



OBSERVER

APRIL 2024

*Bringing Stars to the eyes of Tulsa
since 1937*

Editor – John Land



**March was a busy month for our club
Many of our members participated in our Messier Marathon March 9th
Sidewalk Astronomy March 13th & Observatory workday on March 23**

- 2 Astronomy Club Events
- 3 Solar Eclipse Spectacular – Women in Astronomy Day – 2024 MSRAL Conference
- 4 *President's Message* - by Don Bradford
- 5 *Asteroid Bennu: An Ocean of Possibility* - by Jonathan Fussell
- 6 What's up in April Skies
- 7 Two April Comets and Eclipse Resources page
- 8 *AstroHopper - Free App for your telescope* by John Land
- 9 Treasurer and New member report – by Cathy Grounds
- 10-11 *Citizen Science Eclipse projects* - NSN – Kat Troche
- 12 Map Links to *Where We Meet* * Choice of TWO Routes to the Observatory
- 13 Club Contacts information --- Jenks Planetarium Public shows

Observatory Stargazing 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>

Observatory Visitation Star Nights

Friday March 29 - 7:00 PM Jenks High Planetarium [105 E B St, Jenks, OK](#)

We invite both members and guests to join us for our In Person meeting.
The highlight will be a planetarium show that explains the eclipse, the uniqueness of the April 2024 eclipse, and some of the weird visual phenomena created by it. Also, several other presentations of what can best be called
“Everything you need or want to know about the April 8 eclipse”.

Monday April 8 Solar Eclipse Spectacular 12:00 to 3:00 PM Guthrie Green !

Join Us for the April 8th 95% Solar Eclipse at Guthrie Green !

Come join downtown Tulsa Eclipse viewing. 12:00 to 3:00 PM

Telescopes – Food Trucks – DJ Music and other displays will be there

**** You can view the eclipse anywhere using safe solar eclipse viewers**

More Eclipse Resources on page 7

SATURDAY Afternoon of **April 13 - First Women in Astronomy Group** meeting
See details below in newsletter – time to be announced later

SATURDAY April 13 - 7:30 to 10 PM Sidewalk Astronomy in Sand Springs
Public Sidewalk Telescope night at Case Community Center [1050 W Wekiwa Rd, Sand Springs](#)

Friday April 19 - 7:00 PM Jenks High Planetarium [105 E B St, Jenks, OK](#)
We invite both members and guests to join us for our In Person meeting.

Friday May 3 - 7:45 PM Member's Night at the Observatory.

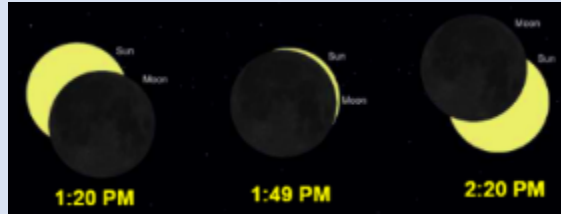
Friday May 10 - 7:00 PM Jenks High Planetarium [105 E B St, Jenks, OK](#)
We invite both members and guests to join us for our In Person meeting.

SATURDAY May 11 7:45 PM **Guest and Members Night** –
Guest requested to RSVP -

See MORE EVENTS on Page 3



April 8th Enjoy a 95% Solar Eclipse at Guthrie Green !
 12:00 to 3:00 PM Telescopes – Food Trucks – DJ Music
 and other Space-Themed Vendors will be there



Tulsa will have a 95 % Partial Eclipse Times are:
 Begins 12:30 PM **Maximum at 1:49 PM** Ends 3:07 PM

See more details and links on page 7

[Eclipse Information and Planning Resources PDF](#)



Women in Astronomy

Our Astronomy Club is pleased to announce our new
"Women in Astronomy" group just for the ladies!
 The purpose is encouragement camaraderie and learning!
 Children welcome. Our initial meeting will be lunch time
 Saturday, April 13th, exact details TBA.
 Contact Cathy Grounds at astrotulsa.tres@gmail.com
 Watch for an email coming soon.



2024 Mid-States Astronomy Conference

June 7, 8, 9 <https://msral2024.org/>

Conference is hosted by the [Omaha Astronomical Society](#) The event
 will be at [Eugene T Mahoney State Park](#) near Ashland, Nebraska off
 Interstate 80 exit 426.

Our Tulsa Club hosted the 2023 conference. It was a great
 opportunity to hear great presentations and meet astronomy
 enthusiast from other clubs throughout our 5-state region.

Registration for MSRAL 2024 is now open.

President's Message

Don Bradford



Everyone is talking about the April 8 eclipse, and rightly so! It's not only a scientifically interesting event, but an exciting spectacle for the whole family to enjoy. And to prepare for the event, at our March 29 club meeting, we will offer several presentations about the eclipse that are at the same time informative and entertaining. The highlight will be a planetarium show that explains the eclipse, the uniqueness of the April 2024 eclipse, and some of the weird visual phenomena created by it. The meeting agenda will include other fun presentations about eclipses such as the 2017 total eclipse that shows how a group traveled to a precise spot in Wyoming to film the simultaneous passing of the eclipse shadow and the transit of the ISS. You have probably heard by now about such phenomena as shadowy snakes, pin-hole projections, temperature changes, but did you know that bees head to their hives at the onset of the total eclipse? And have you heard about the Purkinje Effect – the dimming of some colors and enhancing of others at the onset of total eclipse?

Our March 29 meeting will include these, and other presentations are a part of what can best be called **“everything you need or want to know about the April 8 eclipse”**. Don't miss it and bring your questions for one of our knowledgeable members to answer.

As I reported last month, we established four new Special Interest Groups to further our goals of promoting members interaction and common interest learning. The initial four groups are (1) Introduction to Astronomy, (2) Visual Observing Techniques, (3) Community Outreach, and (4) Astrophotography (all levels). And there are more to come. We are in the process of creating a private forum to facilitate communication among group members, not only to share information and answer questions, but also to plan in-person meetings of the group. I know you are interested in astronomy, and there is no better way to learn more and share your knowledge and interest than personal involvement in these groups. There is no limit to the number of groups, so if you want to join a group or create a new one, contact me at astrotulsa.pres@gmail.com and we will make it happen.

In the meantime, watch the website for announcements and schedules of club events. And remember to stay in touch by sending your questions and comments to us by way of the **“Contact”** feature of the club website: Go to the top of home page, click **“Contact”**, select **“General”**, and scroll down to enter your information and message.

We want to hear from you!

I look forward to seeing you at one of our many events and projects.

“Bringing Stars to the Eyes of Tulsa since 1937”

Don Bradford - President

Vice President Message Jonathan Fussell



Asteroid Bennu: An Ocean of Possibility by Jonathan Fussell

Recent analysis of samples brought back from asteroid Bennu by NASA's OSIRIS-REx spacecraft has unveiled an intriguing possibility that could reshape our understanding of the cosmos and the origins of life.

Scientists speculate that these samples may have originated from an ancient ocean world (Hycean world), potentially laying the groundwork for life as we know it. Bennu, the asteroid in focus, has become a focal point for researchers aiming to decipher the early solar system's mysteries and the genesis of life on Earth. Preliminary findings from the analysis of Bennu samples in October revealed significant discoveries. Researchers discovered large amounts of water and carbon on Bennu, fundamental elements for life's genesis. This revelation has led scientists to speculate that asteroids like Bennu could have delivered essential ingredients for life to Earth.

The University of Arizona's research team has taken this speculation further, suggesting that Bennu may have been part of a water-rich planet billions of years ago. Evidence for this hypothesis comes from Bennu's dark rocks, coated in a thin, bright crust resembling materials found on Saturn's moon, Enceladus. Led by principal investigator Dante Lauretta, the OSIRIS-REx mission has been hailed as a monumental success, providing nearly double the anticipated amount of asteroid samples for scientific study. Lauretta's hypothesis suggests that the bright crust on Bennu's rocks may be composed of a rare calcium and magnesium-rich phosphate material, similar to that found on Enceladus.

This theory is supported by mineralogical similarities between Bennu and Enceladus. The presence of these materials suggests not only the presence of water but also conditions potentially conducive to life. While researchers are cautious not to claim proof of life's existence, the implications of their findings are profound. Analysis of asteroid samples could contribute to understanding life's origins, not just on Earth but potentially elsewhere in the universe. The similarities between Bennu and Enceladus add an intriguing layer to the idea that life's origins might be more common in the universe than previously thought.

As the scientific community awaits further analysis and published results, the initial findings from the OSIRIS-REx mission have ignited a sense of wonder and possibility. The notion that life-building elements could have been delivered from ancient, water-rich worlds like Bennu transforms our understanding of our place in the universe. Asteroid Bennu is a fascinating celestial body classified as a near-Earth object. It is a B-type asteroid containing significant carbon and various minerals, holding clues to the early solar system's chemistry. With a diameter of approximately 500 meters, Bennu orbits the Sun every 1.2 years and comes relatively close to Earth every six years, making it an accessible target for space missions. NASA's OSIRIS-REx mission, launched in 2016, successfully collected samples from Bennu's surface in 2020 and is on its journey back to Earth for analysis. Bennu's potential impact threat to Earth in the late 22nd century has also drawn attention, prompting ongoing observations and studies to refine predictions and develop mitigation strategies if necessary.

Clear skies and Godspeed,

Together, Let's reach for the Stars!

Jonathan Fussell - Vice President



Click on these images to links on the Internet



<https://www.astroleague.org/observing-program-selector-grid/>

*** The NEW **CLEAR OUTSIDE** icon above is a link to an extensive site showing cloud cover %, Seeing, Transparency, Moon Phase, Temp in ° 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/>

February - Moon Phases - -

3rd Q Mon April 1 - - **New** Mon April 8 - - **1st Q** Mon April 15 - - **Full** Tuesday April 23

April EVENING PLANETS – April will be the last good month to see **JUPITER** in the evening sky. Look for it in the evening twilight above the western horizon. **MERCURY** reached maximum evening elongation from the sun on March 24th and will be at inferior conjunction on April 11. Look for it hugging the western horizon below Jupiter just after sunset early in the month. [Calculator for Jupiter's](#) moons



On April 12 **URANUS** is 1.5 degrees above , **Jupiter** and **Comet 12/p Pons-Brooks** is 3 degrees below **Great opportunity for a photo shot** Look for them about 12 degrees up in the west an hour after sunset. Jupiter and Uranus pass within 1/2 deg on April 20 and will be visible in the same wide field eyepiece view from April 17 thru 23.



MORNING PLANETS - VENUS and **NEPTUNE** are just 1/4 degree in the predawn sky on April 3rd but they rise due East only a half hour before sunrise. **MARS** and **SATURN** rise 1.5 hours before sunrise a bit south of East. The pair lie only 1/2 degree apart on April 10. On April 6 the moon joins Saturn and Mars.

Lunar conjunctions Morning Mars & Saturn the morning of April 6, Venus on April 7 – Evening - April 10 TRIPLE conjunction with Jupiter, Uranus, and comet Pons-Brooks

Comet 12P / Pons-Brooks reaches perihelion on April 21st 0.78 AUs from the sun at which time it may reach 4th magnitude. Its closest approach to Earth occurs on June 21 at 1.09 AU's It continues to have periodic outbursts boosting it 3 to 5 magnitudes.

Don't fall for all the Internet hype that is "blowing up" with posts about the "Devil Comet" "Green Comet" "Once in a Lifetime Comet"

It is a nice comet and should be easy to find in smaller telescopes and even binoculars. In dark skies it may even be visible to the naked eye.

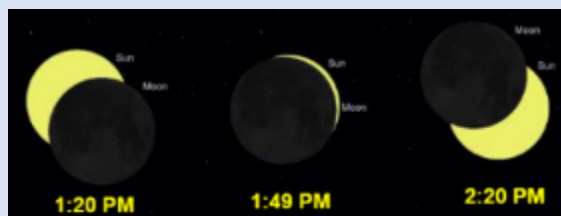
You can keep up with the latest magnitude and sky locations at

<https://theskylive.com/12p-info> <http://astro.vanbuitenen.nl/comet/12>

Comet C/2021 S3 (PANSTARRS) is now 8.5 magnitude rising about midnight. April 29 in passes very close to the middle star of the Northern Cross - *Sadr*. It will continue to loop around the region of Cygnus throughout the summer but will fade in magnitude.

<https://theskylive.com/c2021s3-info> <http://astro.vanbuitenen.nl/comet/2021S3>

USA SOLAR ECLIPSE – MONDAY APRIL 8, 2024

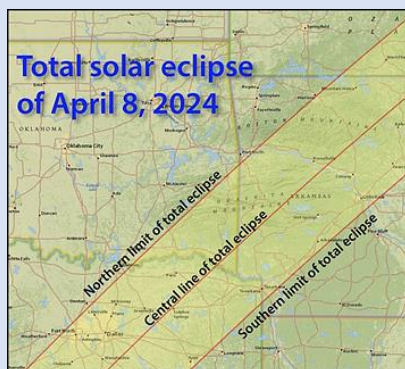


Tulsa will have a 95 % Partial Eclipse Times are:

Begins at 12:30 PM Reaches **Maximum at 1:49 PM** and Ends at 3:07 PM

At Maximum the Sun's Altitude is 61° up just west of South - Azimuth 192°

Some of our Tulsa Astronomy Club members will be at Guthrie Greens 12:00 to 3:00 PM also, the Discovery Lab is hosting a viewing activity.



See our extensive 3-page PDF of Eclipse Information Which includes an **Interactive Google Map** allowing you to see detailed eclipse data for any location. Also includes:

**Viewing Safety – Education Resources –
Travel tips – Citizen Science activities**

[Eclipse Information and Planning](#)

[Resources PDF](#)

Are you traveling to the path of Totality? Take your binoculars and try seeing Jupiter 25 degrees to upper left of Sun and Venus just 15 degrees to lower right of the Sun. A keen eye might see the comet and Uranus but don't spend too long or you'll miss totality!





AstroHopper -

Free App to help you move your telescope to selected objects.

At our March 3rd observing night member James Hines introduced us to a great free phone app that works like a Push-To guide to point your telescope at selected objects. It should work great for any Alto-Az mounted telescope. I have used it with pleasing success on my Dobsonian reflector telescope. To use it you mount your phone on your telescope tube parallel to its axis. James made a simple phone case mounted on a board strapped to his telescope. I made mine but using a dovetail base and a section of a car phone mount. It will slip into any dovetail finder mount on my telescopes. **NOTE:** Do NOT use a MAGNET to attach it to your scope – it will mess with the phones compass orientation

You won't find the app in your App Store – It's a Web based app that you install by going to the website on your phone. Once it is installed it works without any connection to the web. In fact, they have you test it by putting your phone on Airplane mode and turning off your Wi-Fi.

To use it you will still need a finder scope or red dot finder to point your telescope at a brighter star. You will also need some knowledge of the sky, at least being able to identify a several of the brighter stars. Before attaching your phone to the telescope, it helps to wave it around slowly in a figure 8 pattern. This helps to orient the gyroscopes and compass in your smart phone.



Aim your telescope at a bright star in the region of the sky where your desired viewing object is located. Center it in your scope, then look at the phone display screen. If the star you lined up with is not on the view screen scroll around the screen until it shows up. Next Tap Align and then tap on the star your scope is pointed toward. It will go through a 3 second count and center that star on the screen. Then you can type in the search window your target object (M 13 etc.) A circle will show up on the screen if a bar showing the directions you need to move the scope toward your target. Move the scope so it is centered on the phone and look in the eyepiece. Using a 1 degree field of view, I found my object to be almost always in view if not dead center. You can then search other objects in that area of the sky. If you move to another area, you probably will need to select a new alignment star.

On your phone open this URL which is a section of the AstroHopper user manual.

<https://artyom-beilis.github.io/manual.html#installing-astrohopper>

You will want to scroll down to see the instructions for your specific phone type.

See a good review at <https://astronomytechnologytoday.com/2022/06/23/astrohopper/>

YouTube Tutorials – FYI – each has some ads

Aim Any Telescope With AstroHopper – < **Fun energetic demo**

The Revolutionary New Smartphone App! (It's FREE!) Reflector

<https://www.youtube.com/watch?v=6-58mSGz1Q>

Tutorial by the creator of AstroHopper at <https://www.youtube.com/watch?v=AtArqBLWWJ8>

Treasurer Report Cathy Grounds



As of March, 2024, we have **194 members**, with **8** new members so far this year. Let's welcome our newest members - Rick Siegfried, James Vaughn and Russell Moore ! Our membership numbers are lower due to expired memberships being removed.

We are pleased to announce that the PayPal glitch has been resolved, many thanks to Jennifer Jones and Seed Technologies for their efforts on this.

Please note that if you are renewing your membership late, you will still be credited a full 12 months going forward from the date you renew.

We are now able to take point-of-sale credit card payments via SquareUp. This will be a huge improvement for us and much more convenient. There is a processing fee of roughly 3% added by SquareUp.

As always if you have any questions or concerns or if your contact information (email, phone, postal address) has changed please send me an email at:

AstroTulsa.Tres@gmail.com

Accounts as of March 14, 2024

Checking: \$ 3,429.21

Savings: \$ 2,794.88

Investments: \$ 35,181.86

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>

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.

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

Use this [Sky & Telescope Subscription Link](#)

To learn about [Astronomy magazine](#) see their home page

Use this [Astronomy Subscription Link](#) Digital \$ 39.95 Print & Digital \$ 49.95 no club discount



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!

Participate in Eclipse Science

By Kat Troche

April is NASA's Citizen Science Month, and there is no shortage of projects available. Here are some [citizen science projects](#) that you can participate in on April 8th, on and off the path of totality right from your smartphone!



Eclipse Soundscapes, ARISA Lab / NASA

Eclipse Soundscapes

Eclipse Soundscapes will compare data from a 1932 study on how eclipses affect wildlife – in this case, crickets. There are a number of ways you can participate, both on and off the path. NOTE: you must be 13 and older to submit data. Participants 18+ can apply to receive the free Data Collector kit. Learn more at: eclipsesoundscapes.org/

GLOBE Eclipse

Folks that participated in the **GLOBE Eclipse 2017** will be glad to see that their eclipse data portal is now open! With the GLOBE Observer smartphone app, you can measure air temperature and clouds during the eclipse, contributing data to the GLOBE program from anywhere you are. Learn more at: observer.globe.gov/



HamSCI stands for **Ham Radio Science Citizen Investigation**. HamSCI has been actively engaged in scientific data collection for both the October 14, 2023, annular solar eclipse and the upcoming April 8, 2024, total eclipse. Two major activities that HamSCI will be involved in around the solar events will be the **Solar Eclipse QSO Party** (SEQP) and the **Gladstone Signal Spotting Challenge** (GSSC) which are part of the HamSCI Festivals of Eclipse Ionospheric Science. Learn more about these experiments and others at: hamsci.org/eclipse



SunSketcher

If you're traveling to totality, help the **SunSketcher** team measure the oblateness, or shape, of the Sun during the eclipse by timing the flashes of Baily's Beads. You will need a smartphone with a working camera for this, along with something to hold the phone in place - don't forget a spare battery! NOTE: The app will need to run from five minutes *before* the eclipse starts until the end of the eclipse. Any additional phone use will result in Sun Sketcher data loss. Learn more at: sunsketcher.org/

Don't stop at the eclipse - NASA has citizen science projects you can do all year long – from [cloud spotting on Mars](#) to [hunting for distant planets](#)! By contributing to these research efforts, you can help NASA make new discoveries and scientific breakthroughs, resulting in a better understanding of the world around us, from the critters on the ground, to the stars in our sky.

We'll be highlighting other citizen science projects with our mid-month article on the [Night Sky Network](#) page, but we want to wish all you eclipse chasers out there a very happy, and safe solar eclipse! For last minute activities, check out Night Sky Network's

[Solar Eclipse Resources section!](#)

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**
205 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

Enjoy at Planetarium Show at Jenks High School

JENKS PLANETARIUM



Jenks High School Campus
205 East B Street, Jenks

TICKETS are \$7

See our 2024 Spring 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**

ASTRONOMY CLUB OFFICERS:

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You may also contact club officers or
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CONTACT tab on our website

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JERRY CASSITY

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– Cathy Grounds

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allenb_young@yahoo.com

SIDEWALK ASTRONOMY – TIM GILLILAND

PR AND OUTREACH – **Open Position**

GROUP DIRECTOR – **Open Position**

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