



OBSERVER

November 2023

*Bringing Stars to the eyes of
Tulsa since 1937*
Editor - John Land



Oct 14, 2023 Solar Eclipse



Club Members and Public had a great time celebrating the eclipse events. See more images and a great video of the entire eclipse.

Or share this page with your friends [Eclipse Image Page](#)

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Astronomy Club Events Check our website AstroTulsa.com events section for updates

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>

Astronomy Club Meeting - FRIDAY OCT 27 - 7:00 PM - IN PERSON club meetings.

At Jenks High School planetarium 105 E B Jenks OK - Guests Welcome

Program will feature a presentation about the NASA Psyche asteroid mission
We will also be electing new club officers and board members.

Observatory Star Nights

SATURDAY Nov 4 5:50 PM **Guest and** Members Night –
Guest requested to RSVP -

November 5 Daylight Saving time ENDS - CENTRAL STARLIGHT TIME CST RETURNS !

Friday Nov 10 7:00 PM **Members Only** night
Open to our members and their immediate family

ANNUAL MEMBERS and FAMILIES' DINNER

SATURDAY November 11 – 6:30 PM – RSVP required

Reservation details will be sent to members via email

At Jenks High School planetarium 105 E B Jenks OK

Astronomy Club Meeting - FRIDAY DEC 1 - 7:00 PM - IN PERSON club meetings

At Jenks High School planetarium 105 E B Jenks OK - Guests Welcome

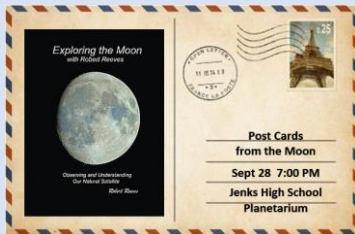
Friday Dec 8 7:00 PM **Members Only** night
Open to our members and their immediate family

SATURDAY Dec 16 4:30 PM **Guest and** Members Night –
Guest requested to RSVP -

Always check website before heading to an event for cancellations due to cloudy conditions or hazardous conditions.



Our program for Friday Oct 27 features a Webinar presentation on the NASA mission to the asteroid PSYCHE. Psyche is a metal-rich asteroid located in the main asteroid belt between Mars and Jupiter. This is NASA's first mission to study an asteroid that has more metal than rock or ice. It was launched on Oct 13, 2023 and expected to reach Psyche. It is scheduled to arrive in August 2029.



Our Sept 28 meeting featured an excellent presentation ***Post Cards from the Moon*** by Robert Reeves

You can watch a recording of the meeting at <https://www.youtube.com/watch?v=-FmDTIip0eM>



Despite the clouds we had a good turnout at our eclipse viewing events. The clouds finally broke up enough for us to see the last half of the eclipse. Now we are all looking forward to the Monday April 8, 2024 TOTAL SOLAR ECLIPSE. Many of our members will be making plans to travel to nearby states to see it. This will be our last Total Eclipse for the USA until Aug 12, 2045. That one will pass directly over Tulsa with over 5 minutes of Totality !!

I am pleased to announce our new officer and board candidates for 2023 -2024

President - Don Bradford Vice President – Jonathan Fussell
Treasurer – Cathy Grounds Secretary – Skip Whitehurst
Board members – MIKE BLAYLOCK, JERRY CASSITY, BRYAN KYLE,
JOHN LAND, JACK REEDER, JAMES TAGGART

Voting will take place at our Oct 27th meeting.

Finally I would like to thank you for allowing me to serve as your club president that past two years. Its been a challenging time finding ways to continue to be vibrant through the pandemic time. But we have adapted to new ways of doing things and are moving forward to the future. I will not be running for president this fall. Its time to let new leadership bring in new ideas and talents to insure our future. Organizations which don't mentor and encourage new talent rarely succeed in the long view of things. I will continue to encourage and mentor the new talent and pray the good Lord will grant me more years to rejoice with my astronomy friends at the wonders of the night sky.

Let us continue our 85+ years of

"Bringing Stars to the Eyes of Tulsa since 1937"

John Land - President



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 ° 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
kyandtelescope.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/

November - Moon Phases - - 3rd Q Nov 5 - - New Nov 13 - - 1st Q Nov 20 - - Full Nov 27

NOVEMBER PLANETS – November and December will be great months for observing the gas giant planets. SATURN can be seen about 40° up in the south as soon as it gets dark and remains visible until past midnight. JUPITER reaches opposition Nov. 2nd making this a prime time for watching its moons or their shadows transit the planet’s disk. URANUS lies 11 degrees to its east and reaches opposition on Nov 13th. Uranus can be seen in binoculars at magnitude 5.6. One of my early memories in astronomy was spotting Uranus naked eye in Oct 1978 as it passed directly between the double stars Zubenelgenubi (alpha Libra) Telescopically its greenish hue makes it easy to distinguish from stars. At about 100x you can make out its tiny 3.6” disc. MERCURY makes a low appearance at dusk after Thanksgiving. VENUS is still our brilliant morning star in the SE before dawn. MARS is passing behind the sun and won’t emerge in the morning sky until Christmas time.

The Moon is near is near Venus the morning of Nov. 9, Saturn Nov. 20, Jupiter Nov. 24

Observing Jupiter's Galilean moons: tips and tricks - This article from BBC Sky at Night has lots of information about Jupiter’s moons. The times are given as UT – universal time. For Oklahoma we have to subtract 5 hours for CDT then 6 hours once we change to CST The Oct 23rd Astronomy Picture of the Day (APOD) has a recent image of Jupiter’s moon Io with a volcano erupting on its limb.

Calculator for Jupiter’s moons position each night - Transits of Jupiter’s Red Spot
Chart of Uranus positions

Give a little Celestial Treat to the kids is Halloween weekend. Think about setting up a telescope to see the Moon, Saturn, and Jupiter in your front driveway as they arrive. Share your enthusiasm for exploring the wonders of the night sky.

Communication Satellites continue to clutter the night sky.

A growing numbers of Communication satellites are becoming an increasing concern for both amateur and professional astronomers. Our club observing chairman, Brad Young, joined with several others to make observations of AST Space Mobile's "BlueWalker 3" satellites. This new class of satellites have larger arrays spanning 64.3 m² – 692 sq ft. (a typical 2 car garage is 500 sq ft) Radio astronomers are also becoming increasingly concerned about interference from the electronics systems on the satellites. At a peak brightness of 0.4 magnitude, they rival even the brightest stars. Brad was featured as a contributor to an article in the scientific [magazine NATURE](#) and in an interview with the Washington Post.

ASTRONOMY in the NEWS - A random selection of recent astronomy articles

JWST observes the Kuiper Belt: Dwarf planets - Sedna, Gonggong, and Quaoar
<https://phys.org/news/2023-10-jwst-kuiper-belt-sedna-gonggong.html>

What Did NASA Discover in Latest Photos from Pluto? - YouTube
<https://www.youtube.com/watch?v=HbPltEgPBZc>

Jupiter. Galileo vs Now
<https://spaceweather.com/archive.php?view=1&day=04&month=10&year=2023>

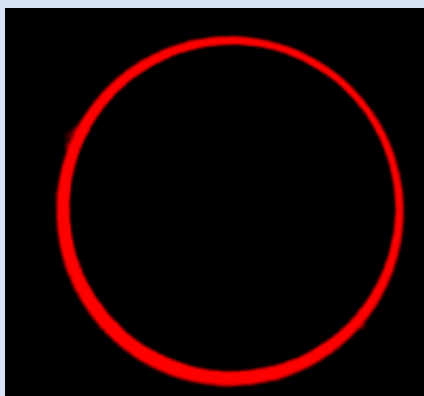
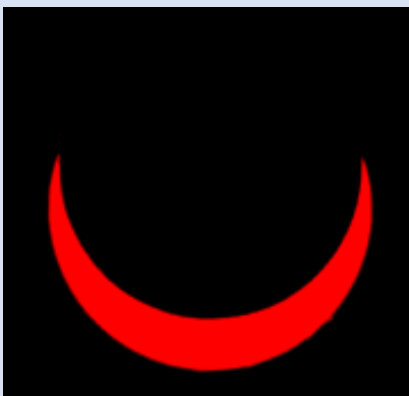
Huge and revolutionary space telescope is in action, new footage shows | Mashable
<https://mashable.com/article/space-telescope-vera-rubin-video>

NASA rover finds place where extraordinary events occurred on Mars | Mashable
<https://mashable.com/article/mars-nasa-curiosity-rover-debris-flow>

NASA 65th Anniversary: A Journey Beyond the Stars - YouTube
<https://www.youtube.com/watch?v=8ZXdZdW8ZRw>

Building the World's Largest Eye: ESO's Extremely Large Telescope Reaches Construction Milestone
<https://scitechdaily.com/building-the-worlds-largest-eye-esos-extremely-large-telescope-reaches-construction-milestone/>

Last Minute Eclipse Images from Steve and Debra Chapman Roswell, NM



During the Oct 14, 2023 Solar Eclipse our Astronomy Club hosted Eclipse viewing at two locations. One at the Voyage Solar System Walkway in Broken Arrow and the other at the Case Community Center in Sand Springs. At each site our club sold eclipse viewers mounted in a picnic plate. Despite the clouds we still had a good turnout of guests. Students from the BA Vanguard high school assembled 225 eclipse plates for our events.



Broken Arrow site enjoying viewing the eclipse and kids decorating their viewing plates.

iPhone Image 11:54

Telescope 12:52





Our Sand Springs site also had a good turnout.

Bruce Marriner holds a filter over the end of his finder



scope for **Jessica Franklin**

Several News outlets covered our events.

Tim Gilliland talking to Ch 8 TV

[Cailey Klingaman from Fox 23 news](#)

Did a great job of interviewing several participants

[YouTube version](#)

[Sunday Article in the Tulsa World](#)

This was an Annular Solar Eclipse. The moon passed directly in front of the sun but was on the outer portion of its elliptical orbit. Thus, its apparent size was smaller than the sun's disc leaving a bright "Ring of Fire" showing around the dark disc of the moon.

Several of our club members traveled to locations along the central line of the eclipse.

Member **John Moore** traveled to Hobbs, NM and created a video of the entire eclipse

See his video at <https://youtu.be/aELc5pPd0k> Here are some selections for the video.

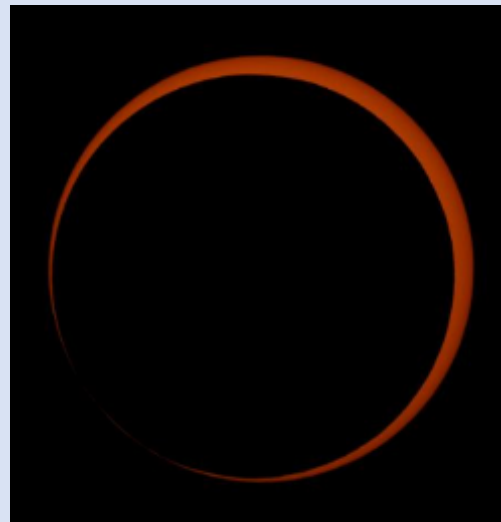
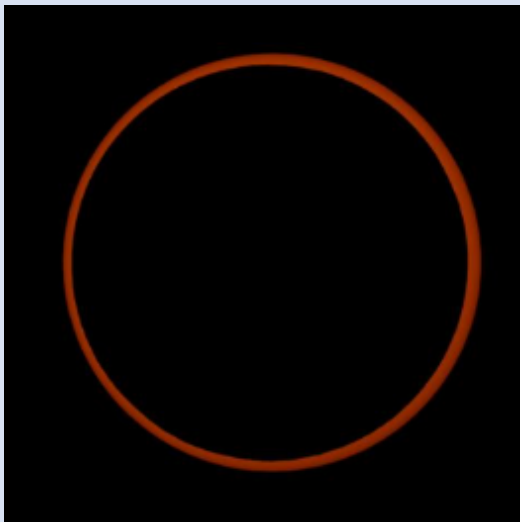


New Member **Michael Swartz** and family traveled to Albuquerque, NM and met some friends in a church yard to enjoy the eclipse. He shares some images he took with a solar filter on a camera zoom lens.



Skip Whitehurst and **Jack Reeder** went to Midland TX. **Bob and Judy Lieser** were also in Midland at a different location. Below are some of Skip's images

The color images are taken through the 3 1/2" Questar with full-aperture solar filter with a full-frame DSLR. B&W images through a 90 mm Coronado H-a telescope with ZWO ASI432 camera. These were enhanced to bring out the prominences around the limb. Notice the Bailey's Beads of sunlight on the lower left limb of the last image.



Okie-Tex Star Party 2023 Aka "Sokie-Tex"

The ranchers and farmers of the western Oklahoma Panhandle were rejoicing with many days of much needed rain after a prolonged drought. Meanwhile some hardy astronomers from our club were adding to the precipitation with tears over cloudy nights.

Member Stan Davis contributed this lone image of Sagittarius looking SW on Sept 9 then turned his camera SE to catching a spectacular lightning display in the SE



Bob Lieser climbed the eastern Mesa to catch this image of "Okie & Tex" overlooking the area before the clouds moved in. Judy Lieser & Bob enjoy a meal and Bob and Don Bradford display a couple of door prizes they won.



Update on Expand, Flash, Bang Model

Davis Taggart, taggardl@mac.com

In my article on the model ([April 2023 newsletter](#) pages 9 -12), I referred to two event horizons. The first is when the mesons are no longer gravitationally stabilized and the second is when the neutrons are no longer stabilized. As part of my thought experiment, the first horizon is when the average density of the universe is less than the density of the starting density of a black hole. The second is less than the density of the crust of a neutron star.

The estimated mass of the observable universe is 1.5×10^{53} kg.¹ It is estimated that this is about 4% of the total mass of the universe. The density of the crust of neutron star is 1×10^9 kg/m³ and the center is 8×10^{17} kg/m³.² The center of a neutron star I think should approximate the boundary between black hole and neutron star.

At first event volume (V_1) and radius (R_1) of the universe is:

$$V_1 = ((1.5 \times 10^{53} \text{ kg} / .04) / (8 \times 10^{17} \text{ kg/m}^3))$$

$$V_1 = 4.69 \times 10^{36} \text{ m}^3$$

$$R_1^3 = V_1 \times 3/4 \times 3.14$$

$$R_1 = 1.04 \times 10^{12} \text{ m}$$

About 58 minutes at light speed or about 6.9 AU - 73% of the distance from Sun to Saturn.

Doing the same calculation for the second event horizon R_2 is:

$$R_2 = 9.6 \times 10^{14} \text{ m}$$

About 37 days at light speed or well outside our solar system.

This provides both a size and time dimension to the early growth of the universe when it was in a more orderly expansion before the random chaos of the "Big Bang".

¹ Wikipedia, "Observable universe".

¹ Wikipedia, "Neutron star".

Associate Treasurer Report

Mike Blaylock



As of October 23, we had 238 members 58 New members for 2023

We welcome this month's newest members – James Hines, Dale Williams, Erik Wiebener, Ryan Rehm, Guy Boyle, Rick Gardner, Nick Nicola Hello and welcome to ACT !

Have you changed you Contact Information? Email, Phone, Postal Address ?

Please help us to maintain our records by sending an email to AstroTulsa.Tres@gmail.com

Accounts as of Oct 23, 2023

Checking: \$ 2,365.13

Savings: \$ 2,793.47

Investments: \$ 30,468.00 (Value tends to fluctuate with markets).

You can JOIN or RENEW memberships or magazine subscriptions ONLINE using ANY MAJOR CREDIT CARD.

The transactions are processed through PayPal but you Do Not need a PayPal account.

Fill out the registration form at <https://www.astrotulsa.com/join>

Click Submit and you will be given the choice of either MAILING in your dues with a check or paying online with most major credit cards. A modest processing fee is added to online transactions.

Membership rates for 2023 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.

Join Online – Add or renew magazine subscriptions. <https://www.astrotulsa.com/join>

MAGAZINE SUBSCRIPTION RATES and PROCESS has CHANGED !

You can get a discount rate as a Astronomy Club member. **However, you will need to do so directly using their discount rate web links.** Both Sky & Telescope and Astronomy have options for DIGITAL as well as PRINT subscriptions.

For club member's Discount subscription rates to [Sky and Telescope magazine](#)
go to [this page](#)

For club member's Discount subscription rates to [Astronomy magazine](#)
go to [this page](#)

Use the DISCOUNT RATE LINKS above instead of their regular subscription pages to MAKE or RENEW your subscription.



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!

Editor Note: Each year Autumn days draw shorter and the trees begin to reveal their glorious colors. We begin to anticipate signs that the first frosts are near. The appearance of the star Fomalhaut in the southern skies is a sure celestial sign that the frosts are drawing near. John Land

Fomalhaut: Not So Lonely After All

David Prosper

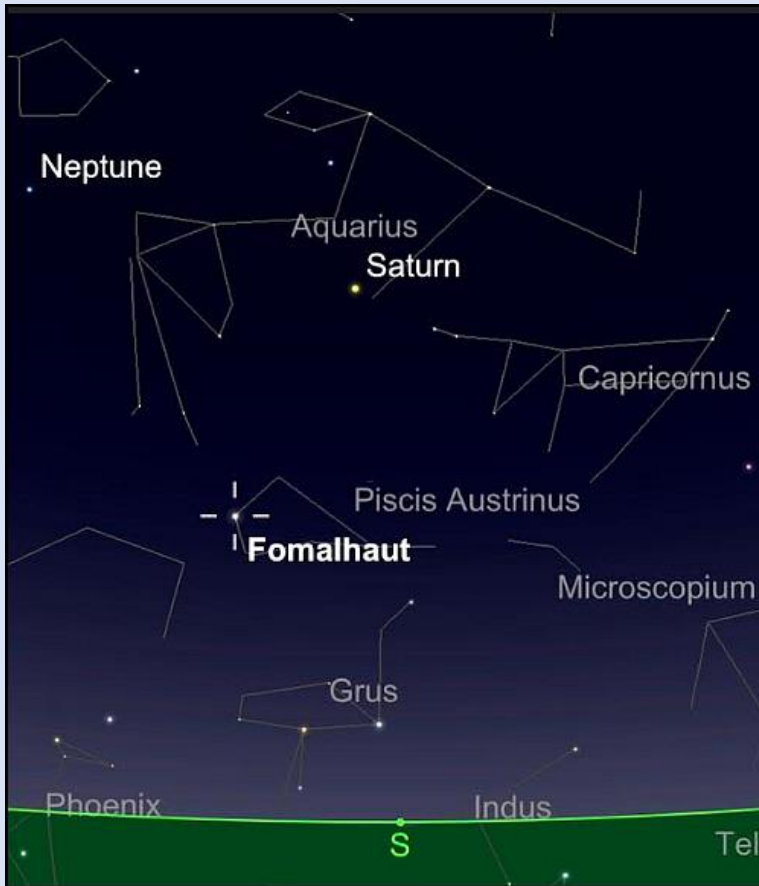
Fall evenings bring a prominent visitor to southern skies for Northern Hemisphere observers: the bright star **Fomalhaut!** Sometimes called "The Autumn Star," Fomalhaut appears unusually distant from other bright stars in its section of sky, leading to its other nickname: "The Loneliest Star." Since this star appears so low and lonely over the horizon for many observers, is so bright, and often wildly twinkles from atmospheric turbulence, Fomalhaut's brief but bright seasonal appearance often inspires a few startled UFO reports. While definitely out of this world – Fomalhaut is about 25 light years distant from us – it has been extensively studied and is a fascinating, and very identified, stellar object.

Fomalhaut appears solitary, but it does in fact have company. Fomalhaut's entourage includes two stellar companions, both of which keep their distance but are still gravitationally bound. Fomalhaut B (aka TW Piscis Austrini, not to be confused with former planetary candidate Fomalhaut b*), is an orange dwarf star almost a light year distant from its parent star (Fomalhaut A), and Fomalhaut C (aka LP 876-10), a red dwarf star located a little over 3 light years from Fomalhaut A! Surprisingly far from its parent star – even from our view on Earth, Fomalhaut C lies in the constellation Aquarius, while Fomalhaut A and B lie in Piscis Australis, another constellation! – studies of Fomalhaut C confirm it as the third stellar member of the Fomalhaut system, its immense distance still within Fomalhaut A's gravitational influence. So, while not truly "lonely," Fomalhaut A's companions do keep their distance.

Fomalhaut's most famous feature is a massive and complex disc of debris spanning many billions of miles in diameter. This disc was first detected by NASA's IRAS space telescope in the 1980s, and first imaged in visible light by Hubble in 2004. Studies by additional advanced telescopes, based both on Earth's surface and in space, show the debris around Fomalhaut to be differentiated into several "rings" or "belts" of different sizes and types of materials. Complicating matters further, the disc is not centered on the star itself, but on a point approximately 1.4 billion miles away, or half a billion miles further from Fomalhaut than Saturn is from our own Sun! In the mid-2000s a candidate planetary body was imaged by Hubble and named Fomalhaut b. However, Fomalhaut b was observed to slowly fade over multiple years of observations, and its trajectory appeared to take it out of the system, which is curious behavior for a planet. Scientists now suspect that Hubble observed the shattered debris of a recent violent collision between two 125-mile-wide bodies, their impact driving the remains of the now decidedly non-planetary Fomalhaut b out of the system! Interestingly enough, Fomalhaut A isn't the only star in its system to host a dusty disc; Fomalhaut C also hosts a disc, detected by the Herschel Space Observatory in 2013. Despite their distance, the two stars may be exchanging material between their discs - including comets! Their comingling may help to explain the elliptical nature of both of the stars' debris discs. The odd one out, Fomalhaut B does not possess a debris disc of its own, but may host at least one suspected planet.

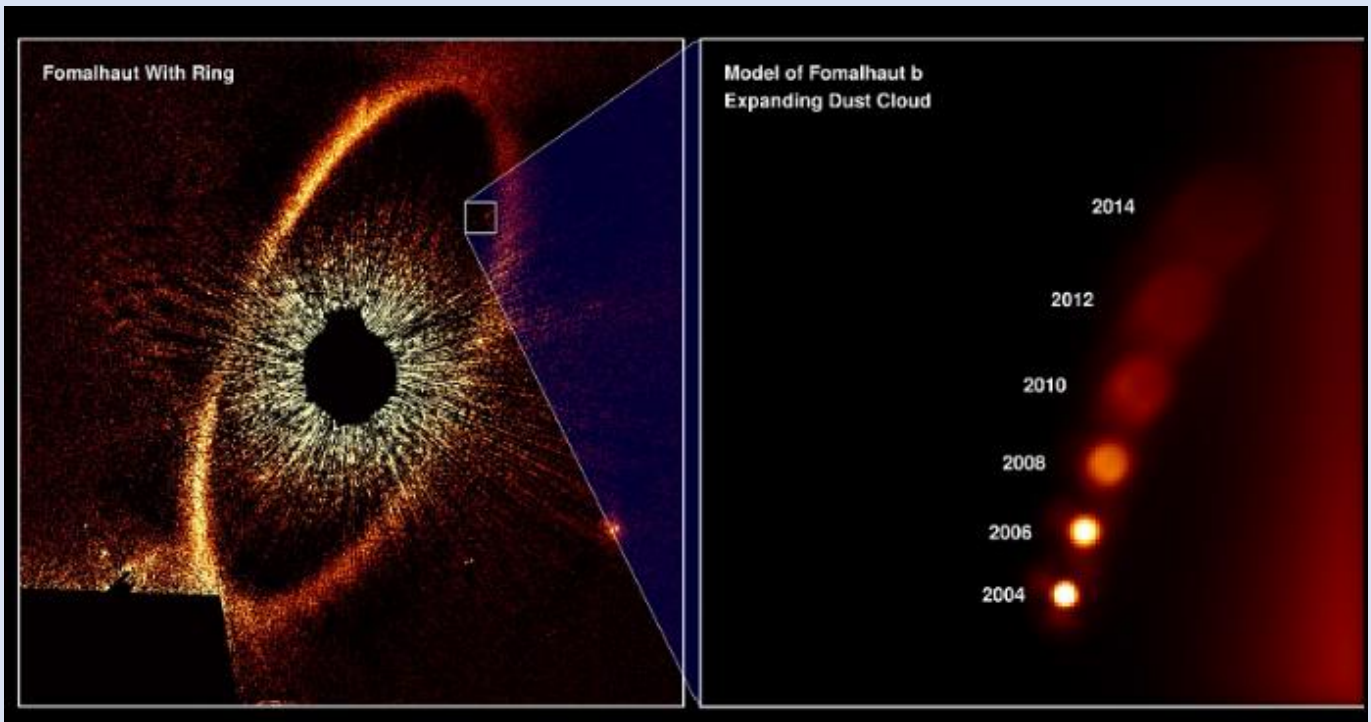
While Hubble imaged the infamous "imposter planet" of Fomalhaut b, very few planets have been directly imaged by powerful telescopes, but NASA's James Webb Space Telescope will soon change that. In fact, Webb will be imaging Fomalhaut and its famous disc in the near future, and its tremendous power is sure to tease out more amazing discoveries from its dusty grains. You can learn about the latest discoveries from Webb and NASA's other amazing missions at nasa.gov.

**Astronomers use capital letters to label companion stars, while lowercase letters are used to label planets.*



Fomalhaut transits the meridian around 7:30 PM CST in mid-November

(8:30 PM DST in early November)



The magnificent and complex dust disc of the Fomalhaut system (left) with the path and dissolution of former planetary candidate Fomalhaut b displayed in detail (right).

Image credits: NASA, ESA, and A. Gáspár and G. Rieke (University of Arizona)

Source: <https://www.nasa.gov/feature/goddard/2020/exoplanet-apparently-disappears-in-latest-hubble-observations>

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 Guest – both individuals and
families as well as our regular members. Several of our club
members set up telescope 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

Purchase online at
jenkscommunityed.com
or call 918-298-0340

2023 Fall Shows [Go to Show Schedule](#)
Click the Date Column to sort them by show date

Most Shows take place on Tuesday evenings
from 7:00 PM to 8:00 PM- a few on Saturday

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SIDEWALK ASTRONOMY – **Open Position**

PR AND OUTREACH – **Open Position**

GROUP DIRECTOR – **Open Position**

NIGHT SKY NETWORK – **Open Position**

WEBMASTER JENNIFER JONES

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