



The Eyepiece

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



Editor - Mike Jensen

Hi Everyone!

Well the Astrophotographers have been imaging like crazy so we have an astonishing number of amazing astro photos this month.

If you notice any goofs or typos in this issue it's because I had to finish it a few weeks early before I headed out on a bucket list trip to Antarctica! Apologies in advance.

Kudos to John MacLean our Treasurer and Program Director. We had some last minute changes for our March program and John very quickly and professionally filled the gap. So, we will have a great planetarium program supplied by Heather Preston in March, and then we'll resume our normal-

ly scheduled speakers (see pages 3-4).

We have finally procured a new computer (Yay!) so Brian and Tom have been working to ready it for use. Thanks to the both of them (plus John Udart) for their technical skills.

I'd like to point out the article on page 6 on Astronomy for Mere Mortals. This is a doc written and provided by the Astronomical League and it looks AWESOME!

The text assumes that this information may be conveyed as a single course, or as two courses of study: Solar System Astronomy, and Stars and Galaxies Astronomy.

Rather than conventional chapters, the material is organized around Components. If you learn the material of the entire text, then you will have a complete picture of the universe. See page 6.

The Horsehead and Flame Nebulae By John Udart

Table of Contents

Club Officers & Positions	2
Monthly Meetings	2
President's Report	3
GUEST SPEAKER PRESENTATIONS SERIES	3
Upcoming Speakers	4
The Astronomical League Report	5
Astronomy for Mere Mortals - An Introductory Astronomy Text	6
Astro Sig Schedule	7
2024	7
The Astrophotography SIG	7
What's Going On in the SIG Group?	7
PixInsight Announces New Image Blend Script	21
Webb Detects Earliest Black Hole	22
Webb Shows Early Galaxies Looked Like Pool Noodles	24
Could Titan Have Floating Blobs of Organic Solids?	26
Sky Chart	27
Meeting Minutes	29

Did You Know?

In 1633 Galileo was charged with heliocentrism, the astronomical model in which the Earth and planets revolve around the Sun.

What????!!

Club Officers & Positions

President/Equipment
Brian Risley
swfaspres@gmail.com
239-464-0366

Vice President/
Newsletter/Website/Astro SIG
Mike Jensen
info@jensenone.com
913-304-0495

Secretary
Dan Dannenhauer
gawomp@aol.com
239-850-7111

Treasurer/AL Coordinator
John MacLean
john.maclean.arcs1969@gmail.com
239-707-3365

Charlotte Event Coordinators
Tony Heiner
verahei@aol.com
941-457-9700

Thomas Segur
tsegur479@comcast.net
941-249-8726

Big Cypress Viewing Coordinator
Mike Jensen
info@jensenone.com
913-304-0495

FSW Punta Gorda Moore Observatory
Director Thomas Segur
tsegur479@comcast.net
941-249-8726

Club Librarian
Maria Berni
239-940-2935

Club Historian
Danny Secary
asecary@gmail.com
239-470-4764

Calusa Nature Center Planetarium Direc-
tor Heather Preston
heather@calusanature.org
239-275-3435

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

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

Mar. 7, 2024
April 4, 2024
May 2, 2024

Brian will be emailing out the
Zoom link. See next page for in-
structions.

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:

- 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

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



President's Report

Brian Risley - President

I would like to thank Joe Dermody for coming out to STEMtastic on the 10th. Sun was great, clouds stayed away until the last hour.

Don't forget that March 8th is the Rotary Park Star Party in Cape Coral. This is at the south end of Pelican Blvd in South Cape Coral. We usually have several hundred show up so we can use all the help we can get.

I will bring multiple scopes so even if you don't have one, we can still use you to man one of the extra ones. Usually start setting up by 5:30 to the east of the main building. If setting up you can come through the gate and park up on the hill. We do have AC if needed (Bring some cords).

We are looking to have a new Zoom account setup for this meeting. I will email the club the zoom link well before the meeting. If you need the link, contact me at least the day before the meeting by email at SWFASZOOM@gmail.com with Zoom Link in the subject and I will reply with it.

Brian



GUEST SPEAKER PRESENTATIONS SERIES

Here's our lineup for the "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.:

Mar 7, 2024

CNCP Planetarium Presentation

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.

May 2, 2024

Nico Carver talk on Astrophotography

Upcoming Speakers

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.

Astrophotography by Nico Carver

Presented May 2, 2024

Nico Carver is a well known personality in the astrophotography world. With over 166 videos and 18 million views, his [YouTube channel](#) is VERY well watched and he hosts a number of other astrophotography tutorial and discussion venues. He states he tends to focus on education for beginners but as the channel has grown he's moved in to more advanced topics and is now testing new gear for the product companies.



Patreon

patreon.com/nebulaphotos

Discord

discord.gg/nebulaphotos

Website

nebulaphotos.com

Instagram

instagram.com/nebulaphotosdotcom

The Astronomical League Report



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](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

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 Open Cluster Observing Program

Last month we covered the Globular Cluster observing program. The League also supports an Open Cluster program with the goal of having the observing complete a challenging observing program while also learning the details of the Trumpler Open Cluster classification system.

There are two levels of awards:

Basic Program

- Observe any 100 of the 125 Open Clusters on the list
- Sketch any 25 of the 100 Open Clusters observed
- Classify all 100 observed clusters under the Trumpler system

Advanced Program

- Observe all 125 of the Open Clusters on the list
- Sketch any 50 of the 125 Open Clusters observed
- Classify all 125 observed clusters under the Trumpler system

For either level, all observing techniques can be used including Go-To, digital setting circles, and star-hopping, etc. To observe all detail possible, The Program Coordinator recommends a minimum aperture of 15 inches! The Program Coordinator successfully completed the advanced program using an 8 inch instrument, however. The "Open Star Clusters – A Guide for the Open Star Clusters Observing Program" pdf document is included on the website. This document provides the program requirements along with detailed instructions for assigning the correct Trumpler designation and also includes the listing of the 125 objects. The list was compiled from over 20 specialist catalogs along with the well-known Messier and NGC listings. The list of 125 targets includes 9 Messier List objects and 54 which are included in the NGC catalog.

Astronomy for Mere Mortals - An Introductory Astronomy Text

Available in PDF format, FREE from the Astronomical League

[Click here to download this amazing resource.](#)

The text assumes that this information may be conveyed as a single course, or as two courses of study: Solar System Astronomy, and Stars and Galaxies Astronomy.

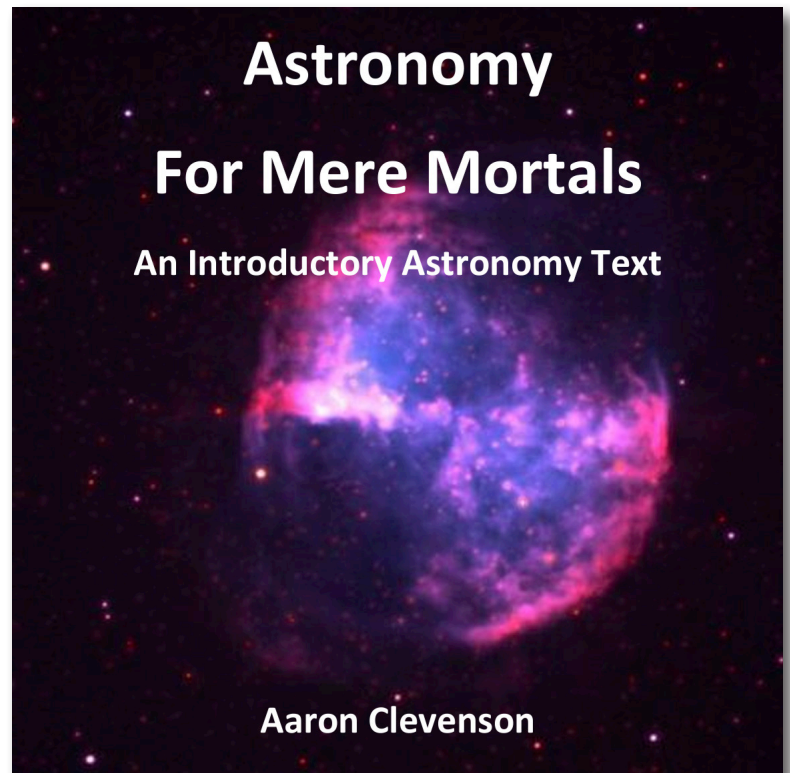
Rather than conventional chapters, the material is organized around Components. If you learn the material of the entire text, then you will have a complete picture of the universe.

If you are learning the material as two courses, there are some Components that are fundamental to both courses and are part of both courses, Components 1 through 35 and components 96 through 102. These are the Basics, History, Measurements, the Sun, and Cosmology.

- Solar System Astronomy includes: Components 1 through 102
- Stars and Galaxies Astronomy includes: Components 1 through 35 and 96 through 191

The courses have also been broken up into teaching units to make the material manageable. The Solar System Astronomy Course has four teaching units, and the Stars and Galaxies Astronomy Course has five teaching units due to a larger amount of content. The first two units are identical when taught as two separate courses.

Read more in the pdf document.



Astro Sig Schedule 2024

All Meetings at 6:30pm

March 19th
April 16
May 21

ASTRO SIG MEETING ZOOM LINK

<https://us02web.zoom.us/j/86238788613?pwd=aHhKa-jluQ2hNejl4YVFyczIxM1R4QT09>

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

There are as many options to talk about at one of our SIG meetings as there are ways to photograph a nebula!

Everyone's got a bit of a different approach, and they are all working well! From Phil Jansen's DSLR's on telescopes to John Udart & Scott Cruzen using the ZWO533 OSC. Ray is using a 2600, and so is Dick while I'm using a 1600 mono.

This season (and maybe this year) may be the year (or area) of the OSC, or One Shot Color camera approach. Essentially it's a dedicated, cooled astrophotography camera that shoots full color rather than shooting B/W through certain filters to give you a certain color (called Mono). Mono takes longer, much longer, but gives you a bit of a more detailed image, BUT there's something to be said for speed when you only have a short amount of time to get your images, the way it's been this winter, and the way the Summer's normally are.

Ok, that's my quick take on the signs (or cameras) of the times.

I hope you can join us at our next meeting.



NGC2841 unbarred spiral galaxy in Ursa Major by Scott Cruzen.

NGC2841 is a flocculent spiral, which means it is patchy and doesn't have distinct arms.

Brand/Type of Telescope/Lens: Ioptron 200mm F8 Ritchey-Cretien

Mount: SkyWatcher EQ6-R Pro, ASIAir Plus

Exposures: 80 x 180sec subs

ASI533MC Pro camera

Optolong UV/IR filter

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



IC342 by Scott Cruzen

Spiral Galaxy in Camelopardalis, referred to as the “Hidden Galaxy” because there is a lot of dust obscuring it. It’s reported that if it weren’t for the dust, IC342 would be a naked eye object.

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: 464 x 90 sec subs with ASI533MC Pro camera with Optolong UV/IR filter

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



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 2403 by Dick Cogswell

Brand/Type of Telescope/Lens: C-14

Mount: AP1100

Exposures: 58 RGB

Processing Software: PI, PS, TDN



Comet 62P/Tsuchinsham by Mike Jensen

Brand/Type of Telescope/Lens: ES127 with .7 Field Flatten (698 Focal Length)

Mount: SkyWatcher EQ6-R Pro, ASIAir Plus

Exposures: 6x300 secs of each Red, Green Blue channels = 90 minutes

Processing Software: PixInsight, Photoshop

This is a "Bonus Image". Usually in a normal night I'll pick out a primary target, and there is frequently either not enough night, or not enough target, meaning the target can set before I'm done getting data. SO, I select a 2nd target and try to get some data from it in hopes of getting enough data at some point to assemble a publishable image. This one was easy peasy! As my primary target set over the house, I had noticed in planning that Comet 62P was peaking in the East, Perfect! I programed my mount to move to the East at 4am and start shooting. This is the result! Yippie. I love the fact that even though the comet is moving away from us, it is so vivid in color! I also love the fact that I was able to image several galaxies, I counted at least three!



NGC2264 aka The Cone Nebula and the Christmas Tree Cluster by Mike Jensen

Brand/Type of Telescope/Lens: ES127 with .7 Field Flatten (698 Focal Length)

Mount: SkyWatcher EQ6-R Pro, ASIAir Plus

Exposures: 109x300 secs of each Red, Green & Blue channels plus a HUGE amount of Ha

Processing Software: PixInsight, Photoshop



NGC 5906 by Dick Cogswell

Brand/Type of Telescope/Lens: C-14

Mount: AP1100

Exposures: 54 LRGBHa

Processing Software: APP, BXT,GXT,PS,TDN



Rosette Nebula C49 (with SIRIL) by Ray Bratton

Brand/Type of Telescope/Lens: William Optics Zenithstar 61, 360mm, 0°C, 100G, ZWO ASI2600MC DUO, ASI AIR Plus

Mount: EQ6R Pro

Exposures: 60 120second (2 hours) with ZWO Duo filter

Processing Software: SIRIL, PS RAW, Topaz DeNOISE



The Horsehead Nebula by John Udart

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

Mount: Sky-Watcher EQ6-R Pro

Exposures: 31x240s (OSC Optolong L-eXtreme), 224x180s (OSC Optolong L-Pro), total integration time: 13.25 hours.

Processing Software: PixInsight



NGC 3718 by Dick Cogswell

Brand/Type of Telescope/Lens: C-14 Edge at 3900mm f/l

Mount: AP1100

Exposures: 154 4-minute subs in LRGBHa

Processing Software: APP, BXT, TDN, GXT, PS



M 81 by Dick Cogswell

Brand/Type of Telescope/Lens: C-14 Edge at 3900mm

Mount: AP1100

Exposures: 160 4-minute exposures in LRGBHa

Processing Software: APP, BXT,GXT, TDN, PS

M81 is always imaged in a wide field with M82, but I think it is a beautiful grand design spiral that, like starlets everywhere, deserves its own close-up.

We all know M 81 was first discovered by Johann Elert Bode on December 31, 1774-- New Year's Eve, after heavy drinking which didn't bode well-- and thus the nickname "Bode's Galaxy". In 1779, Pierre Méchain and Charles Messier stole it from him and listed it in the Messier Catalogue.

M 81 is the largest galaxy in the M81 Group, a group of 34 in Ursa Major. At approximately 11.7 million light years from the Earth, it makes this group and the Local Group, containing the Milky Way, relative neighbors in the Virgo Supercluster.



Tiger's Eye Galaxy NGC 2841 by Dick Cogswell

Brand/Type of Telescope/Lens: C-14

Mount: AP1100

Exposures: 93 4-minute exposures in LRGB

Processing Software: PI,PS,BXT,TDN



NGC2403 Spiral Galaxy in Camelopardalis. An member of the M81 group, NGC2403 has numerous HII star forming regions, similar to M33. 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: ASI533MC Pro imaging camera. 300 x 240sec broadband subs= 20 hours integration

Plus 149 x 240sec Ha subs = 10 hours integration

30 hours total exposure

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

PixInsight Announces New Image Blend Script

by Mike Jensen

Through YouTube and Social Media Adam Block has again announced another script he has helped create with the partnership of Mike Cranfield. Adam provided user experience input and Mike wrote the code.

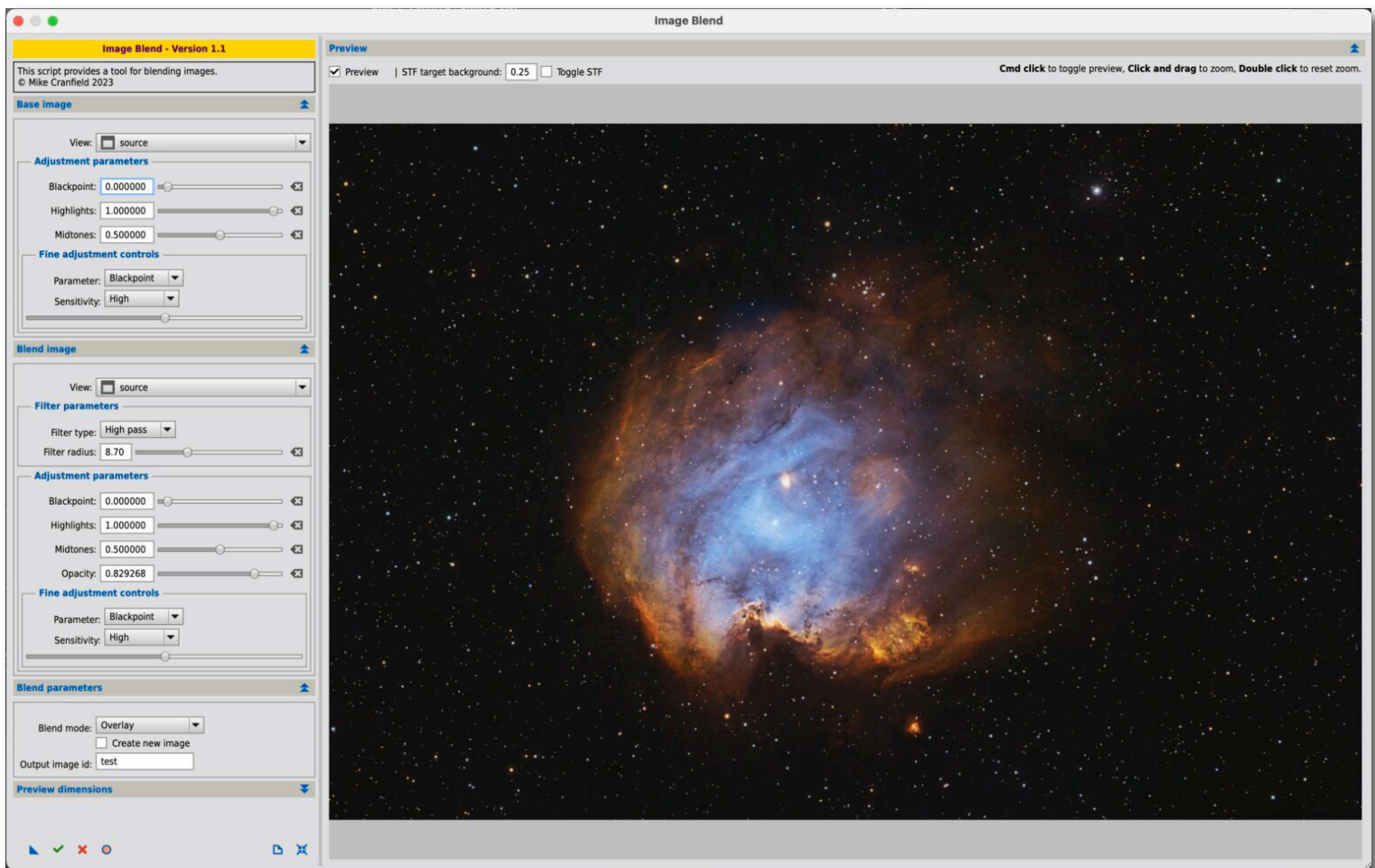
ImageBlend

Repository address:

<https://www.cosmicphotons.com/pi-scripts/imageblend/>

The ImageBlend script allows images to be blended together using a range of blending methods. It also allows you to apply a stretch to the constituent images so you can balance the relative pixel intensities to your liking. A filter (blur or high pass) can be applied to the blend image and its opacity can be adjusted. This brings into PixInsight, much of the functionality that some users have sought by exporting images out to other image processing software. There is full documentation available from within the script.

After installation the script can be found in Script>Utilities.



Here's the link to the tutorial on Adam Block's YouTube channel. <https://youtu.be/j14lPwcNeeo?si=8lNADhd-nOVIOL5DU>

Webb Detects Earliest Black Hole

It's really bit for its age

[From NPR/NASA - Ari Daniel](#)

When the Hubble Space Telescope first spotted the galaxy GN-z11 in 2016, it was the most distant galaxy scientists had ever identified. It was ancient, formed 13.4 billion years ago — a mere 400 million years after the Big Bang.

But while GN-z11's record has since been broken, the galaxy remains something of a puzzle. For such an old and compact galaxy, it was oddly luminous.

To be that bright, "it would have required a large number of stars packed in such a small volume," says Roberto Maiolino, an astrophysicist at the University of Cambridge. But, given how young the universe was, it would have been hard to make all those young, bright stars in that relatively short period of time.

Now, in a paper entitled "A small and vigorous black hole in the early Universe," published in [Nature](#), Maiolino and his colleagues have an alternative explanation for all that light: a supermassive black hole about 1.6 million times the mass of our Sun. The black hole itself doesn't emit any light — but all the material screaming toward it, Maiolino proposes, may well be hot and bright enough to produce the galaxy's intense radiance.

He says this is the earliest black hole ever detected, and its very existence calls into question where certain black holes come from and how they feed and grow.

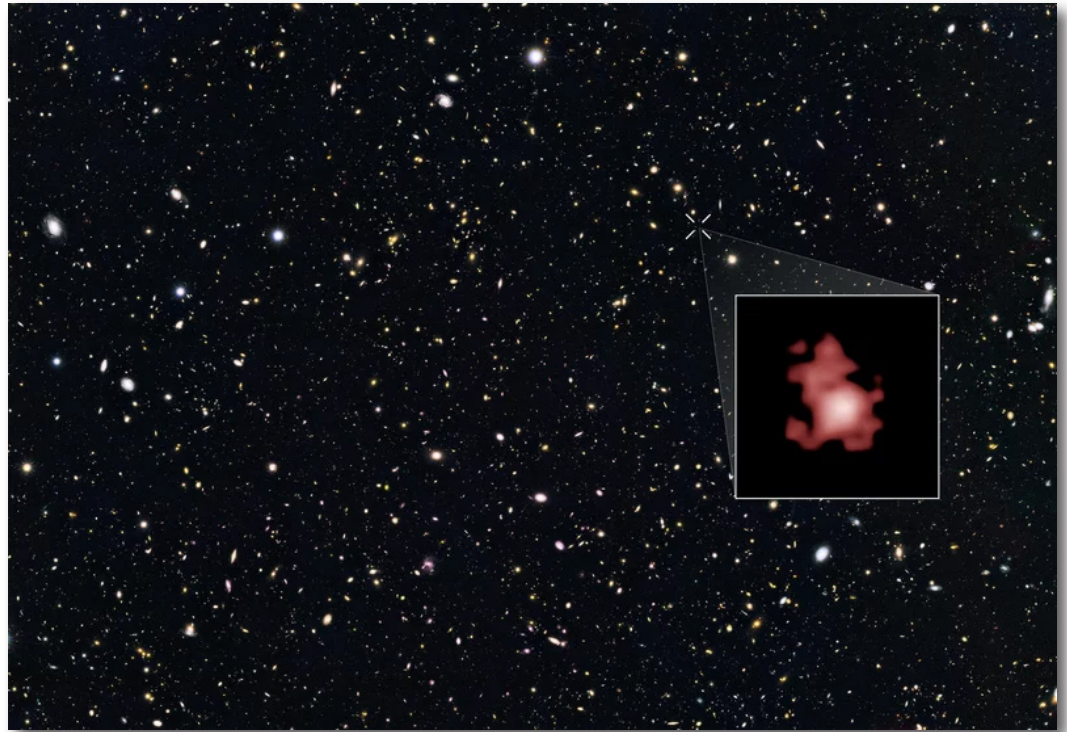
A new telescope reveals a remarkable rainbow

For the last twenty years, Maiolino has helped develop the James Webb Space Telescope that launched on Christmas Day 2021. In particular, he's part of the team that designed and built one of its key instruments called the near-infrared spectrometer.

"The instrument [is] responsible for splitting the light of galaxies and stars [into] their colors," he says. "So it's essentially the rainbow of the galaxy."

When Maiolino and his colleagues directed the powerful new telescope and their instrument at the galaxy known as GN-z11, the detail that came streaming back was stunning.

"It was super exciting," he recalls. "But at the beginning, we didn't really realize what it was telling us. The spectrum was quite puzzling."



So the team deepened their analysis and collected more data. And they speculated that the bright ultraviolet glow emanating from the distant galaxy was probably coming from huge amounts of gas swirling around and pouring into a black hole. The friction of all that gas being pulled inwards would have heated and lit it up, likely explaining why the galaxy is so luminous.

That's how Maiolino and his team figured out what they were dealing with — a supermassive black hole parked in the center of the galaxy.

"At that point," he says, "the excitement had doubled and got even more interesting, of course."

A special black hole

This wasn't just any black hole. First — assuming that the black hole started out small — it could be devouring matter at a ferocious rate. And it would have needed to do so to reach its massive size.

"This black hole is essentially eating the [equivalent of] an entire Sun every five years," says Maiolino. "It's actually much higher than we thought could be feasible for these black holes." Hence the word "vigorous" in the paper's title.

Second, the black hole is 1.6 million times the mass of our Sun, and it was in place just 400 million years after the dawn of the universe.

"It is essentially not possible to grow such a massive black hole so fast so early in the universe," Maiolino says. "Essentially, there is not enough time according to classical theories. So one has to invoke alternative scenarios."

Here's scenario one — rather than starting out small, perhaps supermassive black holes in the early universe were simply born big due to the collapse of vast clouds of primordial gas.

Scenario two is that maybe early stars collapsed to form a sea of smaller black holes, which could have then merged or swallowed matter way faster than we thought, causing the resulting black hole to grow quickly.

Or perhaps it's some combination of both.

In addition, it's possible that this black hole is harming the growth of the galaxy GN-z11. That's because black holes radiate energy as they feed. At such a high rate of feasting, this energy could sweep away the gas of the host galaxy. And since stars are made from gas, it could quench star formation, slowly strangling the galaxy. Not to mention that without gas, the black hole wouldn't have anything to feed on and it too would die.

"These authors have made a persuasive case that there is a black hole," says Priyava Natarajan, an astrophysicist at Yale University who wasn't involved in the study, "despite the fact that it has not been detected" using X-rays, which are the gold standard to test for the presence of a black hole.

Natarajan was part of a team that recently used both the new James Webb Space Telescope and X-ray data from the Chandra X-Ray Observatory to find a supermassive black hole in a different part of the universe that existed 470 million years after the Big Bang — so a touch more recent than this latest discovery.

A discovery which, Natarajan says is, "revealing the diversity of black holes and their host galaxies. We see a diversity today, and it looks like this diversity starts quite early on."

Webb Shows Early Galaxies Looked Like Pool Noodles

From [NASA.gov](https://www.nasa.gov)

Researchers analyzing images from NASA's James Webb Space Telescope have found that galaxies in the early universe are often flat and elongated, like surfboards and pool noodles – and are rarely round, like volleyballs or frisbees. “Roughly 50 to 80% of the galaxies we studied appear to be flattened in two dimensions,” explained lead author Viraj Pandya, a NASA Hubble Fellow at Columbia University in New York. “Galaxies that look like pool noodles or surfboards seem to be very common in the early universe, which is surprising, since they are uncommon nearby.”

The team focused on a vast field of near-infrared images delivered by Webb, known as the Cosmic Evolution Early Release Science (CEERS) Survey, plucking out galaxies that are estimated to exist when the universe was 600 million to 6 billion years old.

While most distant galaxies look like surfboards and pool noodles, others are shaped like frisbees and volleyballs. The “volleyballs,” or sphere-shaped galaxies, appear the most compact type on the cosmic “ocean” and were also the least frequently identified. The frisbees were found to be as large as the surfboard- and pool noodle-shaped galaxies along the “horizon,” but become more common closer to “shore” in the nearby universe. (Compare them in this illustration.)

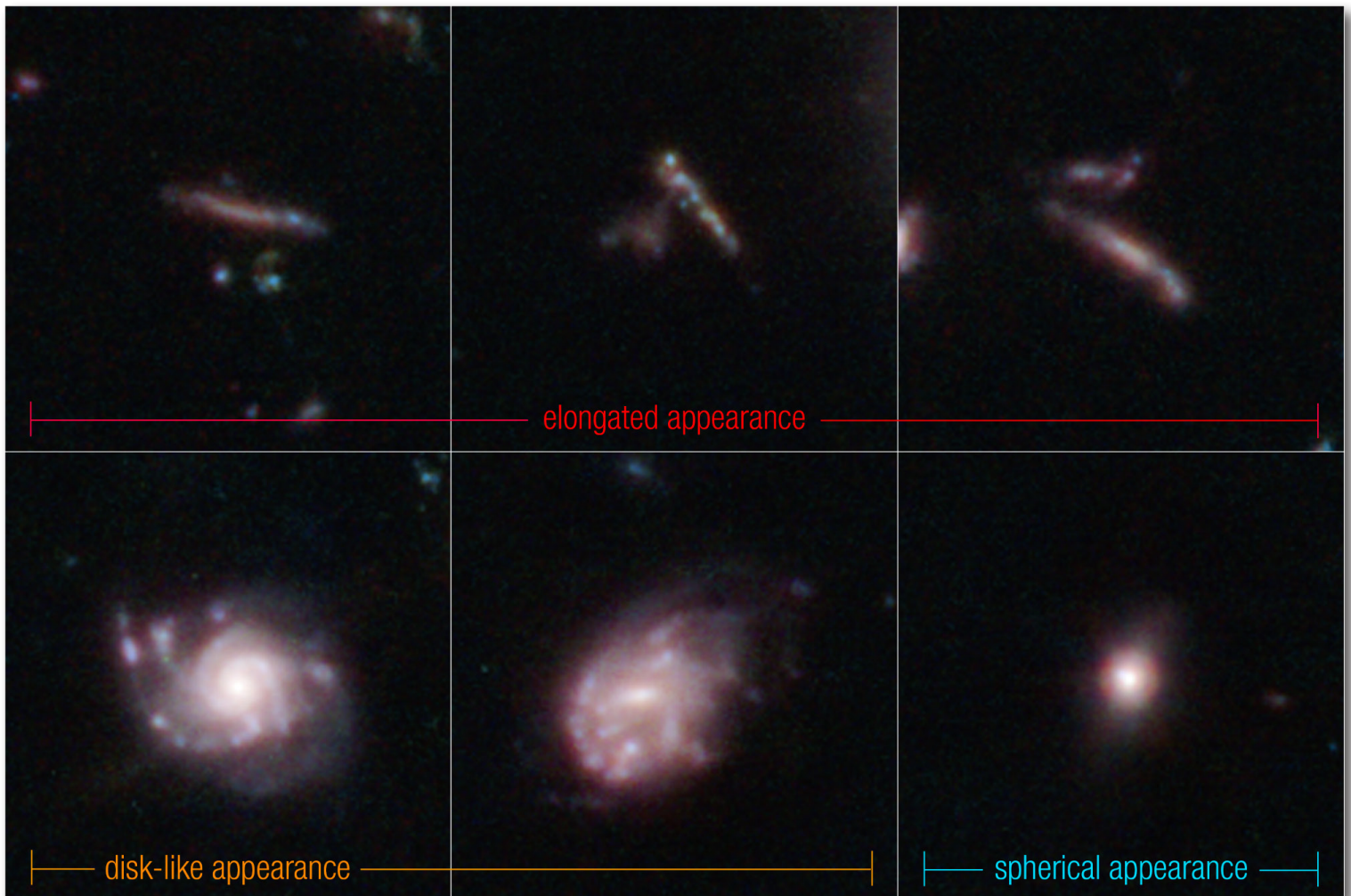
Which category would our Milky Way galaxy fall into if we were able to wind the clock back by billions of years? “Our best guess is that it might have appeared more like a surfboard,” said co-author Haowen Zhang, a PhD candidate at the University of Arizona in Tucson. This hypothesis is based partly on new evidence from Webb – theorists have “wound back the clock” to estimate the Milky Way’s mass billions of years ago, which correlates with shape at that time.

These distant galaxies are also far less massive than nearby spirals and ellipticals – they are precursors to more massive galaxies like our own. “In the early universe, galaxies had had far less time to grow,” said Kartheik Iyer, a co-author and NASA Hubble Fellow also at Columbia University. “Identifying additional categories for early galaxies is exciting – there’s a lot more to analyze now. We can now study how galaxies’ shapes relate to how they look and better project how they formed in much more detail.”

Webb’s sensitivity, high-resolution images, and specialization in infrared light allowed the team to make quick work of characterizing many CEERS galaxies, and model their 3D geometries. Pandya also says their work wouldn’t be possible without the extensive research astronomers have done using NASA’s Hubble Space Telescope.

For decades, Hubble has wowed us with images of some of the earliest galaxies, beginning with its first “deep field” in 1995 and continuing with a seminal survey known as Cosmic Assembly Near-infrared Deep Extragalactic Legacy Survey. Deep sky surveys like these led to far greater statistics, leading astronomers to create robust 3D models of distant galaxies over all of cosmic time. Today, Webb is helping to enhance these efforts, adding a bounty of distant galaxies beyond Hubble’s reach and revealing the early universe in far greater detail than previously possible.

Webb’s images of the early universe have acted like an ocean swell – delivering new waves of evidence. “Hubble has long showed an excess of elongated galaxies,” explained co-author Marc Huertas-Company, a faculty research scientist at the Institute of Astrophysics on the Canary Islands. But researchers still wondered: Would additional detail show up better with sensitivity to infrared light? “Webb confirmed that Hubble didn’t miss any



These are examples of distant galaxies captured by NASA's James Webb Space Telescope in its CEERS Survey. Galaxies frequently appear flat and elongated, like pool noodles or surfboards (along the top row). Thin, circular disk-like galaxies, which resemble frisbees, are the next major grouping (shown at lower left and center). Galaxies that are shaped like spheres, or volleyballs, made up the smallest fraction of their detections (shown at lower right). All of these galaxies are estimated to have existed when the universe was only 600 million to 6 billion years old.

NASA, ESA, CSA, Steve Finkelstein (UT Austin), Micaela Bagley (UT Austin), Rebecca Larson (UT Austin)

additional features in the galaxies they both observed. Plus, Webb showed us many more distant galaxies with similar shapes, all in great detail."

There are still gaps in our knowledge – researchers not only need an even larger sample size from Webb to further refine the properties and precise locations of distant galaxies, they will also need to spend ample time tweaking and updating their models to better reflect the precise geometries of distant galaxies. "These are early results," said co-author Elizabeth McGrath, an associate professor at Colby College in Waterville, Maine. "We need to delve more deeply into the data to figure out what's going on, but we're very excited about these early trends."

The James Webb Space Telescope is the world's premier space science observatory. Webb is solving mysteries in our solar system, looking beyond to distant worlds around other stars, and probing the mysterious structures and origins of our universe and our place in it. Webb is an international program led by NASA with its partners, ESA (European Space Agency) and the Canadian Space Agency.

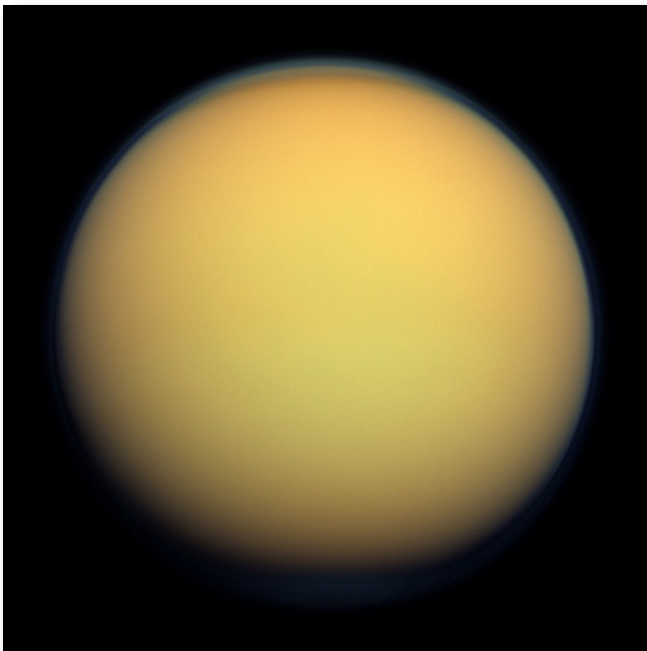
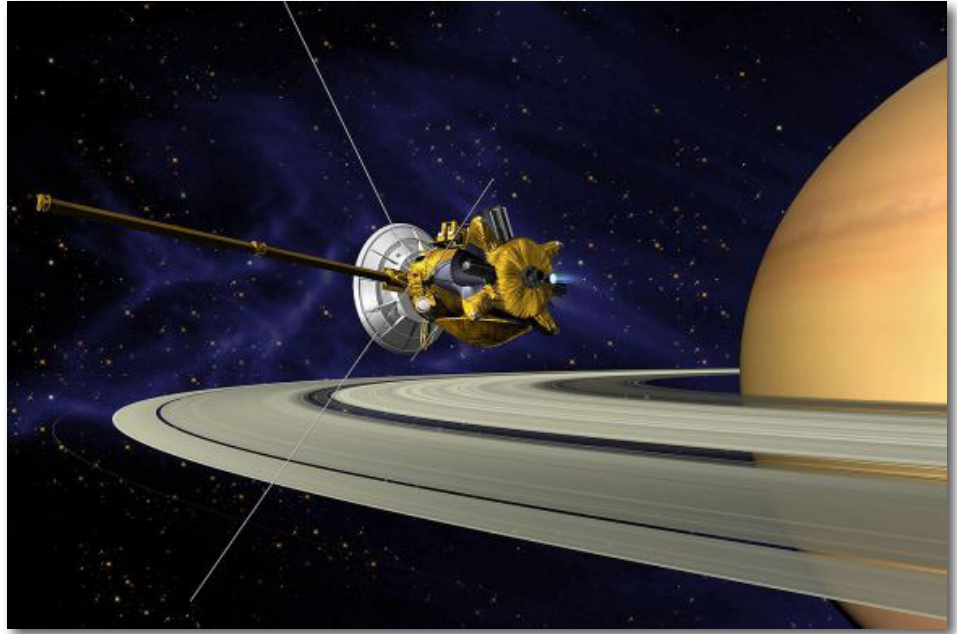
Could Titan Have Floating Blobs of Organic Solids?

When the Cassini spacecraft returned radar scans of the surface of Saturn's moon Titan, the results were mind-blowing. It revealed giant lakes or seas of liquid methane, a complete absence of waves and what seemed to be islands in the giant bodies of liquid. Now a team of scientists think they may be blobs of organic molecules that form in the atmosphere, collect in the lakes and float around!

The bus sized space probe Cassini was launched in October of 1997. The journey took the craft 3.5 billion km using gravitational slingshots following launch from Venus (twice), Earth and Jupiter before arriving in July 2004.

The mission at Saturn lasted for 14 years when Cassini dived into the atmosphere of Saturn on 15 September 2017. While it was there it orbited Saturn a total of 290 times, explored many of its moons and discovered seven more.

A particularly interesting part of the mission was the Huygens probe that hitched a ride aboard Cassini with Titan as its destination. Titan is Saturn's largest moon, the second largest moon in our Solar System and larger even than our own Moon and the planet Mercury. It's also the only moon known to have a dense atmosphere and large, stable bodies of water on its surface.



The atmosphere of Titan has a neat trick, it transforms gases like methane and nitrogen (of which there is plenty in the atmosphere) into organic compounds. The team, led by Xinting Yu from the University of Texas studied what happens to those compounds when they reach the surface of the Moon.

Surprisingly, they found that the compounds reach the surface as solids, even on the lakes. Just what happens then was what the team were interested to explore. If they were structured like a sponge, mostly full of empty space then they would simply float. If on the other hand they were solids, they may still float depending on their composition, otherwise they will just sink to the lake bed.

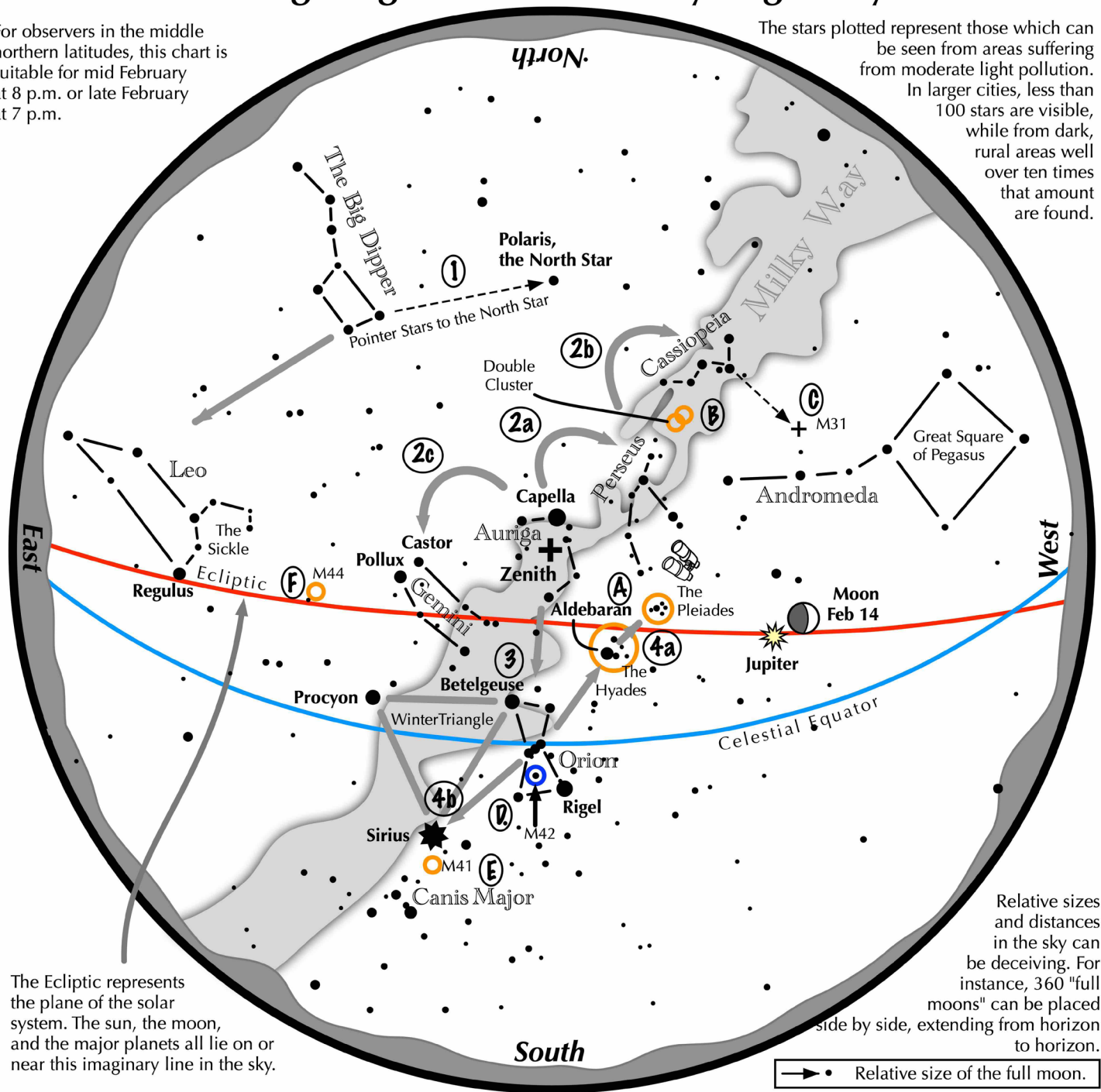
One mysterious feature of the Titanian (if that's even a word) lakes that was picked up as temporary bright spots seen by radar. They were dubbed 'magic islands' because they seemed to be only temporary features. The team found that the only plausible explanation for the observations was that the solid material landing on the surface.. and by chance, in the lakes, must be porous in nature giving it the ability to float.

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.

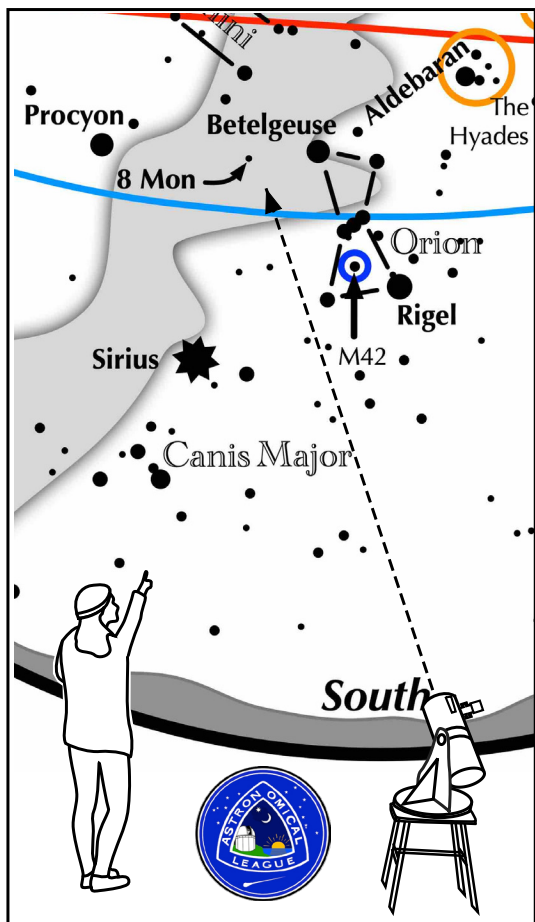
- 1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
- 2 Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next jump southeastward 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

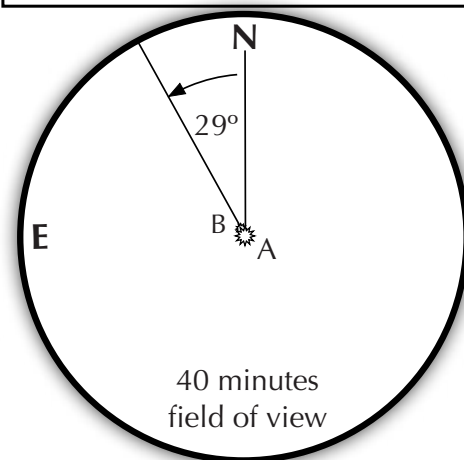
B magnitude: 6.6

Position Angle: 29°

Colors:

white

lilac



Meeting Minutes

Southwest Florida Astronomical Society member minutes of February 1, 2024 both Zoom and at the Caloosa Planetarium

Opening remarks: President Risley called the meeting to order at 7:10PM, thanked all for being there, 8 on zoom and 21 in person, and introduced Lane and Jane Countryman as new members. Brian thanked Tom Klein for his IT assistance and then asked John MacLean to introduce the evening speaker. John introduced our own amateur member Joe Dermody, who is a NASA Solar System Ambassador and presents many sky issues for NASA, tonight being Eclipses.

Program: Eclipses.... The Total Solar Eclipse of Monday, April 8, 2024 by Joe Dermody..... Joe began by explaining the function of the NASA Ambassadors. He further stated that the knowledge of mankind regarding eclipses goes back thousands of years. Joe rendered a map dated August 1654 illustrating Europe, Africa and Western Asia tracing eclipses. Highlighted the 1912 Denver eclipse and the 1900 North Carolina total eclipse. Sir Arthur Eddington's May 29, 1919 photo of a total eclipse. SYZYGY describes a linear conjunction of the Sun, Moon and Earth at a new moon. Joe defined the difference between a Total eclipse and an Annular Eclipse. He illustrated partial eclipses, hybrid solar eclipses, eclipse timetables, and the damage to one's eyes if not properly protected by ISO 12312-2 glasses or filters, advising not to use another kind. Joe illustrated multiple charts of viewing the April 8th eclipse. Next one in the USA....8-12-2045, which will traverse most of Florida. Questions were asked and answered with Joe receiving a round of applause.

Review of Past Events:

Charlotte County....Tom Segur said that the January 12th, 2024 at FSW Moore Observatory was rained out... and the January 27th Solar viewing event at Bayshore Live Oak Park was well attended wherein he had 6 scopes with really great public response. Tom looks forward to the opening of Sunseeker Resort parking area and roof top.

Upcoming Outreach events:

Charlotte County.....Tom Segur advised that there will be a February 9th viewing at the FSW Moore Observatory and a Solar viewing at Gilchrist Park on February 24th.

Lee County.... Brian Risley said there would be Big Cypress Observing on February 10th and March 9th (the last of the season) located off of Sea Grape road in Collier County.....Brian further stated that there would be a STEMtastic February 10th outing at the Caloosa Sound Convention Center, a borrowing Owl festival at Rotary Park in the Cape on February 24th, a SeaHawk Star Party on March 2nd and a Rotary Star Park Party on March 8th. Brian asked for help with more volunteers.

Officer and Committee Reports:

Vice President.....Mike Jensen was not available and President Risley specifically pointed out Don Bishop's astrophotography article, and said job well done.

Secretary..... Dan Dannenhauer asked for approval of the January 4, 2024 minutes. So moved by Mario Motta and seconded by John MacLean...passed without objection.

Treasurer.....John MacLean stated that the beginning operating balance was \$1,063.04 with an ending balance of \$1,328.88. John stated that 75 members have yet to pay the 2024 dues and asked President Risley to email all reminding them. President Risley said he would send an email out to everyone asking that no-one take offense if they have already paid. John asked that all view the newsletter for specifics of his report. No motion needed.

Equipment Coordinator.....Brian Risley advised that he is placing some of the SWFAS equipment in Tony Cos-

tanzo's possession to sell at the Winter Star Party. The value of these items will be established

by Tony, who will list the item and the value sold for accounting purposes.

Program Coordinator.....John MacLean advised that he has an excellent speaker from the University of Florida in March and filled speaker positions for the following months. President Risley thanked John for his continued efforts regarding a superior group of speakers.

Adjourn: At 8:45 PM President Risley asked for a motion to adjourn. So moved by Tony Costanzo, seconded by Maria Berni, and passed without objection.