THE EVENT HORIZON

ST. LOUIS ASTRONOMICAL SOCIETY

Devoted to the Interest and Advancement of the Science of Astronomy

VOLUME 29, Issue 2
February, 2019

Probing the Sub-Microwave Universe

by

K. Michael Malolepszy
Saint Louis Astronomical Society

K. Michael Malolepszy of the Saint Louis Astronomical Society, will be featured at the February meeting of the Society. The meeting will begin at 7:30 PM Friday, February 15 in McDonnell Hall, Room 162, on the Washington University campus, Saint Louis, MO 63105.

In addition to telescopes that use regular light waves to form images, there are now instruments that "see" the universe in invisible radiation. X-rays, heat, and radio waves are examples. In the high, frozen deserts of northern Chile is a device, nicknamed ALMA, which detects sub-microwave energy. Michael Malolepszy will talk about recent radio astronomy developments focusing on the Atacama Large Millimeter/submillimeter Array (ALMA). While not strictly a radio telescope (sub-microwave energies have higher frequencies than radio energies), it does operate very much like a radio telescope interferometer such as the Very Large Array (VLA) near Socorro, New Mexico. ALMA is array of 66 high-precision, movable antennas, which can be linked together to form one image. Mr. Malolepszy will explain how ALMA is similar and how it differs from the VLA. He will also present a survey of ALMA's capabilities and recent results.

Michael Malolepszy is a veteran amateur astronomer. Now employed in a technical support role for the Department of Biology at Washington University, he formerly worked as a Radio Telescope Array Operator at the Very Large Array.

Presentations for 2019
March Bruce Stinchcomb, PhD
Meteorites Flo-Valley
April Bob King "Astro Bob" (1)
May Craig O'Mara Flying SOFIA NASA
June Josiah Lewis, PhD
Presolar Grains: Solids from Other Stars Wash U
July Ryan Clegg-Watkins, PhD
Exploring the Moon from Orbit Wash U
August Angela Speck, PhD
2019 Solar Eclipse Results University of Missouri
September Don Hampton,PhD
Aurora Borealis & Steve (1) UAF
October Claire Chandler, PhD Super-Earths and the Formation of the Solar System NRAO
December Duncan Lorimer, PhD
Fast Radio Bursts: "Lorimer Bursts" (1) UWVA
(1) Skype event UAF: University of Alaska: Fairbanks UWVA: University of West Virginia

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Mark Your Calendars Now!

Homemade Fest!

Saturday, February 16 5-10 pm, Food Served at 6:00PM

Kirkwood Community Center, Kirkwood Park

Pot Luck, bring your favorite hot dish!

See Brad Waller if you wish to make a presentation!

Tell us about anything related to astronomy.
New item you bought, built, or learned how to use!

Presidents Corner *by* Jim Small

The February meeting will feature our own Mike Malolepszy talking about recent radio astronomy developments focusing on the Atacama Large Millimeter/ submillimeter Array (ALMA). Mike has worked at the VLA in the past so his talk should be great! If you haven't seen him do a presentation, you're in for a treat!

Homemade Fest is booked for February 16th, the day after our February meeting! Once again, Kirkwood Parks has generously donated their room at the community center. Just park and enter where the flagpole is! We look forward to learning about new items and ideas you might have about astronomy. Think about making a presentation of any aspect of astronomy you are interested in. It could be a new software package or app you are using, piece of equipment you bought or designed…. Photographs of the eclipse or other events… whatever you want! We would like to hear about it! Talk to Brad Waller to get on the presentation list.

Progress is being made with the Jefferson College Observatory and we expect to be able to make an official announcement at the regular meeting this month. The committee that will determine funding for the observatory will be meeting on the 14th.

MSRAL is coming up June 14-16 in Kansas City. Watch for registration information to be available soon.

ALCON 2019 will be July 25-29. The league has procured a good deal on a cruise to the Bahamas for the weekend leaving from Cape Kennedy. Tours of the Kennedy Space Center will be part of the convention.

About Canopus

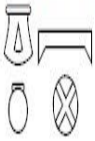
I just saw Fred Schaaf's article "The second star" in *Sky and Telescope*, Feb. 2019, p. 45, about the star Canopus, Alpha Carinae, in which he states that next month's *S&T* article will be a follow-up on the origin of the name and so forth. Alas, I may be too late to have the following information included in that next column because it may already have been typeset and laid out, but here it is, and I hope it can be included if not then later as a letter to the editor:

Paul Kunitzsch and Tim Smart's *Short guide to modern star names and their derivations*, Wiesbaden, 1986, Otto Harrassowitz, on p. 25, shows the following:

α Canopus (kŭ nŏ' pŭs): From its ancient Greek name Κάνωβος (Ptolemy's spelling), an untranslated proper name that was introduced rather late into Greek astronomy (perhaps in the 2nd century B.C.). There seems to be Egyptian influences in the name's development. Reapplied in Renaissance times.

There is in E.A. Wallis Budge's 2-volume *An Egyptian hieroglyphic dictionary*, London, 1920, John Murray (New York, 1978, Dover Publications, Inc.) on page 1049b the town name

Canopus = Genp



Genp (Gardiner's German-derived transcription: *gnpt*), that is, *gnp(t)* + unpronounced determinative *niwt* (*nut*) 'town, village with crossroads'. That's the phonetic transcription, but literally the ideograms are *nst* (*nes-t*) *nw* (*nu*) *pt* (*pet*) = *nest nu pet* = 'seat of heaven', which can indicate "the second star" in the night sky, an important star in Egyptian mythology.

Carl Masthay, retired medical editor, linguist, Algonquianist
838 Larkin Ave., Creve Coeur (St. Louis), MO 63141-7758, USA, cmasthay@juno.com 314-432-4231.

[From J.M. Rogers, editor of and translator from Turkish of Filiz Çağman and Zeren Tanındı: *The Topkapı Saray Museum: The Albums and Illustrated Manuscripts*, Boston, 1980, Little, Brown and Company] [p. 256]

The seventeenth and eighteenth centuries and Westernization **[Constellation artwork during Ottoman Turkish times]**

178–181

Star-pictures from al-'Aynī, *'Iqd al-Jumān fī Tārīkh Ahl al-Zamān*, dated 1160/1747–8, copied by Baltacı Ibrāhīm b. Ḥācī Meḥmed b. Khalīl; B.274.

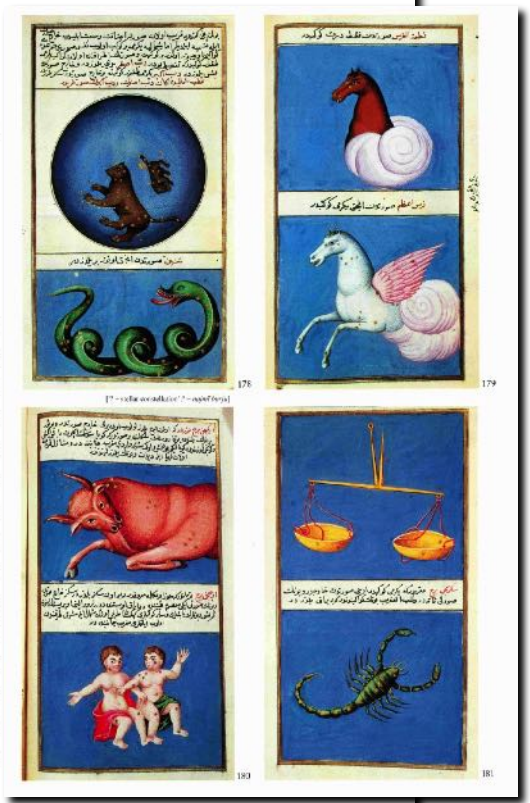
['Necklace of Pearls in the History of Contemporary people']

178 Ursa Minor and Ursa Major, diameter 10·5 cm; and Draco, 7·4 x 12·7 cm; f. 19a. [and Draco]

179 Equus, 10 x 12·5 cm; and Equus Major, 11 x 12·5 cm; f. 22b.

180 Taurus, 8·4 x 12·5 cm; and Gemini, 9 x 12·5 cm; f. 26b.

181 Libra, 11 x 12·5 cm; and Scorpio, 10·5 x 12·5 cm; f. 28a.



The *'Iqd al-Jumān*, an encyclopaedic work by the Mamlūk author, Abū Muḥammad Maḥmūd b. Aḥmad al-'Aynī (died 1451) was translated into Ottoman Turkish by Muḥammad Emīn al-Üsküdārī. This work was copied in three volumes in 1104/1692–3 (Istanbul University Library, T.5953) and the first volume was given star-pictures after Western European models. These were the source of the later copy in the Topkapı Saray Library (B.274). The illustrations may have been derived from a celestial globe. On the other hand, they may derive from the *Atlas Major* of Willem and Jean Blaeu (1662), which, as usual, contained various star-maps and constellation figures – a work which was presented to Sultan Meḥmed IV (1648–87) and translated into Ottoman Turkish by Ebu Bekir Efendi. Its influence was long-lasting for it was one of the works printed by Ibrahim Müteferrika at his press in Istanbul.

☐ Günsel Renda, *Batılaşma döneminde Türk resim sanatı: 1700–1850* (Ankara 1977), 32–3, 43–4; F. Edhem and I. Stchoukine, *Les manuscrits orientaux illustrés de la Bibliothèque de l'Université de Stamboul* (Paris 1933), 21–2; Georg Thiele, *Antike Himmelsbilder. Mit Forschungen zu Hipparchos, Aratos und seinen Fortsetzern, und Beiträge zur Kunstgeschichte des Sternhimmels* (Berlin 1898).

Coming Soon!!
Big Blue Observatory
Phase II

Owned and Operated by
Eastern Missouri Dark Sky Observers

Big Blue in its former location at the McDonald Farm just west of new location. Though very secluded with many amenities such as caves, cliffs, glades, and wildlife ie cougars and deer; because of the terrain, it was very expensive and labor intensive to maintain access. Passing of its owner hastened this locations demise.

Big Blue Observatory located at the Cedar Creek Conference Center, west of New Haven, MO.

To find out about Cedar Creek: go to

https://cedarcreekcenter.com/

Leasing property from Cedar Creek Conference Center and relocating Big Blue Observatory to CCCC will

•Allow EMDSO to reduce operational costs in maintaining the site.

•Ensure a longer life for Big Blue Observatory.

•Increase accessibility for all ages and abilities to attend functions at the site.

•Allow EMDSO to continue to offer observing sessions to groups such as school, scout, church, a variety of community groups, and astronomy club functions.

•Allow EMDSO to offer public stargazing events on a regular basis and special events for Cedar Creek Conference Center guests Though sacrificing slightly on isolation and dark skies (compared to the previous site) and having to defer to CCCC on Saturday scheduling conflicts during peak wedding season,

•the location is reasonably dark,

•CCCC offers a full restaurant, and a full bar (for the adults),

•Cedar Creek offers recently renovated and expanded accomodations (full cabins and a motel),

•There is availability of meeting space for conferences and workshops on site

Predicted to open in Spring 2019 Following are images of the entire project representing the projects progress. Image order goes from most recent listed first to oldest images taken last.

EMDSO workday: Completed attaching deck floor, primed (painted) ibeam extension, stacked materials for roll-off telescope shelter building

(Continued from page 3)

Welding students from Four River's Career Center representing both Washington High School and East Central College installing bracing and floor support and rails on the extension ibeams.

•Positioning ibeams on piers.
•Erecting bandboard perimeter on deck.
•Installing floor joists for deck.

•Volunteer crew made of club members, and members of the New Haven community pouring concrete
•Piers poured and curing.
•Main pier braced for pouring

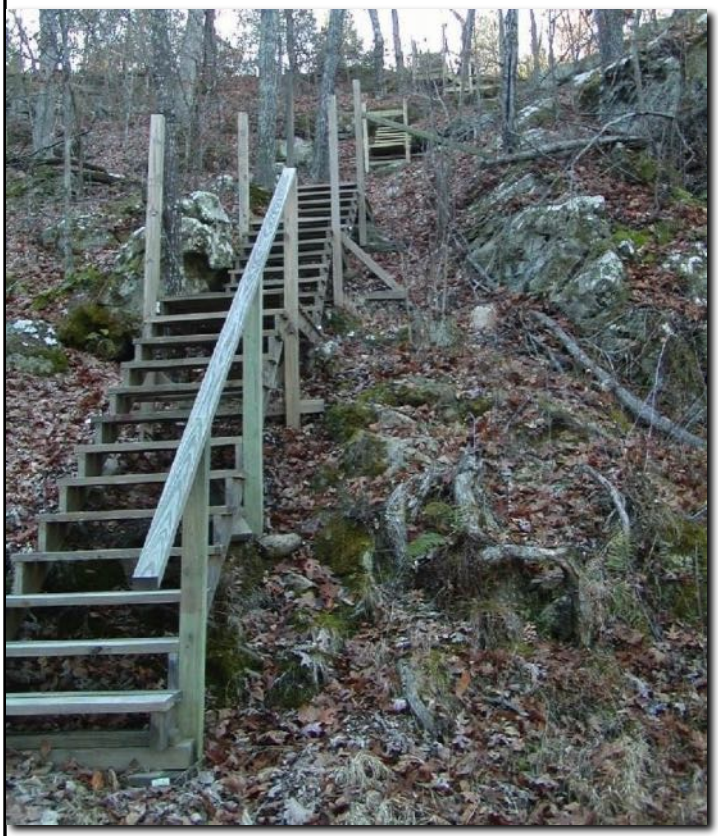
•Concrete forms positioned and braced
•Main pier concrete form built
•Forming tube and bracing cut and ready for transport to site
•Rebar towers constructed and ready for transport to site

•Flooring laid out for treatment with oxygen bleach
•Floor joists prior to cleaning
•Flooring cleaned, sealed and stacked until use.
•Floor joists ready for transport to site.

•Batter boards installed
•Excavating site to a 2" grade
•Drilling pier holes

•Establishing elevations for each pier via level and story boards. Blueprints were hand drawn to meet Cedar Creek requirements. No engineering drawings were required by Franklin County because the height of deck was kept below 30" at all points.

Once disassembled, all materials had to be transported down the hill via a mile long steep logging road. To minimize trips, part of the deck was carried down 100 steps bypassing a slippery rock ledge and the steepest part of the road to be carried the remainder of the road by truck. Deck disassembly and transport to a new site took most of the summer of 2017.



EMDSO club members disassembling building and deck.

Just to remove Big Blue Observatory and deck from the original McDonald property, the existing washed out and overgrown road had to be bladed to make it temporarily passible for tractors and four wheel drive vehicles.

Early history of Big Blue

•During the summer of 1996 a 30" diameter mirror Dob was purchased for $5725.26 from Martz Observatory Group out of New York State by a group of investors including club and non club members. The telescope was initially housed in one of the owner's fathers barn. An observatory was constructed on the family farm of one of the investors.

•In Nov 1996 the 30" mirrors were sent off to be re-coated.

•In 1998, modifications to the 30" were completed installing a 30" drive system and mount, with electronics and a programming laptop computer. This drive system proved unwieldy and unusable. (The drive system has recently been removed from the telescope). The new mounting was kept and Big Blue is currently operated manually.

•In October 1999 the 30" Dob telescope was replaced by a 40" dob by its owners. The 30" telescope was placed in storage for over a year and offered for sale. Several club members chose to buy out members who wanted to move their investment into the 40" telescope.

•The 30" was eventually located west of New Haven in a saddle between two sizable knobs or hills.

•Called Big Blue Observatory, it was named after the painted sides of the primary support box.

St. Louis Astronomical Society Executive Board Meeting Minutes January 3, 2019

1. Opening Activities: Attending: Jim Small, Bradley R Waller, Larry Campbell, Brent Buch, Tom Nickelson, Rich Heuermann Meeting opened at 7:00pm December minutes distributed before the meeting. Motion to approve the minutes by Bradley Waller, seconded by Tom Nickelson. Minutes were approved.

2. External Business: Science Center Liaison: From Cook Feldman: You may want to start thinking about someone to take over acting as the liaison and lead for the events at the SLSC. I have been doing it for going on 26 years and it may be the time to pass the baton at the end of 2019. The one caveat is that the person who chooses to do this needs to be at each event including the First Friday events each month. They will also need to be prepared to offer an indoor program for the First Friday events. We can have further discussions as we progress through 2019. I have all the known SLSC events on the NSN calendar and I will tighten up the proposed 50th anniversary event for Apollo 11.
Next board meeting: Meetings posted on NSN Board meetings will be held at Nicoletti's Restaurant in Valley Park until further notice. Dates left for 2019: Feb 7, Mar 7, Apr 4, May 2, Jun 6, Jul 11 (4th is 1st Thursday), Aug 1, Sep 5, Oct 3, Nov 7, Dec 5

3. Director Reports:
President: Jim Small: Homemade Fest has been scheduled for Sat, Feb 16, at the Kirkwood Community Center
Vice President: Bradley R Waller Starting to look at 2020 for future Presentations. Send ideas and contact information to Brad Looking for attendance Prize suggestions SLAS ¼ card brochures: Do we need to print more? Seeking new picture ideas.

SLAS Monthly Meetings **Presentations 2019**

Month	Name	Topic	Sponsor
18-Jan-2019	Erika Gibb, PhD	Comets	UMSL
15-Feb-2019	K Michael Malolepszy	The Year in Planetary Exploration	SLAS
15-Mar-2019	Bruce Stinchcomb, PhD	Meteorites	Flo-Valley
19-Apr-2019	Bob King "Astro Bob"		
17-May-2019	Craig O'Mara	Flying SOFIA	NASA
21-Jun-2019	Josiah Lewis, PhD	Presolar Grains: Solids from Other Stars Studied in the Lab	Wash U
19-Jul-2019	Ryan Clegg-Watkins, PhD	Exploring the Moon from Orbit: Paving the Way for Future Astronaut Explorers	Wash U
16-Aug-2019	Angela Speck, PhD	2019 Solar Eclipse Results	Mizzou
20-Sep-2019	Don Hampton,PhD	Aurora Borealis & Steve	UAF
19-Oct-2019	Abigale Bollenbach	Hubble and His Telescope	Bartlesville Astronomical Society
15-Nov-2019	Claire Chandler, PhD	Super-Earths and the Formation of the Solar System	NRAO
20-Dec-2019	Duncan Lorimer, PhD	Fast Radio Bursts: "Lorimer Bursts"	UWVA-Skype

Event
NRAO: National Radio Astronomy Observatory
UAF: University of Alaska: Fairbanks
UWVA: University of West Virginia

***Astro 101:** No discussion *Welcome Aboard Meetings for new members are still planned for each month.
Secretary: Mark Jones: No report
Treasurer/ALCor: Bill Winningham ; No report
Hospitality: Larry Campbell Cake of Death Star for December meeting could not be made due to copyright.
Membership recognition: Larry plans to mail recognition awards that were not picked up. There are four 5-year pins; one 10-year pin; three 15-year pins; one 25-year pin; one 3-year pin; and two +35-year pins to be mailed.
Board member at large reports
Rich Heuermann (2019): Update on YMCA situation. YMCA telescopes sold with proceeds to go to YMCA to purchase library telescopes
Tom Nickelson (2020): No Report
Brent Buch (2021): 4 more videos uploaded. Still working on interface.

4. Committee Reports: If needed
Library Telescope Program: Volunteer Training scheduled for Saturday Feb 9 and Feb 16th
Membership: We ended the year with 179 members which is six members lower than our count of 185 from last year. Individual and youth memberships increased by 3 and 1, respectively, while family memberships declined by 10 members. I did not analyze the detail but believe that several people switched from family memberships to individual memberships.
Merchandise: 7 shirts sold at last meeting. Total collected $90. Will continue to offer them for sale at $15 each.
Telescope Making: No report
Librarian: No report
Newsletter: Please forward articles to newsletter@slasonline.org
Website: Current speaker listed on website, 2019 speakers updated.
Social Networking: Facebook and Twitter accounts active and current.
Night Sky Network: No report
SLASdialogs: 120+ members now on SLASDialogs
Dark Site: Spring events listed on SLA/NSN calendar
Loaner Scopes: Sold Aluminum telescope for $75
Publicity: Tentative press release distributed for approval, Larry motioned to approve release, Bradley Waller seconded. Release approved.
Observing Programs: No report
Star Parties: See additional report
5. Old Business: None
6. New Business: None
7. Closing Activities: Motion to adjourn by Brad and seconded by Tom. Meeting adjourned at 8:08pm.

St. Louis Astronomical Society
Profit & Loss Budget vs. Actual
January 2019

	Jan 19	Budget	$ Over Budget
Ordinary Income/Expense			
Income			
Loaner Scope Sales	75.00	0.00	75.00
Magazine Subscription			
Astronomy Magazine Sales*	93.90	29.95	63.95
Sky & Telescope Sales	131.80	65.90	65.90
Total Magazine Subscription	225.70	95.85	129.85
Membership Dues	480.00	600.00	(120.00)
Total Income	780.70	695.85	84.85
Cost of Goods Sold			
Magazine Subscriptions*			
Astronomy Magazine Cost	87.55	29.95	57.60
Sky & Telescope Cost	131.80	65.90	65.90
Total Magazine Subscriptions	219.35	95.85	123.50
Merchandise		100.00	(100.00)
Total COGS	219.35	195.85	23.50
Gross Profit	561.35	500.00	61.35
Expense			
1-Programs & Events		353.34	(353.34)
2-Newsletter		43.00	(43.00)
3-Library expense		117.50	(117.50)
5-Loaner Scopes		9.00	(9.00)
6-Brochures		60.00	(60.00)
8-Website		285.00	(285.00)
9-Administrative Expenses	8.31	35.84	(27.53)
Total Expense	8.31	903.68	(895.37)
Net Ordinary Income	553.04	(403.68)	956.72
Other Income/Expense			
Other Income			
Donations			
SLAS Club Members	0.05	0.00	0.05
Total Donations	0.05	0.00	0.05
Interest Income	15.33	9.00	6.33
LTP Receipts**	500.00	0.00	500.00
Total Other Income	515.38	9.00	506.38
Other Expense			
LTP Escrow Funding**	500.00	500.00	
Total Other Expense	500.00	500.00	
Net Other Income	15.38	(491.00)	506.38
Net Income	568.42	(894.68)	1,463.10

* Astronomy Magazine undercharged some subscriptions for January, this is why the income and revenue do not match.

** Reflects the $500 SLAS budgeted for the Library Telescope Escrow for 2019.

St. Louis Astronomical Society
Balance Sheet
As of January 31, 2019

	Dec 31, 18	Jan 31, 19
ASSETS		
Current Assets		
Checking/Savings		
Checking - First Bank	9,990.59	9,837.14
Deposit, Certificate of	20,239.11	20,244.59
Library Telescope Escrow	91.35	591.35
PayPal	0.00	311.54
Savings - First Bank	46,379.35	46,389.20
YMCA Trout Lodge Escrow	627.87	627.87
Total Checking/Savings	77,328.27	78,001.69
Other Current Assets		
Inventory Asset	821.53	821.53
Undeposited Funds	105.00	0.00
Total Other Current Assets	926.53	821.53
Total Current Assets	78,254.80	78,823.22
Fixed Assets		
Accum Depr - Office Equp	(216.65)	(216.65)
Office Equipment	216.65	216.65
Total Fixed Assets	0.00	0.00
TOTAL ASSETS	78,254.80	78,823.22
LIABILITIES & EQUITY		
Equity		
Opening Bal Equity	8,497.66	8,497.66
Retained Earnings	65,418.58	69,757.14
Net Income	4,338.56	568.42
Total Equity	78,254.80	78,823.22
TOTAL LIABILITIES & EQUITY	78,254.80	78,823.22

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.
Mar 7, Apr 4, May 2, Jun 6, Jul 11 (4th is 1st Thursday), Aug 1, Sep 5, Oct 3, Nov 7, Dec 5

Dark Sky Observing Dates

3/2, 4/6

Francis Park Events: These events are on Wednesdays of the week nearest the first quarter Moon
4/10, 5/8, 6/5, 7/10, 8/7, 9/4, 10/2, 10/30

Sky Orienteering Events For members who want to gather and do some relaxed observing at Babler State Park
orienteering. 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
Mar 1, Apr 5, May 3, Jun 7, Jul 5, Aug 2, Sep 6, Oct 4, Nov 1, Dec 6

Pattonville Observatory Public Viewing Dates
2-22, 3-8, 3-22, 4-12, 4-26, 5-10, 5-24

Broemmelsiek Astronomy Park Public Viewing

Every Friday night with ASEM members

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:

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

	February
13 Wed	Truman Middle School Family
13 Wed	St Louis Public Library
15 Fri	SLAS Regular Meeting
16 Sat	Outreach Training Libra
16 Sat	HOMEMADE FEST !!
19 Tues	Wren Hollow ES
20 Wed	Jordan ES
22 Fri	Twin Chimneys STEAM
23 Sat	Library Telescope Build
24 Sun	SLAS Sky Orienteering
28 Thur	St. Louis Public Library
	March
1 Fri	SLSC Public Telescope Viewing
1 Fri	Parkway School STEMFest
2 Sat	Parkway School STEMFest
2 Sat	SLAS Dark Sky Observing
5 Tue	LaSalle Springs MS
7 Thur	Wilkinson Science Night
7 Thur	SLAS Board Meeting
13 Wed	Rock Road Library
14 Thur	Crestwood Elementary School
14 Thur	Bridgeton Trails Library
15 Fri	SLAS Regular Meeting
18 Mon	St. Louis County HQ Library
19 Tue	Samuel C. Sachs Library
20 Wed	Cliff Cave Library
20 Wed	St. Louis Public Library
24 Sun	SLAS Sky Orienteering
30 Sat	Library Telescope Maintenance
	April
4 Thur	SLAS Board Meeting
5 Fri	SLSC Public Telescope Viewing
6 Sat	SLAS Dark Sky Observing
10 Wed	Florissant Valley Library
10 Wed	Florissant Valley Library
11 Thur	Thornhill Library
16 Tue	Natural Bridge Library
17 Wed	Indian Trails Library
18 Thur	Daniel Boone Library
19 Fri	SLAS Regular Meeting
20 Sat	Sidewalk Solar Observing

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 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 @ $29.95 / 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:

Rich Heuermann 314-962-9231
Board19 at slasonline.org

Brent Buch 314-239-0329
Board21 at slasonline.org

Tom Nickelson 314-346-9565
Board22 at slasonline.org

ALCOR ***Bill Winningham*** 636-357-2763
(Astronomical League Correspondent)
treasurer at slasonline.org

MSRAL Rep. ***Jim Small*** 314-909-7211
msral_rep at astroleague.org

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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

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loaner at slasonine.org

Merchandise ***Vacant***
merchandise at slasonline.org

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Devoted to the Interest and Advancement of the Science of Astronomy

ST. LOUIS ASTRONOMICAL SOCIETY

We're on the Web!
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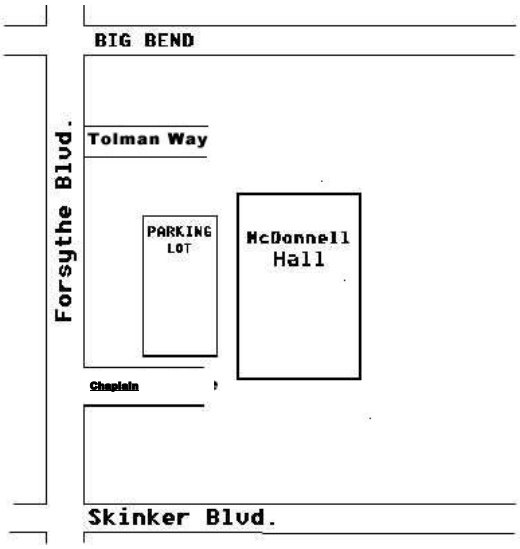
Who We Are and What We Do

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 any-one 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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