at livescience.com

Astronomers have spotted an intriguing triple-galaxy system, nicknamed "The Stingray," that dates to when the universe was just over 1.1 billion years old. A new analysis of the celestial sea creature has revealed an object that may provide clues about the nature of mysterious cosmic objects dubbed "little red dots" (LRDs).

LRDs were first observed in 2022 by the James Webb Space Telescope (JWST). Astronomers initially proposed that these compact red objects, which seem to permeate the very early universe, could be galaxies that host actively feeding black holes known as active galactic nuclei (AGNs). Alternative LRD theories involve ancient supermassive stars on the verge of collapse and exotic black hole stars.

In the new study, published March 9 in the journal *Astronomy & Astrophysics*, astronomers reconstructed the recent star formation history of the triple-galaxy stingray. They found that interactions between galaxies may have pushed an AGN into an unusual state resembling a transition into or out of a little red dot. Astronomers dubbed the galaxy that hosts this unusual AGN a 'transitional little red dot' (tLRD).

"We have all the necessary ingredients to produce such a transition: starbursts caused by galaxy interactions, an AGN, and a galaxy (tLRD) whose spectral features match almost all LRD criteria," lead study author Rosa María Mérida, an astrophysicist who studies galaxy formation and evolution at Saint Mary's University in



The full-size view of galaxy cluster MACS J1149, home of the 'stingray'.

(Image credit: ESA/Webb, NASA & CSA, C. Willott (National Research Council Canada), R. Tripodi (INAF - Astronomical Observatory of Rome))

Canada, told Live Science in an email.

The unique system's nickname came from its appearance: In early images, it resembled a stingray with a body, head and tail. However, later analysis revealed that the "tail" was formed by unrelated distant objects and had aligned by chance in the image.

The Stingray is made of three galaxies: a Balmer break galaxy that is relatively massive and evolving more steadily, a tLRD, and a satellite star-forming galaxy that is less massive and appears to have joined the system more recently.

Back to the past

Due to observational limitations, the researchers could not definitively determine how the three-galaxy system formed. Instead, they proposed a scenario based on indirect evidence. They did this by reconstructing the galaxies' star formation histories, using data from the Canadian NIRISS Unbiased Cluster Survey, one of the deepest JWST surveys to date.

By comparing these histories across galaxies and incorporating relative stellar masses, the team looked for patterns that might indicate past interactions. For example, if multiple galaxies showed changes in star formation at similar timescales, that could point to a shared event, such as a close encounter. Additionally, lower-mass galaxies with weaker gravity are more susceptible to disturbance, which may trigger bursts of star formation.

The team's analysis suggested that about 100 million years ago, the tLRD galaxy experienced a burst of star formation, which was likely triggered by an interaction with the nearby Balmer break galaxy. The more massive Balmer break galaxy, however, appeared largely unaffected and evolved steadily. Later, around 10 million years ago, the smaller satellite galaxy experienced increased star formation.

"We think this is the moment when the [satellite] galaxy entered the Stingray system," Mérida noted.

Around that time, some activity was observed in tLRD but not in the Balmer break galaxy. By this stage, tLRD also would have been quite massive, making this behavior difficult to explain through gravitational interactions alone. This raises the question of what drove the activity in tLRD, while the Balmer break galaxy shows little change in its star formation history. This suggests factors beyond simple gravitational interactions may be at work.

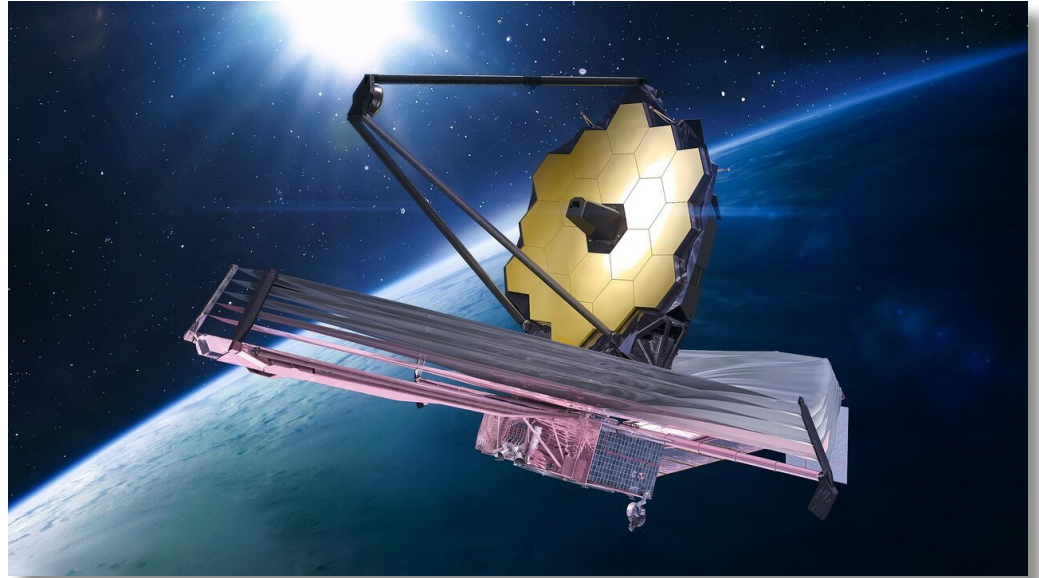
Part AGN, part LRD

The researchers proposed that the answer may lie in the behavior of the central black hole. Mérida explained that interactions between galaxies can trigger bursts of star formation, but the activation of an AGN can occur later. In this scenario, the earlier encounter may have first sparked star formation and then, with some delay, fueled the black hole in tLRD, pushing the galaxy into its unusual state.

The active black hole in tLRD shows spectral features of a type I AGN characterized by a bright and unobscured core. But it is also compact and bright in ultraviolet light, partly resembling a little red dot. However, it lacks one key spectral signature that almost all observed little red dots have in their light spectrum: a V-shaped feature. So it looks like a mix of both objects but not completely like either.

"This galaxy is strategically in between the little red dot population and compact Type I AGN," Mérida said. Therefore, tLRD is part AGN and part LRD, but it's unclear whether it is entering or exiting the LRD phase.

"The paper supports the idea that at least some little red dots are evolutionary phases rather than a wholly distinct class," Devesh Nandal, a postdoctoral researcher at the Harvard and Smithsonian Center for Astrophysics who was not involved in the study, told Live Science in an email. "The system is physically compact, spectroscopically confirmed, and the authors infer enhanced recent growth in the tLRD and [satellite galaxy]," compared what would be



expected from their normal, internal processes, making their interaction-driven interpretation credible. However, while galaxy interactions may trigger or shut down the LRD phase, they do not fully explain the black hole's mass or the LRD phenomenon as a whole, Nandal noted.

What next?

If this transition phase is very short — less than about 5 million years — the chances of spotting a galaxy in that stage are very low, Mérida said. In that case, tLRD might just be a normal AGN. But if the transition lasts longer, astronomers should find many such transitional objects in current galaxy surveys. That means researchers need to do two things: carefully search existing data for more candidates, and improve theoretical models to predict how often these transitions happen and determine how to clearly identify them.

A larger sample size of such "in-between" objects and a better understanding of how long the AGN spends in active and quiet phases can establish the new results more robustly, Nandal said. A clear distinction between how the black hole is currently feeding and how the black hole originally formed is also crucial, he said. For example, the black hole may have already existed as a massive seed from a supermassive star or other origin; in that case, the LRD-like activity we observe now likely reflects later fueling or dust obscuration rather than the black hole forming from scratch.

The team plans to conduct follow-up studies on The Stingray and other LRDs found in the Canadian NIRISS Unbiased Cluster Survey. If confirmed, this transitional object would support the idea that little red dots are not a separate class of objects but a temporary phase in the evolution of a black hole system, with their behavior controlled by their surroundings.

Five things we learned from Nasa's Artemis II astronauts

It's been weeks since the Nasa's four Artemis II astronauts landed back on Earth.

Mission commander Reid Wiseman, pilot Victor Glover, mission specialist Christina Koch and mission specialist Jeremy Hansen splashed down April 10th after a 10-day trip beyond the far side of the moon.

After thanking everyone who made the mission possible, the astronauts have been sharing their thoughts on their time in space and what they've been up to since returning home.

According to the crew, they have been getting used to gravity and eating normal food again.

Here's five other things we learned from them, about their mission.

1. Landing back on Earth was 'a very smooth ride'

When the Orion spacecraft came back to Earth, and re-entered our planet's atmosphere, it reached speeds of 25,000mph and super-high temperatures about half that of the sun.

However, according to the crew, the whole process went really well.

Mission commander Reid Wiseman explained: "We came in fast, we came in hot and I would tell you looking out the window, that whole way in, it was a very smooth ride."



Pilot Victor Glover added that landing in the ocean felt like jumping off a skyscraper.

"I've never been base jumping, I've never been skydiving, but if you dove off a skyscraper backwards, that's what it felt like for five seconds.

"And then the pilots and the mains came out, and it was glory," Glover added.

2. Seeing the galaxy up close was the most amazing part

The astronauts were asked about the most remarkable experiences of their journey - those that couldn't be captured through photos and videos.

Canadian astronaut Jeremy Hansen, who unlike the others was on his first space flight, answered the question.

He said the crew had many amazing experiences, but what kept grabbing his attention was the "depth of the galaxy" that he hadn't experienced before.

Stars "looked like you could tell where they are in 3D," he explained.

Hansen added that seeing the Moon and Earth from that perspective made him feel "small and powerless, yet powerful together."

3. Crew became 'best friends' while in space

Reid Wiseman described the mission as an "unbelievable adventure" and was full of praise for his three fellow crew members.

"We are just we are bonded forever. I mean, that's the closest four humans can be and not be a family," he says, adding that they came back as "best friends".

"Every single person on that crew lifted each other up the entire time," Wiseman added.

He also thanked Nasa and the crew that built the ship, as well as everyone who tuned in to watch the mission.

"Humans are just great people...what I have seen has brought me more joy and more hope for our future," Hansen said.

4. Getting used to being back on Earth isn't easy

The astronauts were asked if they have been dreaming of the Moon since coming home.

Christina Koch said she has been sleeping well, however it seems that there are some things which have taken a little longer to get use to again.

"Every time I've been waking up or in the first few days, I thought I was floating... and I had to convince myself I wasn't," she confessed.

She said she was "actually surprised" when she held up a shirt one day and it fell to the floor, instead of floating.

5. Their advice for future astronauts

After their amazing achievement, what advice did the four have for budding astronauts and the future Artemis crew who will land on the Moon?

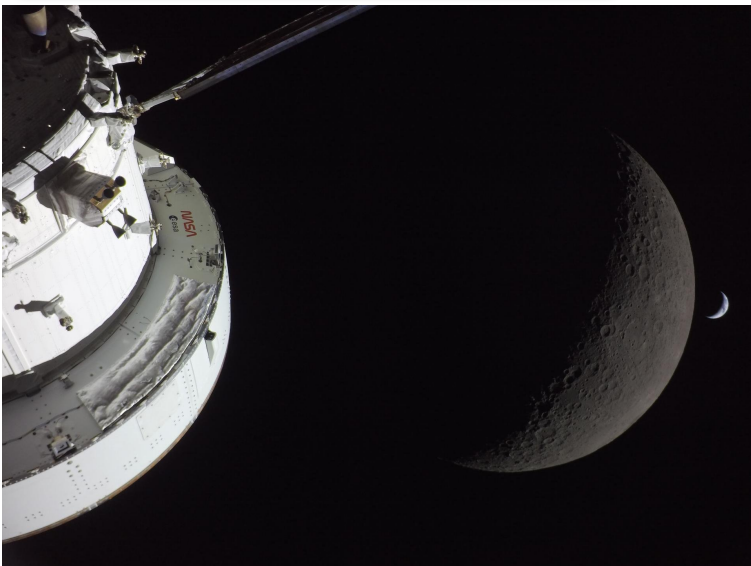
According to Reid Wiseman, "you have got to invest in each other" while Victor Glover added they need to "ask more questions".

Christina Koch said future astronauts to "remember you are part of a team" and to "say congratulations" to the whole team every day.

While Jeremy Hansen said that learning about your rocket is the key and that future astronauts should get to know the spacecraft really well.



Images from Artemis II



“A Stray SpaceX Rocket Will Smash Into the Moon at Mach 7 in August, Analyst Says”

“By Ellyn Lapointe” from <https://gizmodo.com/>

“When SpaceX’s Falcon 9 launched a pair of commercial lunar landers in January 2025, the rocket’s upper stage was supposed to return to Earth. Instead, it got stuck in a highly elliptical orbit, and an astronomer now says it’s going to hit the Moon.

Bill Gray, an independent orbital analyst and creator of the Project Pluto object-tracking software, used this program to analyze the upper stage’s orbit and predict its future path. His findings indicate that the rocket will crash into the lunar

surface at 5,400 miles per hour (8,700 kilometers per hour) at 2:44 a.m. ET on August 5. That’s seven times the speed of sound.

“It doesn’t present any danger to anyone, though it does highlight a certain carelessness about how leftover space hardware (space junk) is disposed of,” he wrote in a post on the Project Pluto website. SpaceX’s wayfaring rocket

On January 15, 2025, a Falcon 9 rocket launched from NASA’s Kennedy Space Center carrying Firefly Aerospace’s Blue Ghost lander and ispace’s Resilience lander. Both landers made it to the Moon, but Resilience crashed into the surface, bringing an early end to its mission. Blue Ghost successfully touched down and captured stunning footage of the Sun setting over the lunar horizon before powering down as planned. As for Falcon 9, the upper stage—the part that set the landers on a Moon-bound trajectory—failed to reenter the atmosphere after separating from its payloads. According to Gray, the rocket has had a few close passes by the Moon and Earth but has never come close enough for a possible impact. As of February, astronomers had accumulated 1,053 observations of it, he said.

These observations revealed that the rocket is circling Earth along a wide, lopsided orbit. It’s taking about 26 days to complete one trip around the planet, and at its closest point it only comes within 137,000 miles (220,000 km) of us. At its farthest, it’s about 310,000 miles (510,000 km) away, which puts it well within cislunar space.

“The orbit of the Moon and of this object, roughly speaking, intersect,” Gray said. “Usually, one goes through the intersection point while the other is someplace else. But on August 5, they’ll reach that point at the same time.”

Brace for impact

Based on his calculations, Gray said the upper stage should hit the lunar surface on the Moon’s near side, but just barely. By August, he expects to have accumulated enough data to significantly refine the impact point. It



could shift over to the far side, but that remains to be seen.

“By the time August 5 comes around, we will have a very exact idea of where and when the impact will occur, probably within a few dozen meters and a fraction of a second,” he said. “We will be collecting data almost right up to the time of impact.”

Even if it does hit the near side of the Moon, it’s unlikely we’ll be able to see the impact from Earth. In 2009, NASA deliberately rammed a rocket into the lunar surface to see if the impact kicked up ice, but according to Gray, observing telescopes were not able to see the crash.”

“To him, this Flacon 9 situation underscores the need to address Earth’s growing space-junk problem. Humans are launching more objects into space than ever before, with consequences for astronomy, air quality, and, in rare cases, human safety. Some objects that have managed to reenter Earth’s atmosphere without burning up during descent have crash-landed in populated areas—a few have even fallen onto people’s homes. Fortunately, this rocket’s crash landing on the Moon will not meaningfully damage the lunar surface, and as Gray said, it’s better to have space junk hit the Moon than the Earth. But even if the upper stage was on track to reenter Earth’s atmosphere, it would just burn up.

It will be fascinating to track this object’s journey over the next several months. Make sure you mark your calendar for the August 5 crash.”

Southwest Florida Astronomical Society Membership Minutes of April 2, 2026 at Calusa Planetarium and Zoom

President Risley called the meeting to order at 7:02PM and thanked the 24 members (14 present and 10 on Zoom) for attending and asked John MacLean to introduce the speaker. John introduced Carson Fuls, director of the Catalina Sky Survey based in Arizona. Carson holds a Bachelor of Science in Physics and a Master of Science in Natural Applied Sciences with a focus in Physics from Stephen F. Austin State University, and he is currently pursuing a doctorate in Planetary Sciences at the Lunar and Planetary Laboratory at the University of Arizona. Carson leads the Catalina Sky Survey, a NASA funded project of Near Earth Objects Observatory Program. The April News Letter has further information.

PROGRAM: Planetary Defense with the Catalina Sky Survey.. manuscripted for SWFAS April 2, 2026 by Carson Fuls. Carson defined that the Catalina Sky Survey (CSS) is a NASA funded project with the mission to discover and track near-Earth objects. Near Earth Objects (NEOs) are mostly asteroids with orbits that bring them close to Earth. There are 41,000 known NEOs with at least another 10,000 to be discovered. CSS began in 1998 with Steve Larson and currently operates with 5 telescopes per night viewing. Carson showed a photo of Jupiter with an asteroid hit the size of our Earth as Jupiter is the great magnet of asteroids given its density. Carson illustrated various asteroid hits on Earth; Chelyabinsk, Russia (2-15-13), Tunguska, Russia (6-30-1908), Barringer Meteor Crater, Arizona (50 million years BC) and the Cretaceous-Paleogene Impact (66 millennium). Carson illustrated the Near-Earth Asteroid Discovery Timeline, the CSS discoveries across the Solar system, the field of reflecting telescopes and the fields of view. He listed the CSS discovery pipeline. Carson asked for our members to volunteer in sharing the workload and he illustrated the workload and hours of time spent. Carson next presented the Daily Minor Planet, launched on May 16, 2023 with 11,000 volunteers have identified 6,000 unreported main-belt asteroids of which 5 were NEOs. Carson presented the DMP data flow procedures and concluded by again asking for our volunteer assistance by contacting www.Zooniverse.org. Carson answered many questions and was applauded several times and thanked by President Risley.

PAST OUTREACH EVENTS:

CHARLOTTE COUNTY:

Tom Segur stated that the Monthly Solar Observing Event at Ponce de Leon Park on March 7th was well attended, good viewing and a very busy day. Tom also stated that the FSW Moore Observatory March 20th viewing was well attended by 60-70 people and lasted until 10:30PM.

LEE COUNTY:

Brian Risley advised that the Seahawk Park Star Party on March 14th was well attended with clear skies and great viewing.

UPCOMING OUTREACH EVENTS:

CHARLOTTE COUNTY:

Tom Segur stated that the monthly Solar viewing event on April 4th at Gilchrist Park from 9AM until Noon. He also stated that the monthly FSW Moore Observatory event will take place on April 17th.

LEE COUNTY:

Brian Risley advised that there are two meetings on the same day of April 18th and he needs help to assist at the Calusa Nature Center Earth Day held from 10AM until 4PM wherein SWFAS mans a table with data regarding our society. Then he must travel to Cape Coral for the evening viewing at Seahawk Park Star Party. Brian asked that someone please volunteer.

OFFICER AND COMMITTEE REPORTS:

President Report: President Risley was asked what caused streaks in the sky, satellites or space stations. He responded that there are 10,000 satellites and so who knows what you were viewing. He further entertained discussion regarding the recently launched Artemis II craft and mission. Brian further advised that a 10" Meade has been offered our Society and if anyone wants it, get in touch with him as there is no more room in the storage unit to keep this. Canterbury School is starting an Astronomy group and is asking for us to provide assistance and speakers. President Risley asked the membership to please think this over and to contact him should you desire to assist. Maybe offer the 10" Meade to them.

Vice President Report: Vice President Jensen stated that the Website will be updated at a later date and that May and June Newsletter will be one as he will be on vacation. He further stated that 4 members met for the before meeting Social dinner, asked others to join, and advised that such will be suspended during the offseason not to meet again until December.

Secretary Report: Secretary Dannenhauer asked for a motion to approve his March 5th minutes. So moved by John MacLean, seconded by Mario Motta and passed without objection.

Treasurer Report: Treasurer MacLean stated that our beginning balance was \$5,586 with a closing balance of \$5,971. As of today we have listed 125 members with only 66 paid. John said that he will send out a letter of payment or cancel your membership shortly. Discussion was had, and all agreed that payment should have been by April 1st, but agreed that an extension to May 1st be granted. No motion was needed as such was previously approved by the officers.

Equipment Coordinator: Brian Risley stated that those who want to use the equipment ought to get in touch with him.

Program Coordinator: John MacLean advised that he and Dan have speakers committed until September.

Charlotte Director: Tom Segur advised that the Pegasus was being used and viewed on the monitor. Tom said it was used on the 4" refractor, while the 16" was using a regular eyepiece on the same object.

Adjourn: President Risley asked if there was any other questions, old or new business and for a motion to adjourn. So moved a 8:14PM by Mike Jensen and seconded by Mario Motta.....passed with loud approval and applause...

aAstrophotography Special Interest Group (SIG)



By Mike Jensen - Leader/Founder

Happy Galaxy Season!

I've been REALLY working on my knowledge and skill level at post processing of my images this year. I know a lot of the members are intimidated by post processing and by the daunting process of learning a new software pretty much written by a bunch of nerdy eggheads and astrophotographers who get no sleep anyway, BUT I bought an astro rig that requires it so I'm invested. Eventually I'll buy one of those new smart scopes, but I'll bet you a nickel that I'll still want to process the images in PixInsight (PI). I like to tinker I guess.

So I do use several tools, PixInsight, Photoshop and Topaz (Denoise and Sharpen). I try to let PixInsight do what it does and learn how to use it more efficiently, but I'm deeply rooted in Photoshop, so 99 and 44/100 percent of the time I layer the base image with the stars in Photoshop (PS). I then use PS to export as a jpg.

I've found a new(er) tool for stretching the images. Stretching in astrophotography is the essential non-linear post-processing technique of mapping dark, low-value pixel data from raw image files into a brighter, visible range. (Think Histogram if you're a photographer) It increases contrast and reveals faint details—like nebulosity or faint stars—hidden in the dark background, converting linear data into a viewable, non-linear image.

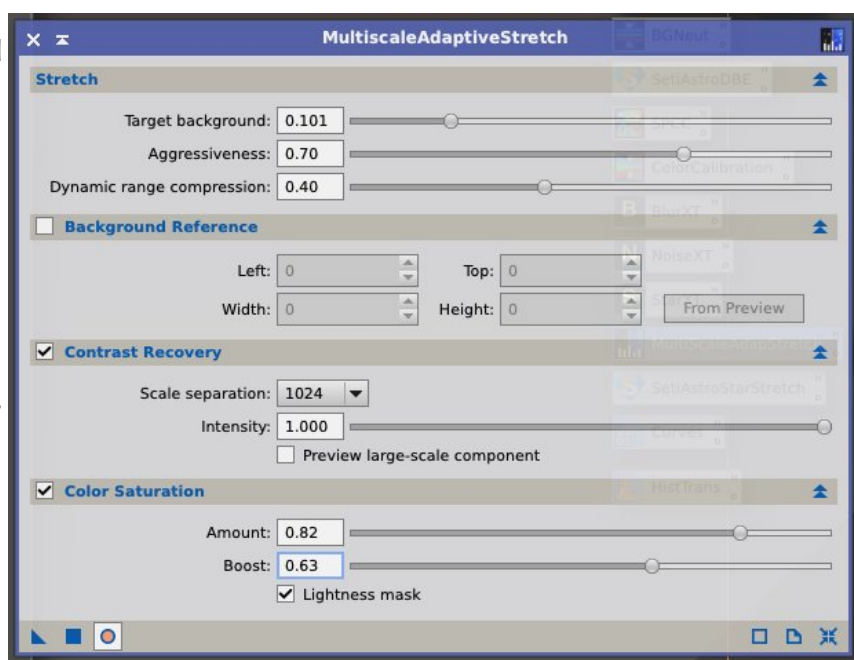
Linear data in astrophotography refers to the raw, unprocessed data captured directly by a sensor, where pixel brightness is directly proportional to the number of photons received. In this state, images look very dark, with data hidden in the shadows because the vast dynamic range has not yet been stretched, providing a true, unprocessed representation of the light intensity.

In the "Old Days" of astrophotography (2-5 years ago, yes it moves this fast) stretching your image was a real PITA, or you could say it was a pain in the butt. I mean it was seriously NOT FUN! Now, it's MUCH more manageable and much more fun. There are new tools out there. The ones I use the most are:

MultiscaleAdaptiveStretch MAS (remember nerdy eggheads), Seti Astro's Statistical Stretch and Star Stretch.

Another new one out is called Veralux, but in my opinion it's not as robust as MAS. Maybe I need to mess with the adjustments a bit more. Also, I've noticed that Veralux uses a fair amount of processor and RAM, and I've got a pretty good computer! Ok, on to the info...

The **MultiscaleAdaptiveStretch** (MAS) in PixInsight is an advanced, automatic, and multiscale-based stretching tool (available in recent versions/updates) that provides superior results to traditional histogram transformations, often preventing bloated stars and preserving core details. It effectively stretches images by identifying noise thresholds and applying non-linear adjustments to enhance faint structures.



Key Parameters for Using MAS

- Target Background: Defines the brightness of the sky background (0.1–0.2 is recommended). Higher values make the background brighter.
- Aggressiveness: Controls the shadows clipping point. Higher values (default is often fine, but can be raised) make the stretch more aggressive, boosting faint details.
- Dynamic Range Compression: Protects bright structures (like galactic cores) from burning out, resulting in better star profiles.
- Contrast Recovery (v1.1+): Restores contrast in stretched, faint objects to avoid a "washed out" look. Enabling this helps recover detail lost in strong stretches.

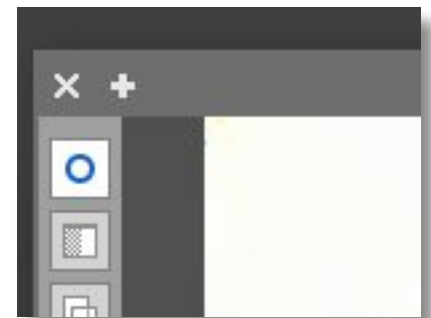
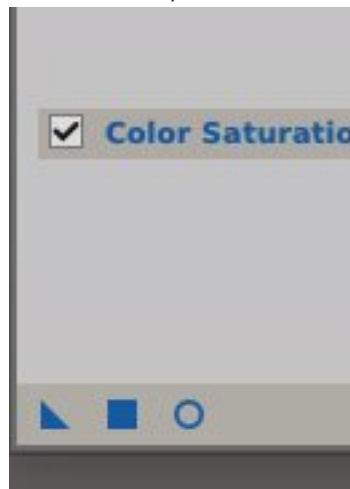
Step-by-Step Usage Guide - MAS (Generated by AI)

1. Open the Tool: Locate the tool in Process > IntensityTransformation > MultiscaleAdaptiveStretch.
2. Use Real-time Preview: Always open a real-time preview (circle icon) to see changes instantly, as MAS can act differently on different images.
3. Define Background (Optional but Recommended): Use the "Background Reference" feature in version 1.1+ to select a region of your image with minimal nebulosity/stars. This allows the tool to calculate the stretch based on true background noise, rather than the average image brightness, preventing overly dark results.
4. Initial Adjustment: Start with the default settings. Adjust the Target Background until the background sky looks natural.
5. Fine-tune Aggressiveness: Increase Aggressiveness to bring out faint details, watching the histogram/preview to ensure background noise isn't raised too high.
6. Compress Dynamic Range: If stars are bloating or core is too bright, increase the Dynamic Range Compression.
- 7 Apply: Apply the instance (triangle) to the main image.

My settings (set here for galaxies):

Target Background - .10. I leave everything else at their default setting EXCEPT for Color Saturation. Here's a chance to get a bit of a headstart on bringing out the colors if you like. I typically bump up the Amount to .82 and the Boost to .63. This tool usually runs pretty fast (unless you're on a laptop) so it's easy to just run it over if you don't like the settings you've chosen.

Oh, a word of warning. I REALLY recommend using the Real Time Preview setting. The Real-Time Preview (RTP) in PixInsight's Multiscale Adaptive Stretch (MAS) tool is an interactive window that shows immediate visual updates, allowing users to fine-tune stretch parameters (like target background and aggressiveness) without waiting for a full process rendering. It enables instantaneous viewing of how multiscale adjustments affect stars and background noise.



You turn it on by clicking the little circle as seen in the left image above. THEN, you MUST click the circle in the top left corner of the tool shown in the right image above.

Remember, THIS IS AN IMPROVEMENT to how it USED to be!

Ok, let's look at the results in my image of M81/M82.



Above LEFT is the BEFORE image. I've run this image through about 8 - 10 processes in PI before that point. Above RIGHT is the AFTER image. After the stretch, and after some other adjustments in Curves and the Histogram Transformation Tool.

REMEMBER THIS! I'm a big one on saving different iterations of the image as I progress through the processing. It's only hard drive space, and I typically will Zip or Compress a lot of the work once I'm done. Also, I permanently delete the Calibrated, Registered and Log folders. I don't need them. And, I Zip or Compress my Lights. My camera uses about 35mb per image so that can add up to a lot of hard drive space.

Ok, on to the photos....



M81/82 - by Mike Jensen

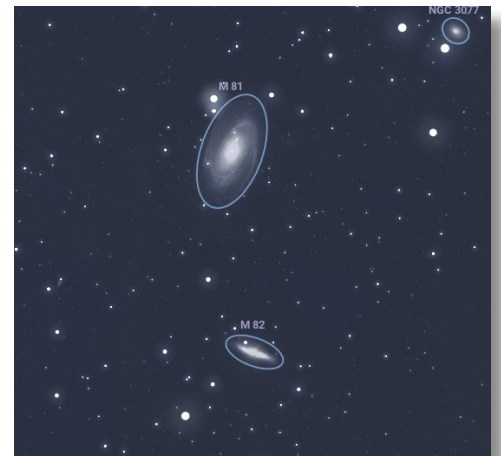
Brand/Type of Telescope/Lens: Explore Scientific CF 127 (Refractor)

Mount: Sky Watcher EQ6 R Pro

Exposures: 120 x 60 secs each of R, G, B (6 Hours), plus 15 x 300 secs each R,G,B (3.75 hours), plus 60 x 300 of Ha (5 hours)

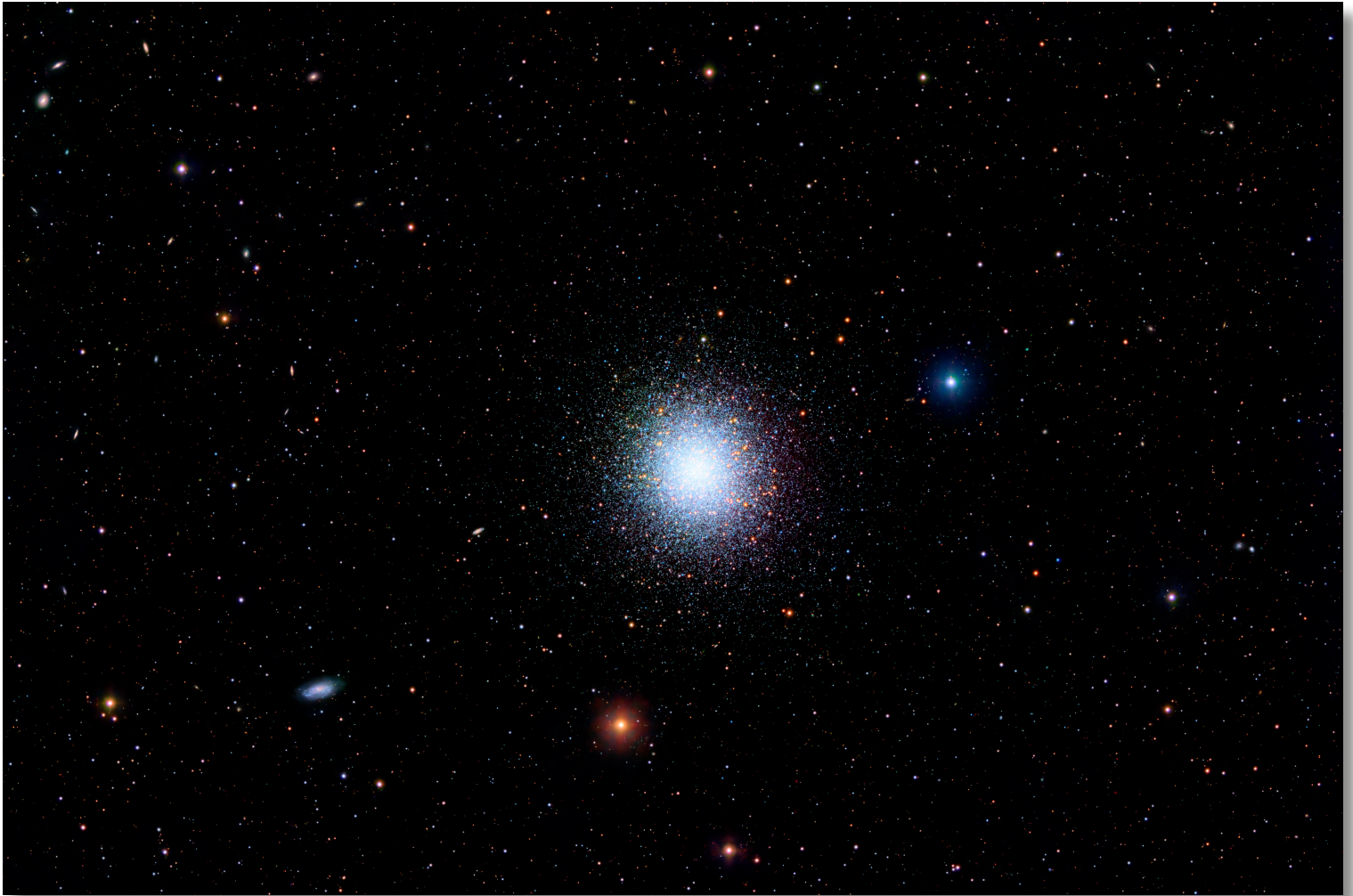
Processing Software: Pixinsight

Here's the story: This is a GREAT target! I first tried it in 2022. The image was meh, ok! It wan't framed well and the processing was not great. This time I shot for about 15 hours and ended up with (I think) a pretty nice image. The key for many of these "close" galaxies is the shoot the Ha (and LUM if you can).



M81 is called Bode's galaxy (he discovered it not Dick Cogswell). M82 is called the Cigar galaxy for obvious reasons. I've seen them both positioned left and right, so I looked it up, and if you look at them in Stellarium, they are vertical. Anyway, mine's staying this way!. Both galaxies are about 12 million light years from Earth, and about 150,000 light years from each other which is why M82 looks like it does, gravitational interaction!

As a side note, in processing this image I used masks in PixInsight to help me work some digital magic on the galaxies and the background. When you shoot galaxies, there's not a lot of stars near them as they've all been pulled into the galaxy, so I wanted a real nice dark background to show off the stars. Enjoy!



M13 - Hercules Globular Cluster - by Mike Jensen

Brand/Type of Telescope/Lens: Explore Scientific CF 127 (Refractor)

Mount: Sky Watcher EQ6 R Pro

Exposures: 220 x 60 secs each of R, G, B (11 Hours)

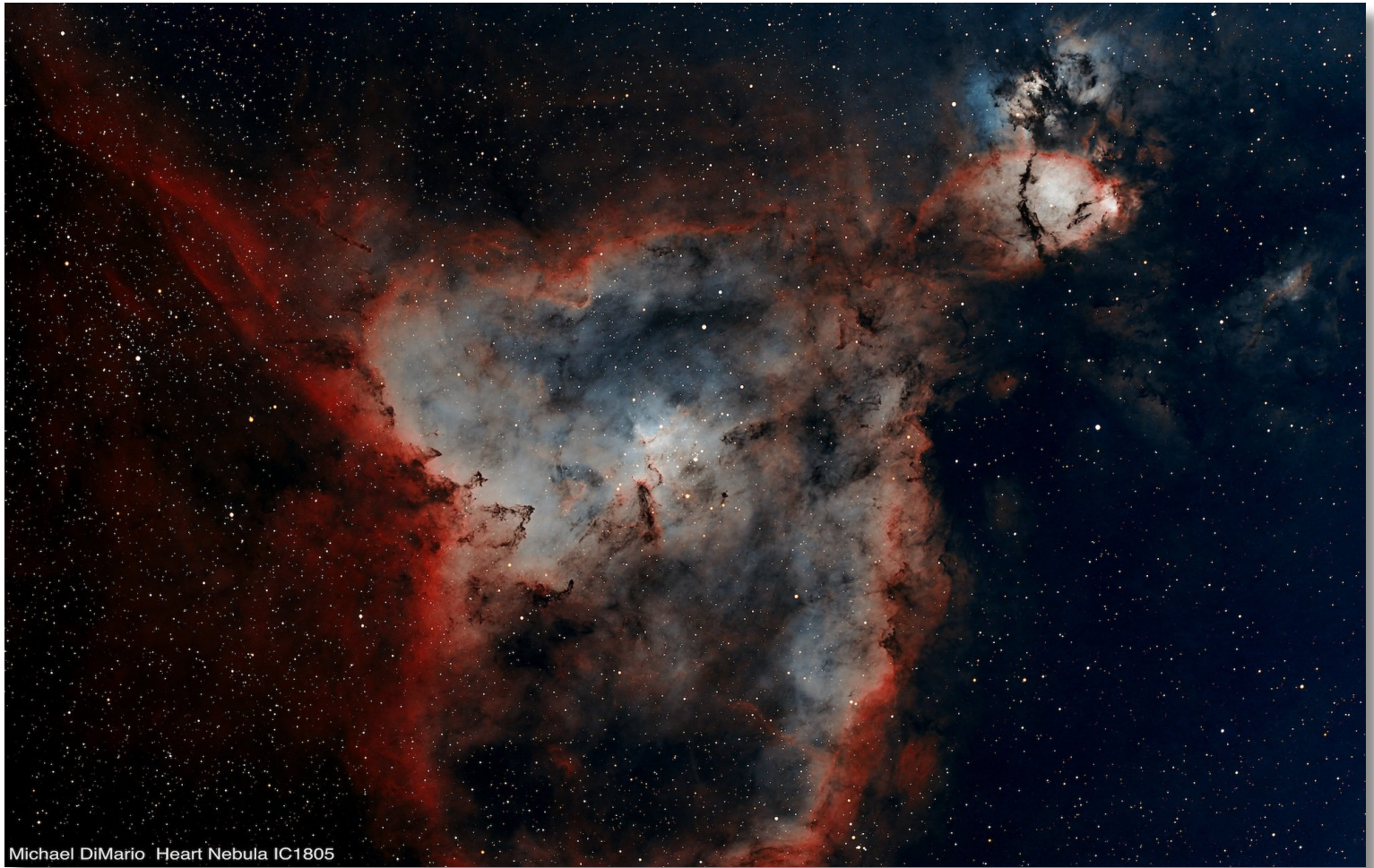
Processing Software: Pixinsight

Here's the story: I've had this on my list for awhile. It will most likely be a work in progress this summer but I wanted to post it to let everyone know what a GREAT target it is! If you look at this image on my Astrobin page at <https://app.astrobin.com/u/mcjensen?i=no15vp> and hold your mouse over the image you will see the plate solve of the image. I believe I counted at least another nine galaxies and more than a few seriously huge stars.

So, what's a globular cluster. First, go back and read my article in last month's newsletter about star clusters. Essentially, a star cluster is a group of stars held together by mutual gravitational attraction.

Processing, I tried several methods to get where I wanted. Where I settled was a raw image of Red, Green, Blue with gradient repaired by PI's Gradient Correction tool, then BG Neutralization, then Graxpert and finally SPCC for the star color. Stretched with MultiScaleAdaptiveStretch and final color and darkness by Curves and Histogram Transformation.

This target peaks in the sky in June so you have a LOT of time to get some imaging done on it (unless we get the real rainy season).



Michael DiMario Heart Nebula IC1805

Heart and Fish Head Nebulas by Michael DiMario

Brand/Type of Telescope/Lens: Takahashi FSQ85EDX/85mm/f5.4/455mm

Mount: ZWO AM5N

Exposures: Camera ASI2600mm Pro and Antlia 2.5nm Ha and O3 filters

Imaged over 5 nights:

Ha 60x180", 60x180" for 6h

O3 14x420", 18x360", 55x180" for 6h11'

Total: 207 images for 12 h 11'

Processing Software: PixInsight

Here's the story: Heart and Fish Head Nebulas (Fish Head is the nebula upper right) or known as IC 1805 and IC 1795 respectively are located in the constellation Cassiopeia. The Heart Nebula is located about 7,500 light years from Earth while the Fish Head Nebula is about 6,000 light years. Both nebulas are star nurseries due to the amount of dust and gas in the region. The region has very bright luminance due to the amount of ultraviolet light emitted by very young hot stars.

Decision was made to image these nebulas due to the amount of hydrogen (Ha) and oxygen (O3) that could be displayed, in addition to its availability in the early night sky. However, long integration times were needed due to the 2.5nm filters and the required longer exposure times for O3 signal.



NGC 4651 The Umbrella Galaxy by Dick Cogswell

Brand/Type of Telescope/Lens: Planewave CDK14

Mount: AP1100

Exposures: 363 5-minute exposures, LRGBHa

Processing Software: APP, PI PS

Here's the story: NGC 4651 is a spiral galaxy located in the constellation of Coma Berenices that can be seen with amateur telescopes, at a distance not well determined that ranges from 35 million light years to 72 million light years. It was discovered by German-British astronomer William Herschel on 30 December 1783.

This member of the Virgo Cluster is located on its outskirts in an area of the cluster known for particularly heavy rain. As a result, the galaxy keeps an umbrella up to keep itself dry. The umbrella-shaped structure extends from its disk and is composed of stellar streams extending 100,000 light years beyond the disc. These are the remnants of a much smaller galaxy that was torn apart by NGC 4651's tidal forces, and the remaining stars will likely fall back and become part of a combined larger galaxy over the next few million years. In the mean time, it is expected to stay dry for the next few million years. After that, it may become a soaked galaxy. Studies using radio telescopes of the distribution of its neutral hydrogen show distortions on NGC 4651's outer regions and a gas clump associated with a dwarf galaxy that may have been born in the event that produced the mentioned stellar streams.



M95 by Dick Cogswell

Brand/Type of Telescope/Lens: Planewave CDK14

Mount: AP1100AE

Exposures: 260 5-minute exposures LRGBHa

Processing Software: APP, PI, PS

Here's the story: M95 or NGC 3351, is a very nice barred spiral galaxy about 33 million light-years away in the constellation Leo. It was discovered by Pierre Méchain in 1781, and catalogued by compatriot Charles Messier four days later. Pierre was lucky, and was very precise in his observations, whereas Charles was messier.

The galaxy has a morphological classification of SB(r)b, with the SBb notation indicating it is a barred spiral with arms that are intermediate on the scale from tightly to loosely wound, and an "(r)" meaning an inner ring surrounds the bar. The latter is a ring-shaped, circumnuclear star-forming region with a diameter of approximately 70,000 light-years and a thickness of around 2,400 light-years. The spiral structure extends outward from the ring. M95 consists of around 40 billion stars, far fewer than the Milky Way.

Its ring structure is about $3.5 \times 10^8 M_{\odot}$ (solar masses) in molecular gas and yields a star formation rate of $0.38 M_{\odot} \text{ yr}^{-1}$. The star formation is occurring in at least five regions with diameters between 100 and 150 pc that are composed of several star clusters ranging in size from 1.7 to 4.9 pc. These individual clusters contain $(1.8\text{--}8.7) \times 10^6 M_{\odot}$ of stars, and may be on the path to forming globular clusters.

M95 is one of several galaxies within the M96 Group, a group of galaxies in the constellation Leo, the other Messier objects of which are M96 and M105. (M95 has never been pleased that the group was named after M96 instead of it). A supernova was discovered in it in 2012, although no one in the SIG group noticed.

This image was made from 260 5-minute exposures in LRGBHa. So 21.6 hours of integration, with an additional 15 hours of integration not done out of laziness.

M 51 and NGC 5195 by Reggie Blackmon

Brand/Type of Telescope/Lens: Zwo/Seestar S50/50 mm/
250mm

Mount: Sky-Watcher Star Adventurer Lat Eq Base

Exposures: 9 hrs Integration (30s and 10s subs)

Processing Software: Siril/SAS Pro

Here's the story: Located approximately 23 million light-years away in the constellation Canes Venatici, this pair is locked in a gravitational dance that has triggered intense star formation. The interaction leads to compression of hydrogen gas which, in turn, leads to formation of stellar nurseries. The two galaxies will eventually merge, but it will take another few passes for the merger to be complete. The blue color can be attributed to hot, young stars while the yellow color is from older stars. There is also Integrated Flux Nebulae (IFN) present in the image.

I was able to add some more data to the original 3 hrs I captured around the same time last year.





IC 405/HIP by Reggie Blackmon

Brand/Type of Telescope/Lens: Askar/75Q quintuplet/75mm/405mm

Mount: Sky-Watcher HEQ5 Pro

Exposures:

118 x 300s

ASI 2600 MC

Processing Software: Siril/GraXpert/SAS Pro

Here's the story: At the very heart of this vast cloud of gas and dust rages a true celestial renegade: the mighty star AE Aurigae. As AE Aurigae now ploughs through this cloud, its powerful ultraviolet radiation energizes the surrounding hydrogen gas, causing it to glow with a brilliant, deep red light—the very emission that gives the nebula its "flaming" appearance. But the star's influence doesn't stop there. Patches of dense interstellar dust near the star catch its intense light, scattering the blue wavelengths more effectively than others. This creates a mesmerizing blue haze.

**M 82 - Cigar Galaxy
(A Galaxy in Turmoil)
by Reggie Blackmon**

Brand/Type of Telescope/Lens: Askar/
75Q/75mm/405mm

Mount: Sky-Watcher HEQ5 Pro

Exposures:

398x150s - IR/CUT

50x300s - Duo Narrowband

ASI 2600 MC

Processing Software: Siril/GraXpert/
SAS Pro

Here's the story: Located roughly 12 million light-years away, M82 is currently undergoing a period of star formation 10 times faster than our own Milky Way. This image captures the physical consequences of that energy—a galactic-scale "blowout" driven by the collective power of thousands of young, massive stars.

The processing focused on balancing the high-energy H-alpha signal with the delicate dust structures that crisscross the galaxy's bright interior using continuum subtraction.





Markarian's Chain by Reggie Blackmon

Brand/Type of Telescope/Lens: Askar/75Q/75mm/405mm

Mount: Sky-Watcher HEQ5 Pro

Exposures:

941x150s

80x300s

Processing Software: Siril/SAS Pro

Here's the story: While I kept the wide-field context of the "Chain" intact, I applied a light crop to draw the viewer's eye toward "The Eyes" (NGC 4435 and NGC 4438). This framing highlights the chaotic, distorted disk of NGC 4438—a stunning result of its high-speed encounter with its neighbor.



M 46 and NGC 2438 by Reggie Blackmon

Brand/Type of Telescope/Lens: Zwo/Seestar S50/50mm/405mm

Mount: Sky-Watcher Star Adventurer Lat EQ Base

Exposures: 163x30s IR/CUT

Processing Software: Siril and SAS Pro

Here's the story:M 46 is a rich, dense open cluster in Puppis, containing roughly 500 stars. What makes this image a "two-for-one" special is the planetary nebula NGC 2438 appearing to sit within the cluster. While it looks like a member, the nebula is actually a foreground object, creating a stunning visual contrast between the aging gas shell and the young blue stars of the cluster.



M3 - A Relic of the Early Universe by Reggie Blackmon

Brand/Type of Telescope/Lens: Zwo/Seestar S50/50mm/250mm

Mount: Sky-Watcher Star Adventurer

Exposures: 540x30s IR/CUT

Processing Software: Siril and SAS Pro

Here's the story: At approximately 11.4 billion years old, M3 is a literal fossil of the Milky Way's formation. This image captures the classic "snowball" structure, transitioning from a chaotic, packed center to a delicate, expansive periphery. This image showcases M3 as it sits 33,000 light-years away in the galactic halo. The clean, background reveals the immense gravitational reach of the cluster, with stars trailing off into the dark vacuum.

