ASTRONOMY CLUB OF TULSA

OBSERVER

OCTOBER 2024

Bringing Stars to the eyes of Tulsa since 1937

Editor – John Land

Hickson 44 galaxy cluster in Leo by Tim Gilliland

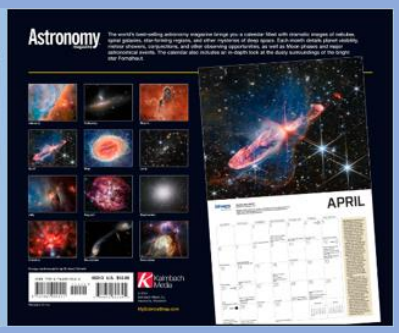
Image was taken at Tim's Hardhat Observatory near Keystone Lake.
His telescope is Celestron 11" Edge with a SBIG ST8300m camera
Filters Lum 900 sec X 16 RGB 225sec x 16 binned 2x2

The large galaxies are NGC 3190 10th mag Spiral -- NGC 3187 13th mag Spiral
NGC 3185 12th mag Spiral. These three lie at a distance 79 million light years.
NGC 3193 11th mag Elliptical 110 million light years away

2025 Astronomy Magazine Deep Space Mysteries Wall Calendars

Astronomy Magazine's 2025 Deep Space Mysteries calendars - $12.00 each. They make great gifts! For sale at club events or to reserve one. Email astrotulsa.tres@gmail.com

Each month has a stunning image along with information about astronomy events that month and interesting bits of astronomy history. There is ample space for you to write in your notes.



Our observing chairman Brad Young has published a collection of astronomy articles appearing in several magazines and newsletters over the past six years. Amateur astronomers of every level and any (or no) equipment will find fresh takes on our hobby, including ideas to expand your observing and get more from the night sky.

Copies of *Take What the Night Gives You*
will be available for purchase at our meeting or on AMAZON

The Women's Astronomy Group met on Sat. Sept 7. We had a fun visit and enjoyed brunch at Mom's Diner at 41st and Mingo in Tulsa!

We discussed the T Corona Borealis recurrent nova, September viewing opportunities and the upcoming Okie-Tex Star Party.

Pictured are Ann Bruun, Cathy Grounds, Tamara Green and Carol Kinzer.

Contact Cathy Grounds if you are interested in this group.

Stargazing Nights and Observatory Nights

Our GUESTS & Members nights are open to anyone. We do ask guests to try to RSVP.
Large groups need to make separate arrangements.

Members Only Nights are Open to members and their family
Details, Times and Direction Maps are posted on our Website
https://www.astrotulsa.com/events

Guest and member Observatory nights

Come enjoy an evening of star gazing at our observatory
located in dark rural skies SW of Tulsa
See details and directions on our Website Events Page
Guests are requested to RSVP

Saturday Oct 26 - 6:00 PM Guest & Members Observatory Night
Saturday Nov 23 - 4:30 PM Guest & Members Observatory Night
Saturday Dec 20 - 4:30 PM Guest & Members Observatory Night

Astronomy Club Members Nights

Our members are invited to come work on their observing goals, do some Astro imaging and share ideas.

Friday Oct 4 - 6:30 PM Members Observatory Night
Friday Nov 1 - 6:00 PM Members Observatory Night
Friday Dec 27 - 4:30 PM Members Observatory Night

If a Friday event must be cancelled due to weather, we will try again on Saturday
- Always check the website for event updates

In Town Astronomy Club meetings

Open to Guests and Members

Friday Oct 18 – 7:00 PM Jenks High School Planetarium
Friday Dec 13 – 7:00 PM Jenks High School Planetarium
Saturday Nov 9 - 5:30 PM Annual Member's Banquet

Located at 105 East B St, Jenks, OK

Keystone Ancient Forest public telescope night

Friday Nov. 8 - 4:45 PM details posted later
160 Ancient Frst Dr, Sand Springs, OK 74063

Come early and enjoy a hike along the scenic trails then stay late to view the moon, planets, and stars.
https://www.sandspringsok.org/175/Keystone-Ancient-Forest

Annual Astronomy Club Dinner
Saturday Nov 9 - 5:30 PM
@ Jenks High School planetarium building

Our members are invited to bring their spouse and family for a time of visiting and fellowship.

Menu – Enchilada Bar – mix of Beef, Chicken or Cheese
Salad, Desserts, and Drinks

Cost $ 20 each – Please RSVP in advance

Please prepay for your dinners with cash or check by October 30th as it helps us make an accurate order to the caterer (we will not be offering pay at the door this year)
Questions? Please contact Cathy at astrotulsa.tres@gmail.com

Volunteer teams wanted - Early Set Up - Serving time – Clean Up afterwards
Contact our treasurer at astrotulsa.tres@gmail.com

In addition to our program, we plan to have a drawing for some door prizes. If you have items to contribute as a prize contact our treasurer or officer.

Astronomy in the News

This is a selection of astronomy related news articles that come to my attention is recent weeks. I tried to select ones that seem credible but cannot vouch for complete accuracy.

Breathtaking timelapse of the Milky Way takes 10 years to create Cast it on to your TV
https://universemagazine.com/en/astrophotographer-spends-10-years-to-create-a-spectacular-8k-timelapse-of-the-milky-way/

How to Define a Planet – The Sequel - Sky & Telescope - Sky & Telescope
https://skyandtelescope.org/astronomy-news/how-to-define-a-planet-the-sequel/

Earth to get a temporary mini moon
https://skyandtelescope.org/astronomy-news/earths-new-temporary-mini-moon-arrives-this-weekend/

NASA Analysis: Earth Is Safe From Asteroid Apophis for 100-Plus Years - NASA
https://www.nasa.gov/solar-system/nasa-analysis-earth-is-safe-from-asteroid-apophis-for-100-plus-years/

Meade and Orion Telescope Cease Operations — Sky & Telescope - Sky & Telescope
As of July 9, the parent company of Meade and Orion telescopes ceased business and let go all its employees !
https://skyandtelescope.org/astronomy-news/meade-and-orion-cease-operations-maybe/

'Once-in-a-lifetime' photo — Perseid meteors, northern lights and rare glowing arc
https://www.space.com/perseid-meteor-shower-northern-lights-sar-arc-once-in-a-lifetime-photo

Camper Playing with Google Maps—and Stumbled Upon a Likely Ancient Impact Crater -
https://apple.news/AHLlYbuE3QCy-f7mGPFIwqw

Royal Observatory Greenwich's Astronomy Photographer of the Year Awards
https://skyandtelescope.org/astronomy-news/the-royal-observatory-greenwich-announced-the-winners-of-its-annual-astronomy-photographer-of-the-year-award/

President's Message
Don Bradford

The Astronomy Club of Tulsa is an interactive organization. It is organized to promote and facilitate the love and practice of astronomy to club members and to the public. But we cannot accomplish that goal by sitting back and passively waiting to be entertained. There is no better way to fulfill the mission of the club than for each of you to get interested, get active, and get involved in any way you feel comfortable and motivated.

At the September 20 club meeting, our Observing Chairman Brad Young, presented the "Citizen Astronomer's Manifesto" in which he outlined the numerous ways to get involved in astronomy, including science, observing, astrophotography, and others. And he presented his new book *"Take what the Night Gives You"* in which he tells his own personal story of the endless ways to enjoy this hobby and promote club objectives. I urge each of you to not only take what the night gives you, but to take what this club offers you. To do that effectively you must get actively involved.

As you know, I am not a candidate for President again, thereby making way for young leaders of the club. But I am not reducing my own interest, activity, and involvement in the club. You will hear me continue to encourage (some say preach) Special Interest Groups or whatever ways members decide to get involved. I am available to help in that effort in any way I can. But it's up to you! Just Do It!

I look forward to seeing you at future club events and at special activities you create.

"Bringing Stars to the Eyes of Tulsa since 1937"

Don Bradford - President

Each fall we hold elections for new officers and board members. These people help keep the club running smoothly by planning programs and observing events, communicating with the membership, maintaining our observatory and grounds, and overseeing the funds and business needs of the club. Elections will be held at our Oct 18th meeting.

The candidates for the 2024-2025 year are:

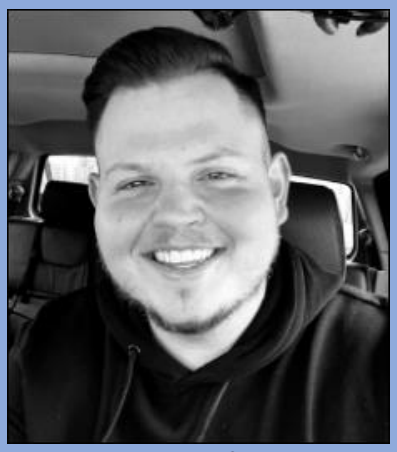
President – Jonathan Fussell, Secretary – Skip Whitehurst – Treasurer – Cathy Grounds

Board members – Don Bradford, Mike Blaylock, Jerry Cassity, Bryan Kyle,
John Land, Jack Reeder, James Taggart, and Skip Whitehurst

You can read about them on the following pages.

2025 Officers and Board Candidates -

Election Voting will take place at our October 18th meeting.



Jonathan Fussell - President Candidate

Many of you know me from club events or have seen me out at the observatory, but if we haven't met yet, allow me to say, hello! I'm excited to announce that I'm running for President of the Tulsa Astronomy Club. Over the past year as Vice President, I've had the privilege of engaging with many of you during public outreach nights, club meetings, and observatory nights. Together, we've fostered a welcoming environment where members can explore their passion for astronomy!

My journey in astronomy began at Oral Roberts University, where I founded and served as President of the ORU Astronomy Club while pursuing my degree in molecular biology. It was during this time that my passion for astronomy and astrobiology truly flourished. I honed my leadership skills, and authored my first scientific research paper, *"Stellar Nucleosynthesis of Phosphorus as a Biosignature."* This passion continued during my internship at Blue Marble Space Institute, a NASA-affiliated research institution, where I worked with Dr. Blanco and Dr. Cabrera on studying the evolution and chronology of amino acids, including those found in meteorite samples.

Although my time with Dr. Blanco and Dr. Cabrera has come to a close, I'm continuing my association with Blue Marble Space Institute under Dr. Jim Cleaves at Howard University. We are currently exploring the chemical evolution related to biosignatures—research with exciting potential for use in upcoming missions, such as the Europa Clipper, which will search for signs of life on Jupiter's moon, Europa. I'm also proud to have led the volunteer team for Tulsa's total eclipse event, serving as the go-to resource for the community during this incredible celestial experience.

If given the opportunity to serve as President, I will continue to lead our club with the same passion and dedication as previous presidents, ensuring we remain a vibrant, thriving community with a passion astronomy.

Thank you ! Jonathan Fussell

VICE PRESIDENT - No Candidate has put forth an application.

Cathy Grounds - Treasurer Candidate

Hi, my name is Cathy Grounds, and I am seeking re-election to the post of Treasurer. I have been a club member on and off since 2009 and have served as a board member several times. I have previously been involved in grant writing, organizing club functions, and helped plan the MSRAL conference last year. I have previous employment at H&R Block as a tax preparer and at MetLife as a senior annuities' specialist.

Cathy's heart of service and attention to details have been a great asset to our club. Recently Cathy has started a Women in Astronomy group. She has been doing an excellent job this past year managing our club financial accounts. Helping us plan the catering and snacks for the 2023 MidStates conference. Food and decorations for club picnics and dinners.

Skip Whitehurst - Secretary Candidate

Skip is a lifelong astronomy enthusiast. He is especially interested in transient events like eclipses, occultations, satellite tracking, satellite transits of the sun and moon, and dabbles in astrophotography. Skip has volunteered with public nights, outreach, "Telescopes 101" hands-on teaching, maintenance of the observatory, operation improvements to the club's 14" telescope and the observatory dome. He has been a board member since 2014 and club secretary since 2022.

Don Bradford - Board Candidate

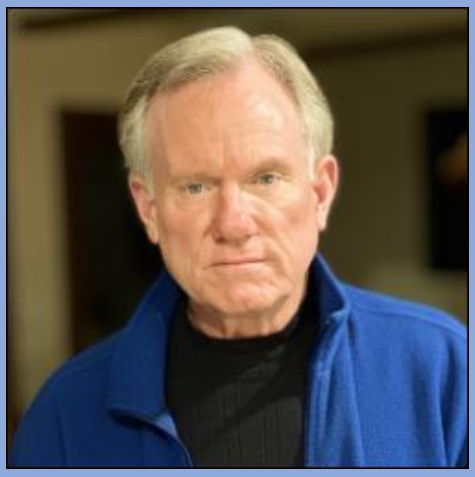
It has been my great pleasure and opportunity to serve as your president for the past year. I hope I have contributed to the enthusiasm and positive momentum of this club that has propelled its growth and good works since 1937. But it is time to pass that torch to a young generation. Although stepping away from the presidency, I will not reduce my own enthusiasm for the work being done by the club. I am therefore offering my candidacy for Board Member for the coming year, and I will continue to work hard to promote the club's founding purpose: to promote and facilitate the love and practice of astronomy to club members and the general public. I look forward to working with each of you to fulfill that purpose. Your vote for me will be appreciated.

Jerry Cassity – Board Candidate

I have been a member of the Astronomy Club of Tulsa since 2014. I have served one year as Vice President, two years as Secretary, and several years as a Board Member. I am running to serve another term as a Board Member. I am a frequent participant of our Guest nights and public events. I particularly enjoy sharing the night sky with the public as well as the camaraderie with other amateur astronomers. Jerry with his big Dob telescope is always a main attraction at our observatory guest nights.

James Taggart – Board Candidate – Observatory Manager

My name is James Taggart, and I have been a senior security platform architect for almost 20 years. I took over as Observatory Manager several years ago and I hope you have seen some of our improvements. I would very much like to be on the board again. This past year's big project has been replacing the drive system for our dome. This year we hope to be working on more automation and deploying more IT resources at the observatory site. If anyone wants to volunteer to help with building and land maintenance, please email. I am also looking for IT people to help modernize our facilities. If there is something that you need changed or added at the observatory, please let me know.



Jack Reeder – Board Candidate

I am an Oklahoma native with an interest in the cosmos from grade school. With the purchase of a Celestron 8" Edge HD and AVX mount about 6 years ago, my interest peaked again. I then set about to learn its operation and the night sky and have found both to be quite stimulating.

Volunteering and participating in ACT events has been very informative and enjoyable. I particularly enjoy the variety of people in the club. I feel I have brought a new set of eyes to the Board, especially in that I consider myself to be at an early stage of learning. I also bring other outside interests in cycling, writing, photography, and camping.

I have made my living for the last 25 years helping about 130 organizations all over this part of the country, mostly manufacturers, adopt the Toyota Production System. This system is known domestically as *"Lean."* It has many benefits in efficiency, productivity, cost, and quality. In practice, my profession involves running a lot of teams, teaching, mentoring, and coaching CEO's.

John Land – Board Candidate - Newsletter Editor

Having grown up along with the Space Age, I have always been fascinated with space. I was blessed to have a mother with a keen scientific mind who encouraged my curiosity about the many wonders of God's creations.

I discovered the Tulsa Club in the spring of 1977 and used to drive 70 miles to attend their meetings. I had some great mentors who took the time to guide me on my journey of knowledge to discover the treasurers of the night sky. One of my greatest joys is to pass that legacy on to others.

I accepted a science teaching position in the rapidly growing community of Broken Arrow in 1978. Following the Solar Eclipse of Feb 26, 1979, I was asked to start an Astronomy class that fall. For 28 years I was blessed to be able to share my passion for the wonders of God's universe with several thousand students as well as my fellow teachers. I have served in various leadership capacities in the club including observing chair, president, treasurer, board member and presently as newsletter editor.

Mike Blaylock – Board Candidate

Mike has lived in Tulsa since 1991. He got into Tulsa around 2005 and joined the Tulsa club in 2009. He writes – "I started with Binoculars for the first year. At first Rick Walker took me under his wings and basically showed me which end of the binoculars to look through. Steve Chapman took up mentoring after that. My next-door neighbor gave me a Meade 4" Reflector on a really, really bad department store GoTo Eq mount. That started me into ATM as I converted the scope to a DOB mount. Lots of fun building mounts, cases, Binocular parallel-o-gram, etc.

After using the 4" for about a year, I of course caught a mild case of aperture fever. That led to buying the then new to the market Orion 14" truss tube dob. Since then, it has been more scopes, cameras, and eyepieces.

My first Okie-Tex was in 2001. During that year's star party, I became interested in the idea of imaging. Being in the printing trade and growing up around my Aunt and Uncle's portrait studio, It seemed only natural. Also, being a bit of a closet geek, the technical aspect and somewhat steep learning curve appealed to me. I'm still imaging and still learning." Mike has shared several of his Astro Photos for the cover page of our newsletter. He has served on our board for several years.
His other hobbies : Woodworking, N-Scale Train Modeling & Operations, Watch Servicing, RC Sailboats

Bryan Kyle – Board Candidate

My name's Bryan Kyle. I've had a passion for all things space since I was very young but became a backyard astronomer in 2005. In 2018, I became the Planetarium Manager at the Tulsa Air and Space Museum and Planetarium, and I joined the Astronomy Club of Tulsa the same year. I've been with the club ever since, to lend a hand and a telescope when and where needed. I have served as a board member starting in 2020 and served as club vice president from October 2021 to October 2022. I would like to serve on the board to help the club any way I can.

Click on these images to links on the Internet

*** The NEW CLEAR OUTSIDE icon above is a link to an extensive site showing cloud cover %, Seeing, Transparency, Moon Phase, Temp in ^{O} C and many other useful tools

GOT A NEW TELESCOPE? Here are some sites to help you get started with you telescope.

Getting Started with Your New Telescope
https://skyandtelescope.org/astronomy-news/getting-started-with-your-new-telescope-2/

Astronomy for Beginners | Night Sky Facts, FAQs & Resources
https://skyandtelescope.org/astronomy-information/

What to Know Before Buying a Telescope
https://skyandtelescope.org/astronomy-news/what-to-know-before-buying-a-telescope/

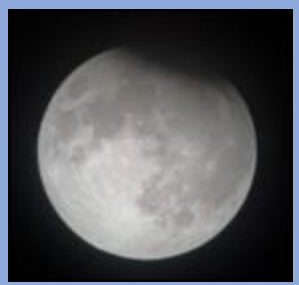
See Website Observation Station for a collection of Interactive Sky Watching Tools
Moon phases - Sun rise & Set - Make your own custom interactive sky chart and more
Great website for printable Finder Charts of Solar System objects https://in-the-sky.org/

October - Moon Phases - -
New Weds Oct 2 - - 1st Q Thurs Oct 10 - - Full Thurs Oct 17 - - 3rd Q - - Thurs Oct 24

OCTOBER PLANETS – Venus is becoming more prominent as our early evening planet in the SW sky. **Mercury** skims low along the WSW horizon in the evening the middle of the month. **Saturn** lies in the water jag of the constellation Aquarius. Earth is viewing its rings nearly edge on. We will get two opportunities to see Saturn without rings in the middle of March 2025 and again in Mid-November 2025. **Neptune** is lies about 4 degrees east of Saturn in mid-October. **Uranus** currently in upper region of Taurus near the Pleiades cluster. At 5.6 magnitude you can locate it using binoculars. Look for its tiny greenish disk in a telescope as it reaches opposition Nov. 16. **Jupiter** is in eastern Taurus rising about 10:30 PM early in the month and 9:00 PM at the end. **Mars** is rising about midnight. During the mid-October watch as it lines up with the two Gemini stars, Pollux and Castor. The third quarter moon joins the trio for a nice photo-op before Dawn on October 23rd.

Other Lunar conjunctions – Venus Oct 5, Saturn & Neptune Oct 14, Jupiter Oct 20, Mars Oct 23 & 24, and possibly Comet C/2023 A3 (Tsuchinshan-ATLAS) at dawn Sept 30

Partial Lunar Eclipse Sept 17, 2024



Member Scott Bratt took this beautiful image of the rising Harvest Full Moon using his Votex Viper 20x60x85 spotting scope. He used a TRIDAPTOR telescope phone adapter to attach his iPhone 15 Pro MAX to its eyepiece.

He then switched to his Celestron Nextstar 6se with a f6.3 focal reducer and 32mm plossl eyepiece to make a 20 second time lapse video Clicking THIS VIDEO LINK should drop the video into your download folder so you can view it

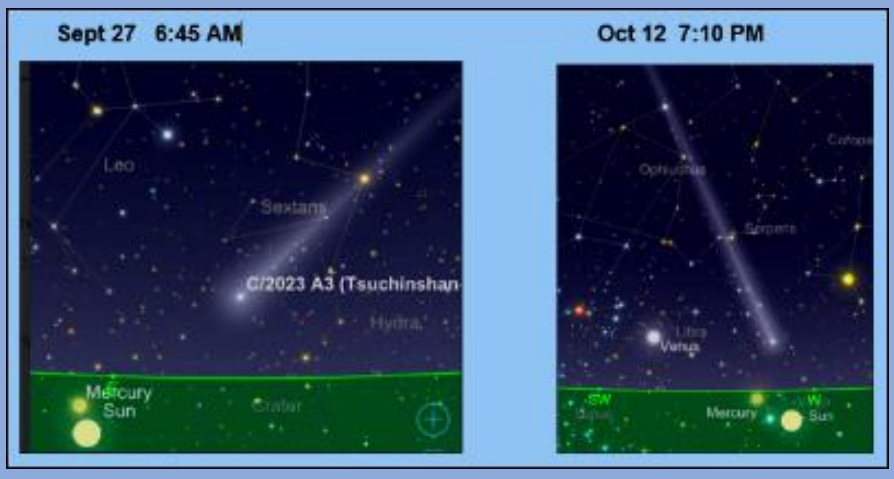
John Land took this series of images showing the movement of the earth's shadow with his SeeStar S50 smart telescope. Near the maximum eclipse some thin clouds drifted in front of the moon producing a colorful moon glory. Center image taken with an iPhone

The bright **Comet C/2023 A3 (Tsuchinshan ATLAS)** is now visible low in the east in the predawn sky. Images and observations are pouring in placing it a 3rd magnitude and increasing rapidly as it approached perihelion (closest to the sun) on Sept 27 It will sweep past the sun and outward toward its closest approach to the earth on Oct 12 at 0.47 AUs (43.7 million miles)
Astronomers are anticipating it to be a naked eye object for several days in October. If the more optimistic predictions hold true it may even be visible in bright twilight. Here is a nicely done **animated video** showing the comet diving in toward the sun and then back out into space.

The website **https://spaceweather.com/** is featuring images and updates daily. It also has a nice gallery of comet photos. **http://astro.vanbuitenen.nl/comet/2023A3** is an extensive site for current comet observation data and details. There are many other good sites but don't get caught up in the news and social media hype.

The comet will be visible in the morning sky until about Oct 9, then swiftly transition to the evening sky where we will be able to enjoy viewing it for a few weeks as it heads back to the far regions of the solar system. The images below from my phone app exaggerate the length of the comet. The one on the left shows it 30 minutes before dawn and on the right 30 mins after sunset. Start your search scanning slowly along the horizon. Once you spot the comet note its location relative to a horizon landmark and then try to find it naked eye.

Its morning appearance is challenging since it is emersed in the morning twilight. I was unsuccessful the morning of Sept 26 using my 9X60 binoculars. Try to view from a clear horizon. If you spot it you can try to image it with a tripod mounted DSLR camera. If you are planning on telescope imaging you may need to set up your scope and mount the night before and get everything leveled and star aligned. Some mounts even let you put them in a hibernate mode so you can reboot them quickly. If that is not practical select your observing site ahead of time and mark where you are going to set up your scope.
PLEASE SEND IN YOUR BEST SUCCESSFUL IMAGES TO SHARE WITH OUR NEWSLETTER READERS.



Setting Circles for your Dobsonian Telescope

One of our club's newer members, **Mike Bebeau**, shares this excellent tip for modifying his Dobsonian telescope to aid in locating objects in the sky. Mike tells us *"Installing a printed setting circle on my 10-inch Skywatcher telescope has been a game-changer for me! As a beginner, it was just fun to play around with my telescope and I was content to star hop, but I started getting frustrated when I wanted to learn more and narrow in on finding more specific objects.*

I came across a YouTube video that taught me how to create and install a customized setting-circle and it has helped me ton. I no longer have to aimlessly jump from object to object in the sky and I'm learning where things are and how to find them.

*I followed the instructions from the **Blocklayer site** for making the setting circle fit the base of my telescope. Then I downloaded the measurements onto a thumb drive to take to Staples for printing and laminating because our printer wasn't big enough. The cost for both printing and laminating was about $10.00.*

*I purchased a **Klein Digital Angle Guage** at Home Depot for $28.00. I attach this to the telescope tube to read the Altitude angle the scope is pointed to*. On the base plate is a small two axis bubble level to help level the scope when it is set up. *It's been a big help for finding the altitude of various deep sky objects."*

Mike has also created a nicely designed raised base platform to set his scope on. This helps get the eyepiece up to a comfortable level for viewing without having to bend over for low altitude objects.

To find the sky position of an observing target, Mike uses a smartphone astronomy app. Since the phone has a built in GPS the app gives the **Altitude angle** of the object above zero as well as the **Azimuth direction** angle. North is Zero and South is 180 degrees. Then he moves the scope around until the setting circles match those readings. Doing this should place the desired object near the center of his finder scope and easily located in a low power eyepiece.

GOOD JOB MIKE ! ! Take time to visit with him at the next observing event.

Here is the YouTube video I used to teach me how to make the circle:
https://www.youtube.com/watch?v=bUEhm2fB13M

I used the Blocklayer app to customize and create the setting circle:
https://www.blocklayer.com/protractor-print

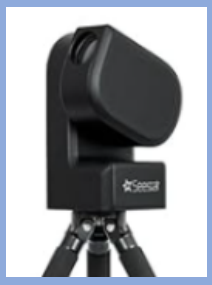
To get coordinates of sky objects, I bought the SkySafari Basic app for $4.99:
Other versions of SkySafari are available of Android or Apple
https://go2.skysafariastronomy.com/skysafari-7-pro-on-ios-android-macos

NOTE: Dob owners might also like the **Astrohopper App** See **April 2024 Newsletter**

SeeStar S50 smart telescope Fun imaging experiments

By John Land

“Smart Imaging” telescope have been around for a few years. The telescopes take images of the sky that the user control with a phone or tablet and watch the screen as the images develop over a few minutes. However, they came at a fairly high - $ 1K - plus price point. It the past year or so two newer versions have entered the market in the $ 500 range. The **SeeStar S50** and **Dwarf II** smart telescopes Both allow a person to get satisfying images of deep sky objects without having an extensive knowledge of astronomy or photography. (The Hyperlinks are telescope reviews)



I bought a ZWO SeeStar S50 for the April 8, 2024 Total Eclipse. It has a 50 mm aperture and a 250 mm focal length. Its FOV is 1.3 degree tall and 0.7 deg wide. Which seems very humble by telescope standards. It creates pleasing images by taking many short 10 sec exposure which its internal computer progressively stacks one upon another. You can read extensive reviews elsewhere. (Since I have owned mine, they have done two software upgrades and added new abilities)

Since then, I have enjoyed taking images of sunspots, the moon, comets, deep sky objects and various other things. I also have been enjoying experimenting with its ability to image non-traditional sights. Below is a set of fun images I took of Deneb on the left and Arcturus on the right. Then I placed a lady’s nylon foot sock over the scope to create the colorful inserted diffraction patterns showing the differences in the color and spectra of the stars.

Chasing Pluto – Earlier this summer astronomers were making predictions that the recurrent nova star T-Corona Borealis was showing signs that a new outburst may happen soon. (see July newsletter) I took a pre-outburst image of it with my SeeStar. While examining the image I discovered it was showing stars as dim as 14th magnitude! That intrigued me! Pluto is 14th magnitude. At its opposition on July 23rd, it was listed as 14.4 mag. But at that time Pluto was still near the horizon until after midnight. On Weds Sept 4th I drove to a darker spot 8 miles east of Broken Arrow and took an 8-minute exposure around 9:40 PM. When I compared the image to Pluto's position on my sky Safari app, I could plainly see a dim object in about the right position along with other dim stars nearby. To confirm that I had indeed imaged Pluto I needed to take another image on a different night to see if it had moved. So, I took one at the observatory site on Sept 6 and a another on Sept 8 from my backyard just 5 miles east of downtown BA. All three images clearly show a dim star that had moved in a retrograde (west) direction among the background stars. All the images are about 8 minutes long, but I could see Pluto in about 4 minutes.

At the top is Pluto's position show on the phone app. I had to go into the phone settings and increase its magnitude limit to the maximum level of 18.5 mag

Sept 4, 2024
Phone App position
Note the pointed star triangle
to the left of Pluto

You may want to view these images on a computer monitor for larger scale.

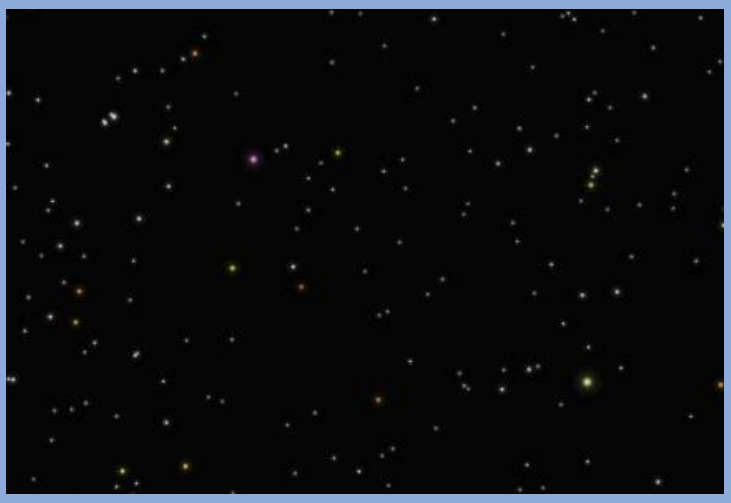
Sept 4, 2024
SeeStar image
Find the pointed star triangle
Then look to its right for three
dim stars stacked in a row.
The top one is Pluto ! !
And the others are even more
dim than Pluto !!

Then I discovered I had also caught the 14.2 mag asteroid 916 American.
Look at the brightest star on the lower right of the image.
Just above it is the tiny 33 km (20.5 mi) wide asteroid 1.09 AUs away.
It orbits the sun in 3.6 years. It had moved out of the field by the time
I took the Sept 6 image. Pluto is now 34.37 AUs from earth and takes 248 years
to orbit the sun, so it only moves a tiny amount each night.
The SeeStar image is 0.7 degrees wide. (42 arc minutes)

Sept 6, 2024
Phone App position

The purple dot is Pluto
Note that it has shifted further
from the pointed star triangle.

Distance from the tip of the triange
to the pair of stars near Pluto is
about 5.6 arc minutes



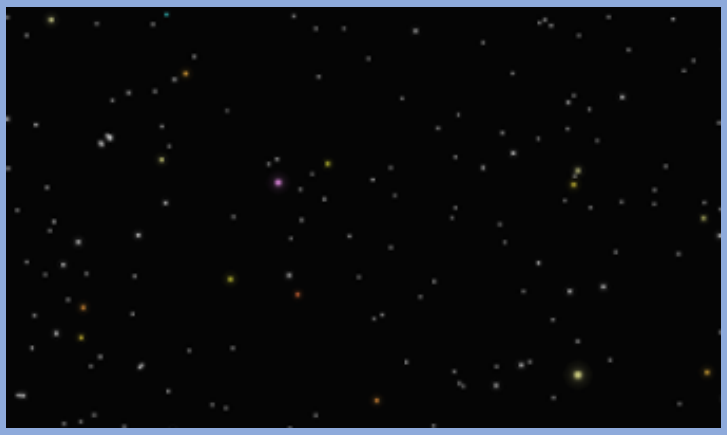
Sept 6, 2024
SeeStar image

Now there are only two dim stars
In the former position.
Pluto has moved a bit right.

The asteroid is now missing next
to the brighter star

Sept 8, 2024
Phone App position

The purple dot is Pluto
Pluto is now below a pair of stars



Sept 8, 2024
SeeStar image

Look carefully for Pluto under
the pair of stars .

Treasurer Report
Cathy Grounds

As of Sept 20, 2024, we have 179 members, with 38 new members so far this year. Let's welcome our newest members – Nicholas Elliot, William Varney, David Stine and the Pitts family Susan, Jason and daughter Emmaline!

Accounts as of September 20th, 2024

Checking: $ 1,729.22 – we had several expenses including the club picnic, bulk calendar purchase, Zoom subscription and a "dog days of summer" electric bill.

Savings: $ 4,738.55 – increase due to memorial donations

Investments: $38,110.59 (fluctuates with markets).

Most importantly: Thank you to everyone who donated in remembrance of Davis Taggart. We have had numerous donations come in and these generous gifts total $2340.89 to date. Donations have been placed in the Club savings account for future uses.

We're pleased to have gained many new members over the summer, but we've also had quite a few expiring memberships. Out of concern that some emails may be ending up in spam, I am now sending out final expiration notices via US mail as an additional step to make sure we are reaching members...that being said please be sure to update your email and other contact info with us so you can receive important updates. Email your updates to astrotulsa.tres@gmail.com

Memberships: Join or Renew Online at https://www.astrotulsa.com
The "join" tab is at the upper right of the page. Renew is under the "members" tab. Difficulty with the PayPal link or questions about dues? Please email me at astrotulsa.tres@gmail.com and I will be happy to help.

Membership rates for 2024 are as follows:
Adults: $ 45 per year, includes Astronomical League Membership.
Sr. Adult: $ 35 per year for those 65 or older, includes Astro League Membership.
Students: $ 30 with League membership; Students: $ 25 without League membership.
Additional Family membership: $ 20 with voting rights and League membership.
$ 15 with voting rights but without League Membership.

The regular membership allows all members in the family to participate in club events but only ONE Voting Membership and one Astronomical League membership.

As always if you have any questions or concerns or if your contact information (email, phone, postal address) has changed please email me: AstroTulsa.Tres@gmail.com

You can JOIN or RENEW memberships ONLINE using ANY MAJOR CREDIT CARD or MAILING in your dues with a check. The transactions are processed through PayPal, but you DO NOT need a PayPal account. A modest processing fee is added to online transactions.
Fill out the registration form at **https://www.astrotulsa.com/join**

MAGAZINE SUBSCRIPTION RATES 2024 updates
A monthly astronomy magazine subscription is a great way to learn more about many aspects of our hobby. - Scientific articles, sky events, equipment reviews, imaging techniques and more
Use the links below to make your subscription

To learn about Sky and Telescope magazine see their home page
Digital $ 37.05 Print & Digital $ 45.75 includes a $ 10 club discount
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MOBILE OBSERVATORY - READY FOR THE NEXT CHAPTER

- THE NORTHEAST OKLAHOMA SCIENCE HEADS by Peggy Walker

Science Heads is a non-profit, donation-based STEM organization from California, that blends volunteers from the community, to provide educational opportunities to the same.

The Northeast Oklahoma Chapter has a mobile Observatory that is 12 feet long and 6 plus feet tall and 8 feet wide. It has a 6-foot observatory dome that warehouses an 11-inch Celestron Edge telescope, a Solar Max sun scope with 2 T.V. monitors for NASA's "Eyes on Solar System" software.

The current chapter membership base comes from engineering, chemical engineers, computer science/security, amateur astronomers, biology, geologist, and an art volunteer all dedicated to enriching students through hands-on engagements.

A year has passed, and all the internal work is completed, as well as some external repair work and now is time to concentrate on fundraising for the wrap that would be the advertising for the MOBs. There is also a great need to cover the R.V. monthly rental costs, spare tire and tire repair jack and equipment, case for the telescope and funds to help get hands-on STEM activities to accompany the astronomical sessions. The chapter members voted on these items that came shy of $10,000.
Any and all support is greatly appreciated. **The Facebook page is** [Science Heads N.E. OK Chapter](https://www.facebook.com/people/Science-Heads-NE-OK-Chapter/61564762763345/?mibextid=LQQJ4d)

https://www.facebook.com/people/Science-Heads-NE-OK-Chapter/61564762763345/?mibextid=LQQJ4d

QR Code goes directly to this chapter's account of Science Heads as we finish setting up the Go Fund Me account which will go live soon!

Astronomy Equipment for Sale

< < Almost brand-new
Meade 8" LX85 Astrograph
Asking $ 1500
8" f/4 astrograph reflector >>
Michael Swartz
510-377-0694
zlanguy@gmail.com

The reflector has an LX85 equatorial mount and tripod with GoTo slewing and tracking, and AudioStar controller for automated pointing to over 30,000 objects in the night sky. Precision-made (8") parabolic mirror reflector telescope with fast 800mm focal length (f/4) provides exceptionally bright and crisp images of both solar system and deep-sky objects.

Includes robust 2" linear bearing Crayford focuser with 1.25" adapter, 8x50 finder scope, 26mm Super Plössl eyepiece, 2" diameter steel leg tripod, extra fittings, and more.

Our club also got this contact message - Hello, I am relatively new to Tulsa and have a lot of Astronomy equipment I may want to sell. I have a **Celestron 8-inch Edge** with the dew shield, and Losmandy and Vixen rails. I also have a **Meade 12-inch Lightbridge Dob** with a Moonlite focuser. And a Meade LX90 10-inch ACF with tripod and hand controller.
If you have any members interested, I can arrange to show these telescopes.

Contact Pedro Orta pedro@pedroisraelorta.com

This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

October's Night Sky Notes: Catch Andromeda Rising!

By Dave Prosper Updated by Kat Troche

If you're thinking of a galaxy, the image in your head is probably the Andromeda Galaxy! Studies of this massive neighboring galaxy, also called M31, have played an incredibly important role in shaping modern astronomy. As a bonus for stargazers, the Andromeda Galaxy is also a beautiful sight.

Spot the Andromeda Galaxy! M31's more common name comes from its parent constellation, which becomes prominent as autumn arrives in the Northern Hemisphere. Surprising amounts of detail can be observed with unaided eyes when seen from dark sky sites. Hints of it can even be made out from light polluted areas. Use the Great Square of Pegasus or the Cassiopeia constellation as guides to find it. Credit: Stellarium Web

Have you heard that all the stars you see at night are part of our Milky Way galaxy? While that is mostly true, one star-like object located near the border between the constellations of Andromeda and Cassiopeia appears fuzzy to unaided eyes. That's because it's not a star, but the Andromeda Galaxy, its trillion stars appearing to our eyes as a 3.4 magnitude patch of haze. Why so dim? Distance! It's outside our galaxy, around 2.5 million light years distant - so far away that the light you see left M31's stars when our earliest ancestors figured out stone tools. Binoculars show more detail: M31's bright core stands out, along with a bit of its wispy, saucer-shaped disc. Telescopes bring out greater detail but often can't view the entire

galaxy at once. Depending on the quality of your skies and your magnification, you may be able to make out individual globular clusters, structure, and at least two of its orbiting dwarf galaxies: M110 and M32. Light pollution and thin clouds, smoke, or haze will severely hamper observing fainter detail, as they will for any “faint fuzzy.” Surprisingly, persistent stargazers can still spot M31’s core from areas of moderate light pollution as long as skies are otherwise clear.

Generated version of the Andromeda Galaxy and its companion galaxies M32 and M110.
Credit: Stellarium Web

Modern astronomy was greatly shaped by studies of the Andromeda Galaxy. A hundred years ago, the idea that there were other galaxies beside our own was not widely accepted, and so M31 was called the “Andromeda Nebula.” Increasingly detailed observations of M31 caused astronomers to question its place in our universe – was M31 its own “island universe,” and not part of our Milky Way? Harlow Shapley and Heber Curtis engaged in the “Great Debate” of 1920 over its nature. Curtis argued forcefully from his observations of dimmer than expected nova, dust lanes, and other oddities that the “nebula” was in fact an entirely different galaxy from our own. A few years later, Edwin Hubble, building on Henrietta Leavitt’s work on Cepheid variable stars as a “standard candle” for distance measurement, concluded that M31 was indeed another galaxy after he observed Cepheids in photos of Andromeda, and estimated M31’s distance as far outside our galaxy’s boundaries. And so, the Andromeda Nebula became known as the Andromeda Galaxy.

While M31's disc appears larger than you might expect (about 3 Moon widths wide), its "galactic halo" of scattered stars and gas is much, much larger – as you can see here. In fact, it is suspected that its halo is so huge that it may already mingle with our Milky Way's own halo, which makes sense since our galaxies are expected to merge sometime in the next few billion years! The dots are quasars, objects located behind the halo, which are the very energetic cores of distant galaxies powered by black holes at their center. The Hubble team studied the composition of M31's halo by measuring how the quasars' light was absorbed by the halo's material. Credits: NASA, ESA, and E. Wheatley (STScI)

These discoveries inspire astronomers to this day, who continue to observe M31 and many other galaxies for hints about the nature of our universe. One of the Hubble Space Telescope's longest-running observing campaigns was a study of M31: the Panchromatic Hubble Andromeda Treasury (PHAT). Dig into NASA's latest discoveries about the Andromeda Galaxy, on their Messier 31 page.

Originally posted by Dave Prosper: September 2021 Last Updated by Kat Troche: September 2024

You are invited to come join us to learn more about
Astronomy and view the wonderful sights in the night sky.
Check the EVENTS section at https://www.astrotulsa.com/

During the school year our club holds a
Monthly General Club meetings at
Jenks Public Schools Planetarium
105 East B St, Jenks, OK
Located North of the intersection of
1st and B St

Meetings begin at 7:00 PM

When you enter the building lobby,
take the elevator to the 3rd floor.

Click for Google Map Link

ASTRONOMY CLUB OBSERVATORY
Located on a hilltop about 25 miles SW of Tulsa
Features: classroom, restroom, dome with 14-inch telescope and an acre to set up your telescopes.

Weather permitting, we host two types of observing nights.

GUEST OBSERVING NIGHT – RSVP requested
This event is open to our Guests – both individuals and families as well as our regular members. Several of our club members set up telescopes for public viewing.
***** Groups need to make separate arrangements.

MEMBERS OBSERVING NIGHT usually on a Friday near new moon
Reserved for club members and their families to allow them to pursue observing projects.
The Observatory is ONLY OPEN for SCHEDULED EVENTS.

Check the EVENTS section at https://www.astrotulsa.com/
Follow our map directions DO NOT USE GPS

Two Options for travel to the observatory

MOSTLY PAVED ROADS – Hwy 75 to 201st St S – through Mounds OK

Most DIRECT ROUTE – Hwy 75 to 241st St S – some coarse gravel & dirt roads

ASTRONOMY CLUB OFFICERS:

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astrotulsa.pres@gmail.com

VICE PRESIDENT – JONATHAN FUSSELL
astrotulsa.vp@gmail.com

SECRETARY – SKIP WHITEHURST
astrotulsa.secy@gmail.com

TREASURER – CATHY GROUNDS
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Enjoy at Planetarium Show at Jenks High School

JENKS PLANETARIUM

Jenks High School Campus
205 East B Street, Jenks

TICKETS are $7

See our Current Shows Schedule and ticket purchase links at
Shows and Ticket Link

Shows take place on Tuesday evenings or Saturday mornings
Must purchase tickets online in advance