

THE EVENT HORIZON



ST. LOUIS ASTRONOMICAL SOCIETY

Devoted to the Interest and Advancement of the Science of Astronomy

VOLUME 30, Issue 7
July, 2020

Quasars: Black Holes, Bright Lights!

by

Dr. Amy Kimball
National Radio Astronomy
Observatory (NRAO)

”, an illustrated presentation by Dr. Amy Kimball of the National Radio Astronomy Observatory (NRAO), will be featured at the July meeting of the Saint Louis Astronomical Society. The meeting will be held via Zoom online conference only, due to the coronavirus COVID-19 outbreak. The meeting and lecture will begin at 7:30 p.m. on Friday, July 17. Zoom access information is posted on the Society’s website, www.slasonline.org. The event, cosponsored by NASA's Missouri Space Grant Consortium, is open to the public free of charge.

Quasars are very bright, very distant objects first found by the powerful radio waves that many emit. They must generate tremendous amounts of energy to be visible across a billion or more light years. Dr. Kimball will explain how quasars are detected and mapped and why astronomers think that supermassive black holes are linked to the quasar power source. She will also talk about her work with

the Very Large Array, an interconnected group of twenty-seven massive radio telescopes, each with a disk over eighty feet across.

Dr. Amy Kimball is a staff scientist at the NRAO headquarters in Socorro, NM. She assists astronomers worldwide who use the Jansky Very Large Array (VLA) radio telescope facility. She is also the Head of Operations of the VLA Sky Survey, which is in the process of imaging the entire radio sky visible from New Mexico. Dr. Kimball uses the VLA and other telescopes (both radio and non-radio) to study the demographics of quasars--- supermassive black holes at the centers of large galaxies.

Upcoming Meetings!

August Jeffrey Gillis-Davis, PhD Apollo XIII Plus 50 Years Washington University
September Ann Hofmeister, PhD New Mechanisms for Plate Tectonics, Lunar Drift and Differential Rotation of the Lithosphere.
October Marco Cavaglia, PhD Gravitational Waves Part II University of Missouri: S & T
November-Brett McGuire, PhD Mirror Asymmetry in Life and in Space NRAO-WVa
December- Maura McLaughlin, PhD Still Thinking About a Topic! University of West Virginia

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Joining a Zoom Conference Meeting: Everyone can join!

Joining us for a Zoom Conference is easy! All you need is any of the following: Computer, desktop or laptop, smartphone, **OR** any regular phone! The meeting will be open from 6:30-11pm. The extra time is to allow socializing before or after the meeting

Below is the invitation to join:
To join Zoom Meeting for SLAS Regular Meeting with computer or smartphone:
Just click the link below:

<https://zoom.us/j/8604505790>

Meeting ID: 860 450 5790

Dial by phone using your location (any phone will work)

+1 312 626 6799 US (Chicago)

Meeting ID: 860 450 5790

If you need help joining the meeting, don’t hesitate to call Jim Small at 314-307-0692!!

(ps: the link for the meeting is the same each month so far. If there continue to be no problems)

President's Corner by Jim Small

The SLAS Regular meeting for July will be via Zoom conference only. This month features Amy Kimball from NRAO to speak to us about black holes! To join the meeting, see the article on the front page for instructions and a link. We have been having good attendance at the meetings. We certainly hope to see you then!

The business meeting for ALCON was held around July 16. I haven't received a report from that meeting at this time as I am no longer the official rep for the Mid-States Region.

We will also continue holding SLAS Board meetings via Zoom conference. The link for the board meetings on the First Thursday of the month is the same as the link for the regular meetings.

The nomination forms for the Special Awards program is available on the website. The period for nominations has been extended until September 1st. Please read through the nomination forms and fill one out for someone you feel is deserving!

We held a zoom meeting to plan outreach events that will take place virtually. This includes having live telescope views through zoom or other streaming meeting setups. Watch for virtual events on the SLAS calendar and watch dialogs for other events you might be interested in participat-

ing in. If you would like to assist by using your telescope setup to share a live image, contact myself, Mark Jones, Don Ficken or Bill Breeden to participate. The more the merrier! We would love to have as many members as possible participating!

There are still events held at [McDonald Observatory via virtual streaming](#) for Moon observing, Deep Sky observing and Solar observing. Follow the link to see them archived. If you find more virtual events worth looking into, post them in dialogs and/or send them to me for posting in the newsletter.

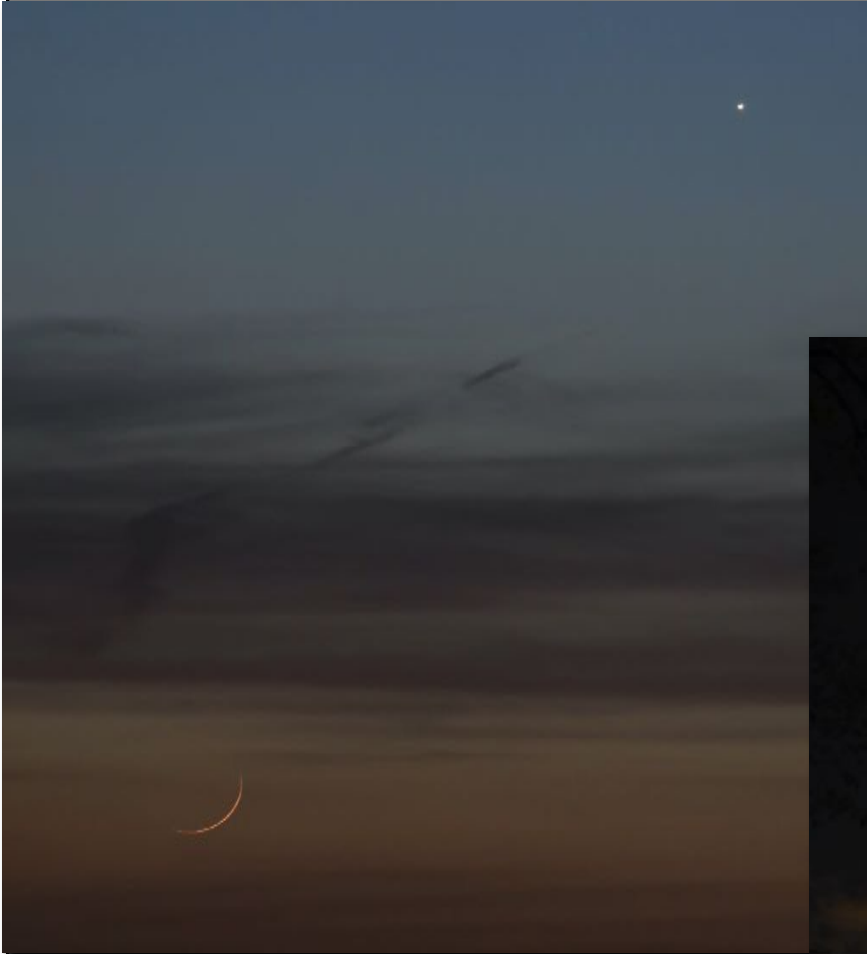
If you haven't seen the Neowise comet yet, DON'T miss it! It is easy to photograph, not quite so easy to see naked eye unless you have dark skies, but it's easy to get a picture of it. I've seen tons of photos, including photos taken with a smartphone! Get out and see it, there might not be another one to come along for a while. If you get photos, please send them to me for use in the newsletter!

If you go out, be sure to take a couple of photos and send them to me for the newsletter! Be sure to get a pic of you and your setup if you're out observing and any photos you might take with your equipment.


Hope to see you at the meeting Friday night!

Until then, clear skies!

Jim Small



Left: Venus and a very thin crescent Moon taken on May 23, 2020 at 9pm. Nikon D750, 260mm, f/5.6, 1/5 sec, ISO1600. **Below:** Moon and Starlink satellites taken on April 27, 2020 at 9:17pm. Nikon D750, 24mm, f/2.8, 1/4 sec, ISO 6400. Both photos by Jim Small
Submit your own photos for the newsletter at newsletter@slasonline.org





Far Left: Comet Neowise taken with a Canon DSLR with 205mm lens. 6 second exposure. Taken by Mark Jones at Danville. Comet Neowise is now visible in the Northwest skies below the Big Dipper. It is climbing higher daily and should be a great target for the next week or two. It is difficult to find naked eye unless you have reasonably dark skies. It is a terrific object in a pair of binoculars and also easy

to find using any binocular. Be sure to look for it in the coming week or two! It is worth the effort! **Left:** Comet Neowise through a 12 in Meade LX 200. Shot with a Canon DSLR at prime focus by Mark Jones. 2 sec crop image. Taken at Danville.



Left: Neowise with Nikon D750, 300mm f/6.3, 5 sec exposure at 800iso. Taken in west county at 4:40 am. **Above:** Neowise with Nikon D750 at 300mm, f/8, 3 sec exposure at 3200iso. Taken in southwest St Louis County at 9:53 pm July 13. Both photos by Jim Small. Note the different angle of the tail.



Regional Representative Report

By Peggy Walker

Feel free to add the minutes, bylaws and this notice to your club emails.

This is a quick note as the new regional representative with the minutes and Bylaws from the Mid-States Business Meeting.

MSRAL BUSINESS MEETING MINUTES: Was held on Saturday, June 13th from 10:30—12:30 via zoom. The minutes in draft form are attached and will be approved at MSRAL 2021 Conference in June in OK.

BYLAW WORKING GROUP: The attached MSRAL Bylaws will be updated this year since they have not had revisions in years. We have formed a Working Group to update the bylaws and there is room for a couple of others to join us. If you are interested please let me know. The goal is to get these done by mid April and have them reviewed to comply with the National League's Bylaws. Then they will be put before the region in May so any changes/recommendations can be made for a final vote at MSRAL 2021 Business Meeting.

REGISTRATION & REGIONAL WEBSITES: The MSRAL 2020 Registration website was offered to be used for future MSRALs by just updating the information so hosting clubs don't have to always start from scratch. It is made in Wix which is basically an app based development that is very easy to use and update. I also generated a new regional website that would be a communication hub for the region. I would love to get current information on it so that it can be reviewed by the membership for potential use. The registration site will be tied into the registration site and make it one large resource of information. So to finish what I started, I would love to have the following information to add before you all review the site.

1) Club name and Logo, 2) President's name and email, 3) Vice President's name and email, 4) ALCOR's name and email, 5) Newsletter editor's name and email, 6) Club's website URL, (if there is one), 7) Facebook link, (if there is one), 8) Club observatory name and URL (if any), 9) Observatory director/coordinator's name and email as soon as you are able.

COMMUNICATION: MSRAL FACEBOOK & MSRAL GROUP.IO:

The Mid States Regional Facebook Page has Jim Twellman and myself as administrators so please like the page. There is also now a MSRAL "Groups.IO" if anyone is interested please contact Jim Small at jrsmall@earthlink.net

QUARTERLY MEETINGS:

I will start holding quarterly meetings that are open to all members. These meetings will be via zoom and about 45 minutes long and will not need a quorum to function. These are informal and for networking purposes. They are for folks to voice concerns, and also get some information or recommendations to situations. It will also be the place to let me know what I need to push up the ladder to get the answers and information you are desiring from the AL Executive Board. I like Saturday mornings, etc. will work for you.

NEXT REPORT: will have the notes from the ALCON Business Meeting in July.

DON'T FORGET TO MAIL IN YOUR AL BALLOT FOR AL PRESIDENT AND VICE-PRESIDENT BY THE END OF THE MONTH.

MSRAL OFFICERS

Regional Representative:
Peggy Walker

basidewalkastro@yahoo.com

Regional Secretary Treasurer:
Jerelyn Ramirez

Jerelyn.ramirez@gmail.com

MSRAL Chair:
Peggy Walker

MSRAL Vice Chair:
Abby Bollenbach

MSRAL Conference Treasurer:
Rick Walker

Rixworx@cox.net

WEBSITE

MSRAL FACEBOOK

Moderators:
Jim Twellman & Peggy Walker

BY-LAWS WORKING GROUP

Peggy Walker

Jerelyn Ramirez

Ed Swaim

Carroll Iorg

QUARTERLY MEETINGS—TBD

St. Louis Astronomical Society
Devoted to the Interest and Advancement
of the Science of Astronomy
Executive Board Meeting Minutes June 4, 2020

1. Opening Activities

- a. Attendance: Jim Small, Larry Campbell, John Newcomer, Brent Buch, Bill Winningham, Opal Andrews, John Beury
- b. Open Meeting 7:02pm
- c. Approval of last month's meeting minutes
- d. Elections were held during May Zoom meeting: President, Jim Small, Vice President, Bradley Waller, Treasurer, Bill Winningham, Secretary, Mark Jones, Hospitality, Larry Campbell, Board Member at Large, Tom Nickelson
- e. Next Board meeting date: Dates for 2020: Meetings will be via Zoom until further notice: Jul 2, Aug 6, Sep 3, Oct 1, Nov 5, Dec 3

2. Upcoming General Membership meeting topics:

- a. **Speaker:** Vayujeet Gokhale Truman State University Missouri Dark Skies will co-host speaker and we will Zoom and Facebook live this event
- b. Special Awards needed: none
- c. Speaker Press Release: Rich Heuermann will create Press Release for June meeting.
- d. Special Business needed: None
- e. A101: Ideas to discuss public star party plans for rest of 2020
- f. Solstice attendance prizes: laser pointers, Subscription to Star Date magazine, \$45 gift certificate to Looking Up, Project Blue Book DVD, \$25 gift certificate to the astronomy magazine of your choice

3. SLAS Financial Report

- a. Balance Sheet: Net income \$888.71 through May 31, 2020
- b. Profit/Loss report: Total income \$88 below plan. Total expenses \$2448 below plan. Net income \$2677 over plan
- c. Annual Budget meetings start in September
- d. Corporate filings: Are up to date
- e. Trout Lodge check was mailed this week and escrow account balance now \$0

4. Speaker Committee

- a. Budget: \$500
- b. Upcoming speakers: July- Amy E Kimball, PhD, August- Jeffrey Gillis-Davis, PhD, September - Ann Hoffmeister – Washington University, October-Marco Cavaglia, PhD, November-Brett McGuire, PhD, December- Maura McLaughlin, PhD
- c. Open dates: None for 2020
- d. Topics of interest should be submitted to Bard Waller
- e. Stipends: No stipends other than budgeted amounts
- f. Travel: No travel reimbursement other than budgeted amounts

5. Membership Initiatives

- a. Budget: \$400
- b. Welcome Aboard Meetings on hold
- c. Raffles: none planned
- d. Attendance prizes for solstice are planned

6. Membership Recognition Total Budget: \$900

NSN Outreach Awards:

Membership Report: We ended the month with 177 members which is nine members below last year at the same time but an increase from the 171 membership count of last month. Our acquisition of new members is comparable to last year but we still have a few renewals pending from long-time members. Extend renewal grace period from 2 to 4 months. Use renewal stickers on membership reminders
Member anniversary awards: Mail out remaining awards from Nov 2019

New Award program: \$600 budget

New Award Committee report: Committee formed; Jim Small, Mark Jones, Cook Feldman, Sharon Bertram, Fred Schovanez, Bill Neubert, Chairman – Larry Campbell.

Nomination forms finalized.

New Award Policy and nomination process – Mark to write newsletter article.

Submittal deadlines

Nomination reviews

Award selection
Plaques purchased
Awards presented

7. Outreach

- a. Budget: \$1100
- b. Member Training Program Status: on hold for the time being.
- c. Purchase of T-shirts for volunteers completed training
- e. Upcoming outreach events: Outreach in the current and near future situation. Discussion of techniques to be used.
- f. Awards / recognitions – Planned for Jan/Feb meeting
- g. NSN Outreach hours YTD – Hours greatly reduced due to COVID-19. However, NSN has encouraged virtual events be held and to open meetings to national audience. Bill Breeden continues to Host virtual sky events on his Zoom account. Other events include Gateway Arch virtual presentations and Dark Sky Missouri.

8. Old Business: a. Training Program is on hold for the time being.

9. New Business:

- A. MSRAL Business Meeting to be held Saturday, June 13, Jim will send out meeting notice
- B. Zoom Account for SLAS. - Board continues to discuss buying a dedicated Zoom account for \$15-20/month. Right now SLAS is able to use member accounts.
- C. Outreach conduct during COVID-19 – The Board discussed how to address requests for in-person outreach events with a written policy. This policy is subject to change as COVID19 pandemic evolves Bill Winningham provided the following report: I have done some research regarding Covid19 as it relates to our insurance policy. There are no specific provisions in the policy (which renewed in May 2020) regarding corona virus or Covid19. The policy does require that we follow local laws, ordinances, regulations etc including those that relate to public health. I spoke with our insurance broker and they stated that many of their clients have asked event attendees to sign waivers. They directed me to a sample waiver on their website and stated that their clients are adding some additional language to the attached waiver in light of Covid19. The additional language includes a statement that the participant understands that they are attending a public event and that there are at risk of being infected etc. We would want somebody with legal expertise to help us with any additional language if we go the waiver route. The Board agreed that the following policy will be put into place until such time that Federal, State and Local governments provide direction that COVID-19, no longer requires health and safety precautions including: social distancing; face coverings; and special cleaning. This policy only covers SLAS sponsored meetings and outreach activities where SLAS members and the general public are involved.
 1. For events sponsored by non-SLAS organizations, SLAS coordinator shall require the organization provide their COVID safety plan. Plan should include rules for social distancing, face coverings and cleaning. The SLAS coordinator shall review sponsor's plan, and determine if it meets SLAS guidelines.
 2. SLAS shall provide to all organizations requesting SLAS outreach services the following guidelines for services:
 - a. SLAS provided telescope viewing means that guests and SLAS volunteers will need to touch and look through telescopes. The delicate nature of telescopes and optics prevents frequent and aggressive cleaning of these surfaces. Sponsors and guests must recognize the inherent risk of coming into contact with these surfaces.
 - b. Other astronomy related activities that require guests and SLAS volunteers to touch common items will not be available while COVID safety practices are enforced.
 - c. SLAS volunteers will provide their own face masks, however the sponsor may provide additional face masks.
 - d. SLAS volunteers will wear their masks at all times when they are inside the sponsor's building spaces
 - e. SLAS volunteers will wear masks when in sponsor's outdoor spaces when 6-foot social distancing cannot be maintained
 - f. Sponsors will provide access to hand sanitizer to SLAS volunteers

(Continued from page 5)

g. Sponsors will provide access to surface cleaners to SLAS volunteers

h. Sponsors will ensure all guests wear face masks when within 10-feet of SLAS volunteers.

i. Sponsors will provide access to hand sanitizer to all guests.

j. SLAS volunteers may with-hold services if they feel guests are not practicing safe behavior

10. Other Committee Reports: If needed

A. SLSC Business: a. First Friday actions: First Fridays are discontinued until further notice. Virtual First Friday stargazing?

B. SLCL Business: a. Annual contract – On hold due to COVID
b. Upcoming events – On hold due to COVID

C. Jefferson College Business: a. Committee Meeting report. The JCO campus has been shut down since March 14th because of COVID-19. This has made it difficult to get all the major players together. Now with the coronavirus and the National Guard been called out to duty. The National Guard troops will be tied up throughout the United States helping with this virus pandemic. Under normal conditions, the NG schedules their projects 12 months in advance so their participation is no longer being considered. Site work will now be part of the construction specifications for bid. The new money (\$48k?) allocated for the next fiscal year (2020-2021) has been put on hold. The potential good news is that if the budget picks up later this year, the on-hold capital projects will be re-evaluated to be allocated their approved budget. That's promising for us, since we have a small project with outside donations. Other good news is the confirmation that this current year's capital projects budget (2019-2020) will roll over and continue being used in the next

fiscal year. From the 2019-2020 budget, we have committed or spent a little over \$12,000 to the project for core drillings, storage sheds, and additional site electric. That leaves about \$26,000 left to cover the balance of the work. Our major donor for the concrete is donating product only, and no labor. Their contribution is concrete for the dome, patio and sidewalk and the wall foundation. The labor will be provided by the contractor performing the actual work. The architect has finished the construction specifications and is ready to release for bid. We are waiting for the school to release. I believe the school has reviewed the specifications and has no further changes. Once we receive the bids, we can see how much can be accomplished for our budget. The Observatory is #1 priority.

b. Upcoming Outreach Event: Outreach events are cancelled for April through June, Summer events to be discussed later

D. Library Telescope Committee a. Budget – \$650 b. Upcoming builds or maintenance events c. Maintenance budget - \$200

d. Mileage re-imbursement - \$250 e. Promotional materials - \$200

E. SLAS Social Events a. Budget - \$300 b. Homemade Fest - \$100 budget c. Star-B-Q - \$200 budget, On hold due to COVID

Other

F. SLAS Brochures a. Budget \$325 b. Quarter cards

G. Loaner scope Program a. Budget - \$100 b. New donations 10" Meade donated by Bill Poletti c. Replacement Parts for the LPTs

d. Items for sale

H. SLAS Library a. Budget - \$400 b. Other

I. Star Parties Donation: no donations

11. Closing Activities Motion to Adjourn by Mark, second by Larry, meeting adjourned at **9:16pm**




Photo of spiral galaxy M51 taken by Mark Jones with a Canon DSLR. It was shot at Danville Conservation Area Friday, July 11.

St. Louis Astronomical Society Profit & Loss Budget vs. Actual January through June 2020			
	Jan - Jun 20	Budget	\$ Over Bud...
Ordinary Income/Expense			
Income			
Events Income		810.00	(810.00)
Magazine Subscription	1,037.20	703.80	333.40
Membership Dues	2,425.00	2,390.00	35.00
Total Income	<u>3,462.20</u>	<u>3,903.80</u>	<u>(441.60)</u>
Cost of Goods Sold			
Magazine Subscriptions	971.30	703.80	267.50
Total COGS	<u>971.30</u>	<u>703.80</u>	<u>267.50</u>
Gross Profit	<u>2,490.90</u>	<u>3,200.00</u>	<u>(709.10)</u>
Expense			
1-Programs & Events	859.13	2,255.00	(1,395.87)
2-Newsletter		355.00	(355.00)
3-Library expense	81.53	250.00	(168.47)
5-Loaner Scopes		50.00	(50.00)
6-Brochures		300.00	(300.00)
7-Insurance	1,049.50	1,050.00	(0.50)
8-Website	179.40	445.00	(265.60)
9-Administrative Expenses	100.08	151.00	(50.92)
Total Expense	<u>2,269.64</u>	<u>4,856.00</u>	<u>(2,586.36)</u>
Net Ordinary Income	<u>221.26</u>	<u>(1,656.00)</u>	<u>1,877.26</u>
Other Income/Expense			
Other Income			
Donations	102.05		102.05
Interest Income	83.58	100.00	(16.42)
LTP Receipts	1,669.01		1,669.01
Proceeds from Lens Sales	694.10		694.10
Total Other Income	<u>2,548.74</u>	<u>100.00</u>	<u>2,448.74</u>
Other Expense			
LTP Disbursements	1,799.26		1,799.26
YMCA Trout Lodge ESCROW Expe...	14.21		14.21
Total Other Expense	<u>1,813.47</u>		<u>1,813.47</u>
Net Other Income	<u>735.27</u>	<u>100.00</u>	<u>635.27</u>
Net Income	<u><u>956.53</u></u>	<u><u>(1,556.00)</u></u>	<u><u>2,512.53</u></u>

St. Louis Astronomical Society Balance Sheet As of June 30, 2020		
	Dec 31, 19	Jun 30, 20
ASSETS		
Current Assets		
Checking/Savings		
Checking - First Bank	7,187.45	7,776.09
Deposit, Certificate of	15,841.67	15,906.37
Library Telescope Escrow	1,053.86	998.61
PayPal	77.94	227.71
Savings - First Bank	41,122.69	41,141.57
YMCA Trout Lodge Escr...	14.21	0.00
Total Checking/Savings	<u>65,297.82</u>	<u>66,050.35</u>
Other Current Assets		
Inventory Asset	761.53	761.53
Undeposited Funds	20.00	0.00
Total Other Current Assets	<u>781.53</u>	<u>761.53</u>
Total Current Assets	<u>66,079.35</u>	<u>66,811.88</u>
Fixed Assets	<u>15,000.00</u>	<u>15,224.00</u>
TOTAL ASSETS	<u><u>81,079.35</u></u>	<u><u>82,035.88</u></u>
LIABILITIES & EQUITY		
Equity		
Opening Bal Equity	8,497.66	8,497.66
Retained Earnings	69,757.14	72,581.69
Net Income	2,824.55	956.53
Total Equity	<u>81,079.35</u>	<u>82,035.88</u>
TOTAL LIABILITIES & EQUITY	<u><u>81,079.35</u></u>	<u><u>82,035.88</u></u>

We could use articles for the newsletter. The following topics are fine for submission.

- 1. Star party reports. Let us know how a star party you attended went! Photos would be most welcome in addition to the article.**
- 2. Observing reports. Actually made it out observing? Let us know how it went. Taken some astro photos? Please submit!**
- 3. Bought something or built something? How about a review or an article!**

Send to newsletter@slasonline.org

Upcoming Star Parties and Other Events

For details on these and other upcoming events, check out the Night Sky Network Calendar linked on the Home Page for SLAS at <http://www.slasonline.org>

SLAS Executive Board Meetings *Location will be at Nicoletti's Restaurant in Valley Park* All meetings are on First Thursdays unless noted. **Note: Board meetings will be via Zoom until further notice.**
Aug 7, Sept 3, Oct 1, Nov 5, Dec 3

Dark Sky Observing Dates

Francis Park Events: These events are on Wednesdays of the week nearest the first quarter Moon
July 29, Aug 26, Sept 23, Oct 21

Sky Orienteering Events For members who want to gather and do some relaxed observing at Babler State Park

Please RSVP if you plan to come!

SLSC Public Telescope Viewing Events: These events are held the first Friday of the month
Planetarium shows start at 7pm Aug 7, Sept 4, Oct 2, Nov 6, Dec 4

Pattonville Observatory Public Viewing Dates
See you next year! Maybe!

Broemmelsiek Astronomy Park Public Viewing
Cancelled until further notice

UMSL Observatory
For directions and map
<http://www.umsl.edu/~physics/About%20the%20Department/astro.html>

All sessions include viewing of 1st quarter Moon with additional objects

Skywatch Hotline: 314-516-5706

Saturdays:

SLAS EVENTS

LET US KNOW YOU ARE COMING!

To RSVP for any of these events log in to the Night Sky Network and submit your RSVP. If the event is canceled, you will be notified immediately according to the preferences you have selected.

July

Jefferson College Observatory
17 Fri SLAS Regular Meeting
18 Sat SLAS Dark Sky Observing
19 Sun SLAS Sky Orienteering
25 Sat Virtual Stargazing at the Arch
29 Wed Virtual Francis Park Stargazing
31 Fri Virtual Backyard Campout

August

6 Thur SLAS Board Meeting
7 Fri SLSC First Friday?
9 Sun Virtual Jefferson College Observa-
tory
15 Sat SLAS Dark Sky Observing
16 Sun SLAS Sky Orienteering
21 Fri SLAS Regular Meeting
22 Sat Virtual Stargazing at the Arch
26 Wed Virtual Francis Park Stargazing

September

1 Tue Deadline for Special Award Nomi-
nations
3 Thur SLAS Board Meeting
6 Sun Virtual Viewing at Jefferson College
18 Fri SLAS Regular Meeting
19 Sat SLAS Dark Sky Observing
20 Sun SLAS Sky Orienteering
23 Wed Virtual Francis Park Stargazing

For other events, watch the calendar on the website. Virtual stargazing events and other online activities will be registered there. We hope you can join us for some of these activities!

SLAS Merchandise Available

SLAS merchandise is now set up for embroidery at Headz n Threadz at <https://hnt.threadthis.com/>

There are two locations:

Galleria: 2495 St. Louis Galleria, St. Louis, MO 63117 Telephone: 314.862.2695
galleria@headznthreadz.com

Simply take the garment, hat, etc you wish to have embroidered and they will take care of it. They have the SLAS logo on file. You may make modifications to the colors if you wish.

SLAS Logo is also available at Infini-tees



SLAS MEMBERSHIP APPLICATION

Name: Last _____
 First, Middle Initial _____
 Address _____
 City, State, Zip Code _____
 email address _____



Please send completed form with check (no cash please) made payable to
St Louis Astronomical Society

Don Ficken, Membership
 13024 Barrett Crossing CT
 St. Louis, MO 63122

Youth @ \$10.00 / 1 year (18 yrs or younger) \$ _____

Individual @ \$25.00 / 1 year \$ _____

Family @ \$40.00/1 year \$ _____

Publications with discount available with your SLAS membership:

Sky and Telescope @ \$32.95 / 1 year \$ _____

(S&T may also be renewed at their website:
<http://www.skyandtelescope.com>)

Astronomy @ \$34.00 / 1 year \$ _____

TOTAL ENCLOSED \$ _____

Check all that apply:

- Renewal
- Address Change Only
- Please send my newsletter by regular mail
- New Member!**

SLAS OFFICERS

President *Jim Small* 314-307-0692
 president at slasonline.org

Vice President *Bradley R Waller* 314-481-7250
 vicepresident at slasonline.org

Secretary *Mark Jones* 636-394-2342
 secretary at slasonline.org

Treasurer *Bill Winningham, (Don Ficken - membership)*
 treasurer at slasonline.org 636-357-2763

Hospitality *Larry Campbell* 636-244-2867
 hospitality at slasonline.org

Board Members at Large:

Tom Nickelson 314-346-9565
 board20 at slasonline.org

Brent Buch 314-239-0329
 board21 at slasonline.org

John Newcomer 314-496-4636
 board22 at slasonline.org

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 (Astronomical League Correspondent)
 treasurer at slasonline.org

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 msral_rep at astroleague.org

COMMITTEE CHAIRS

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 darksite at slasonline.org

Librarian *Jim Small* 314-909-7211
 librarian at slasonline.org

Library Telescope Program *Don Ficken* 636-851-9630
 librarytelescope at slasonline.org

Loaner Equipment *Greg Gaines* 314-277-3082
 loaner at slasonline.org

Merchandise *Vacant*
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Devoted to the Interest and Advancement of the Science of Astronomy

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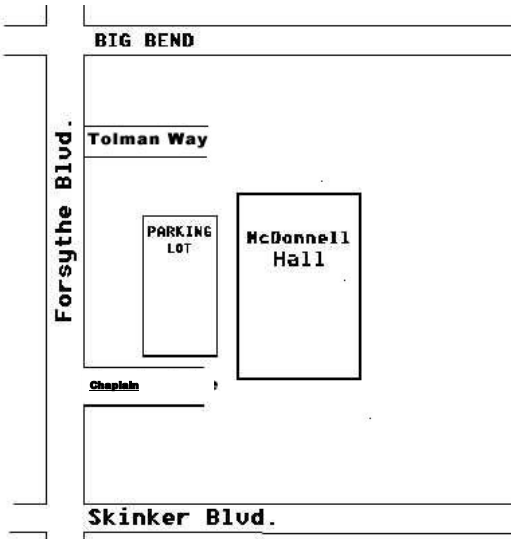


Who We Are and What We Do

St. Louis Astronomical Society is a not-for-profit organization established in 1936. SLAS is devoted to the interest and advancement of the science of astronomy. Our mission is to promote an understanding of the science of astronomy to our members and to the public. Membership is open to anyone with an interest in astronomy.

For more information contact any SLAS officer or visit our website listed above. SLAS is affiliated with the Astronomical League, Night Sky Network and the Mid-States Region of the Astronomical League.

Meetings are held the 3rd Friday of each month at McDonnell Hall at Washington University. See the map to the right for directions.



St. Louis Astronomical Society

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