

THE EVENT HORIZON



ST. LOUIS ASTRONOMICAL SOCIETY

Devoted to the Interest and Advancement of the Science of Astronomy

**VOLUME 27, Issue 10
October, 2017**

Exploring the Spacetime Around Supermassive Black Holes with Gravitational Lenses

by
**Dr. Henric Krawczynski
Washington University**

Dr. Henric Krawczynski of Washington University, will be featured at the October meeting of the St. Louis Astronomical Society. **The meeting will begin at 7:30 PM Friday, October 20, in WILSON HALL, Room 214, on the Washington University campus, Saint Louis, MO 63130. Wilson Hall is accessible from Forsyth Boulevard via Tolman Way.** Yellow zone and garage parking are available to the audience. Einstein's groundbreaking theory of General Relativity, published in 1915, predicted that the gravity of massive bodies would deflect light. That prediction was confirmed by Sir Arthur Eddington's precise measurement of the positions of stars near the Sun during the total solar eclipse of 1919. An astonishing application of this property is that we can use galaxies in the distant Universe as magnifying glasses to study even more distant objects. Dr. Krawczynski will talk about using this gravitational lensing by a remote galaxy to study the X-ray emission from a quasar. The quasar is a super-

massive black hole at the center of a yet more distant galaxy. The quasar swallows gas and dust, which shines brightly just before falling into the black hole. Interestingly, the X-rays observed with the Chandra X-ray space telescope allow us to map out the curved spacetime close to the black hole. X-ray observations also allow us to constrain the properties of the lensing galaxy. We can actually measure the amount of the mass of dark matter and stars along our line of sight, and calculate the typical masses of the visible stars.

Dr. Henric Krawczynski is a Professor of Physics at Washington University. His research involves both experimental and theoretical astroparticle physics. Some of his experiments measure X-rays from space, using instruments aboard high altitude balloons. His experimental and theoretical work use astrophysical observations to test the Standard Model of Particle Physics and to probe General Relativity Theory in regions of space where gravity is extremely strong.

Upcoming Meetings:

November: William McKinnon, PhD
PLUTO Wash U

December: Amy E Kimball, Radio Quasars
& the VLA

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Membership Recognition Day

The first annual **SLAS Membership Recognition Day** will be on **October 20th** this year. Pins and certificates will be presented to those loyal members who have supported us with continuous membership over a time span of 5, 10, 15, 20, 25 and 30 [or more] years. A few members have more than 50 years, but they do not have pins for that! The certificates will show the actual time span being recognized. Please make a special effort to attend this meeting to receive your award and / or celebrate the dedication of your fellow SLAS members.

Presidents Corner - Jim Small

It's been a terrific and busy month. Last meeting we had a great turnout of members who presented about their eclipse experience. 11 presenters and a couple of cakes later, we all had a terrific experience recounting the eclipse. Now we need to move on to further the cause of STEM in our region! There are a myriad of opportunities to accomplish this, starting with volunteering for the next star party you can make! Membership has increased to over 180 members, the highest it's been in years. Now we need to make sure we get our new friends involved and participating in our activities. Be sure to welcome new members and ask what you can do to help them in their interest in astronomy. New members, be sure to ask people questions about what we do and get involved where you can!

We had a number of good activities this month, starting with First Friday and including library telescope programs, Astronomy Day at the McDonnell Planetarium, evening programs in 3 areas that evening, etc. There are plenty of op-

portunities to volunteer for star parties coming up. See the calendar at the end of this newsletter.

The Pleiades National conference of Planetarians (people who run planetariums, not flatworms!) was held in St. Louis this past week and was very well attended by more than 370 persons. The James S. McDonnell Planetarium and the St. Louis Science Center hosted the conference, with Anna Green serving as the Chair for the conference. It was an excellent conference, featuring 5 days of talks, workshops, tours, and demonstrations. I got to participate in a workshop at Seiler Instruments here in St. Louis. Highlights for me included the full dome demonstrations, the constellation shootout and the astronomy update. You can watch all of the talks at the website for the conference at www.pleiades2017.org Just click on the livestreams.

At the meeting we are celebrating our membership with service recognitions. I look forward to passing out many certificates!

Outreach Volunteers Jan - Oct 8, 2017

SLAS members have logged 1440.8 hours so far this year for NSN outreach events!

Members with 5 or more events for 2017 qualify for the Night Sky Network pin. Check the SLAS calendar on NSN for opportunities and sign up today.

Thank you to all our volunteers!

Donald Ficken	94 events; 176.2 hours
Cook Feldman	47 events; 167.5 hours
Rich Heuermann	45 events; 124.3 hours
Bradley Waller	37 events; 108.5 hours
Larry Campbell	27 events; 70.5 hours
Mark Jones	26 events; 82 hours
John Beaury	25 events; 109.5 hours
Frank Mack	23 events; 69 hours
James Small	20 events; 103 hours
Sharon Bertram	19 events; 50 hours
Richard Jennings	17 events; 42 hours
Rick Menendez	14 events; 42.5 hours
William Neubert	10 events; 32.5 hours
Bill Breeden	9 events; 31.5 hours
Richard Fefferman	8 events; 18 hours
Rita Breeden	7 events; 25.5 hours
Josh Zitko	4 events; 13 hours
Ann Trull	3 events; 6 hours
Jim Trull	3 events; 10 hours
John Edwards	3 events; 7.5 hours

Raymond Mueller	3 events; 11.5 hours
Robert Drzymala	3 events; 10.8 hours
William Winningham	3 events; 13 hours
Alan Sapia	2 events; 8 hours
Angelika Buckley	2 events; 2 hours
Anthony Russo	2 events; 6 hours
Benjamin Winningham	2 events; 4 hours
Bill Biermann	2 events; 4 hours
Brian Mills	2 events; 12.5 hours
Chris Nobbe	2 events; 10 hours
Edward Frey	2 events; 4.5 hours
John Boncek	2 events; 5 hours
Kevin Koontz	2 events; 4.5 hours
Tom Keutzer	2 events; 6.5 hours
Cathy Hooper	1 events; 4 hours
Daniel Corso	1 events; 3 hours
david barry	1 events; 4 hours
Donald Snyder	1 events; 6 hours
Jeffrey Strauss	1 events; 4 hours
Joshua Bradshaw	1 events; 1 hours
Murray Fishman	1 events; 3 hours
Rosanne Naunheim	1 events; 3 hours
Shanna Ramirez	1 events; 4 hours
Thane Bopp	1 events; 8 hours
Timothy Hulla	1 events; 5 hours
Vicky Boncek	1 events; 4.5 hours



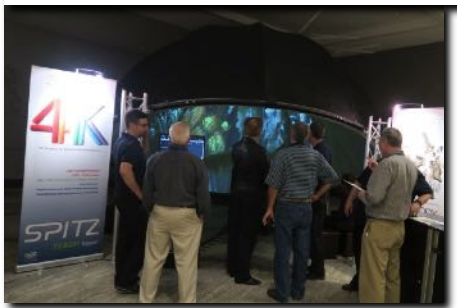
Top left: Celebrating the eclipse and sharing stories
Top right: First Friday at the Planetarium
Above: Presenters at the September meeting
Right: Don Ficken is presented a gift by Don Snyder in recognition of his work with the eclipse sundial.
Below: cakes made from photos by Jim Small and Grant Martin



Left: "Looking Up", a new sculpture at the Planetarium
Above and Right: Solar viewing on Astronomy Day



Above and Right: Crestwood Star Party. Right is Jim and Ann Trull with the Teapot in the background. Above right is Cook Feldman. Above is the line at a refractor aimed at the Moon. **Below:** Workshop at Seiler, Anna Green recognized for her work as the conference chair for the Pleiades Conference. **Bottom:** Astronomy update talk at the conference



SLAS Executive Board Meeting Minutes September 7, 2017

1. Opening Activities: Attending: Jim Small, Rich Heuermann, Larry Campbell, Brad Waller, Tom Nickelson, Mark Jones
Meeting call to order at 720pm

2. External Business Next board meeting: Oct 5, Nov 9, Dec 7 **SLSC:** Astronomy Day set for September 30th, 10-4pm. SLAS will either have a table outside or inside if weather doesn't cooperate.

3. Director Reports:

President – Jim Small: The program for September meeting will be SLAS members presenting eclipse results. Forest Park Balloon Glow is the same night as always. We had request to provide telescope viewing for a child's birthday party on September 23. Rich Heuermann has volunteered and will make contact with parents.

Vice President: Bradley Waller

*15-Sep-2017	SLAS Collective	Solar Eclipse Results		
*20-Oct-2017	Henric Krawczynski, PhD	Exploring the Space-time around Supermassive Black Holes w/ Gravitational Lenses		
*17-Nov-2017	William McKinnon, PhD	PLUTO Wash U		
*15-Dec-2017	Amy E Kimball	Radio Quasars & the VLA	"Skype"	NRAO

2018 Speakers

*19-Jan-2018	Carl Bender, PhD	Black Holes and Hawking Radiation	Wash U
*16-Feb-2018	Ryan Ogliore, PhD	From Stardust to the Solar System	Wash U
*16-Mar-2018	Michael Medford	Discovering Planet 9 (10) "Skype"	Berkeley
*20-Apr-2018	Kun Wang, PhD	New Evidence for the Origin of the Moon	Wash U
*18-May-2018	Ryan Clegg-Watkins, PhD	Exploring the Moon from Orbit: Paving the Way for Future Astronaut Explorers	
*20-July-2018	Erika Gibb, PhD	Comets, University Mo ST Louis	Wash U
*21-Sept- 2018	Francesc Ferrer, PhD	In the wake of the Higgs, what will the next breakthrough at the LHC?	Wash U
*19-Oct-2018	Mao Xiaochen,	The Dawn Mission, Vesta and Ceres	
*16-Nov-2018	Michael C Bouchard	Mars 2020 Rover	Wash U

2017 budget of \$300 to buy member vests for SLSC First Fridays. SLSC is no longer requiring us to identify our members at First Friday events. Therefore would like to reallocate budget as follows: Motion: I propose we re-allocate the 2017 \$300 budget for SLAS vests to instead buy SLAS Eclipse coffee mugs for sale to members and as gifts to monthly speakers. Motion by Brad W second by Tom N. Board passed motion, motion to be taken to vote general membership at September meeting. August telescope viewing at the Arch. Brad volunteered but there were not enough parking spots at the Arch so Brad parked in a pay lot. Brad seeks reimbursement for parking this time. Motion I make motion the SLAS reimburse Brad Waller for his parking at the Sep 5 Arch Outreach event. Parking fee was \$16. This will not set a precedent of future reimbursement. Motion Tom N seconded Rich Heuermann. Motion passed. Eclipse photo contest award winner would be featured on new SLAS mug. Equinox prizes will be given out in September

Astro 101 – none for September **Welcome aboard** new members meeting still planned for each month.

Secretary – Mark Jones: SLAS Star-B-Q September 16th. Spread the word! Rick Menendez has volunteered to do the quiz for the Star-B-Q. Mark will purchase prizes and main food items

Treasurer/ALCor – Bill Winningham: Total assets through August 31 about \$74,000 AAS payment for \$5000 grant was received. Don Ficken and Rich Heuermann reimbursed for their expenses \$1450 in donations received so far, this year SLAS is under budget for general expenses by \$1860 SLAS needs to set up 2018 Budget development schedule. Needs to be presented to SLAS membership at the November and December meetings. Therefore, budget must be voted by Board at Nov Board meeting. Budget meeting schedule for 4pm Sept 24th at Young's Restaurant

Hospitality – Larry Campbell: Eclipse Cake for September. Will plan to use Jim Small's eclipse photo for cake. Need a photo for cake. **Membership recognition** – October meeting will be used for SLAS pins.

Board member at large reports

Brent Buch (2018) no report

Rich Heuermann (2019) AAS grant received AAS requires final grant report Press release - Task Force wants to recycle eclipse glasses through Astronomers without Borders.

Tom Nickelson: (2020) Flash drives with SLAS meeting videos will be copied onto DVDs.

4. Committee Reports: If needed

Library Telescope Program: Sunspotter scopes and Galileoscopes for solar use have been deployed in to Public libraries

Membership – Report received by Don Ficken. Current membership is 177.

Merchandise – Infiniti-tees shirts for sale - \$20, Brad write up plans for TSE mugs.

Newsletter – Articles and pictures (especially pictures) are welcome to beef up the newsletter and our social media outlets. Please forward to newsletter@slasonline.org Discussion about redesign of brochure and what to do with them.(content, replace with cards, supplement with cards, reduce to front and back handout, etc.) All articles for newsletter due by Saturday 10am

Website SLAS website crashed Aug 17th due to internet traffic and downloads. Corrected problem by deleting certain large size photos that were taking up bandwidth.

Social Networking – Public Facebook page is growing thanks to efforts by Michelle B. to add content

Publicity – Press Release out for September Meeting

Star Parties: Review of outreach events next 3 months. September 16th with Solar Saturday during the day until 2 pm and the Star-B-Q that afternoon and evening. September 30 is very busy, Astronomy Day during the day, 3 evening events.

5. Old Business None

6. New Business None.

7. Closing Activities Motion to adjourn meeting by Bill W. and Tom N. Meeting adjourned at 915pm

8:22 AM
10/17/17
Accrual Basis

**St. Louis Astronomical Society
Profit & Loss Budget vs. Actual
January through September 2017**

	<u>Jan - Sep 17</u>	<u>Budget</u>	<u>\$ Over Budget</u>
Ordinary Income/Expense			
Income			
Total Magazine Subscription	1,401.34	638.00	763.34
Membership Dues	3,435.00	2,155.00	1,280.00
Total Income	<u>4,836.34</u>	<u>2,793.00</u>	<u>2,043.34</u>
Cost of Goods Sold			
Total Magazine Subscriptions	1,335.90	638.00	697.90
Merchandise		45.00	(45.00)
Total COGS	<u>1,335.90</u>	<u>683.00</u>	<u>652.90</u>
Gross Profit	<u>3,500.44</u>	<u>2,110.00</u>	<u>1,390.44</u>
Expense			
1-Programs & Events	1,658.41	2,097.00	(438.59)
2-Newsletter	120.83	131.00	(10.17)
3-Library expense ¹	49.95	225.00	(175.05)
4-Astronomical League Dues	740.00	670.00	70.00
5-Loaner Scopes	5.00	50.00	(45.00)
7-Insurance	825.50	380.00	445.50
8-Website	179.40	170.00	9.40
9-Administrative Expenses	296.96	1,223.50	(926.54)
Total Expense	<u>3,876.05</u>	<u>4,946.50</u>	<u>(1,070.45)</u>
Net Ordinary Income	<u>(375.61)</u>	<u>(2,836.50)</u>	<u>2,460.89</u>
Other Income/Expense			
Other Income			
Donations	1,800.00	0.00	1,800.00
Eclipse Escrow Receipts	18,559.24	0.00	18,559.24
Interest Income	43.98	75.00	(31.04)
LTP Receipts ⁴	8,359.84	0.00	8,359.84
Proceeds from Lens Sales	16,518.81	0.00	16,518.81
Total Other Income	<u>45,081.85</u>	<u>75.00</u>	<u>45,006.85</u>
Other Expense			
Eclipse Escrow Disbursements	22,673.47	0.00	22,673.47
Eclipse Escrow Funding ³	1,500.00	1,500.00	0.00
LTP Disbursements ⁴	8,618.89	0.00	8,618.89
LTP Escrow Funding	1,000.00	1,000.00	0.00
Total Other Expense	<u>33,792.36</u>	<u>2,500.00</u>	<u>31,292.36</u>
Net Other Income	<u>11,289.49</u>	<u>(2,425.00)</u>	<u>13,714.49</u>
Net Income	<u>10,913.88</u>	<u>(5,261.50)</u>	<u>16,175.38</u>

1 Reflects expanded insurance coverage over prior years
 2 Outreach budget reflects \$150 approved by membership vote as a donation towards the International Space Development Conference.
 3 Includes \$500 in St. Louis County Library donations associated with Eclipse related events.
 4 Speaker fees include an additional \$200 as voted on by Club Membership (for the August Speaker)
 5 Reflects \$5,000 grant from the American Astronomical Society, the grant funds have been spent in accordance with the grant proposal

**St. Louis Astronomical Society
Balance Sheet
As of September 30, 2017**

	<u>Dec 31, 16</u>	<u>Sep 30, 17</u>
ASSETS		
Current Assets		
Checking/Savings		
Checking - First Bank	3,957.19	2,482.78
Deposit, Certificate of	20,148.49	20,178.63
Library Telescope Escrow	799.33	349.78
PayPal	126.42	395.72
Savings - First Bank	29,755.97	46,288.60
SLAS Eclipse Conference Escrow ⁴	6,259.97	2,250.78
YMCA Trout Lodge Escrow	542.87	482.87
Total Checking/Savings	<u>61,580.24</u>	<u>72,428.12</u>
Other Current Assets		
Inventory Asset	1,360.92	1,360.92
Undeposited Funds	0.00	75.00
Total Other Current Assets	<u>1,360.92</u>	<u>1,435.92</u>
Total Current Assets	<u>62,951.16</u>	<u>73,865.04</u>
Total Fixed Assets	<u>0.00</u>	<u>0.00</u>
TOTAL ASSETS	<u>62,951.16</u>	<u>73,865.04</u>
LIABILITIES & EQUITY		
Equity		
Opening Bal Equity	8,137.66	8,137.66
Retained Earnings	24,813.28	54,813.50
Net Income	30,000.24	10,913.88
Total Equity	<u>62,951.16</u>	<u>73,865.04</u>
TOTAL LIABILITIES & EQUITY	<u>62,951.16</u>	<u>73,865.04</u>

⁴ Any excess Eclipse Escrow funds will revert to SLAS in 2017 after all accounts are settled.

Wanted: Volunteers!

Be sure to sign up on Night Sky Network for upcoming star parties. Lead volunteers need to know who will be there so they can tell where we are falling short. If you aren't sure how to RSVP, please ask anyone at the meeting and we can show you how on the computer after the meeting. Or contact any board or committee member to find out. See you at the next star party!

WANTED: Newsletter Articles and Pictures!

The Event Horizon needs articles and pictures from people like YOU!

Interviews, current astronomy topics, historical articles, star party reports, you name it, we can use it! Send what you have 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 the Edward Jones YMCA* All meetings are on Thursdays unless noted.
2017: Nov 9; Dec 7

Dark Sky Observing Dates

See you when it gets warmer!! Use SlasDialogs or Facebook to coordinate winter events!

Francis Park Events: These events are on **Wednesdays the week nearest the first quarter Moon** October 25

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!

2017-11-12 6:00 PM 2017-12-10 5:30 PM

SLSC Public Telescope Viewing Events: These events are held the first Friday of the month
Planetarium shows start at 7pm
11-3, 12-1

YMCA Edward Jones Star Parties (generally third Mondays)
Finished for the year

Pattonville Observatory Public Viewing Dates
10-26, 11-3, 11-10, 12-1, 12-8

Broemmelsiek Astronomy Park Public Viewing
Every Friday night with ASEM members

UMSL Observatory
For directions and map
<http://www.umsi.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

October

20 Fri SLAS Regular Meeting
21 Sat Star Gazing at the Gateway Arch
21 Sat SLAS Dark Sky Observing
23 Mon Grant's View Library Telescope
25 Wed Francis Park Stargazing
25 Wed Samuel Sachs Library Telescope
25 Wed Babler Outdoor Education Program
28 Sat Girl Scouts Shades of Green

November

1 Wed Weber Road Library Telescope
2 Thur Prairie Commons Library Telescope
2 Thur North Glendale Cub Scouts
3 Fri SLSC Public Telescope Viewing
4 Sat STEAM Fair
6 Mon Thornhill Library Telescope
8 Wed Bridgeton Trails Library Telescope
9 Thur SLAS Board Meeting
12 Sun SLAS Sky Orienteering Event
13 Mon Parkway North Star Gazing
14 Tue Way of Lights Our Lady of Snows
17 Fri SLAS Regular Meeting
18 Sat SLAS Dark Sky Observing
30 Thur Machacek Library Star Party

December

1 Fri SLSC Public Telescope Viewing
5 Tue Oak Bend Telescope
7 Thur SLAS Board Meeting
10 Sun SLAS Sky Orienteering Event
13 Wed Daniel Boone Library Telescope
15 Fri SLAS Regular Meeting

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

Delmar: 6662C Delmar Blvd St. Louis, MO 63130 Telephone: 314.863.2695

delmar@headznthreadz.com

[Delmar Map](#)

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 _____

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 \$ _____

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

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)	636-225-0269
treasurer at slasonline.org		
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
Board18 at slasonline.org		
	Tom Nickelson	314-346-9565
board17 at slasonline.org		
ALCOR	Bill Winningham	636-225-0269
(Astronomical League Correspondent) treasurer at slasonline.org		
MSRAL Rep.	Jim Small	314-909-7211
msral_rep at astroleague.org		

COMMITTEE CHAIRS

Dark Site Coordinator	Mark Jones	636-394-2342
darksite at slasonline.org		
Librarian	Jim Small	314-909-7211
librarian at slasonline.org		
Library Telescope Program	Don Ficken	636-851-9630
lirbrarytelescope at slasonline.org		
Loaner Equipment	Greg Gaines	314-277-3082
loaner at slasonline.org		
Merchandise	Vacant	
merchandise at slasonline.org		
Membership	Don Ficken	636-225-0269
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Newsletter Editor	Jim Small	314-909-7211
newsletter at slasonline.org		
Observing Programs	Mark Jones	636-394-2342
observing at slasonline.org		
Publicity	Rich Heuermann	314-962-9231
publicity at slasonline.org		
Recognition	Larry Campbell	636-244-2867
recognition at slasonline.org		
Social Media	Michelle Birch	636-373-1102
social at slasonline.org		
'SLASdialogs' Moderator	Mark Jones, Rhonda Whelan	
dialogsmoderator at yahoo.com		

Devoted to the Interest and Advancement of the Science of Astronomy

ST. LOUIS ASTRONOMICAL SOCIETY

We're on the Web!
<http://www.slasonline.org>

Follow us on
Twitter: @stlastro
Facebook: @stlastro

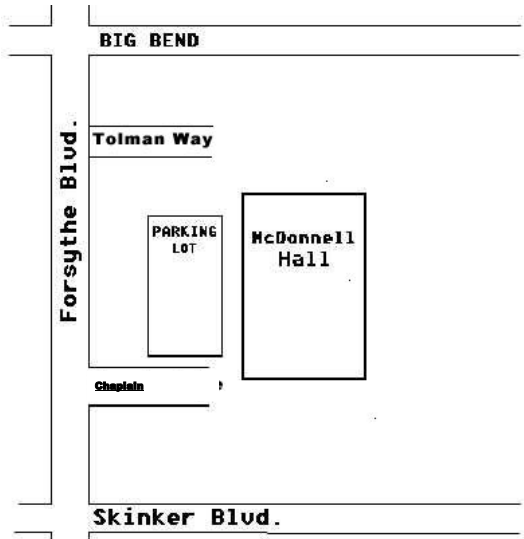


Who We Are and What We Do

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

Jim Small
13128 Cozyhill Drive
St. Louis, MO 63122

