THE EVENT HORIZON



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ST. LOUIS ASTRONOMICAL SOCIETY Devoted to the Interest and Advancement of the Science of Astronomy

VOLUME 31, Issue 5 May, 2021

The Connection Between the Periodic Table of the Elements and Astronomy *by* Larry Bartoszek Bartoszek Engineering

Larry Bartoszek of Bartoszek Engineering will be will be featured at the May meeting of the Saint Louis Astronomical Society. The meeting will be held online, via Zoom. The meeting and lecture will begin at 7:30 p.m. on Friday, May 21. Zoom access information is posted on the Society's website, www.slasonline.org

Most of what is known about the distant Universe comes from decoding the spectrum of starlight. The specific colors present – or missing – in the spectrum of a star reveals the chemical elements present in the star. Mr. Bartoszek will start with a brief history of the Universe to discuss where atoms come from and the forces that hold them together. He will explain how the electron energy shell structure of each type of atom allows the atom to give off a unique pattern of light – its spectrum. The spectrum identifies the element and aids in placing it into the Periodic Table. Mr. Bartoszek will also talk about how the light from distant stars and galaxies changes as the galaxies move away from us. He will show how spectroscopy of starlight reveals the expansion of the Universe as well as the acceleration of the expansion now thought to be caused by Dark Energy. He will also discuss the work that he did in helping to build the Sloan Digital Sky Survey Telescope (SDSS).

Mr. Bartoszek is an Illinois Licensed Professional Engineer and owner of Bartoszek Engineering. His consulting firm specializes in the design of nuclear and high energy physics facilities, both here and abroad. Mr. Bartoszek worked at the Fermi National Accelerator Laboratory from 1983 to 1993. While there, he was responsible for major equipment designs, including the 4,000 ton hadron calorimeter.

Upcoming Meetings 2021

June - Brad Joliff, PhD, China's Exploration of the Moon: The Chang'e Missions Wash U. July - John Newcomer, Hiking on the

Mountains of the Moon SLAS August- Robert Criss, PhD Galactic Rotation & Dark Matter Washington University

READ ME !!!!!!! Beginning in June, SLAS will have it's own Zoom account and the link for the meetings will CHANGE! We'll keep you posted for the new ID.

Joining a Zoom Conference Meeting: Everyone can join! No Computer Required!

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: <u>https://zoom.us/j/8604505790</u> Meeting ID: 860 450 5790 Dial by ANY phone using your location (any phone will work) +1 312 626 6799 US (Chicago)

President's Corner by Jim Small

This month has been one of developments, both good and bad.

Good. Found a home for the Monolux 4380 refractor we offered for sale last month. Jeff Carpentier decided to pick it up! Thanks for providing a good home for this pristine scope from back in the day!

Bad. MSRAL has been canceled. Again. COVID policies are continued with the Astronomical League from last year and all league group activities are canceled. This does NOT include local group activities as long as the AL is not named.

Good. SLAS is beginning to have outreach activities again. Be sure to follow the usual COVID guidelines if you are providing a telescope with social distancing and be sure to wear a mask, even if you are fully vaccinated. RSVP if you are interested in attending events to provide telescope viewing. Cell phone display or projections are welcome as alternative viewing techniques! We look forward to your creativity in this area.

Good. The concrete for the pier and dome for the observa-

SLAS Elections This Month!

tory has been poured!!! In addition, the grounds have been filled around the concrete and the land surrounding the dome is sloped so that water will drain away from the dome. Next step? Getting the dome and telescope moved!!

Good. Once the observatory is moved, set up properly and is fully functional, we will begin training operators to use the telescope. This will NOT be random use by anyone in the society. Proper training is REQUIRED to be able to operate the telescope properly and it is likely to be a situation where more than one person will need to be present to operate the observatory. Rules of engagement will be set down in the future. There will be a lot to cover.

Bad. Galaxy observing is going away. Orion and company will set by sunset toward the end of next month.

Good. Sagittarius, Scorpio, the Milky Way and Planetary nebulae are coming!

Good. Weather has been cooperating lately! We had a particularly enjoyable time at Babler Sunday because the temperature was perfect, skies were clear and no wind!

If you haven't gotten a scope out lately, it would be a great time to do it now! Good to get back into practice again.

Clear Skies! jrs



It's that time again! Time to host the SLAS elections during the May meeting! Nominations were held at the April meeting and are still open until the elections. Below are the nominations as listed for the last meeting:

President - Jim Small

Vice President: Bradley R. Waller

Treasurer: Bill Winningham

Secretary: Mark Jones

Hospitality: Larry Campbell

Board Member at Large: Brent Buch

We will vote via private chat in Zoom during the meeting.

We will see you there!

Jim Small

Celestron Ultima 11 (11" Schmidt-Cassegrain, #11050-PEC) purchased about 1995. My son and I used it through 2006 when he finished high school, and I have used it rarely since - probably last time was the Venus transit. It is in excellent condition. If you are interested contact Scott Martin via email at the following address: martsam@sbcglobal.net



Francis Park Stargazing 2021 Schedule · We're Back! Presented by the St. Louis Astronomical Society



Enjoy Wednesday night stargazing sessions at Francis Park!

All are welcome to join us! Stop by and take a look at the Moon, or bring your observing gear. This event is scheduled near the First Quarter Moon each month. We provide views of craters, mountains, and shadows on the Lunar surface. Members of the St. Louis Astronomical Society also share telescope views of planets when they are visible. You may even be able to see the moons of Jupiter and Saturn, or a distant double star!

Date	Time	Moon Age	Planets we can Observe
Wednesday, June 16	7:00-9:30PM	6 days (first quarter)	Mars.
Wednesday, July 14	7:00-9:30PM	5 days (waxing cres.)	Venus.
Wednesday, August 11	7:00-9:30PM	4 days (waxing cres.)	Venus.
Wednesday, Sept. 15	7:00-9:30PM	9 days (waxing gibb.)	Venus, Jupiter, Saturn.
Wednesday, Oct. 13	7:00-9:30PM	8 days (first quarter)	Venus, Jupiter, Saturn, Neptune.

SAFETY COVID PRACTICES:

Bring masks and hand sanitizer • Practice 6 feet social distancing while waiting in lines • Wear a mask when at a telescope • SLAS provided telescope viewing means that guests and SLAS volunteers will need to touch and look through telescopes. The delicate nature of equipment prevents frequent and aggressive cleaning of these surfaces. Sponsors and guests must recognize the inherent risk of coming into contact with these surfaces. • All guests must wear face masks when within 10 feet of SLAS volunteers. • SLAS volunteers may withhold services if they feel guests are not practicing safe behavior. • Attend this event only if you are comfortable with these practices.

We set up in Francis Park in south St. Louis city, at Tamm Ave. & Itaska St.

Events will be canceled for unfavorable weather or sky conditions.

Visit <u>www.slasonline.org</u>, and click Event Calendar for up-to-date information.

Virgo's Galactic Harvest

by David Prosper Night Sky Network

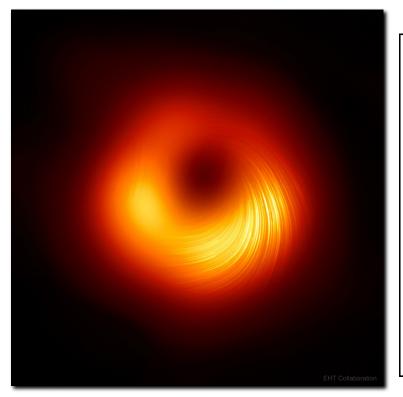
May is a good month for fans of galaxies, since the constellation Virgo is up after sunset and for most of the night, following Leo across the night sky. Featured in some ancient societies as a goddess of agriculture and fertility, Virgo offers a bounty of galaxies as its celestial harvest for curious stargazers and professional astronomers alike.

Virgo is the second-largest constellation and largest in the Zodiac, and easily spotted once you know how to spot Spica, its brightest star. How can you find it? Look to the North and start with the Big Dipper! Follow the general curve of the Dipper's handle away from its "ladle" and towards the bright orange-red star Arcturus, in Boötes – and from there continue straight until you meet the next bright star, Spica! This particular star-hopping trick is summed up by the famous phrase, "arc to Arcturus, and spike to Spica."

This large constellation is home to the Virgo Cluster, a massive group of galaxies. While the individual stars in Virgo are a part of our own galaxy, known as the Milky Way, the Virgo Cluster's members exist far beyond our own galaxy's borders. Teeming with around 2,000 known members, this massive group of galaxies are all gravitationally bound to each other, and are themselves members of the even larger Virgo Supercluster of galaxies, a sort of "super-group" made up of groups of galaxies. Our own Milky Way is a member of the "Local Group" of galaxies, which in turn is also a member of the Virgo Supercluster! In a sense, when we gaze upon the galaxies of the Virgo Cluster, we are looking at some of our most distant cosmic neighbors. At an average distance of over 65 million light years away, the light from these galaxies first started towards our planet when the dinosaurs were enjoying their last moments as Earth's dominant land animals! Dark clear skies and a telescope with a mirror of six inches or more will reveal many of the cluster's brightest and largest members, and it lends itself well to stunning astrophotos.

Virgo is naturally host to numerous studies of galaxies and cosmological research, which have revealed much about the structure of our universe and the evolution of stars and galaxies. The "Universe of Galaxies" activity can help you visualize the scale of the universe, starting with our home in the Milky Way Galaxy before heading out to the Local Group, Virgo Cluster and well beyond! You can find it at bit.ly/universeofgalaxies. You can further explore the science of galaxies across the Universe, along with the latest discoveries and mission news, at nasa.gov.

(Continued on page 5)

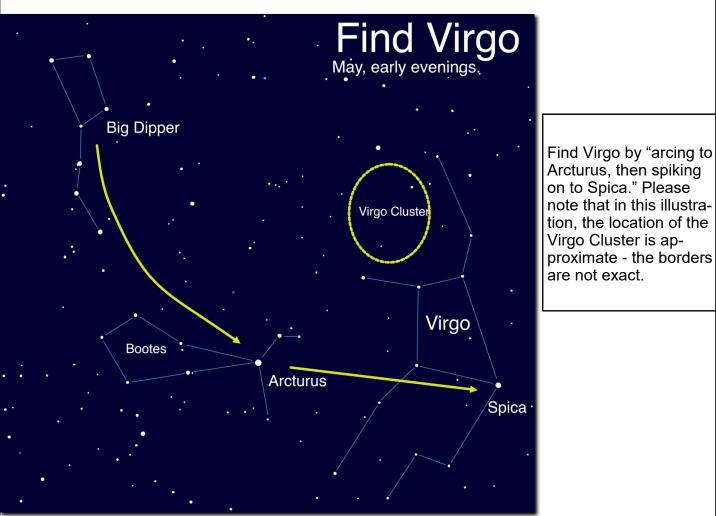


The first image of a black hole's event horizon was taken in the center of one of the most prominent galaxies in Virgo, M87! This follow up image, created by further study of the EHT data, reveals polarization in the radiation around the black hole. Mapping the polarization unveils new insights into how matter flows around and into the black hole - and even hints at how some matter escapes! More details: <u>https://apod.nasa.gov/apod/</u> ap210331.html

Credit: Event Horizon Telescope Collaboration

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(Continued from page 4)





Setting up for the Manchester Park event at Fussner Field. This was one of the first in-person outreach events SLAS has had so far this year. About 50 people attended the event. The next in-person star party will be at Crestwood Park Saturday night. Hope to see you there!

St. Louis Astronomical Society Devoted to the Interest and Advancement of the Science of Astronomy Executive Board Meeting Minutes 4/1/2021

1. Opening Activities

a. Attendance: Mark Jones, Larry Campbell, Bradley Waller, Brent Buch, Jim Small

b. Open Meeting

c. Approval of last month's meeting minutes Bradley Waller motioned, Larry Campbell Second, minutes approved

d. Next Board meeting date: Dates for 2021: May 6, Jun 3, Jul 1, Aug 5, Sep 2, Oct 7, Nov 4, Dec 2. Meetings will be via Zoom until further notice:

2. Upcoming General Membership meeting topics:

a. Speaker:

b. Special Awards needed: not this month

c. Speaker Press Release:

d. Special Business needed:

e. A101: Jeff Carpentier, Grant Martin presentations. Possibly Randy spotlight latest toys!

3. SLAS Financial Report

a. Balance Sheet

b. Profit/Loss report

c. Annual Budget meetings -

d. Corporate filings:

4. Speaker Committee

a. Budget - \$400

b. Upcoming speakers:

SLAS Monthly Meetings Presentations 2021

Presentations 2021		
Month Name	Торіс	Sponsor

16-Apr-2021Ian H Redmount, PhD Cosmic Roller CoasterSLU21-May-2021Larry Bartoszek, PEThe Connection Between the Periodic Table and AstronomyNSS18-Jun-2021Brad Jolliff, PhDChina's Exploration of the Moon: TheChang'e MissionsWash U16-Jul-2021John NewcomerHiking on the Mountains of the Moon:The Voyage of Apollo 15SLAS20-Aug-2021Robert Criss, PhDGalactic Rotation & Dark Matter

Wash U 17-Sep-2021 Larry Bartoszek, PE The Sloan Digital Sky Survey Tele-

scope

 15-Oct-2021
 TBA

 19-Nov-2021
 Vger speakers

 17-Dec-2021
 TBA

c. Open dates for 2021

d. Topics of interest James Webb Space Telescope, Event Horizon Katie Bouman

- e. Stipends
- f. Travel

5. Membership Initiatives a. Budget - \$450

- b. Welcome Aboard Meetings
- c. Raffles

d. Attendance prizes this month none this month, two 23mm SVBONY eyepieces for the June prizes

6. Membership Recognition a. Total Budget \$420

b. NSN Outreach Awards:

c. Membership Report: Full report sent to board. SLAS membership report for March 2021. We have 216 members which 29 members over last year's count of 187 members, and an increase of 5 members this year. The growth is driven by new members, offset partially by a loss of existing members.

- d. Member anniversary awards
- e. New Award program \$600 budget

1. Special Award Committee report: Chairman – Larry Campbell, Jim Small, Mark Jones, Cook Feldman, Sharon Bertram, Fred Schovanez,

- Bill Neubert
- 2. New Award Policy and nomination process Short article for April NL announcing nominations.
- 3. Submittal deadlines May 1 put on agenda for meeting for April 4. Nomination reviews:
- 5. Award selection:
- 6. Plaques purchased: Design for perpetual plaque is ready to be
- submitted.
 - 7. Awards presented:
- 7. Outreach a. Budget \$700
- b. Member Training Program Status: on hold for the time being.
- c. Purchase of T-shirts for volunteers completed training
- d. Purchase of lawn signs:
- e. Upcoming outreach events: Jefferson College events, Manchester Park events
- f. Awards/recognitions
- g. NSN Outreach hours YTD

8. Old Business: a. Training Program start a committee

9. New Business:

COVID protocols for outreach events, update on MSRAL

10. Other Committee Reports: If needed

- A. SLSC Business:
- a. First Friday actions: From Bradley new idea for SLSC
- b. Other immediate business

B. SLCL Business:

a. Annual contract –
b. Upcoming events - at least two June events.

C. Jefferson College Business:

a. Committee Meeting report: Observatory update. **Concrete poured!!!** (pictures??) and there was much rejoicing....

yay..... waiting on dirt for fill

b. Upcoming Outreach Event:

D. Library Telescope Committee a. Budget - \$300

- b. Upcoming builds or maintenance events
- c. Maintenance budget \$100
- d. Mileage re-imbursement see above
- e. Promotional materials \$200

E. SLAS Social Events

- a. Budget \$300
- b. Homemade Fest \$100 budget
- c. Star-B-Q \$200 budget

Other

- F. SLAS Brochures a. Budget \$200 b. Quarter cards
- G. Loaner scope Program a. Budget \$100
- b. New donations Monolux 4380 sold to Jeff Carpentier for \$150
- c. Replacement Parts for the LPTs -
- d. Items for sale
- **H. SLAS Library** a. Budget \$500 b. Other obtained copy of the 2016-2020 DVD for Astronomy Magazine for \$29.95
- I. Merchandise
- J. Telescope Making
- K. Newsletter a. Budget \$600
- L. Website a. Budget \$690 Updated website for past newsletters
- M. Social Networking
- N. Night Sky Network
- O. SLASdialogs
- P. Dark Site
- Q. Observing Programs
- R. Star Parties Donation:

11. Closing Activities Motion to adjourn by Larry Campbell, second by Brent Buch, motion carried.

St. Louis Astronomical Society Profit & Loss Budget vs. Actual January through April 2021			St. Louis Astronomical Society Balance Sheet		ciety	
	Jan - Apr 21	Budget	\$ Over Bud	As of April 30, 2021		
Ordinary Income/Expense Income Events Income	830.00		830.00		Dec 31, 20	Apr 30, 21
Magazine Subscription	1,758.85	802.35	956.50		Dec 31, 20	
Membership Dues	1,950.00	1,525.00	425.00	ASSETS		
Total Income	4,538.85	2,327.35	2,211.50	Current Assets Checking/Savings		
Cost of Goods Sold Magazine Subscriptions	1,670.90	768.35	902.55	Checking - First Bank Deposit, Certificate of	7,587.88 15,925.53	8,703.07 15,933.26
Merchandise	85.92			Deposit, certificate of	10,020.00	10,000.20
Total COGS	1,756.82	768.35	988.47	Library Telescope Escrow	1,206.41	1,336.31
Gross Profit	2,782.03	1,559.00	1,223.03	PayPal	747.44	983.79
Expense 1-Programs & Events	416.68	843.00	(426.32)	Savings - First Bank	41,145.74	41,147.09
2-Newsletter	640.02	320.00	320.02	Total Checking/Savings	66,613.00	68,103.52
3-Library expense 5-Loaner Scopes 6-Brochures 7-Insurance	56.75	200.00 50.00 100.00 1,050.00	(143.25) (50.00) (100.00) (1,050.00)	Other Current Assets	761.53	675.61
8-Website 9-Administrative Expen	179.40 281.60	690.00 184.00	(510.60) (510.60) 97.60	Total Current Assets	67,374.53	68,779.13
Total Expense	1,574.45	3,437.00	(1,862.55)	Fixed Assets	15,336.00	15,336.00
Net Ordinary Income Other Income/Expense	1,207.58	(1,878.00)	3,085.58	TOTAL ASSETS	82,710.53	84,115.13
Other Income Donations	190.00		190.00	LIABILITIES & EQUITY		
Interest Income	9.08	16.00	(6.92)	Equity		
LTP Receipts	29.90		29.90	Opening Bal Equity	8,497.66	8,497.66
Total Other Income	228.98	16.00	212.98	Retained Earnings	72,581.69	74,212.87
Other Expense LTP Disbursements	31.96		31.96	Net Income	1,631.18	1,404.60
Total Other Expense	31.96		31.96	Total Equity	82,710.53	84,115.13
Net Other Income	197.02	16.00	181.02			
Net Income	1,404.60	(1,862.00)	3,266.60	TOTAL LIABILITIES & EQUITY	82,710.53	84,115.13

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

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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. May 6, Jun 3, Jul 1, Aug 5, Sep 2, Oct 7, Nov 4, Dec 2

Dark Sky Observing Dates

May 8, Jun 5, Jul ,10 Aug 7, Sep 4, Oct 2, Nov 6, Dec 4

Francis Park Events: These events are on Wednesdays of the week nearest the first quarter Moon On hold until further notice due to Covid 19

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 On hold until further notice due to Covid 19

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

Broemmelsiek Astronomy Park Public Viewing Every Friday by appt

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

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

Skywatch Hotline: 314-516-5706

Saturdays:

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.

SLAS Events

ents, inked <i>fill be at</i>	21 Fri 22 Sat 22 Sat 24 Mon 27 Wed 30 Sun	SLAS Regular Meeting Stargazing at Crestwood Park Snores and Smores Kirkwood Park Constellation Tour 44 SLAS New Member Zoom SLAS Sky Orienteering
etings D ard		June
:e. 1, Dec 2	3 Thur 5 Sat 4-6	SLAS Board Meeting SLAS Dark Sky Observing CANCELED! MSRAL Conference - Broken Arrow, OK
6, Dec 4	6 Sun 7 Mon 14 Mon	Aim For the Stars Jefferson College Constellation Tour 45 Constellation Tour 46
/ednes- oon	16 Wed 18 Fri 19 Sat 21 Mon	Francis Park Stargazing SLAS Regular Meeting Snores n Smores Kirkwood Park Constellation Tour 47
vant to er State	24 Thur	SLAS New Member Zoom July
ese	1 Thur 3 Sat 4 Sun 5 Mon 10 Sat 12 Mon 14 Wed 16 Fri 19 Mon	SLAS Board Meeting Audubon Center Aim for the Stars Jefferson College Constellation Tour SLAS Dark Sky Constellation Tour Francis Park Stargazing SLAS Regular Meeting Constellation Tour
es .	22 Thur	SLAS New Member Zoom

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 www.headznthreadz.com

There is now only one location:

1065 Regency Parkway, St. Charles MO 63303 Telephone: 314.528-8100 sales@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 www.Infini-tees.com

SLAS MEMBERSHIP APPLICATION ST. LOUIS Name: Last First, Middle Initial Address _ City, State, Zip Code email address Please send completed form with check (no cash please) made payable to Youth @ \$10.00 / 1 year (18 yrs or younger) \$ St Louis Astronomical Society Individual @ \$25.00 / 1 year \$ Don Ficken, Membership 13024 Barrett Crossing CT Family @ \$40.00/1 year \$ St. Louis, MO 63122 Publications with discount available with your SLAS membership: Sky and Telescope @ \$43.95 / 1 year \$ (S&T may also be renewed at their website: http://www.skyandtelescope.com) Check all that apply: Renewal Astronomy @ \$34.00 / 1 year \$ Address Change Only Please send my newsletter by regular mail **TOTAL ENCLOSED** New Member! SLAS OFFICERS COMMITTEE CHAIRS

SLAS UFFICER	3		
President Jim Small president at slasonline.org	314-307-0692	Dark Site Coordinator Mark Jones 636-394-23	42
Vice President Bradley R Waller vicepresident at slasonline.org	314-481-7250	darksite at slasonline.org Librarian Jim Small 314-909-72	11
Secretary Mark Jones	636-394-2342	librarian at slasonline.org	
Traceway Bill Minningham (Dan Fick)		Library Telescope Program Don Ficken 636-851-96	30
Treasurer Bill Winningham, (Don Ficker treasurer at slasonline.org	636-357-2763	librarytelescope at slasonline.org <u>Loaner Equipment</u> Greg Gaines 314-277-30 loaner at slasonine.org	82
Hospitality Larry Campbell hospitality at slasonline.org	636-244-2867	Merchandise Vacant merchandise at slasonline.org	
Board Members at Large:		Membership Don Ficken 636-225-02 membership at slasonline.org	
<i>Tom Nickelson</i> board20 at slasonline.org	314-346-9565	Newsletter Editor Jim Small 314-909-72 newsletter at slasonline.org Observing Programs Mark Jones 636-394-23	
<i>Brent Buch</i> board21 at slasonline.org	314-239-0329	observing at slasonline.org <u>Publicity</u> <i>Rich Heuermann</i> 314-962-92	31
John Newcomer board22 at slasonline.org	314-496-4636	publicity at slasonline.org <u>Recognition</u> Larry Campbell 636-244-28 recognition at slasonline.org	67
ALCOR Bill Winningham (Astronomical League Correspondent)	636-357-2763	Social Media Vacant <u>'SLASdialogs' Moderator</u> Mark Jones, Rhonda Whe dialogsmoderator at yahoo.com Star Party Coordinator Bill Breeden 314-276-36	
treasurer at slasonline.org MSRAL Rep. Jim Small msral_rep at astroleague.org	314-909-7211	starparty at slasonline.org <u>Telescope Making</u> <i>Bill Davis, Jim Melka</i> 314-469-30 telescope at slasonline.org	
		Webmaster Jim Small 314-909-72 webmaster at slasonline.org 314-909-72	211

Devoted to the Interest and Advancement of the Science of Astronomy

ST. LOUIS ASTRONOMICAL SOCIETY



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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.

