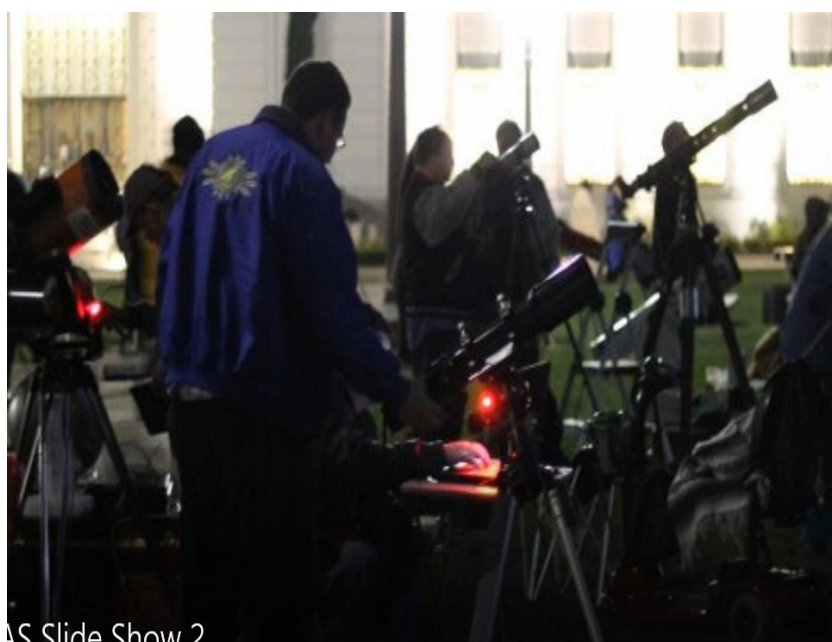




THE LOS ANGELES ASTRONOMICAL SOCIETY

DECEMBER, 2022
VOLUME 96, ISSUE 12

THE BULLETIN



LAAS Slide Show 2

They're baaaaaaaack! Public Star Parties at Griffith Observatory have been scheduled for 2023.

Dust off your scopes and join the fun. Our star parties are the club's favorite events and are usually well-attended by a large group of members, both new and old.

Go to Page 3 to view the schedule and learn more!



Upcoming Club Events

Public Star Party: Dec. 3rd

Holiday Party & Swap Meet: Dec. 4th

Board Meeting: Dec. 7th.

General Meeting: Dec. 12th.

Dark Sky Night: Dec. 24th.

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Update Your Contact Information

Please send any contact info changes to the club secretary at

secretary@laas.org.

Garvey Nights -The Garvey Ranch Observatory is open to the public every Wednesday night from 7 PM to 10 PM, weather permitting. Masks are required inside the facilities.

Science Night - Thanks To All

By Darrell Dooley



Hi LAAS ,members,

What a great event we had on Saturday and Saturday evening.

With spectacular support from The City of Monterey Park, and all of our science outreach partners, we were able to put on an event that entertained, educated, and fed hundreds of people.

Special thanks to Geo for his extensive contacts, to be able to bring most if not all our presenters. Geo, please reply all, with our presenters. I want to thank them too but I'm sure I can remember them all.

So many families showed up with young children, it was great. The costumes were fun and diverse. Dinosaurs to space telescopes. We had raffles all day long. Drinks, hot dogs and hamburgers to all who wanted some. During the day there were multiple solar telescopes set up on the lawn. As the sun went down, out came the night scopes.

The public interest was high, with lines at most scopes waiting to see Jupiter, or Saturn, and other objects in view. After dark, the dome was opened and our 8" refractor was open for public viewing for the first time on its brand new mount.

Also special thanks to Robert and Rudy from The City of Monterey Park. They are much appreciated for their behind the scenes preparation and support was a big key to our success.

Thank you, everyone.

Darrell Dooley,
Los Angeles Astronomical Society
 President
 Mt. Wilson telescope session coordinator
 Life member
Mt. Wilson Institute
 60" and 100" session director.
 60" telescope operator.

Public Star Party Schedule for 2023

Thanks to administrators at the Griffith Observatory, Public Star Parties are now scheduled for next year. Below are the dates for each event. Please plan ahead and mark your calendars so you won't miss any of these fun and well-attended club events. You can also go to your account on the Night Sky Network to view the dates each month. (Log in to view any private club events.)

Each star party is on a Saturday only.

January 28
 February 25,
 March 25
 April 29
 May 27 - Pending until further notice
 June 24
 July 22
 August 26
 September 23
 October 21
 November 18
 December 16

The star parties begin at 2:30 PM and end at 9:30 PM. During the warmer months, the star parties may be extended by one hour. You will be notified by announcements through the IO Discussion Group Forum of any changes.

All LAAS members are guests of the observatory on every Star Party night. On these nights, you represent our club. Please act accordingly.

Parking passes will be sent to all club members also through the IO Group. These passes are ONLY to be used by LAAS members attending the event with or without telescopes. Please print out the parking pass and bring it with you as a parking staff person may ask to see it. Also, please **wear your club name tag** to help identify you as a member of the club. Members of the Sidewalk Astronomers and the Planetary Society may also attend the star parties with telescopes. (The public is not permitted to bring up telescopes.)

If you do not bring up a telescope, you are welcome to attend and help other members with their gear or help at the LAAS booth which is set up to provide general information about our club. If you are a new member, it is OK to attend your first star party without a scope. This will give you an opportunity to meet other members and learn more about these events.

Carts should be provided for all members to help move telescope gear from the parking lot to the lawn. After you set up your telescope, please return your cart back to the curb to allow other members to use it.

Arrive before 6PM or you may not find a parking spot in the lot. The parking spaces are reserved for LAAS members ONLY until 6 PM.

Please take some photos while at the star party for the club newsletter. If you would like to be a club reporter for the LAAS, please let me know. A report about each star party would be greatly appreciated and will be published in all upcoming Bulletins. A club reporter doesn't need to attend all of the star parties but if you go to one, please share a few photos. Feel free to share a story about your experience at the event, too.. This is a great way to volunteer and get more involved in your club.



Photo credit: Penny Kunitani



Please bring along folding chairs and a small folding table, if you have one. Chairs are not provided by the observatory. A small table is great for gear, if needed. If you need to take a break from your telescope, please ask one of the other members to watch your telescope for you. Setting up near a group of other members is recommended for all new members.

Please leave your pets at home. You may not be able to watch your pet while working with lines of visitors at our telescope.

If you have any questions about the public star parties, you can use the discussion group or feel free to call the LAAS phone at 213-673-7355 and leave a message. Please state that you are a member and include your name and phone number to receive a response. This is a message phone only.

Public star parties are fun to attend! You will meet many curious and excited people from different cultures and walks of life, who will want to look through your telescope, including children of all ages. Sharing your enthusiasm for astronomy may motivate and inspire many to learn more about science after the star party ends. You might also ignite a spike of interest that will remain with a youngster for the rest of his or her lifetime.

Happy Holidays!

Andee Sherwood
Communications@laas.org



Photo Credit:

Geo Somoza - Nov. 18, 2017



You Are
Invited!

**HOLIDAY PARTY
AND SWAP MEET**

Sunday, Dec. 4, 2022

9 AM - 9 PM

Free for LAAS Members & the Public

- Free Hot Dogs and Hamburgers for all guests.
- Trade, Swap, Sell telescopes and gear
- Meet the members of the LAAS
- Star Party!

Location: Garvey Ranch Park Observatory
781 S Orange Ave, Monterey Park, CA
91755

Info: 213-673-7355

LAAS Light Pollution Committee Update

By Spencer Soohoo and Ron Kaufman

As many of you know, the LAAS light pollution committee partnered with the LA Audubon Society and the Center for Biological Diversity in a petition effort to have the county of Los Angeles update and enforce the Rural Outdoor Lighting District (ROLD) ordinance. The ordinance contains numerous requirements designed to reduce light pollution in unincorporated areas. Sadly, it does not apply to incorporated areas such as the Cities of Los Angeles, Pasadena, Glendale, etc. Figure 1 illustrates the increase in light pollution in rural Lake Los Angeles (near Lancaster in the Antelope Valley) despite the passage of the ordinance in 2011.

We are pleased to report that our response, both from those who have signed our [petitions](#) and the county's reaction to it, has been quite positive. A significant step was taken when the Director and several members of the Los Angeles County Department of Regional Planning joined us at our September 2022 Family Night at our Lockwood Valley site. They witnessed firsthand why we are passionate about the need to reduce light pollution to preserve dark skies for future generations as well as reducing the harmful effects on human health and that of wildlife.

As a result of the visit to our Lockwood site, the Department of Regional Planning:

- Now requires that any new developments meet the ROLD ordinance standards prior to approval. This, in of itself, is a major win.
- Is considering a pilot project in the Castaic area that will implement the ROLD ordinance in an existing community. We should have a response on this important consideration in a few weeks from now.
- Is discussing how to educate residents about the lighting standards in the ROLD ordinance and the importance of preserving dark skies. One possibility is to work with school districts in areas covered by ROLD to emphasize the need to preserve dark skies and help inform residents of the ordinance and the need to comply.

While we are making progress in our joint efforts to reduce light pollution, we do have a new source from above in the form of space-based interference emanating from AST SpaceMobile's BlueWalker 3 satellite (Figure 2). Its flat panel antenna was just fully deployed on November 11, and [reports](#) indicate its brightness is 1.0-1.5. There plans to deploy at least 100 more satellites, some of which may be larger, by the end of 2024. And, unlike Starlink and Amazon, AST SpaceMobile has thus far refused to partake in discussions and actions designed to mitigate the effects of space-based light pollution as well as the deleterious effects on radio astronomy.

We ask that you contact AST SpaceMobile and ask them to join in efforts with Starlink and Amazon to institute measures on their satellites that will reduce their light pollution signatures across our nighttime skies. A [Scientific American article](#) indicated that they are aware of concerns about the brightness of their satellite, but in a [Science article](#), the AST SpaceMobile CEO seemed to downplay the impact of his company's satellites. We expressed our concerns via email messages sent via their website but have not heard anything. Some professional astronomers we are in contact with also have not received any response. Hopefully if AST SpaceMobile sees people expressing their concerns via their social media sites, they may be more responsive. Their social media sites are:

<https://www.facebook.com/ASTSpaceMobile/>

<https://www.instagram.com/astspacemobile/>

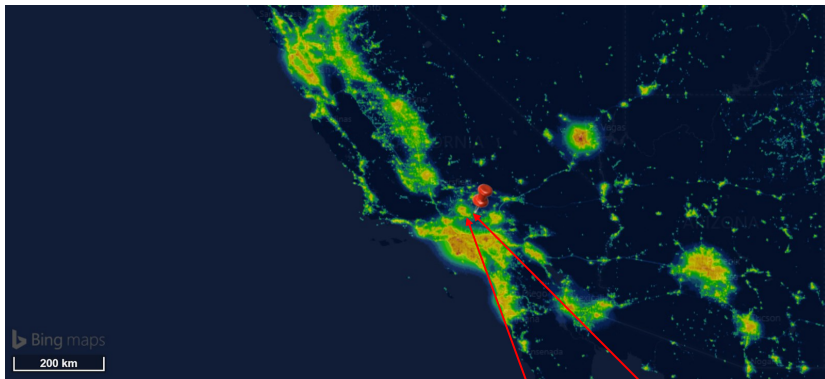
Twitter: @AST_SpaceMobile

Here are links to other information about BlueWalker 3 and efforts to combat satellite-based light pollution:

[Sky and Telescope article on monitoring satellite brightness](#)

[Satellite Constellations Are an Existential Threat for Astronomy](#)

[Giant satellite outshines stars, sparking fresh concerns for astronomers](#)



lighttrends.lightpollutionmap.info/#zoom=12&lon=-117.83963&lat=34.61764

RADIANCE LIGHT TRENDS Language | en Statistics Help About

Lake Los Angeles, CA

Light trend analysis - area

Polygon coordinates
-117.8230819496228,
34.6031033059911
-117.8157348405947,
34.6239558934255

Polygon centroid coordinate
117° 49' 40.2 W, 34° 36' 49.1 N

Polygon area
4.0 km² (selected: 3.7 km²)

Selected year interval: 1992 - 2022

Satellite
VIIRS DNB

Satellite series
Choose satellite series (default: all)

Time period
Monthly

Months
Choose months (default: all)

1000 m

Lake Los Angeles

-117.80238 34.61717

RADIANCE LIGHT TRENDS Language | en Statistics Help About

Lake Los Angeles, CA

Light trend analysis - area

4.0 km² (selected: 3.7 km²)

Selected year interval: 1992 - 2022

Satellite
VIIRS DNB

Satellite series
Choose satellite series (default: all)

Time period
Monthly

Months
Choose months (default: all)

Aggregation
Summed radiance

Mask
None

Generate chart

1000 m

Light trends chart

Summed radiance in 3.7 km² area near 117.8278 W, 34.6136 N.

Year	Summed radiance (nW/cm ² /yr)
2013	110
2014	120
2015	130
2016	140
2017	150
2018	160
2019	170
2020	180
2021	190
2022	200

ROLD passed (2011)

-117.87235 34.63734

Figure 1. Satellite data shows increasing light pollution in an area centered around rural Lake Los Angeles despite ROLD



Figure 2. BlueWalker 3 Satellite Antenna Array.

LAAS Outreach Report

By Van Webster

LAAS Outreach Report
Breed Street Elementary School
11-3-2022
By Van Webster

Members of the Los Angeles Astronomical Society traveled east of downtown Los Angeles for an early evening session of stargazing. Setting up our equipment during daylight hours, the first target was the 77% gibbous moon in the east. Members of the school faculty had a rocket launching station that used half the playground as a downrange target area. The poof of compressed air punctuated the evening ambience during our observations. The night was clear and cold as the wind blew constantly. Folks were wrapped up in heavy coats and blankets to ward off the chill.

Students began to line up at the telescopes as the evening progressed and Jupiter with 4 moons came into view. Oohs and aahs were heard as the students, faculty and family members took their turns at the eyepieces. Saturn eventually became visible. Although windy the seeing was pretty good with crisp planetary images and good contrast.

Too soon the muted voice of the principal announced over the inadequate PA system that the event was over and the crowds thinned out as the families left the campus. The bells at the nearby church tolled the seven o'clock hour as we packed up our gear. The school principal gave a small thank you bag to each of us. Grabbing a couple of slices of cold pizza, the astronomers packed up their gear and set off for their own home dinners.





The 2022 Nightfall Star Party

By David Nakamoto

This annual event is held at the Palm Canyon resort at Borrego Springs, out in the desert between Palm desert and Escondido, the Salton Sea and Temecula. It began as a single night event, but has grown to three nights thanks to the increasing popularity. It offers lots of RV spots, and the complete accommodations of a hotel with pools, Jacuzzis, and air conditioned and heated rooms and comfortable bed. My days of "roughing it" are long gone. It was held in September but moved to late October to avoid the Monsoonal storms and high humidity and temps. One year, it was 90 degrees F and 90-percent humidity at 11:00 p.m. !!!

Thursday I went from dusk to dawn, mainly because the weather reports told of clouds in the evening sky for the next two nights. It took until 8:00 p.m. to get everything set up and working. I finally quit a little after 5:00 a.m. (!!). I tried to find some 20 to 30 objects in that nine hour period, and successfully imaged eighteen of them.

I also ran into this amazing dual telescope rig on a custom equatorial mount permanently attached to a trailer ! The left scope is a 16-inch Cassegrain, the right a 12-inch SCT. This was an awesome scope. The polar axis adjustment was a large multicable and pulley assembly. The owner used it for only visual purposes. It was already getting dark, and I couldn't hold my flip phone steady enough.



Also, as soon as the sun set, we saw the Falcon rocket launch from Vandenberg. Second stage separation and burn, first stage firing to land back at the base.

There were many highlights from that evening, including some first timers.

NGC 253, the great spiral in Sculptor. My best image to date, with lots of details.



Friday night the clouds came with a vengeance. From 5:00 p.m. to 8:00 p.m. it was clouds, clouds, and more clouds. It made all of us a little Grinchy. Because of this some objects I wanted to image because unavailable when they passed behind a tree I had inadvertently set up under.

One first time object was the Bubble nebula.



M33, the Triangulum galaxy, was an old friend, but this is the best photo I've taken of it in terms of the amount of detail.



Another old friend is the Rosette nebula, NGC 2244.



The Andromeda galaxy, my cleanest shot of it so far, and also due to the transparent skies and darkness.



The Heart Nebula

By Alex Weinstein



Above is a bicolor image of the heart nebula, shot over the course of a few weeks from my balcony in West Hollywood. It's around 40 hours of data split evenly between Ha and OIII. I have been binning all my images using APP and am noticing remarkably less noise (increasing kernel size to 2 and drizzling at .8, which approximates somewhere between 1x1 and 2x2 binning apparently). I'm using an asi 2600mm pro, so my images are still 12MP, which is plenty large for framing on a wall!

Gear: ASI 2600mm-Pro—Baader 6.5nm filters - Avx - Guided subs at 3min each - ES ED 80 scope with .8 flattened / reducer - Shot with Nina - Stacked with APP - Light pollution removed using APP - Processed in pixinsight and finished in Lightroom on my phone.

M33 -The Triangulum Galaxy

By Nasir Jeevanjee



Happy to share one of my best image of M33 from my backyard

Gear: Ha-RGB total about 14 hrs. - ZWO ASI 1600mm pro - Ioptron gem45g - ES ED152 mm - ZWO RGB-Ha filters - ZWO120 guide camera - Processed in Pixinsight & Mac iphotos .

Monthly Sky Report

By Dave Nakamoto

In December, the planets line up as follows.

The moon will be full on the 7th, last quarter on the 16th, new on the 23rd, and at first quarter on the 29th. In January,

On the 1st, **Mercury** sets at 5:26 p.m., PST, and the sun sets at 4:44 p.m., PST. The planet is 93-percent illuminated and five arcseconds wide. On the 31st, Mercury sets at 5:57 p.m., PST, and the sun sets at 4:54 p.m., PST. The planet is 16-percent illuminated and 8.9 arcseconds wide. A telescope with a magnification of 150x is needed to see the planet's disk. Do not observe any planet when it comes close to the sun, for the danger to the eyes is great.

Venus sets at 5:20 p.m., PST, on the 1st; its disk is 99-percent illuminated and 9.9 arcseconds wide. On the 31st, Venus sets at 6:10 p.m., PST, and is 96-percent illuminated and ten arcseconds wide. Venus continues to increase in size slowly and the portion of its disk that is illuminated will decrease. Do not observe any planet when it comes close to the sun, for the danger to the eyes is great.

Mars is in Taurus the Bull. Mars rises at 5:02 p.m., PST, on the 1st, and its disk is 100-percent illuminated and 17 arcseconds wide. Mars increases in brightness and diameter as it approaches opposition with the sun on December 7. For the rest of December, the apparent size of Mars and the portion of its disk that is illuminated decrease. On the 31st, Mars rises at 2:24 p.m., PST, and is 97-percent illuminated and 15 arcseconds wide. A telescope with a magnification of 100x is needed to see its diminutive disk. Along with Jupiter and Saturn, the three outer planets are available for observation all night long.

Jupiter is in Pisces the Fishes. Jupiter sets at 1:09 a.m., PST, on the 1st and at 11:18 p.m., PST, on the 31st. Jupiter's disk is 40 arcseconds wide. The Red Spot is visible with a magnification of 50x. The four bright Galilean moons move back and forth, roughly in a line centered on Jupiter.

Saturn is in Capricornus the Sea Goat. The planet sets at 9:58 p.m., PST, on the 1st and at 8:12 p.m., PST, on the 31st. Saturn is 16 arcseconds wide. The rings and Saturn's largest moon Titan may be seen with a small telescope with a magnification of 50x.

Uranus is at mag +5.7 and is in Aries the Ram. Uranus sets at 4:55 a.m., PST, on the 1st and at 2:53 a.m., PST, on the 31st. On the 15th, Uranus is located at Right Ascension 2^h 52^m 51^s and a declination of +16° 9' 11". The disk of Uranus is 3.7 arcseconds wide, and so a magnification of 150x is needed.

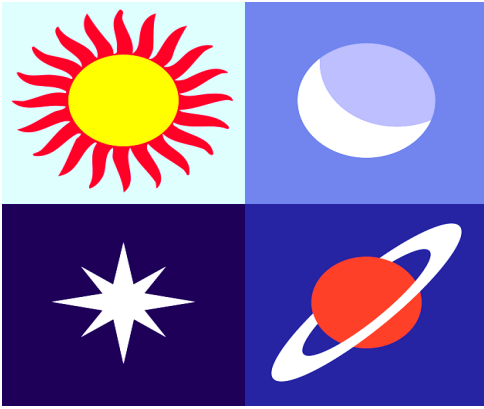
Neptune is even fainter at mag. +7.9, and is in Aquarius the Water Bearer. Neptune sets at 12:39 a.m., PST, on the 1st and at 10:38 a.m., PST, on the 31st. On the 15th, Neptune is at Right Ascension 23^h 35^m 0^s and a declination of -4° 0' 13". Neptune's disk is 2.3 arcseconds in width, and so a magnification of 150x is needed to show it.

SPECIAL EVENTS in December include the following:

An occultation of Mars by the Moon will occur on December 7. The moon will pass in front of Mars as viewed from Los Angeles. This event starts at 6:31 p.m., PST, when Mars is at an azimuth of 74 degrees and an elevation of 23 degrees. Mars emerges from behind the moon at 7:31 p.m., PST, at an azimuth of 81 degrees and an elevation of 35 degrees. Mars will appear on the limb of the moon for only 30 seconds each time. A telescope with a magnification of 50x or more will be needed to see the small disk of Mars on the limb of the moon.

The winter solstice occurs on December 21 at 1:48 p.m., PST. The sun reaches its southernmost point on the ecliptic, reverses its movement south, and heads north. This marks the longest night and the shortest day of the year. The sun rises at 6:55 a.m., PST, and sets at 4:48 p.m., PST. The day is 9 hours 53 minutes long.

The Geminid meteor shower is active from December 4 to 17, with the peak occurring from the evening of the 13th through the morning of the 14th. The shower can be observed all night long. The approximate peak hour is from 1:23 a.m., PST, to 2:23 a.m., PST. The expected dark-sky rate is 150 meteors per hour, but rates will be significantly decreased by bright moonlight after 9:54 p.m., PST. The shower's radiant is close to the bright star Castor in the constellation Gemini the Twins.



Almanac

December 8 - Full Moon. The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 04:09 UTC. This full moon was known by early Native American tribes as the Cold Moon because this is the time of year when the cold winter air settles in and the nights become long and dark. This moon has also been known as the Long Nights Moon and the Moon Before Yule.

December 8 - Mars at Opposition. The red planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view and photograph Mars. A medium-sized telescope will allow you to see some of the dark details on the planet's orange surface.

December 13, 14 - Geminids Meteor Shower. The Geminids is the king of the meteor showers. It is considered by many to be the best shower in the heavens, producing up to 120 multicolored meteors per hour at its peak. It is produced by debris left behind by an asteroid known as 3200 Phaethon, which was discovered in 1982. The shower runs annually from December 7-17. It peaks this year on the night of the 13th and morning of the 14th. The waning gibbous moon will block many of the fainter meteors this year. But the Geminids are so numerous and bright that this should still be a good show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Gemini, but can appear anywhere in the sky.

December 21 - December Solstice. The December solstice occurs at 21:40 UTC. The South Pole of the earth will be tilted toward the Sun, which will have reached its southernmost position in the sky and will be directly over the Tropic of Capricorn at 23.44 degrees south latitude. This is the first day of winter (winter solstice) in the Northern Hemisphere and the first day of summer (summer solstice) in the Southern Hemisphere.

December 21 - Mercury at Greatest Eastern Elongation. The planet Mercury reaches greatest eastern elongation of 20.1 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the evening sky. Look for the planet low in the western sky just after sunset.

December 21, 22 - Ursids Meteor Shower. The Ursids is a minor meteor shower producing about 5-10 meteors per hour. It is produced by dust grains left behind by comet Tuttle, which was first discovered in 1790. The shower runs annually from December 17-25. It peaks this year on the the night of the 21st and morning of the 22nd. This year, the nearly new moon will leave dark skies for what should be a really good show. Best viewing will be just after midnight from a dark location far away from city lights. Meteors will radiate from the constellation Ursa Minor, but can appear anywhere in the sky.

December 23 - New Moon. The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 10:17 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.


Source: [Sea And Sky Reference Guide 2022](#)



Curious about the objects in tonight's sky? Click on the link below to learn more.

[Time & Date - Los Angeles, CA.](#)

December 2022

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 Outreach Pasadena	2 Outreach N. Hollywood	3 Public  Star Party Griffith Obs.
4 Holiday Party and Swap Meet	5	6	7 Garvey Night Board	8	9	10
11	12 General Meeting	13	14	15	16	17
18 Happy Chanukah!	19	20	21	22	23	24 Dark Sky Night
25 Merry Christmas!	26	27	28	29	30	31 New Year's Eve

Happy
Holidays

Meet The New Members

Welcome to the LAAS!



Laura May Abron	Gigi Guven	Ronald Pepitone
Ginger Bucker	Glenn Holland	Truman Polich
Vaughn Cable	Genevie Hong	Daniel Ruspi
Delores Chavez	Terry Koken	Daniel Sanchez
Keith Farrell	Daniel Kopti	Lily Shevchenko
David Greenwood	Joshua Mehdian	

LAAS Board Meetings

.Due to the pandemic, all Board Meetings are now held online, live on Zoom. Please check the information posted in the IO Group Forum for any current news related to these meetings. If you wish to attend a board meeting, please send a request to secretary@laas.org for a link to Zoom.

Volunteer Opportunities

Every LAAS member is a volunteer at some point. Some members volunteer to share telescopes with the public, while others tackle administrative duties, help out at our community and public events, or join a club committee. Taking photos at our events and writing articles about events for our club newsletter are great ways to volunteer and become more involved in the LAAS as a member.

Volunteers are always welcome to write articles for our monthly newsletter or share images captured of the night sky. Members are also welcome to come up with new ideas and future activities for the membership which can be shared in Board meetings. If you are artistic and enjoy creating posters or flyers, or printable astro-educational handouts for further star parties, please let us know.

Time To Renew Your Membership?

Please remember to renew your membership once you receive notice from the Club Secretary in your email inbox. The secretary will send you a link to a form created just for you for your renewal.

Please send any new contact information to the club secretary at secretary@LAAS.org.



LAAS Outreach Program

The mission of LAAS is to promote interest in and advance the knowledge of astronomy, optics, telescope making and related subjects. In furtherance of its mission, LAAS conducts public star parties and other outreach events that are intended to enhance the public's understanding of astronomy and its enjoyment and appreciation of the beauty and wonders of our universe.



We provide outreach events at local schools, Griffith Observatory, Mt. Wilson Observatory, various state and county parks, and community events.

Join our Outreach team of volunteers today.

Contact Heven Renteria, our Outreach Coordinator at Outreach@LAAS.org for more information.



Want to include astronomy outreach at your school's science night or open house? Follow the link below to access the request form:

[Outreach Request Form](#)

LAAS Club Merchandise

LAAS T-SHIRTS, HOODIES, MUGS, AND MORE!

To find new merchandise from our store, please use the following link: [Shop Here](#)

Please note all prices listed are subject to change and include all shipping and handling costs. All items will be shipped directly to the address you provide on your order form.



LAAS Hoodie



Amazon Smiles

The LAAS is now listed on Amazon Smiles. When you purchase any goods on Amazon.com, Amazon will donate a small percentage of the funds they receive from you, back to the LAAS. Here's some information to help bring in funds for our club projects:

What is AmazonSmile?

AmazonSmile is a simple and automatic way for you to support your favorite charitable organization every time you shop, at no cost to you, with the added bonus that Amazon will donate a portion of the purchase price to your favorite charitable organization., such as the LAAS!

Learn more by following this link:

<http://smile.amazon.com/>



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John O'Bryan, Jr.

Astronomy Magazine Discounts

Discounts for astronomy magazines can be found on the internet. Look for the best deals possible. Send a copy of your LAAS membership card with your check or payment to receive a club member discount.

Astronomy
magazine

As a member of the Night Sky Network, you may use the above link to renew your Astronomy Magazine subscription (or enter a new subscription) at the club discount rate. If this is a renewal, Astronomy Magazine will match your entered name and address and extend your subscription. For inquiries, please contact Astronomy Magazine customer service & sales at 1-800-533-6644.

[Click here to subscribe to Sky and Telescope Magazine.](#)



Join the Astronomical Society of the Pacific and help support the cause of advancing science literacy through engagement in astronomy. Member benefits include a **subscription to the online Mercury Magazine**, published quarterly, and **Astronomy Beat**, a monthly on-line column written by "insiders" from the worlds of astronomy research and outreach.

Subscribe or renew to the McDonald Observatory's StarDate Magazine and receive a special discount. Go to this page and press "Add to Cart" under the kind of subscription you want:

<http://stardate.org/store/subscribe>

Then, on the Checkout form, enter "network" in the Coupon Code box.



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Find astronomy outreach activities by visiting NASA's Night Sky Network:

<https://nightsky.jpl.nasa.gov/about.cfm>

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Griffith Observatory:

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