



OBSERVER

DECEMBER 2019

Bringing Stars to the eyes of Tulsa since 1937

Editor - John Land



55 members & family attended our Annual Club Dinner Nov 2



2020 Board & Officers

Left to Right - Dennis Berney, John Newton, Daniel Smith, Tamara Green, Jerry Cassity
James Taggart, Skip Whitehurst, Michael Blaylock and John Land
Richard Brady – not pictured

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Astronomy Club Events

Details at <http://astrotulsa.com/Events.aspx>

Be sure to check the Website for Weather Cancellations before coming.

DECEMBER				
GENERAL MEETING	1st Q 12/4	FRI, DEC 6	7:00 PM	JENKS PLANETARIUM
SIDEWALK ASTRONOMY	Full 12/12	SAT, DEC 7	4:00 PM	BASS PRO
PUBLIC NIGHT	3rd Q 12/18	SAT, DEC 21	4:30 PM	OBSERVATORY
WINTER SOLSTICE		SUN, DEC 22		
MEMBERS' NIGHT	New 12/25	FRI, DEC 27	5:15 AM	OBSERVATORY
MEMBERS' BACKUP NIGHT		SAT, DEC 28	5:15 PM	OBSERVATORY
JANUARY - - 2020				
GENERAL MEETING	1st Q 1/2	FRI, JAN 3	19:00	JENKS PLANETARIUM
SIDEWALK ASTRONOMY		SAT, JAN 4	17:30	BASS PRO
TELESCOPE 101 WORKSHOP	Full 1/10	SAT, JAN 11	10:30-2:30	AIR & SPACE MUSEUM
PUBLIC NIGHT	3rd Q 1/17	SAT, JAN 18	17:00	OBSERVATORY
MEMBERS' NIGHT	New 1/24	FRI, JAN 24	17:45	OBSERVATORY
Martin Luther King Day		MON, JAN 20		
GENERAL MEETING	1st Q 2/1	FRI, JAN 3	19:00	JENKS PLANETARIUM

ASTRONOMY CLUB OF TULSA welcomes our 2020 Officers and Board members

President – Tamara Green Vice President – Daniel Smith
Secretary – Jerry Cassity Treasurer -- John Newton

Board members – Dennis Berney, Michael Blaylock, Richard Brady
John Land, James Taggart, Skip Whitehurst

PRESIDENT'S MESSAGE

BY TAMARA GREEN



Hey Y'all!

The year is nearly over! It seems to me that Telescopes 101 was just the other day!

I hope that you all had a wonderful Thanksgiving and that your Holiday Season brings you and yours much happiness.

We only have a couple more events for this year, at which volunteers will be needed. Our list of events for December are as follows:

General Meeting	Friday, Dec. 6	Jenks Planetarium	7:00 PM.
Sidewalk Astronomy	Saturday, Dec. 7	Bass Pro	4:00 PM.
Public Night	Saturday, Dec. 21	Observatory	4:30 PM.
Members' Night	Friday, Dec. 27	Observatory	5:15 PM.

We will need volunteers to show up with telescopes and be ready to help wherever needed on the Sidewalk and Public nights.

Our annual Telescopes 101 event at TASM is tentatively scheduled for Saturday, January 11, 2020 from 10:30 AM to 2:30 PM. Any volunteers for that are most welcome!

We will be co-hosting MSRAL 2020 with Broken Arrow Sidewalk Astronomers! MSRAL will be from Friday, June 12 thru Sunday, June 14. We really need volunteers to help with this event as well. This will be the first time in 15 years or so that MSRAL has been in the Tulsa area, so we want to make this one a huge success! If interested, please contact me by email at astrotulsa.pres@gmail.com or Peggy Walker by email at email4peg@yahoo.com.

Again, have a safe and happy Holiday Season, and a safe and happy New Year! I look forward to the New Year as well! I hope to be able to spend much more of next year at my telescope than I was able to this year!

See you all soon! *Clear Skies,* Tamara Green



Telescope 101 Workshop



**Got a New Telescope ?
(Or an old one gathering dust)
Want some help learning to use it?**

Bring your telescope and let us help you.

**The Astronomy Club of Tulsa and
Tulsa Air and Space Museum are
hosting a Telescope Workshop.**

**Saturday Jan 11, 2020 from 10:30 AM to 2:30 PM
At the Tulsa Air & Space Museum Planetarium**

**RSVP require to reserve your time slot
Call 918-834-9900 to reserve your spot.**

**www.tulsaairandspacemuseum.org
www.astrotulsa.com**

***Please bring telescope user manual
and accessories if you have them**

**Note: Registration details are still being worked out as of
Dec 1 – Check our website mid-Dec. for full details.**

Here is a nice winter (or any time of the year) recipe to try!

For those of you who like to have a nice, warm treat while cuddling with your cat (or dog, or whichever critter companion you may have) in a soft blanket on your sofa.

Or you'd like to enjoy a little something warm and tasty to help you along on those cold observing nights, below you will find a recipe that I'm sure you will find delightful!

I have personally made up a batch or two of this myself and it is really something special, especially with a few marshmallows on top!

I invite you to enjoy this recipe contributed by John Land!

Astronomer's Starlight Cocoa

"One sip of this and you'll think you're in Chocolate Heaven"



5 Cups Instant Milk

1/2 Cup Hershey's Cocoa Unsweetened powder

16 oz. Coffee Creamer

Large container Instant Cocoa Mix (16 oz size)

Blend above ingredients thoroughly in a large covered container.

Put 1/3 cup of powder in a ceramic or insulated cup

Add Hot Water while stirring it into the powder.

Stir until all powder is dissolved then enjoy!

Daniel's Deep Sky Dozen

by Daniel Smith

I hope you had fun with the observing challenge last month. This month we are going to look for a few things in our solar system. Uranus and Neptune are fairly easy to find, but their moons are a little more challenging. The Straight Wall on the Moon is also easy, but try to observe it a few times throughout the Moon cycles because it will cast different shadows depending on the Moon phase. The difficult objects this month are going to need at least a 12 inch reflector and decently dark skies to spot.

Good Luck and Clear Skies! Daniel

Easy

- 1 **NGC 2264** (Christmas Tree Cluster) in Orion - Only viewing the star cluster is necessary to complete the observation, but can you see the faint surrounding Cone Nebula?
- 2 **Uranus** in Aries
- 3 **Neptune** in Aquarius
- 4 **Straight Wall** (Rupes Recta) on the Moon in Mare Nubium
- 5 & 6 **NGC 253** (Silver Coin galaxy in Sculptor) and **NGC 288** in Sculptor is a loose Globular cluster about 1.8 degrees SE of NGC 253.
Try using binoculars view them in the same view



Finder Charts for Uranus and Neptune
http://www.wcdn.skyandtelescope.com/wp-content/uploads/WEB_UrNep18.pdf

Challenging

- 7 **NGC 404** (Mirach's Ghost) in Andromeda
- 8 **Neptune's moon Triton** in Aquarius
- 9 **Uranus' moon Titania** in Aries
- 10 **NGC 7293** (Helix Nebula) in Aquarius

Difficult

- 11 **Jones-Emberson 1** in Lynx
This is a magnitude 12 planetary nebula that will greatly benefit from using either an OIII or UHC filter.
- 12 **Palomar 1** in Cepheus This is one of 15 Palomar globular clusters that can be fairly difficult to see.

Looking for Observing Forms for all occasions – Here are a couple of resources

American Association of Amateur Astronomers <http://www.astromax.org/aa02801.htm>

This one has explanations of terms like transparency and seeing and other tips for recording your observations. It also has links to many of the Astronomical League Observing Certificates.

The Belt of Venus by sketching artist, Jeremy Perez – has numerous observing form templates
<http://www.perezmedia.net/beltofvenus/templates.html>



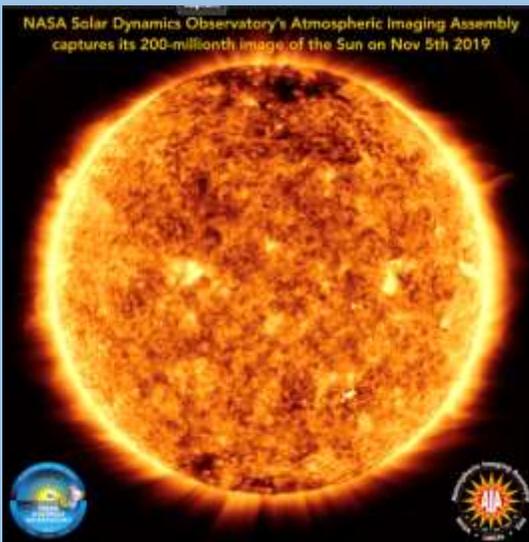
Ultima Thule has a New Name

On Jan. 1, 2019 the New Horizon's spacecraft flew by the distant Kuiper Belt object. Giving scientist a close-up view of one of the building blocks of the early solar system.

On November 12 NASA announced it has been officially named **Arrokoth**, (pronounced AR-uh-koth) a Native American term meaning "sky" in the Powhatan/Algonquian language.

The leader of the New Horizon team Alan Stern stated, "The name 'Arrokoth' reflects the inspiration of looking to the skies and wondering about the stars and worlds beyond our own"

<https://www.skyandtelescope.com/astronomy-news/new-horizons-flyby-target-receives-official-name/>



Launched Feb 11, 2010 SDO continuously images the Sun from an inclined geosynchronous orbit. Its suite cameras that images in 10 wavelengths every 10 seconds. You can see many of its best images on its gallery page. <https://sdo.gsfc.nasa.gov/gallery/main>

The sun has been in a long solar minima for three years now. As of Nov 30 – 76% (253 of 334) days in 2019 have been without sunspots. At this rate 2019 is on pace to beat the 2008 record of 268 sunspot free days.

However, signs of the new solar cycle will begin soon have been noted. The tiny white spot in the lower right near the 4 o'clock position has the magnetic signature of the new solar cycle.



Venus and Saturn have a nice conjunction the week of Dec 9 to Dec 13. Passing within 1.5 degrees on the nights of Dec 10 & 11. Look for them low in the SW in the evening twilight.

The **Geminid Meteor** shower also peaks the week of Dec 12 - 14 but the full moon will obscure all but the brightest meteors.

TREASURER'S and MEMBERSHIP Report

BY JOHN NEWTON



As Nov. 22, 2019, the Astronomy Club of Tulsa has **153 members. Including 41 new members.** Welcome to new members – Tammy Roberts, Jason O'Brien, David & Evan (son) Lucie, Viktor White, and Larry Spann.

Hello and welcome to ACT! We look forward to seeing you at our meetings and at other club event gatherings. Also, a special 'Thank You!' goes out to our long term members for their continued membership, commitment to the club and support.

Accounts as of Nov. 22, 2019 -

Checking: \$ 6,647.45

Savings: \$ 5,782.60

Investments: \$ 24,822.04 (Value tends to fluctuate with markets).

The club now has PayPal available for you to start or renew memberships and subscriptions using your credit or debit cards. Fill out the registration form at <http://astrotulsa.com/page.aspx?pageid=16> Click Submit and you will be given the choice of either mailing in your dues with a check or using PayPal which accepts most major credit cards. A modest processing fee is added to PayPal transactions.

You may also renew your membership or join at one of our club events using your credit card by seeing one of our officers. We can take payments with the Square card reader. A small fee is also added on to these transactions.

ALSO NOTE: For our current members who are renewing their memberships, you can now go to a new link on the website to start your renewal process. On the home page, hover over the "Member" tab on the ribbon menu near the top of the page. Then select the "Membership Renewal" link and this will take to a page to fill out your information. Fill this out, submit it, then pay your dues by whatever method you choose.

NEWS NOTE: Both Sky & Telescope and Astronomy have free Digital subscriptions available with print subscriptions, or Digital subscriptions may be purchased separately. Details - Contact their websites

Membership rates for 2018 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.

<http://www.astrotulsa.com/page.aspx?pageid=16>

Magazine Subscriptions: If your magazines are coming up for renewal, try to save the mailing label or renewal form you get in the mail. Forms are available on the club website.

Astronomy is \$ 34 for 1 year, or \$ 60 for 2 years. www.astronomy.com

To get the club discount you must go through the club group rate.

Sky & Telescope is \$ 33 per year www.skyandtelescope.com

Sky & Telescope also offers a 10% discount on their products.

You may renew Sky & Telescope subscriptions directly by calling their number -**be sure to ask for the club rate.**



This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

The Orion Nebula: Window Into a Stellar Nursery **By David Prosper**

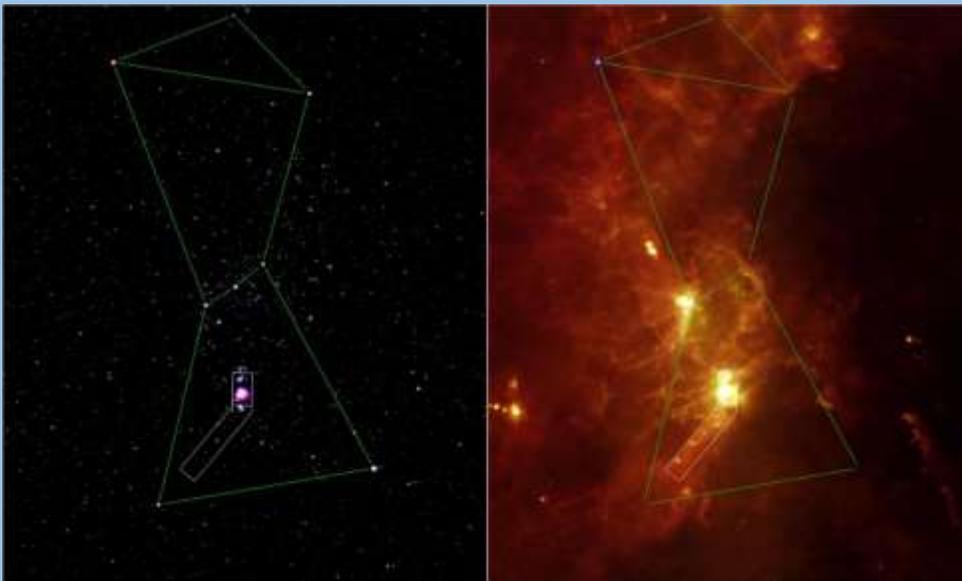
Winter begins in December for observers in the Northern Hemisphere, bringing cold nights and the return of one of the most famous constellations to our early evening skies: Orion the Hunter!

Orion is a striking pattern of stars and is one of the few constellations whose pattern is repeated almost unchanged in the star stories of cultures around the world. Below the three bright stars of Orion's Belt lies his sword, where you can find the famous Orion Nebula, also known as M42. The nebula is visible to our unaided eyes in even moderately light-polluted skies as a fuzzy "star" in the middle of Orion's Sword. M42 is about 20 light years across, which helps with its visibility since it's roughly 1,344 light years away! Baby stars, including the famous "Trapezium" cluster, are found inside the nebula's whirling gas clouds. These gas clouds also hide "protostars" from view: objects in the process of becoming stars, but that have not yet achieved fusion at their core.

The Orion Nebula is a small window into a vastly larger area of star formation centered around the constellation of Orion itself. NASA's Great Observatories, space telescopes like Hubble, Spitzer, Compton, and Chandra, studied this area in wavelengths we can't see with our earthbound eyes, revealing the entire constellation alight with star birth, not just the comparatively tiny area of the nebula. Why then can we only see the nebula? M42 contains hot young stars whose stellar winds blew away their cocoons of gas after their "birth," the moment when they begin to fuse hydrogen into helium. Those gas clouds, which block visible light, were cleared away just enough to give us a peek inside at these young stars. The rest of the complex remains hidden to human eyes, but not to advanced space-based telescopes.

We put telescopes in orbit to get above the interference of our atmosphere, which absorbs many wavelengths of light. Infrared space telescopes, such as Spitzer and the upcoming James Webb Space Telescope, detect longer wavelengths of light that allow them to see through the dust clouds in Orion, revealing hidden stars and cloud structures. It's similar to the infrared goggles firefighters wear to see through smoke from burning buildings and wildfires.

Learn more about how astronomers combine observations made at different wavelengths with the Night Sky Network activity, 'The Universe in a Different Light,' downloadable from bit.ly/different-light-nsn. You can find more stunning science and images from NASA's Great Observatories at nasa.gov.



Caption: This image from NASA's Spitzer missions shows Orion in a different light – quite literally! Note the small outline of the Orion Nebula region in the visible light image on the left, versus the massive amount of activity shown in the infrared image of the same region on the right.

*Image Credit: NASA/JPL-Caltech/IRAS /H. McCallon.
From bit.ly/SpitzerOrion*

SECRETARY'S MESSAGE

BY JERRY CASSITY



ASTRONOMY CLUB OF TULSA MINUTES OF BOARD MEETING

SATURDAY, NOV. 16, 2019

LOCATION: Schusterman-Benson Library, 3333 E. 32nd Pl., Tulsa, OK

Attendees: A quorum was present.

Tamara Green- President	Daniel Smith - Vice President
Jerry Cassity - Secretary	James Taggart - Board Member
John Land - Board Member	Skip Whitehust - Board Member
Michael Blaylock- Board Member	Dennis Berney - Board Member

The Meeting was called to order by Tamera Green, President, at 12:00 PM

Discussions were held of the Action Items provided by Tamera Green for the meeting as follows.

Action Item No. 1: Per John Land: Changes need to be made to the Club's Legal Agent registry status for the Oklahoma Dept. of State. Person of record is no longer active in the club. Also, there is an item of importance concerning our observatory property.

John Land advised that Stephanie Windler, the owner of the observatory property, has passed away. Amy Johnson, a neighbor of Stephanie and a former student of John, informed John of the passing. John gave Amy his contact information to be given to Stephanie's sister. ACT has been informed that the property will be willed to ACT.

It was agreed that Michael Blaylock will be listed as the Registered Agent. The form was completed during the meeting. Tamara will add the Corporate Seal and mail by certified/registered mail. A \$25 fee is required.

Action Item No. 2: Who is responsible for updating the website? The contact information is way out of date. We need a plan for updating it regularly.

A motion was made to appoint Daniel Smith as Public Relation Manager

By John Land, seconded by Jerry Cassity. The motion carried, 7 in favor, none opposed.

John Land has contact with the web master.

Tamara is observing chair

Tamara will send out an email that we need a new Group Director

Action Item No. 3: Approving the events calendar for next year so I can put everything on the Google Calendar and FB page. Dan Z. wants the General Meeting dates for next year too. Also, for June, Public Night would fall on the first day of MSRAL, with the backup night on the night of the MSRAL banquet. Do we want to reschedule it or forego it for the month of June, and put on our website and FB page the reason for that being a special event, and just invite guests to Sidewalk?

A motion was made to approve the Calendar as developed by Tamara Green. The motion was made by John Land and Seconded by Jerry Cassity. The motion carried unanimously.

The Sidewalk Astronomy time will be set to correspond with sunset.

The June Public Night will not be held due to the MSRAL meeting.

Action Item No. 4: Wearing of reflective yellow vests at public events, so that officers and board and security can be visible to guests. Do we want to do this?

Five additional vests are needed. Dennis Berney will obtain the additional vests after determining the sizes needed. A motion was made to approve the purchase by Dennis Berney and seconded by Daniel Smith. The motion carried unanimously.

Action Item No. 5: Purchasing a few more walkie-talkies to keep at the observatory.

A motion was made by Jerry Cassity to authorize Dennis Bernie to purchase four (4) additional walkie-talkies for use during public events for communications. The motion was seconded by Michael Blaylock. The motion carried unanimously.

Action Item No. 6: For public nights at the Observatory, print out a dome show schedule on a half sheet of paper, having guests sign up for dome shows with a maximum number of guests going up per show, with info on what they can expect to see (adjusted monthly for the sky throughout the year. The selling point of this being that the dome and telescope operators can take breaks!

Providing a paper hand out to guests on Public Nights was discussed. This could result in a litter issue. It was decided to post the schedule for the Dome Shows on a white board in the classroom.

Action Item No. 7: Square is imposing a rate change. This needs to be addresses as a cost of doing business, not as a cost to be absorbed by the club. The website will need to be changed (along with club officer and board contact information) showing the rate increase so that new and existing members who wish to pay their dues via Square will be aware of the rate increase.

A motion was made by Skip Whitehurst to update the website to show the increased cost. The motion was seconded by Daniel Smith. The motion carried unanimously.

Action Item No. 8: An individual, Shaun Green, is wanting to donate a Meade LX-16" with lenses and equipment to the club.

The telescope is a Meade LX16 -10 years old – with eye pieces. Mr. Green advised that is is a \$5,000 scope with about \$1000 in eye pieces. Also includes a sun filter.

A Motion was made by Daniel Smith to accept the donation with a Second by Mike Blaylock. The Motion carried - unanimous

Action Item No. 9: Per John Newton: Our PO Box renewal is due by the end of this month. The renewal rate has increased. It would be very difficult to change our current box to something smaller or to another postal location that will help save operating costs. He listed the costs over the years as such:

2015 2x \$65/6 months
2016 \$130/year
2017 \$132/year
2018 \$140/year
2019 \$154/year (due on 11.30.19)

A Motion was made to pay the additional cost and adjust the posted pricing to include the increase. The motion was made by Skip Whitehurst and the second by Daniel Smith. The Motion carried - unanimous

Action Item No. 10: Bitter cold weather and observing nights. Owen suggested to me that in the event of bitter cold weather we cancel Public and/or Sidewalk nights. Do we want to set a minimum temperature (including wind chill) that it must be, regardless of how clear the sky is, in order to hold a Public Night or Sidewalk Astronomy event? For example, if the temperature is going to be at or below freezing, including wind chill factor, do we cancel?

It was decided that a decision to cancel or proceed will be made on a case by case basis.

Action Item No. 11: Per John Land: In April, we approved \$200 for our club's support of MSRAL 2019 for door prizes, for which we sent gift certificates. We also approved the same for Okie-Tex, but that did not get done. John proposes making a \$200 donation to the OKCAC towards the new building for Okie-Tex.

A motion was made to make a \$200 donation to the OKC Club toward the new building at Okie-Tex. The motion was made by Michael Blaylock and the second by Skip Whitehurst.
The Motion carried unanimous

Action Item No. 12: per John Land: Plans for Telescopes 101 at TASM. He has talked to Bryan Kyle.

The proposed date is January 11, 2020 – 2nd Saturday in January.

A Motion was made to coordinate with TASM proceed and coordinate with TASM to hold the Telescopes 101 at TASM on January 11, 2020, from 10:30 AM to 2:30 PM. The motion was made by John Land and the second by Michael Blaylock.

The Motion carried unanimous

Action Item No. 13: Also per John Land: John has spoken to Daniel about getting our Night Sky Network kits reorganized and put back into a reusable form. Going along with this, he also suggests purging old images and info from our FB page and recruit younger and/or more enthusiastic people to keep it updated.

Daniel Smith agreed to reorganize the Night Sky Network kits.

Daniel Smith will update Facebook to remove old images and information.

James Taggart will set up Daniel for Facebook Administration.

Action Item No. 14: Report on the MSRAL plans thus far. John Newton, John Land, and others would like to know budget/banquet/location plans, etc. He wants to know this by no later than early February for publication to the clubs by early March.

A \$30 fee is to be given to Jenks High School for deposit on the 3rd floor of the Math and Science Building for the event.

It was emphasized that we need to keep separate financial records for the MSRAL event.

Most of the Information is need by March, 2020, latest, for publication.

Action Item No. 15: Per Skip, discussion of recent work at the observatory and discussion of ideas for minor improvements.

The plants to provide a light shield on the east end of the viewing field have been planted.

The Rotation switch for the dome is currently functional.

James Taggart advised he will make a new metal switch.

It was decided to dispose of the old AC unit currently in the Classroom storage. Skip Whitehurst and James Taggart will arrange for it to be hauled away.

You are invited to come join us to learn more about
Astronomy and view the wonderful sights in the night sky.

Check our Events Page of Dates [Link to Events Page](#)



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

Take the elevator to the 3rd floor.

[Click for Google Map Link](#)

2019 See the [Fall Planetarium Show Schedule](#)
Then click the **Date Column** to sort them by show date



Sidewalk Astronomy Night

East side of Bass Pro in Broken Arrow near the lake.

101 Bass Pro Drive, Broken Arrow, OK

[Click Map Link here](#)

On a Saturday evening near the 1st Quarter moon Astronomy Club volunteers set up telescopes to share views of the moon, planets and other bright objects. It's a come and go event where shoppers and restaurant goers get a chance to experience glimpses of the universe with their own eyes.



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.

PUBLIC OBSERVING NIGHT on a Saturday

This event is open to individuals and families.

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. [Link to Events Page](#)
[Click for Observatory Map](#)

CAUTION: **DO NOT** use GPS it will likely send you on some nearly impassible back roads.

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WEBMASTER JENNIFER JONES



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