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NOV/DEC 2024

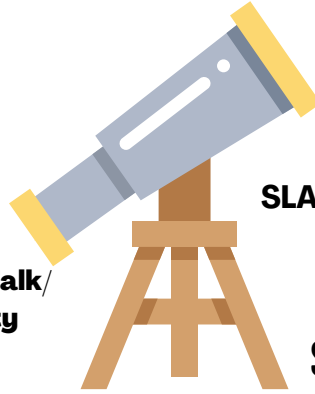


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SLASBROCHURE.pdf



SLAS.US

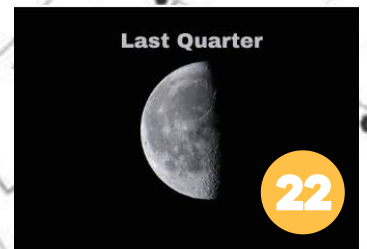
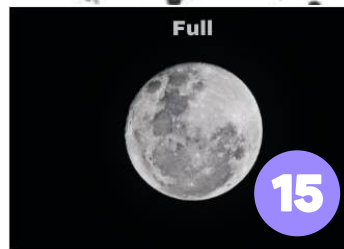
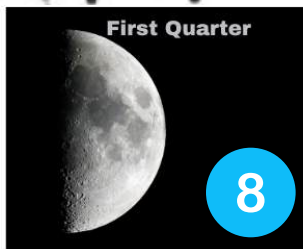
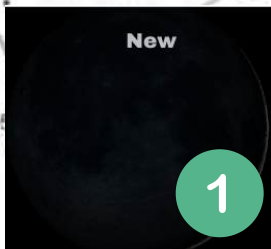


MOON PHASES

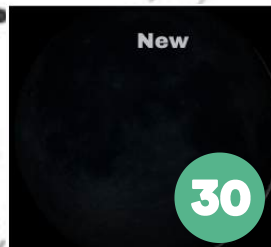
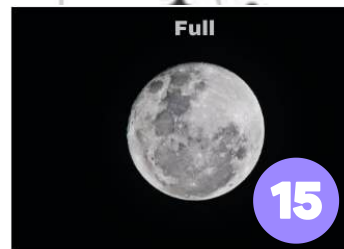
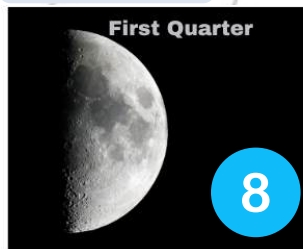
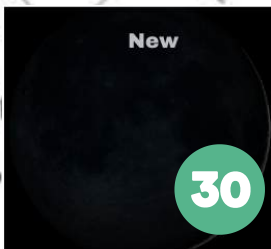
SOURCE: MOONPHASES.ORG

Utah

NOVEMBER 2024



DECEMBER 2024



SLAS OFFICERS

SLAS Board of Directors

President: Don Abernathy

Vice President: Aleta Cox

Secretary/Treasurer: Krista Lemoine

Board Members at Large: Trevor Hebditch and Marlene Egger

Appointed Positions

Astronomical League Contact: Aleta Cox

Equipment Manager: Trevor Hebditch and Aleta Cox

Library Loaner Telescope Coordinator: Joan Carman

Historian: Patrick Wiggins

NASA Night Sky Ambassador: Krista Lemoine

Nova Newsletter Editor: Jenette Scott

Observatory Director: Jim Keane

Private Star Party Coordinator: Don Colton

Solar Party Coordinator: Louis Maez

Webmaster: Ken Warner

ZAP Grant Writer: Jim Keane



SPOC Advisory Committee

Chair: Jim Keane

Members: Don Abernathy, Bob Moore, Patrick Wiggins, Luke Moses, Jim Keane, John Drabik, Leslie Fowler, Bill Kennedy.

Members As Obser. Dir. Emeritus: Rodger Fry.

SPOC Telescope Instruction Coordinators

Bogdan Refractor: Marlene Egger

Ealing: Jim Keane

Grim: Rodger Fry

Clements: Leslie Fowler



Contact board: board@slas.us

contact editor: astrobug3027@gmail.com

THANK YOU

Last night (Saturday, October 26) we had our final SPOC star party for this season. We had a great turn out and it was a lot of fun. We even had a record number of folks in Halloween costumes.

I'd like to Thank everyone that participated in the SPOC events this year as well as everyone that got trained on the scopes.

THANK YOU !!!!

Jim Keane
SPOC Director
Photo Credit: Leslie Fowler



Meet the 2025 SLAS Board of Directors

President: Trevor Hebditch

Vice-President: Jenette Scott

Secretary/Treasurer: Rachel Henderson

Board Member At Large: Max Byerly

Board Member At Large: Hayden Wilde



CONGRATULATIONS

Biographies of Appointed Board Members

Rachel Henderson

(Appointed Secretary/Treasurer) - I'm a newcomer to the world of astronomy. Two summers ago, while trying to navigate a painful loss, my dear friend told me, "If you want to make your grief feel smaller, you have to make your world bigger." Later that day, I saw a flyer for a star party and decided to go, hoping to make my world a little bigger. I looked through my first telescope that evening, saw Jupiter and four of its moons, and instantly fell in love. I've been obsessed with astronomy ever since.

I currently work as an accountant and am a Master of Science in Finance candidate at the U of U, pursuing a career change into asset and wealth management. I'm a single mom to Margot (3), Eleanor (10), and Snowflake (Goldendoodle- age 2). In my free time, I love to be outside, hike, travel, play pickleball, bake, and read.

I'm thankful I found SLAS and cherish the friends and experiences I've had here this year. I'm excited to get more involved with the organization and to continue to share my love of the cosmos with the people in my world.

Hayden Wilde

(Appointed Board Member-at-large) - My passion for astronomy began in my backyard with my mother and a small Bushnell refracting telescope, looking up at the moon. Though we were only exploring our nearest celestial neighbor, I had many questions with hard-to-find answers. This curiosity became a lifelong pursuit, leading me to start teaching myself about astronomy as a child, and eventually pushed me to pursue a degree in astrophysics, which I am still currently working on.

Roughly six years ago, I joined SLAS, and for the past four and a half years, I've been operating the Clements Telescope alongside Mike, and Leslie. Operating this telescope has been more than just a personal fascination; it is a unique role that allows me to share my passion, educate visitors, and hopefully assist others in their educational journey.

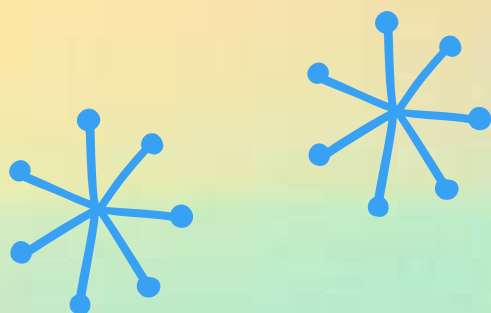
Being considered to serve as a Board Member-at-Large means a lot to me, and I am excited to get more involved and give back to a group that's played a large role in my education. Thank you for the opportunity!

SLAS EVENTS PAGE



SPOC IS IN *winter* **HIBERNATION**

**THE OBSERVATORY WILL
BE UP AND RUNNING AGAIN
IN APRIL 2025
THE SCHEDULE WILL BE
PRINTED IN THE MAR/APR
2025 ISSUE**



General Meeting Information

BOARD MEETINGS ARE FOR SLAS BOARD MEMBERS AND ARE OPEN TO ANY MEMBER OF SLAS TO ATTEND. PLEASE NOTE THAT ONLY BOARD MEMBERS MAY VOTE AT BOARD MEETINGS. BOARD MEETINGS TAKE PLACE ON THE 2ND WEDNESDAY OF EACH MONTH AT 7:00 PM LOCATED AT THE DENNY'S RESTAURANT ON 1701 WEST NORTH TEMPLE STREET SALT LAKE CITY, UTAH 84116 (WE MEET IN THE BACK MEETING ROOM)

GENERAL MEETINGS FOR SLAS MEMBERS TAKE PLACE ON THE 3RD WEDNESDAY OF EACH MONTH (WITH THE EXCEPTION OF DECEMBER WHEN THE SOLSTICE PARTY AT THE BEGINNING OF DECEMBER TAKES THE PLACE OF THE GENERAL MEETING) AT 7:30 PM LOCATED AT ROOM TB104, RAMPTON TECHNOLOGY BUILDING, SALT LAKE COMMUNITY COLLEGE REDWOOD ROAD CAMPUS PARKING IS ACROSS THE STREET TO THE NORTH OF THE BUILDING IN PARKING LOT 'R'. GENERAL MEETINGS ARE OPEN TO THE PUBLIC.

- **Nov 13**- Board Meeting
- **Nov 20**- General Meeting
- **Dec 07**-Solstice Party [See Page 8]
- **Dec 11**- Board Meeting

Please see the info above for the place and time for meetings as well as the webpage: slas.us for more information.

PLEASE NOTE: Zoom is no longer available for these meetings unless the guest speaker is joining us virtually.



SPOC Cleanup Day

Saturday 02 Nov

At 2pm

We are planning on a cleanup day out at SPOC. The goal is to toss out all the stuff in the buildings we don't need or use anymore. If you would like to participate we could use the help. We have one couch and some scrap metal to get rid of in addition to miscellaneous stuff that is stored in the buildings.

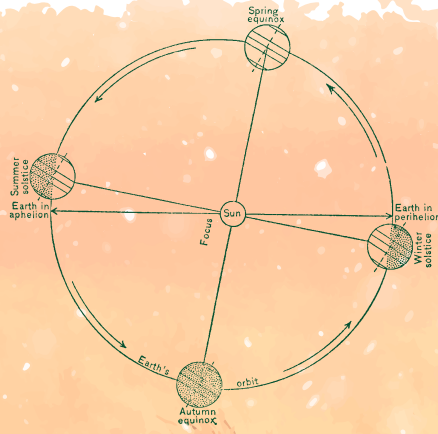
We will organize this by teams starting at 2pm. Work gloves are highly recommended. In addition to simply helping to clean and organize we could also use the following help: Trim the bushes around the buildings (bring a hedge trimmer) and to cut some of the metal that was used on the Clements telescope and is no longer needed and would be easier to handle and dispose of in shorter lengths (bring a metal cutter with you). We will have a coordination meeting to start things off at 2pm. I'll buy some trash bags for the loose trash and will also buy some storage shelves so at a later date we can organize whatever we don't toss out. Since I don't have a good feel how much stuff we are throwing out I'll make arrangements for a trash pickup at a later date, if needed.

Thanks everyone!!!!

Jim Keane
Observatory Director
Stansbury Park Observatory Complex
Salt Lake Astronomical Society (SLAS)



SLAS
Annual



Solstice
Party

**FOR SLAS MEMBERS
AND THEIR FAMILIES**

December 7

Meet, eat, socialize together.

7:00 p.m. - 9:00 p.m.

Attendees are responsible for the cost of their
own plate

There will be a raffle (The raffle is only open to
SLAS members).

This event replaces our monthly General Meeting.

Location:

Golden Corral

665 E. 7200 South, Midvale, Utah

In Memory

**It is with great sadness to
announce that SLAS has lost 2
members.**

Edward Ericksen died September 10, 2024

Bruce Grim died October 7, 2024

**They will be
greatly
missed**

SLAS Loses Another Member

SLAS long time and founding member, Bruce Grim has passed away. Bruce was instrumental in the building of the original SPOC when it was just one building, and also helped with the Harmons Building, the Refractor House, and even the Kolob building. His obituary is below the pictures.



Obituary for Bruce Grim

Bruce Simpson Grim, born on December 12, 1943, in Reading Pennsylvania passed away on October 7, 2024, in Tooele, Utah at the age of 80 after a long struggle with Alzheimer's Disease.

As a boy Bruce was surrounded by family growing up in Hamburg, Pennsylvania. Academics came easily to him quickly earning degrees in Meteorology: a Bachelor's from Parks College and a Master's from the University of Michigan.

During his years as a student, Bruce was invited on a group camping trip to the Rocky Mountains in Colorado and immediately fell in love with the beauty of the West and its mountainous terrain. Upon graduation he was able to find work in Salt Lake City for the US Government as a Meteorologist at Fort Douglas where he met his wife-to-be, Margaret Midgley, who had taken a summer job there. As a shy young man, Bruce finally built up enough courage to ask her out on a date on the last day of her employment. Bruce and Margaret were married in the Salt Lake Temple and began their family together. With their two daughters, Michelle and Jennifer, they built their home in Stansbury Park in 1973 and soon after their sons Scott and Erik completed the family.

Bruce had taken a position at Dugway Proving Grounds where he worked for over 25 years. Outside of work he could be found in one of the many projects he would have going at any given time, most of them involving working with his hands, tools, and machinery that he used to fabricate just about anything you could imagine.

From a young age Bruce had interests in astronomy and had spent countless hours in the dark of the night gazing into the heavens from one of his home-built telescopes. He built his own observatory, The Grim Observatory, in his backyard allowing his family and friends a close-up view into his world away from ours. He also made many contributions to the Salt Lake Astronomical Society in its infancy and throughout his lifetime, leaving a legacy for future star gazers to enjoy at the Stansbury Park Observatory Complex.

Bruce had a strong desire to offer service, however, it was always unspoken. He volunteered his time to the Stansbury Park Fire Department, to his church by serving many positions, and the Tooele Valley Museum and Historical Park.

Bruce had a fascination with trains, which included him building detailed small scale model layouts in his basement as well as fabricating large scale outdoor electric locomotives complete with boxcars, coal cars, passenger coaches, several different engines and even a caboose. These were all

entertainment for the neighborhood and eventually were donated to the museum so children could enjoy rides with Bruce as engineer; all aboard!

Bruce was not one to sit in the same place for too long - he could be heard leaving the neighborhood on his motorcycle, spotted through his binoculars on a hike with friends, followed down a wintry slope on skis, or even cheered for as he heaved iron weights high above his head. His love to provide for those around him was great and he was always happy to have others enjoy his creations.

Bruce's family would like to extend a heartfelt thank you to the caregivers at Cottage Glen for providing him with kind, patient care during the final chapter of his life.

Bruce is survived by his loving wife of 54 years, Margaret of Stansbury Park, UT; daughters Michelle Davis (Allan) of Stansbury Park, UT and Jenni Workman (Wayne) of Dayton, NV; sons Scott Grim (Amy) of Salt Lake City, UT and Erik Grim (Maria) of West Jordan, UT; nine grandchildren and one great-grandchild; and many other relatives in Pennsylvania. Bruce was preceded in death by his parents Robert C. and Merle Grim, brother Michael, and granddaughter Olive.

Funeral services were held on Monday, October 14, at the Stansbury Park Stake Center, 417 Benson Road at 11:00 a.m. with graveside services following at the Stansbury Park Cemetery. Friends and family were invited to pay their respects at a viewing from 9:30 - 10:45 a.m.

Several SLAS members attended the services. We also sent flowers on behalf of the club.

This is a reprint of an article from January/February 2023 *NOVA* about Bruce's long-time membership in the Salt Lake Astronomical Society.

Bruce Grim
Celebrating A Long Time Member
by Aleta L. Cox

Long time SLAS member, Bruce Grim, has reached a milestone. Bruce joined the Salt Lake Astronomical Society in 1971 and has renewed his dues faithfully every year since then. This past year [2022], he celebrated 51 years as a continuous member of SLAS. In 2023, it will mark 52 years of membership for this incredible member. We wanted to recognize Bruce for this accomplishment and loyalty to the club! [Bruce was a constant member for 53 years, never once missing his renewal.]

When he joined the club, he was very active in club projects and events. He was responsible for arranging with the then owners of Stansbury Park (Terracor) for SLAS to build the original SPOC observatory (sometimes called SPOC 1) at Stansbury Park. He also donated the telescope for the original observatory. He was a huge part of building the Harmons Observatory, and did a lot on the Donna P. Wiggins Refractor House and the Kolob building. The man is a telescope building genius! He designed and supervised the construction of the Grim telescope (that's why it's named after him.) He also designed, built and donated the mount for the Bogdan Refractor in the Refractor House.

We wanted to say Congratulations to Bruce and say THANK YOU for all your efforts in the past. Bruce suffered horribly from Alzheimer's and Dementia, and didn't recognize most people he knew anymore.

With his passing, our hearts go out to his family. We wish them comfort and cheer and all the best at this time. Keep looking at the stars, Bruce.

-Aleta L. Cox, SLAS VP



Drift Method for locating NGC 891: Let Earth rotate this galaxy into view



The drift method is useful – even for experienced amateurs – if the observer is unsure as to how the object will appear with the aperture of telescope used, and under the prevailing atmospheric and light pollution conditions. If it can't be seen at the calculated time, then it is likely because of a combination of those three factors.

24 hours of RA exist because 24 hours comprise one full rotation of Earth. This means that, as our planet rotates, an hour in RA passes overhead from east to west for every hour of time on Earth. This also applies for every point on the celestial sphere, not just the zenith.

General Procedure:

1. Find a star positioned near the same declination as the target, but somewhat to its west.
2. In a reference guide, find the coordinates of the guide star and the target.
3. Calculate the difference of their minutes of RA.
4. Position the star in the center of the field of an eyepiece that gives a wide true field.
5. If the difference in their Declination is 20 to 30 minutes: Move the scope northward by 1/2 field if the target is farther north than the guide star, move it southward by 1/2 field if it is farther south.
6. Wait the calculated RA time difference. Bingo! The target should have drifted into the center of the eyepiece's field. Don't be late or it will have drifted westward out of the field.

Example ...

NGC 891

Magnitude 10.8

Size 13.5 x 2.5 min

Gamma Andromedae

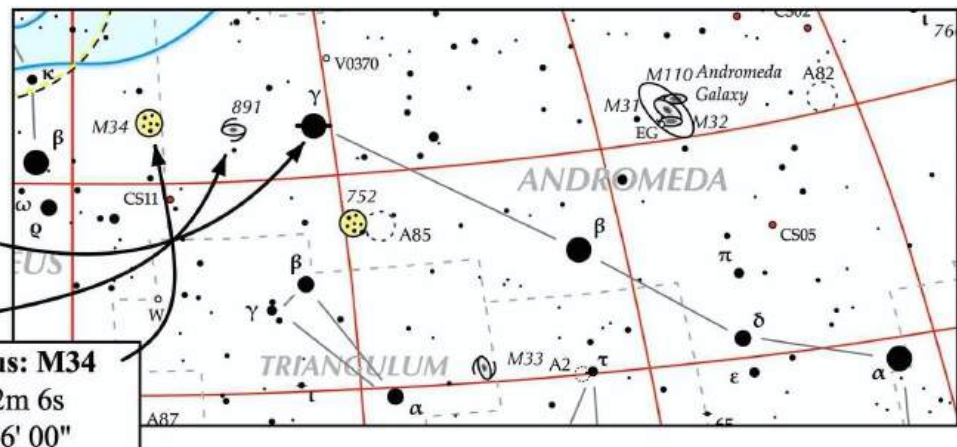
2h 03m 54s

42° 19' 47"

NGC 891

2h 22m 33s

Bonus: M34
2h 42m 6s
42° 46' 00"



Target: NGC 891, a large "edge on" galaxy in eastern Andromeda – a worthy subject.

A. Choose Gamma Andromedae as the guide star. At 2.3 magnitude, it lies at the end of the string of stars that forms the main body of Andromeda.

B. Coordinates:

Gamma Andromedae – RA: 2 hr 03m 54s; Dec: 42° 19' 47"

NGC 891 – RA: 2h 22m 33s; Dec: 42° 20' 57"

C. Declination difference: 1 minute – not much, no need to nudge the telescope.

D. RA difference equals the time wait: 18 m 45 s.

E. Center Gamma Andromedae in the low power eyepiece field (a beautiful double star).

Wait 18 m 45 s and NGC 891 will lie in the field. Don't be late!

Bonus: Then nudge the telescope northward about half the eyepiece field and wait another 19 m 30 s. The bright open cluster M34 will have drifted near the center of the field.

A Once in 80,000 Year Event Comet C/2023 A3 Tsuchinshan-ATLAS



Photo by Leslie Fowler



Taken out at SPOC by Scott Stringham

Interesting Facts About Comet C/2023 A3 Tsuchinshan-ATLAS

- Tail length is tens of millions of miles
- Discovered in 2023 by the Asteroid Terrestrial-impact Last Alert System (ATLAS) and independently by the Purple Mountain (Tsuchinshan) Observatory in China
- Believed to have originated from the Oort Cloud
- Takes 80,000 years to orbit the Sun
- Its orbit is retrograde. It orbits the sun in the opposite direction of the planets



Comet C/2023 A3 Tsuchinshan-ATLAS through my telescope tonight. I love how the coma of the comet appears to be fractured. Although comets can have their coma fracture, in this case, the fractured appearance is an optical illusion caused by long exposure photography. The comet is moving relative to the background stars. So each shot and stack my CCD camera takes with the telescope, even though the telescope is tracking, the comet has moved since the last shot. When the software in the camera plate solves and stacks, the comet's coma has moved and gives that fractured look. I rather like the look. If I used a shorter exposure time, the comet's coma would look whole.

Taken by Jenette Scott

Comet C/2023 A3 Tsuchinshan-ATLAS
10/21/2024 - Jenette Scott



Comet C/2023 A3 taken by Patrick Wiggins

I shot these 2 images about 30 minutes apart to make a stereo pair (use the cross-eye method to see the effect). Image on the left was taken at 0205 and the one on the right at 0238 the morning of 25 October 2024 Universal Time (20:05 and 20:38 24 October MDT). Details: North is up and east to the left. Field of view of each image is 18x26 arc minutes. 60 second exposures taken with an SBIG ST-10 imager binned 3x3 and chilled to -10 through a clear filter with a 35cm Celestron telescope operating at f/5.5.



So, When Will We See the Next Comet?

-333P/LINEAR: Will reach perihelion on November 29, 2024, and will be a magnitude 9.8. Its closest approach to Earth will be December 9, 2024, but it will be a magnitude 10. More about this comet can be found by clicking [here](#).

-C/2024 S1 (ATLAS): Also known as the “Halloween Comet” did not survive its trip around the sun. Watch as it burns up upon close approach by clicking [here](#).

-C/2024 G3 (ATLAS): Will reach perihelion on January 13, 2025, and will be a magnitude -2.0 to 0.6. Its closest approach to Earth will be January 14, 2025, at a magnitude of -1.8 to 0.6. If this comet survives its trip around the Sun, it is predicted that it may be visible in the daytime sky during January 2025, but it will be positioned extremely close to the Sun in the sky. Let's hope it behaves as predicted and we get a spectacular show! Read more about this comet by clicking [here](#) and track it [here](#).



SLAS General Meeting Guest Speakers

November 20, 2024



Louis Maez (Instagram Photo)

Bio:

Louis Maez works at Clark Planetarium as a dome technician and science communicator, at Dark Ranger Telescope Tours as a telescope operator, and is SLAS's Solar Party Coordinator. He enjoys reading, mathematics, cooking, and gardening. He is decent at all of it and good at none of it.

Abstract:

"Seeing Double: Using Open-source Software to Study Double Stars"

Scanning our night sky, we can see thousands of stars scattered almost at random. Instantly, our eyes pick out clusters and groupings of stars that appear to be near each other. For many of these 'doubled' stars, this nearness is a trick of our perspective. For other doubles, the stars actually orbit or interact with one another. Some of these binaries orbit so closely they touch; others take years to complete one orbit. The study of double stars dates back hundreds of years, and the carefully kept catalogs cover the entire sky. Using the positions of countless double stars allows for precise navigation and timekeeping. It also provides for an interesting hobby and an avenue for amateur astronomers to conduct original research with their home equipment and open-source software. I'll talk about my use of the Washington Double Star Catalog, the GAIA database, AstroImageJ, and excel to study double stars. Then I'll discuss my recent additions to the Journal of Double Star Observations to provide an example of research SLAS members can do themselves.

December 7, 2024

SLAS Annual Solstice Party. Please See Page 8 for Details.

Looking Forward to January 15, 2025



Jumana Alshaikh, MD

Jumana Alshaikh, MD is a clinical neurologist and an assistant professor of neurology at University of Utah. She is from Saudi Arabia and moved to the U.S. 10 years ago. She started her career in the U.S. as a neurology researcher in Washington DC, then did her neurology residency training at University of Chicago followed by her subspecialty training in movement disorders at Johns Hopkins University. She moved to Utah in 2021 for her current position as a neurologist and assistant professor at University of Utah and is the co-director of their Parkinson Disease center of excellence and has won the department of neurology's teacher of the year award twice in 2022 and in 2024. After moving to Utah, she looked up at the sky and saw the milky way galaxy for the 1st time and fell in love with the cosmos, then found her way to SLAS where she has learned a lot about astronomy. She is very appreciative to all the knowledge taught to her by SLAS members and is excited to speak to us about a topic that combines her profession in neurology with her hobby in astronomy which is "The Neurology of Space Travel".

Say Hello to Our New Members!



Taylor Benware
Timothy Flores
Jerome Horowitz
Rick Nelson
Christopher Stevens
Greg Turner



At SLAS, we are observational astronomers who:

Promote astronomy

Encourage public education and interest

Coordinate activities with professional research

Salt Lake Compass Rose Dark Sky Excursion

1/2 Day (Evening) Tour

Enjoy Panoramic Views of the Night Sky

Embark on a captivating four-hour excursion that transports you from the vibrant lights of Salt Lake City to the heart of Huntsville, Utah. Nestled beneath a blanket of pristine darkness amidst breathtaking mountain ranges, lies our destination: the renowned HALO Observatory at Compass Rose Lodge.

Our celestial adventure commences every Thursday evening in Salt Lake City, where we board a comfortable vehicle. As we depart the city, the landscape transforms into a captivating display of rolling hills and majestic peaks. Throughout the scenic journey, our knowledgeable guide will unveil fascinating stories and hidden gems of the region.

Upon arrival at the Compass Rose Lodge, a haven of tranquility awaits. Here, perched at an elevated vantage point, light pollution fades away, revealing a breathtaking panorama of the night sky. Our passionate astronomy host will be your guide on this cosmic exploration.

Prepare to be mesmerized by the Milky Way Galaxy in all its splendor. Witness a breathtaking swathe of stars stretching across the celestial canvas, visible with the naked eye. But the journey doesn't stop there. Delve deeper into the cosmos using HALO's incredible telescopes. Marvel at celestial wonders like the Andromeda Galaxy, our closest galactic neighbor, and the intricate formations of distant nebulae.

These aren't your average stargazing tools. HALO boasts a cutting-edge 16-inch Ritchey-Chrétien telescope, mirroring the design of the Hubble Space Telescope. This advanced technology minimizes distortion, offering unparalleled clarity as you explore the universe. With our expert guide navigating the night sky, you won't miss a single celestial spectacle.

This unforgettable experience is guaranteed to leave you with a newfound appreciation for the vastness of space and the wonders that lie beyond our everyday world.

This tour is available in: English, Dutch, German, French, Ukrainian, and Russian.

What is included?

- Professional Local Tour Guide
- Comfortable Transportation
- Bottled Water
- Applicable Taxes and Fees
- Hotel pickup and drop-off (select hotels only)

Locations + Itinerary

May 1 to September 1

8:00 PM Hotel Pick up in Salt Lake City
8:30 PM Travel to Huntsville, UT
9:15 PM Arrive at Compass Rose
9:30 to 11:00 PM Night Sky Program
11:00 PM Return to Salt Lake City
12:00 AM Hotel Drop Off

October 15 to March 15

6:30 PM Hotel Pick up in Salt Lake City
7:00 PM Travel to Huntsville, UT
7:45 PM Arrive at Compass Rose
8:00 to 9:30 PM Night Sky Program
9:30 PM Return to Salt Lake City
10:30 PM Hotel Drop Off

September 1 to October 15

7:00 PM Hotel Pick up in Salt Lake City
7:30 PM Travel to Huntsville, UT
8:15 PM Arrive at Compass Rose
8:30 to 10 PM Night Sky Program
10:00 PM Return to Salt Lake City
11:00 PM Hotel Drop Off

March 15 to May 1

7:30 PM Hotel Pick up in Salt Lake City
8:00 PM Travel to Huntsville, UT
8:45 PM Arrive at Compass Rose
9:00 to 10:30 PM Night Sky Program
10:30 PM Return to Salt Lake City
11:30 PM Hotel Drop Off

Confirmation will be received at time of booking

Not wheelchair accessible

Children must be accompanied by an adult

Pricing

BOOK NOW



- \$145 per person Adults (16 years old +)
- \$110 per person Child (1-15 years old)

Zooniverse Citizen Science Projects Needs Your HELP!

Cloud spotters are needed to spot clouds in the Martian atmosphere. If you would like to help with this project that will help scientists learn more about the atmosphere of Mars, please click [here](#) or scan the QR code.

Cloudspotting on Mars: Shapes



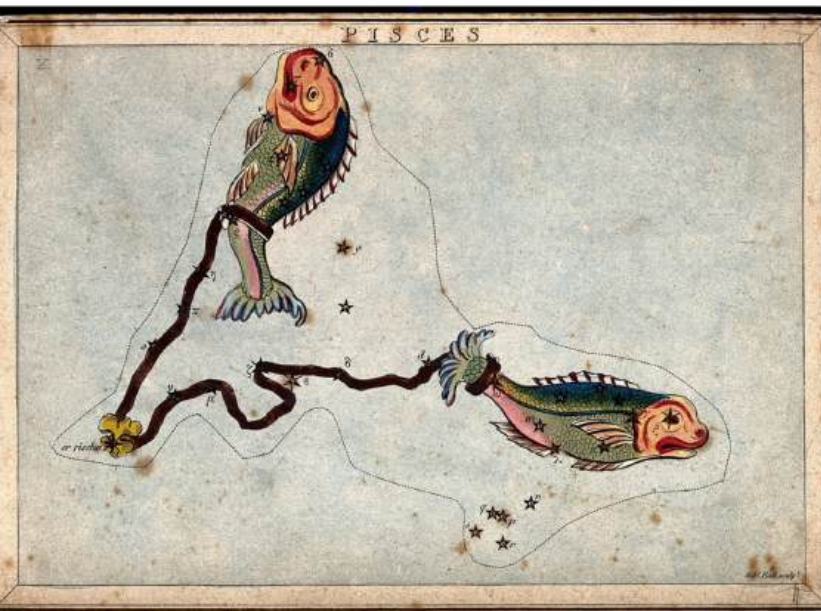
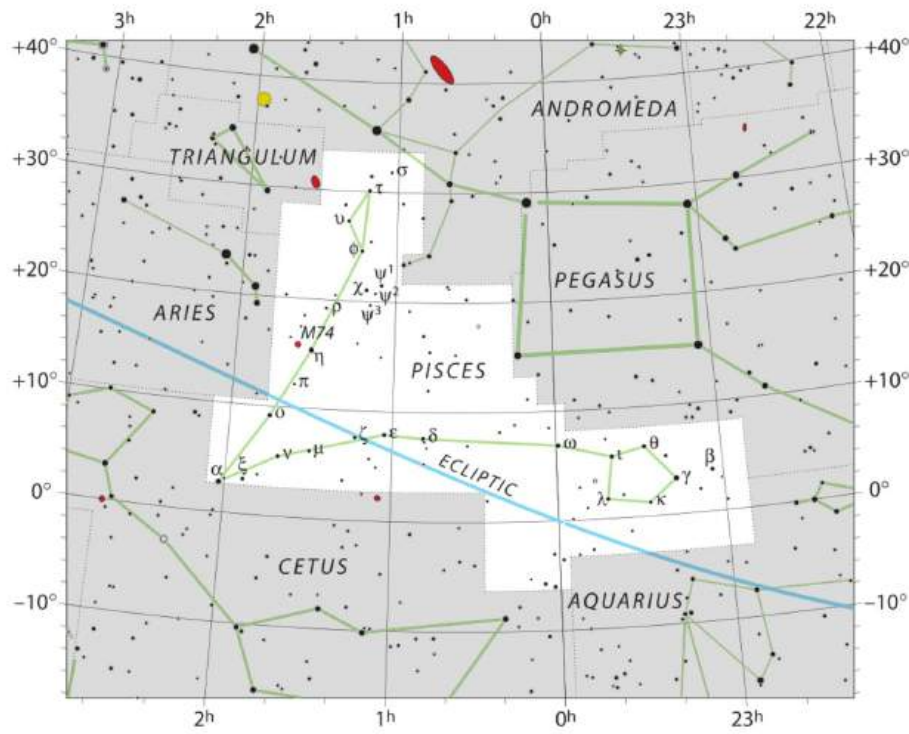
Constellation CORNER

BY: KRISTA LEMOINE

Pisces

THE FISH
NOVEMBER 2024

The Pisces constellation is of Babylonian origin. The Babylonians saw it as a pair of fish joined by a cord. The constellation is usually associated with the Roman myth of Venus and Cupid, who tied themselves with a rope and transformed into fish to escape the monster Typhon. The star Alpha Piscium, also known by the traditional name Alrescha ("the cord" in Arabic) marks the knot of the rope.



ASTRONOMICAL LEAGUE OBSERVING TARGETS

Messier	Herschel 400	Double Star	Urban
M74	NGC 488 NGC 524	65 Piscium Psi 1 Piscium Zeta Piscium Alpha Piscium	None

Click [here](#) for the list of
Astronomical League Observing Programs.

MESSIER 74 SPIRAL GALAXY

Magnitude: 9.4

Approximate distance from Earth: 32 million light-years

Location: 01h 36m 41.8s (right ascension), +15° 47' 01s (declination)



M74

PHOTO: ADAM BLOCK



NGC 7541

PHOTO: ESA/HUBBLE & NASA

NGC 7541 BARRED SPIRAL GALAXY

Magnitude: 11.7

Approximate distance from Earth: 103.7 Million light-years

Location: 23h 14m 43.9s (right ascension), +4° 32' 03.0" (declination)

WHERE IS THE PISCES CONSTELLATION?

Pisces is the 14th constellation in size, occupying an area of 889 square degrees. It is one of the 15 equatorial constellations. It is located in the first quadrant of the northern hemisphere (NQ1) and can be seen at latitudes between +90° and -65°. The neighboring constellations are Andromeda, Aquarius, Aries, Cetus, Pegasus and Triangulum.

NEXT MONTH:

Perseus

THE HERO
DECEMBER 2024

10 BRIGHTEST STARS IN PISCES

η Piscium - Alperg - 3.62

γ Piscium - 3.69

ω Piscium - 4.01

ι Piscium - 4.13

ι Piscium - Torcular - 4.26

ε Piscium - 4.28

θ Piscium - 4.28

α Piscium - Alrescha - 4.33

30 Piscium - 4.41

δ Piscium - 4.43

OTHER DEEP SKY OBJECTS IN PISCES

NGC 315 - Galaxy

NGC 410 - Galaxy

NGC 470 - Galaxy

NGC 474 - Galaxy

NGC 7541 - Galaxy

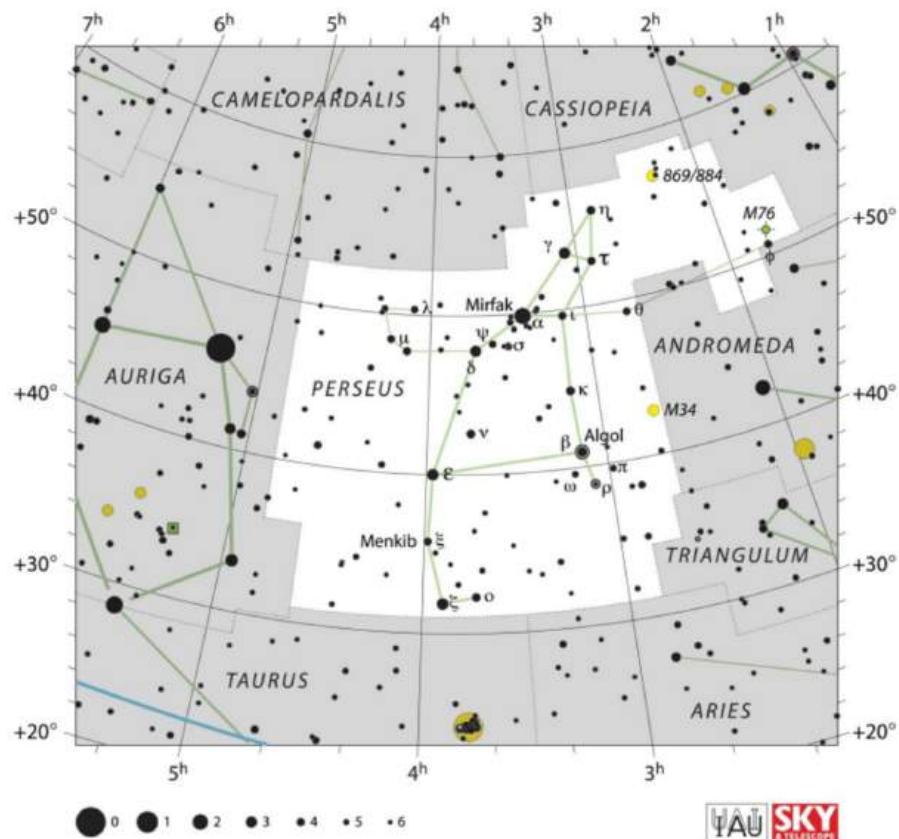
Constellation CORNER

BY: KRISTA LEMOINE

Perseus

THE HERO
DECEMBER 2024

Perseus is one of the most famous Greek heroes. Perseus was the son of Danae, daughter of King Acrisius of Argos. He is best known for killing the Gorgon Medusa and rescuing the Princess Andromeda from the Sea Monster. In the sky, Perseus lies next to his beloved Andromeda. Nearby are her parents Cepheus and Cassiopeia, as well as the monster Cetus, to which she was sacrificed. Pegasus the winged horse completes the tableau. Perseus himself is shown holding the Gorgon's head.



ASTRONOMICAL LEAGUE OBSERVING TARGETS

Messier	Herschel 400	Double Star	Urban
M34	NGC 651	Eta Persei	NGC 869
M76	NGC 869	Struve 331	NGC 884
	NGC 884		Tr 2
	NGC 1023		Mel 20
	NGC 1245		NGC 1342
	NGC 1342		
	NGC 1444		
	NGC 1513		
	NGC 1528		
	NGC 1545		

Click [here](#) for the list of
Astronomical League Observing Programs.

NGC 869 & 884 DOUBLE CLUSTER

Magnitude: 3.7 and 3.8
Approximate distance from
Earth: 7,500 light-years
Location: 2h 20m (right
ascension), 57° 08'
(declination)



MESSIER 76 LITTLE DUMBBELL NEBULA

Magnitude: 10.1
Approximate distance from
Earth: 2,500 light-years
Location: 01h 42.4m
(right ascension), +51° 34' 31"
(declination)

WHERE IS THE PERSEUS CONSTELLATION?

Perseus is very easy to find because it has a distinctive shape and is surrounded by several recognizable patterns: Cassiopeia's W to the north, Auriga's hexagon with the bright Capella to the east, the Pleiades to the south, and the chain of three brightest stars in Andromeda to the west.

NEXT MONTH:

Orion

THE HUNTER
JANUARY 2025

10 BRIGHTEST STARS IN PERSEUS

α Persei - Mirfak - 1.79
β Persei - Algol - 2.12
ζ Persei - 2.85
ε Persei - 2.89
γ Persei - 2.93
δ Persei - 3.01
ρ Persei - 3.39
η Persei - Miram - 3.76
ν Persei - 3.77
κ Persei - Misam - 3.8

OTHER DEEP SKY OBJECTS IN PERSEUS

NGC 744 - Open Cluster
NGC 957 - Open Cluster
NGC 1499 - California Nebula
NGC 1582 - Open Cluster
NGC 1624 - Star Cluster & Nebula



Astronomical Events

November and December 2024

Source: [Sea and Sky](#).

NOVEMBER



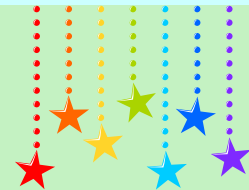
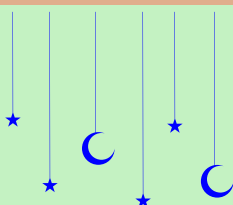
- 01: New Moon
- 04: Moon Near Venus
- 08: Saturn at Opposition
- 11: Moon near Saturn; Lunar Occultation of Saturn
- 15: Full Super Moon
- 16: Mercury at Greatest Elongation; East.
- 17: Uranus at Opposition/Moon near Jupiter
- 16-17: Leonids Meteor Shower Peak
- 20: Moon Near Mars
- 28: Orionids Meteor Shower Peak



December



- 01: New Moon
- 04: Moon Near Venus
- 07: Jupiter at Opposition
- 08: Moon near Saturn; Lunar Occultation of Saturn
- 14: Geminid Meteor Shower Peak / Moon near Jupiter
- 15: Full Moon
- 18: Moon Near Mars; Lunar Occultation of Mars
- 21: December Solstice
- 22: Ursid Meteor Shower Peak
- 25: Mercury at Greatest Elongation; West
- 30: New Moon



Christmas is Practically Here!



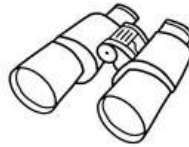
What telescope is best for me?

The best telescope for you is the one that you will use!



1 Consider trying binoculars first.

- ★ Easy to use, easy to store, ultra-portable.
- ★ Can see large sections of the sky at once.
- ★ Can use them for daytime activities.



An excellent size is 10 x 50:
10 = magnification
50 = the diameter in millimeters of the front lens.

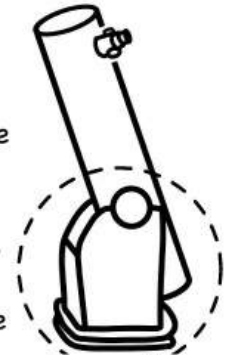
2 Before buying a telescope, ask yourself these questions...

- ★ How well do you know the night sky? Finding objects is not easy without practice. A quality "go-to" computerized telescope is costly and its operation must be mastered.
- ★ How hard is the scope to assemble? If it is too complicated, you won't use it.
- ★ Where will you do most of your observing? A city resident will likely need to cart it to a dark site.
- ★ Where do you think you'll be in the hobby in three years? If you really like astronomy, you'll outgrow a small scope in six months.
- ★ Will you eventually pursue astrophotography? You'll need a sturdy, motor driven mount that tracks accurately.

★ Common Telescope Designs ★

Reflector

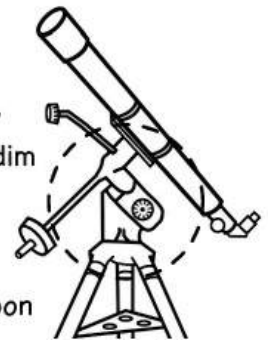
- ★ Easy to use
- ★ Least expensive scope design
- ★ Great for clusters, nebulae, and galaxies
- ★ Can be bulky
- ★ Generally not suitable for astroimaging



Shown with a Dobsonian Mount

Refractor

- ★ Easy to use
- ★ Tend to be costly
- ★ Not suitable for dim objects
- ★ Can be used for astroimaging
- ★ Great for the moon and planets



Shown with an Equatorial Mount

★ Telescope Diameter Dilemma ★

Since most sky objects are relatively dim, a telescope needs to gather large amounts of light. Therefore, larger diameter telescopes are better than smaller ones. However, they are also bulkier – and less likely to make it outside in cold weather!

3 Telescope and observing tips:

- ★ Magnification – low power is used for most objects.
- ★ Finder scope – a small one is nearly useless.
- ★ The larger the telescope's diameter, the better views it gives, but the less portable it is.
- ★ If the scope has poor optics or a wobbly mount, it will be frustrating to use. Hence, it won't be used.
- ★ Finding celestial objects requires practice and patience.
- ★ Never point the telescope at the sun without the proper filter installed ON THE FRONT of the scope.
- ★ Don't expect what you see in the eyepiece to closely resemble what you see in photographs.

4 Visit your local amateur astronomy club!

- ★ You can see and try the various sizes and types of telescopes.
- ★ Some clubs have programs for lending telescopes.
- ★ Members will be happy to guide you through the scope selection process.



Schmidt-Cassegrain

- ★ Portable, but heavy
- ★ Tend to be costly
- ★ Good for astroimaging
- ★ All purpose scope

ASTRONOMICAL LEAGUE

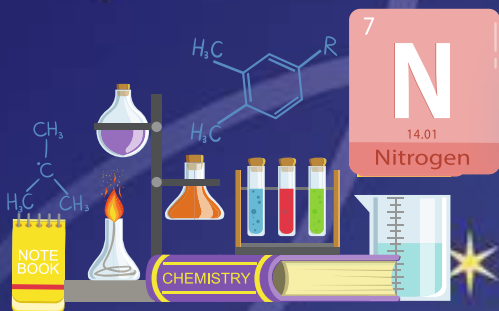
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www.astroleague.org

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The Astronomer's Periodic Table of Elements



Nitrogen

Source: Fusion Reactions in Stars: Proton-Proton Chain and CNO Cycle Reaction

Nitrogen was discovered in 1772 by Daniel Rutherford. It makes up 3.3% of the mass of our bodies with the majority of it being found in our DNA. It makes up 78% of Earth's atmosphere. It makes up a very small percentage of the mass of our Milky Way galaxy and makes up approximately 0.1% of the mass of the visible universe.

Although nitrogen is found in very small amounts in the universe, it is still a very important element when it comes to stars. Especially large mass stars bigger than our sun.

Nuclear fusion powers a star during its life cycle. This fusion takes place in the core of the star converting hydrogen into helium. However, the mass of the star determines how the conversion of hydrogen into helium takes place.

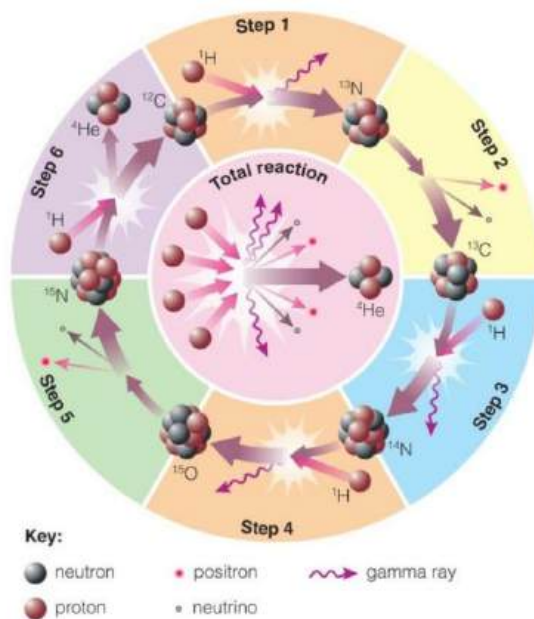
For instance, low-mass stars the size of our Sun and smaller convert hydrogen to helium through a process called proton-proton chain reaction where two hydrogen atoms merge into a deuterium atom which is merged with another hydrogen atom to form a Helium-3 atom. The next step in the chain consists of two Helium-3 atoms coming together to produce Helium-4. The whole chain reaction creates a lot of energy in the form of heat and gamma rays. However, the fusion process is different in stars larger than our Sun and needs nitrogen as a catalyst.

In large-mass stars, the fusion process of converting hydrogen into helium is accomplished by a catalytic process called the CNO Cycle. This cycle uses atoms of carbon, nitrogen, and oxygen as the go-between of hydrogen and helium.

One of the major differences of the CNO Cycle, besides having a catalyst to help the reaction along, is the fact that this cycle is very temperature sensitive. If the core of the star has lower temperatures and pressure, the fusion of hydrogen into helium is slower and is termed the cold CNO cycle. If the star's core has higher temperatures and pressure, the process of fusing hydrogen into helium moves at a quicker rate and is termed the hot CNO cycle. This method of converting hydrogen to helium produces a lot more energy than the proton-proton chain reaction and helps keep larger mass stars in balance between the external and internal forces until they reach the end of their life cycle and die.

The type of hydrogen-to-helium fusion that takes place in the core of the star depends on its mass, pressure, and temperature. However, all stars perform Stellar Nucleosynthesis which is the creation of heavier elements from lighter elements. All the atoms in the universe started as hydrogen and stars turned those hydrogen atoms into other elements, including nitrogen.

CNO Cycle



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- High-mass main sequence stars fuse H to He at a higher rate using carbon, nitrogen, and oxygen as catalysts
- Greater core temperature enables H nuclei to overcome greater repulsion
- C, N, O only ~2% in abundance, but plenty enough to act as catalyst
- Reaction energy is the same, but rate much higher:
 - Higher T, many more photons, very high radiation pressure ($10^{-5} M_{\odot}/\text{yr}$, up to 1,000m/s),

Registration Now Open!!



ASTROCON 2025 will be held June 25-28, 2025, under the spectacularly dark skies of Bryce Canyon National Park in southern Utah.

The venue will be at Ruby's Inn and Convention Center a few miles from the park entrance. A special area a few miles east of the convention center will be available for evening viewing plus astrophotography/digital imaging workshops.

The convention's goal is to teach how to enhance one's personal viewing experiences through workshops and evening viewing plus opportunities to learn astrophotographic skills. As we are still in the planning stage, we welcome your input as to how daytime and/or evening presentations and workshops can best achieve these goals. Ideas that our committee is considering include:

- Setting up your own personal observing program (including Astronomical League Observing Programs to consider)
- Observing tips including clothing to wear, how best to use your own eyes, equipment ideas
- Using star charts (digital and paper)
- Creation of observing lists for difference types of objects
- Understanding eyepiece selection
- Using filters for visual and photographic work
- Sketching workshop
- Observing log workshop – starting and keeping your own journal
- Astrophotography/Digital Imaging workshops (novice and advanced)

Please feel free to contact me if you wish to assist with a presentation and/or a workshop. We are starting our planning early, as we learned from ASTROCON 2017 at Casper Wyoming, held during the total solar eclipse, that advance planning is particularly important for this type of event. We look forward to hearing from you.

Lowell Lyon
ASTROCON 2025 Chair
801-699-7283
bolide@sisna.com



Please visit our website at
<https://astrocon2025.org/>
or Scan the QR code below to
register for ASTROCON 2025!



Volunteers Still Needed!

We are still in need of people who can provide the following services to please volunteer.

***IT Specialist/AV Coordinator *Food Service Coordinator**

***Coordinator of the Workshops * MC to Introduce Guest Speakers**

Please contact Lowell Lyon (Information above) to volunteer!

**ATTENTION
PLEASE!**



HELP!



**Need Some Help with Your
Telescope? Get Friendly, Expert
Help with
SLAS Member, Max Byerly!**

Telescope Repairs and Maintenance:

Do you ever find yourself needing help with your telescope? Maybe something isn't working, right? Maybe you can't figure out how to get it properly collimated or aligned with the sky. Has it broken down and needs a fix? I'm here to help!

I'm Max and I've been helping people get back under the night sky for over a decade. I moved to SLC a few years ago, and have tried to be active when my work schedule lets me come to events and star parties.

I enjoy helping people with the night sky and their equipment. I know a lot from the basics all the way to imaging faint targets with a telescope. I'm quite experienced in particular with Meade, Celestron, iOptron, and Orion/Skywatcher equipment, but that doesn't mean I can't help if you have something outside of that. I've repaired and fixed many mounts cleaned many telescopes and mirrors, and regreased and tuned several Goto systems. Just know that when something happens or if you're not comfortable tackling something, reach out to me and let's see what I can do for you!

Contact: maxbyerly@icloud.com



Pssst! Need a Telescope?



Do you want to use a telescope, but don't have the space for one, or the money for one? There are a couple of options for borrowing a telescope. One is from our Salt Lake County Libraries and the other is if you join SLAS, you can borrow a telescope as part of membership benefits.



To reserve Telescopes, please call Customer Service 801.943.4636 or stop by your local branch and talk with a librarian.



Telescopes THE SALT LAKE COUNTY LIBRARY SYSTEM

The County Library is lending a limited number of Orion StarBlast Telescopes at each branch. The County Library's telescope lending program is made possible through a partnership with the Salt Lake Astronomical Society. Follow the safety rules and don't look at the sun! Enjoy this STEM experience.

- Telescopes are located at all libraries for check out, subject to availability
- Only 1 telescope per library card
- The Telescope and all peripheral materials (fanny pack, eyepiece, rubber eye guard, lens covers, view finder, books, head gear, brush pen, instructions, batteries, and base) must be returned together in the condition in which they were checked out and on the same day in which the Telescope is returned

To see all participating libraries in the telescope loaner program in Utah, click on this link: Utah (librarytelescope.org)

These are the telescopes available to borrow through SLAS. This program is for members only and can be obtained through slasloanequipment@gmail.com



- (4) 8" Dobsonian telescopes
- (2) 6" Dobsonian telescopes
- (4) C-8 telescopes
- (1) 4" Criterion SCT
- H-Alpha Solar Telescope, tripod, mount and misc. accessories.

The Astronomy Nook for Grades K-12



Credit: University of Alaska-Fairbanks

UAMN Virtual Junior Curators: Solar System

Make a Comet on a Stick!

Make your own comet that can fly around the room!

Comets are chunks of ice, rock, and gas that orbit the Sun. When they get close to the sun, they heat up, forming a glowing tail.



Materials Needed:

Wooden stick (a chopstick or popsicle stick works well), aluminum foil, ribbons, scissors.

Instructions:

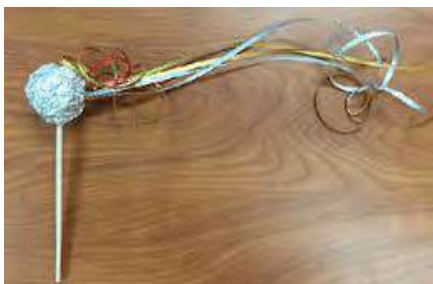
Step 1: Cut five pieces of ribbon: two long pieces (about 3 feet or 91 cm long), two medium pieces, and one short piece. Tie your ribbons around the end of your wooden stick.

Step 2: Cut three square pieces of aluminum foil. Hold the ribbon pieces off to one side and gather the foil around the end of the stick, where the ribbon is tied.

Step 3: Form the foil into a ball while holding the ribbon tail off to the side.

Step 4: Repeat with two more sheets of foil. If you want a bigger comet, add more foil!

Step 5: Take your comet on a stick and fly it around the room!



Left: Example comet on a stick.

Right: Comet ISON in 2013.

Image: NASA/MSFC/Aaron Kingery.



A ctivity and images from NASA SpacePlace: spaceplace.nasa.gov/comet-stick/en/

All About Comets

Comets are balls of frozen gases, rock and dust that orbit the Sun. When a comet's orbit brings it close to the Sun, it heats up and spews dust and gases, forming a tail that stretches away from the Sun for millions of miles. Comets have a *nucleus*, the main body of the comet; a *coma*, the glowing part around the nucleus; and two *tails*, a dust tail and a gas tail.



Comet Lovejoy in 2013. Image: NASA/Aaron Kingery.

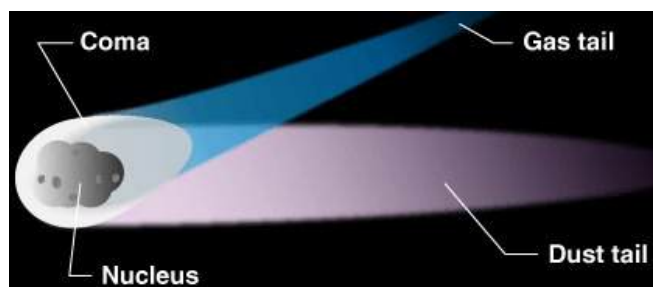


Diagram of a comet. Image: NASA SpacePlace.

Some comets orbit the sun on a predictable schedule. Halley's Comet, the most famous comet, is visible from Earth about every 75 years. The next time we can see it is will be in 2061.

There are currently 3,668 known comets, but there are likely billions of comets orbiting our Sun in the Kuiper Belt and the distant Oort Cloud.

Comets are leftovers from the formation of the Solar System, about 4.6 billion years ago. As the sun, planets and moons were forming, small chunks of ice and rock did not have enough gravity to clump together. These chunks became asteroids and comets.

Scientists study comets to learn more about the early days of the Solar System. Astronomers think that comets may have brought water to Earth to in its early days!

In 2014, the European Space Agency's Rosetta probe sent the Philae lander to the comet Churyumov–Gerasimenko, landing a spacecraft on a comet for the first time!

Right: Surface of the comet Churyumov-Gerasimenko



Image: ESA/Rosetta/NAVCAM.

Information from NASA In Depth - Comets:

solarsystem.nasa.gov/asteroids-comets-and-meteors/comets/in-depth/

SLAS Board Meeting Minutes

September 11, 2024

7:00PM

Denny's – Redwood Rd & North Temple

Board Members in Attendance: Don Abernathy, Aleta Cox, Krista Lemoine, and Marlene Egger

Excused: Trevor Hebditch (on vacation)

Other Members in Attendance: Jim Keane, Alpine Stringham, Joan Carman, Patrick Wiggins, Ken Warner, and Tony Sara.

President, Don Abernathy, calls the meeting to order at 7:01pm

Don welcomes everyone, and thanks the board for their service this year. He also thanked Joan Carman, Alpine Stringham, Jim Keane, and Tony Sarra for all their support throughout the year.

Vice President and ALCor, Aleta Cox, had no updates on the Astronomical League. She congratulated Krista Lemoine for her two recent Observing Program Awards.

Don told Joan that the Celestron Direct website has availability on the Zhumell telescopes for \$179.98. Joan said a member of the national task force is working with Highpoint Scientific to keep a similar telescope in production. Joan said she bought an extra telescope by mistake, and she still has it in her garage.

Historian, Patrick Wiggins, has items to add to the website, but is waiting for the new website to be completed.

SPOC Director, Jim Keane, would like to clean out the maintenance shed and the Clements building. He has plans to do a few more repairs at SPOC. Don mentioned that Jenette Scott reached out to him about the eclipse glasses being meant for another Utah based program. Jim said he knew about it already and that he refused the pallets.

Aleta said she's been receiving emails about telescope donations and people requesting telescopes to be fixed. She gave an example of an email she received. Don said he was contacted by the same person, and he will meet them to pick up the telescope soon. He will arrange a time to meet this weekend.

Secretary/Treasurer, Krista Lemoine, presented the final roster of candidates for the 2025 Board Member Elections. They are as follows:

- Trevor Hebditch -President
- Jenette Scott – Vice President

- Max Byerly - Board Member-at-Large

Krista noted there are still two open offices that need to be filled. (Secretary/Treasurer and a second Board Member-at-Large)

Don asked everyone to see Krista's printed financial report. Jim gave a very detailed report of the budgeted vs actual funds spent this year. SLAS is currently \$576.30 ahead of budget for the general funds. SPOC currently is \$2,105.13 ahead of budget, and Special Projects are \$7,971.64 ahead of budget. The total budget is ahead \$10,653.07. Jim and Don asked Krista to inquire with the Bank of Utah about SLAS investing in CD to collect interest on our account. Jim also asked if we could find a way to get some banking insurance to protect SLAS's assets.

Board Member-at-Large, Marlene Egger, gave her report of the upcoming star parties for the rest of the year. She also mentioned that the museum requested a star party on February 5, 2025. The board agreed that Marlene should decline this star party because the current board cannot schedule events for the next board's term.

Board Member-at-Large, Trevor Hebditch, was absent but had sent the board his bylaws for the SLAS Educational Fund via email. Jim reviewed these prior to the meeting and sent the board his revisions. Marlene also had some suggested revisions.

Don went over the candidates for the 2025 Board Member Elections again. He noted he needs to setup an election committee. Ken Warner will setup the ballots for online voting. Don asked each board member to elaborate on their specific duties and would like this added to the SLAS Constitution. Aleta said that it was quite the task to change the Constitution and Joan agreed. Marlene suggested posting the duties on the website in lieu of changing the Constitution. Everyone agreed this was the best course of action.

Jim requested the board prepare for the transitional board meeting in December by going over the financials and schedules beforehand. He also asked that the CD investment be researched by the next meeting.

Meeting adjourned at 8:04PM.

Minutes submitted by:

Krista Lemoine, SLAS Secretary/Treasurer

SLAS General Meeting Minutes

September 18, 2024

7:30PM

Salt Lake Community College – Redwood Road Campus

Members in attendance 43.

President, Don Abernathy, calls the meeting to order at 7:29PM.

Don welcomed everyone and asked if there were any new members in attendance. Don acknowledged our appreciation to Professor Jonathan Barnes and Dr. Samuel Jones for continuing to host the meeting at Salt Lake Community College.

Don introduced the guest speaker for the evening as Dr. Joseph Jensen. He is an infrared astronomer who studies the expansion of the universe. For the past fifteen years he has been a professor of physics and astronomy at Utah Valley University. Prior to that, he worked at the international Gemini Observatory in Hawaii, where he helped develop new instrumentation for the twin 8-m telescopes. He received his Ph.D. in astronomy from the University of Hawaii Institute for Astronomy.

Don turns over the floor to Dr. Jensen.

Dr. Jensen's presentation is about the Crisis in Cosmology. His presentation talks about the distance ladder and how scientists measure it with various techniques. With this they can measure the Cosmic Microwave Background. This data provides insight into how much dark matter and dark energy the universe possibly contains. He talks at length about the use of Red Giant stars as a means of measuring distances. This is known as the TRGB, or the tip of the Red Giant stars. These stars are used in place of Cepheid Variables.

After his presentation Dr. Jensen answered questions from those in attendance.

Don moves on to the business portion of the meeting.

Don asked ASTROCON 2025 chair Lowell Lyon to come to the podium.

Lowell asked that everyone visit www.astrocon2025.org. He said many registrations have come in. He also noted that Bryce Canyon National Park hopes to have David Levy as their guest speaker for the Astronomy Festival.

Don brought up the upcoming elections. The final candidates are as follows excluding write ins:

President - Trevor Hebditch

Vice President - Jenette Scott

Board Member at Large - Max Byerly

Secretary/Treasurer - Open

Board Member at Large - Open

Election ballots are available online as well as write in. Polls close at midnight before the October General meeting. Paper ballots will be available at the October General meeting.

The next scheduled Solar Party at Winchester Park in Murray is Saturday, September 21 from 9:00 AM to noon, weather permitting. At the last solar party everyone witnessed a coronal mass ejection.

There are only two public star parties taking place at SPOC left on the calendar in October.

Don thanked everyone for coming. Don also invited everyone for Advanced Training at Dee's Restaurant.

Meeting adjourns 8:47 PM.

Minutes submitted by:

Krista Lemoine, SLAS Secretary/Treasurer

SLAS Board Meeting Minutes

October 9, 2024

7:00PM

Denny's – Redwood Rd & North Temple

Board Members in Attendance: Don Abernathy, Aleta Cox, Krista Lemoine, and Marlene Egger

Excused: Trevor Hebditch (on vacation)

Other Members in Attendance: Jim Keane, Alpine Stringham, Patrick Wiggins, Ken Warner, and Tony Sarra.

President, Don Abernathy, calls the meeting to order at 7:04PM.

He thanks everyone for coming tonight.

Don asked Aleta to give an update on ASTROCON. Aleta noted that a meeting was held last week.

Joan Carman has an extra telescope. Don would like an update on that.

Historian, Patrick Wiggins, noted he needs to renew the Clear Sky Clock.

SPOC end of year cleanup is currently being planned. SPOC Director, Jim Keane, will send out a detailed email to everyone participating. He is looking at the date of November 2nd.

Don asked Jim if the Big Sig financials will close out this year. He said yes. Patrick noted it's spelled Sieg.

Jim said that he has more SPOC spending before the end of the year.

Don thanked Aleta and Krista for their officer position descriptions.

Jim has suggestions on getting property insurance out at SPOC. Astronomical League offers some types of insurance, but not property. Jim is going to reach out to Stansbury to see if they will "own" the property to absorb the costs.

Secretary/ Treasurer, Krista Lemoine, will learn how to use FileZilla to update the website with the monthly financials. Krista will also check on protection for the SLAS bank account. Jim will help Krista with gathering information on a CD.

Patrick suggested a debit card for the bank account. The board decided against this for security purposes.

Board Member-at-Large, Marlene Egger, said that the star party for the Girl Scouts went very well. The aurora was visible, and everyone enjoyed seeing it.

She went over the upcoming remaining star parties for the year.

Marlene gave a very detailed report on her duties as Board Member-at-Large. Don asked she summarize it for the website.

Patrick asked Marlene if we are doing too many events. Marlene said we have been maintaining the events and sometimes they get cancelled. Patrick asked if we should charge for star parties. Don said he didn't think this would go well because it would set expectations. Marlene asked if this could be put forth to next year's board at the transitional board meeting. Patrick also suggested bringing back the donation jars next to scopes at SPOC.

Don will have 3 non candidate members for the elections committee selected by next week. Paper ballots will be available at the general meeting. Online voting will be available until midnight the night before the General Meeting. Patrick said that Bruce Grimm has passed away. He would like to see something in the NOVA about him, and to invite his family to the next meeting. Don will reach out to Rodger Fry about writing a piece for NOVA.

Patrick did make a reservation for the room at Golden Corral for the Solstice Party and confirmed it. He asked that this be confirmed by another member. Don said he will check with them to make sure it is on their calendar. Marlene asked if we need to write up duties for the other appointed SLAS positions.

Don said he will look into this.

Webmaster, Ken Warner, said that James has sent back stuff information on the website redesign. Ken asked his development team to give him a bid on finishing the site. They quoted about \$5,000. Jim asked them to be given clear directions, no money to be given upfront, and given an established timeline in writing before proceeding. Don asked Jim and Ken to write out a contract to give the development team. Meeting adjourned at 8:09 PM.

Minutes submitted by:

Krista Lemoine, SLAS Secretary/Treasurer

Minutes of the Salt Lake Astronomical Society General Meeting
October 16, 2024
Held at Salt Lake Community College, Taylorsville Campus

From 7:00 to 7:30, prior to the beginning of our general meeting, Professor Jonathan Barnes, along with Dr. Sam Jones and some students gathered at the northwest corner of the Rampton Technology Building to see if they could see the comet in the western skies. A few SLAS members joined in the comet watch. Unfortunately it was just a bit too light outside for most of us to find and view the comet before 7:30. Professor Barnes found it, but when he moved to a different spot, he couldn't see it again. There were some thin clouds that may have obscured his view. Aleta Cox did not see it at all and left to come inside.

President Don Abernathy called the meeting to order at 7:30 p.m. He thanked Professor Jonathan Barnes, and Dr. Sam Jones, our hosts at the college. He also recognized Professor Janalee Harrison, also in attendance. Approximately 24 people were in attendance. Board members in attendance were Don Abernathy, Aleta Cox, Trevor Hebditch, and Marlene Egger. Krista Lemoine was under the weather and was excused. Don then asked those who were new or here for the first time to stand and introduce themselves.

Don then introduced tonight's speaker, Dr. Rob Zellem, Ph.D, an astrophysicist at NASA's Goddard Space Flight Center. Dr. Zellem spoke to us in August about the Roman Telescope. Tonight he addresses us as the Project Scientist and Lead for Exoplanet Watch, a citizen science project to observe transiting exoplanets to update their ephemerides to ensure the efficiency use of large telescope time. Dr. Zellem opened by telling a bit about himself, and that he was an Exoplanet Astronomer. He defined what that really is. The word Exoplanet is short for extrasolar planet- which is any planet outside our solar system. An Astronomer, he defined as anyone spending copious amounts of time staring into the sky looking through a telescope, or in his case, at his computer hooked up to a telescope, either directly or remotely. This allows him to do research from the comfort of his home in his PJs if he desires. Exoplanet Astronomers are trying to answer the question: "Are we alone in the Universe?" There are 5000 Exoplanets discovered so far. There may be as many Exoplanets as there are stars in the sky.

He then told how Astronomers go about searching for life in the universe. They use 3 basic steps.

1. Find an Exoplanet.
2. Determine if there is an atmosphere to support life.
- 3 Find life on the surface.

Step 1. Finding an Exoplanet. There are several ways to do this, but he only covered three tonight to go about this process.

A. Radial velocity, where the orbiting planet will tug on the host star and the star will wobble back and forth as the planet orbits around it.

B. Transit Method, where the orbiting planet passes in front of the star and very slightly dims the light. The change in brightness is measured, and at best the star dims by 1%. The advantage of this method is that it is relatively cheap, and can help determine the size of the planet. The disadvantage is that there is a bias towards large planets in rapid orbits around their star, sometimes a false detection occurs, and finally, the planet and star must be seen edge on from earth's viewpoint, otherwise we can't see the event happen. Dr. Zellem talked about a couple of ways ordinary citizens could get involved with Exoplanet research and searching. He told about NASA's Transiting Exoplanet Survey Satellite (TESS) a satellite orbiting the earth and is expecting to discover ten

thousand more Exoplanets. He told about Exoplanet Watch, a program where citizens can get involved in monitoring the transits of Exoplanets. They upload their data to a server. This data uploaded to the site becomes immediately available to the public. Observers are listed as co-authors. They feel that if you do some of the work, you should get the credit. It is a collaborative effort to complement existing surveys and increase the amount of information available. Go to exoplanets.nasa.gov/exoplanet-watch for more information. A third program he mentioned was called Exotic. It is a program where an Exoplanet transit data is interpreted and collected and processed.

C. Direct Imaging is the third method used to search for Exoplanets. It consists of actually taking images of the planets orbiting the star. This is difficult because of the glare produced by the star, so they use a coronagraph which simulates a solar eclipse and blocks out the glare, allowing the outer corona to be seen and any objects near. He showed a time-lapsed video of a star blocked out with 4 points of light (planets) orbiting it. The photos were taken over many years and put together to make a 'movie' showing them orbiting the star. It was really interesting.

Step 2. Determine if the planet can support life. Does it have an atmosphere? Is it in the "Habitable Zone" around the star? Too close, the planet is too hot. Too far away and it is too cold. Also, Life as we know it, requires liquid water to support life. He explained a law called 'Beer's Law' that allows a planet to be characterized by how the reflected light comes through an absorbing medium like water vapor, for example, and the colors showing through will determine what elements and things are in the atmosphere. This is easier with telescopes that are in space, above our atmosphere. The Nancy Grace Roman telescope will excel at this because it has a 2.4m mirror, 100x field of view, and is faster than Hubble at direct imaging. Currently we are limited on earth to infrared light.

Step 3. Look for life on this Exoplanet. Is there evidence of oxygen? Is there methane, indicating some kind of biological life? Look at and examine the 'bumps and squiggles' of the surface. Analyze the reflected light to determine if it has atmosphere.

Dr. Zellem mentioned the launches of Voyager 1 and Voyager 2 and what all was included on those two crafts, including the golden records with information. They have left the influence of our solar system and have passed into interstellar space. He closed with the thought that we have yet to make any conclusive detection of extraterrestrial life. Maybe our technology isn't good enough, or maybe we just haven't found them yet.

He took some questions and then gave the web address again for the Exoplanet Watch: exoplanets.nasa.gov/exoplanet-watch and emphasized that you don't need to have a degree in anything to participate in this research.

Don thanked him for the great presentation and he was given a healthy round of applause.

Don then moved into club business for the evening.

Elections: Tony Sarra, Joan Carman, and David George-Kennedy were asked by Don to serve as the Election Committee. They had paper ballots for those who didn't or couldn't vote online. Voting closed as the meeting started so they could hear the speaker too.

David George-Kennedy was asked to report the results. Winners are in **bold**.

For President: **Trevor Hebditch** (ran un-opposed)

Vice President: **Jenette Scott** (ran un-opposed)

Secretary/Treasurer had 3 write-in candidates. The committee wasn't sure if they were actually contacted about this.

They were: Patrick Wiggins, Rodger Fry, Vaughn Kinder. Patrick received more votes than the others and said he would accept the position as Sec/Treas. To Clarify: Later Patrick said that neither he nor Rodger had been asked prior to being written in, and he sent an email and left a voice message for Vaughn. If Vaughn was asked beforehand, and wants the position, Patrick said he should have it. Patrick has not heard back from him yet. Patrick said he would accept the position if Vaughn declines. So, for now, there is no decision on the Secretary/Treasurer position.

Board Member at Large 1: **Max Byerly** (ran un-opposed)

Board Member at Large 2: had four write in candidates. again, the committee wasn't sure if they were actually contacted about this. They were: Patrick Wiggins, Wade Rees, Jim Fenton, John Johansen. For now, no decision has been made for this office.

Don thanked the Election Committee Members for their service, and also thanked Web Master Ken Warner for his work with the online election process.

Don then gave announcements about the final star parties of the season.

Saturday, October 19th our final Sun Party at Winchester Park 9am to noon. (weather permitting)

Saturday, October 26th our final Star Party at SPOC. (weather permitting)

Marlene Egger said there was a possibility of one more school star party this year. Details had not been finalized yet and to check the online calendar for more information.

Don adjourned the meeting at 8:40 p.m. to 'Advanced Training'.

Minutes respectfully submitted by Aleta L. Cox.