

THE EVENT HORIZON



ST. LOUIS ASTRONOMICAL SOCIETY

Devoted to the Interest and Advancement of the Science of Astronomy

VOLUME 25, Issue 2
February, 2015

Hunting For Alien Planets: NASA's Kepler Spacecraft Mission

Professor William Hayden Smith of Washington University, will be featured at the February meeting of the St. Louis Astronomical Society. The meeting will begin at **7:30 PM**

Friday, February 20, in McDonnell Hall, Room 162, on the Washington University campus, Saint Louis, MO 63130.

In March, 2009, NASA launched the Kepler Spacecraft – a 55-inch wide space telescope designed to search for planets around other stars. Kepler detects possible planets by the dimming of the parent star as the planet passes in front of it, blocking some of the starlight. Earth-based telescopes or the Hubble Space Telescope then follow up to confirm the discoveries. Of the more than 5,000 planet candidates detected by Kepler, over 1,000 have been confirmed so far. Dr. Smith will talk about the Kepler spacecraft, how it detects possible planets, and how it was rescued from termination after an equipment failure and given a second planet-hunting mission.

Dr. William H. Smith is Professor of Earth and Planetary Sciences and a Fellow of the McDonnell Center for the Space Sciences at Washington University. His research projects involve the design and development of opto-mechanical remote sensing instruments for spacecraft and research aircraft, climate change studies, and the development of medical diagnostics for long-term spacecraft missions.

Future meetings:

March Rich Heuermann - Asteroids and The Dawn Mission

April - Dr. Joseph Marcus M.D. Comet 67P And the Rosetta Spacecraft”

May - Kathrin Powell “All the Mars Rovers and Discoveries”

Motion Regarding Purchase of 4 Library Telescopes for the Loaner Program to be Voted Upon at the February Meeting

The Library Telescope program is starting with great success and SLAS has budgeted funds to procure telescopes for donation to local libraries. In many cases, libraries are also using their own funds to buy additional scopes. So far more than 15 scopes are now in the library systems around St. Louis. We expect to add 15-30 more Library Telescopes by the end of 2015. So far the trend we see is that the demand for telescopes exceeds the number in the library systems. This means the waiting lists for these telescopes is very long. Even with a 1 week checkout period, waits can be 2-4 months to get a scope. As we approach summer we expect the demand for telescopes to increase. Already our volunteers are hearing from the Public about the long waiting lists. This could create a great membership opportunity for SLAS. If SLAS were to add 4 of these scopes to our Loaner Scope Program we could offer shorter wait times to members. This could be a big incentive for people to join SLAS.

Motion: I propose that SLAS procure four library telescopes for checkout by SLAS members only. These scopes would be built by the Library Telescope Committee as part of their upcoming build program. Buying the scopes at the same time as the other Library Telescopes, will leverage any quantity pricing discounts we get from the suppliers. The building of the scopes is planned for April 2015 and the scopes will be ready for loaning to members by mid-May 2015. These scopes would be maintained by the Loaner Telescope Committee for repairs, etc. These scopes would be checked out through the membership committee to provide faster turnaround than normal Loaner Scopes. Therefore I ask that \$1000 be approved to the Loaner Scope Committee Budget for the purpose of buying these scopes. The existing \$200 Loaner Scope budget will remain for future maintenance of all scopes. Unlike current Loaner scopes, these would have these new rules.

1. Checkout times would be a shorter duration of 2 weeks rather than 4-8 weeks for other Loaner scopes.
2. These scopes would be for check out by new and existing members.
3. A standard Loaner Scope deposit of \$75 would still be required.
4. These scopes would have most of the same modifications as the Library scope configuration.

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**Volunteer to Serve on the
Membership Recognition Committee
by
Larry Campbell**

A Membership Recognition Committee has been formed and an email address (recognition@slasonline.org) has been set up so that recommendations can be submitted to the committee. The chairman, Larry Campbell, is seeking committee members to begin the task of deciding how best to recognize the many volunteers within SLAS who donate so much time and effort to our society. If you have any experience with any recognition programs with any organization (astronomical or otherwise), please contact Larry and volunteer to serve on this committee. However, experience is not a prerequisite to serving on the committee.

A primary goal of the committee is to create a recognition program with annual recipients of various rewards. This program will go beyond the annual recognition of our Outreach volunteers. However, exactly how we will do this is "To Be Determined." If you have any thoughts on this subject, please share them with the committee. A \$200 budget has been allocated for this effort. Help decide how to spend it wisely.

**Forget the Delorian
by Mark Jones**

Interested in traveling back in time? Forget the Delorean, don't invent the flux-capacitor and don't go into hot tubs with old college buddies. Instead get out your telescope. The telescope is truly a time machine.

Thanks to the finite speed of light, it takes years, centuries, or even millennia to reach Earth.

Do you want to see something as old as the dawn of man 2 million years ago? Direct your telescope at the Andromeda Galaxy. What about the age of the dinosaurs? Find the galaxy M87 in Virgo, it is 53 million light years away. Before dinosaurs, back to the age of the earliest life on Earth, glimpse the Quasar 3C273 at 2.4 billion light years.



How about something more contemporary? How about September 5, 1955 the date Doctor Emmitt Brown invented the flux capacitor in "Back to the Future"? Locate Aldebaran, the first mag-

nitude star in Taurus the Bull, 60 light years from Earth. Pearl Harbor, 1941 travel to our southern states and search for Canopus, located 74 light years away.

Want to see star light that originated the last time the Chicago Cubs won the World Series? That was in 1908, look at the second magnitude star, Cor Caroli in Canes Venatici. How about the last time the St. Louis Cardinals won the World Series? That was 2011. Sadly no stars are that close, it will be almost another year before light from Alpha Centuri reaches the Earth.

**SLAS Dark Sky Campout Weekend
March 20-22, 2015
Council Bluff Recreation Area, Potosi, MO**



SLAS along with other local amateur astronomers will hold a campout weekend at Council Bluff Recreation Area near Potosi, MO Friday through Sunday March 20-22, 2015. We have reserved campsite 17. Cost of the campsite is \$20 per day which will be divided among the participants



Campsite 17 is located next to the outdoor restrooms. We will observe in field due east of the restrooms.



There is no electrical power available. Water is shut off until April 1st so please bring water. Tent camping only please.



There is a lake for boating, see Council Bluff Recreation Area website for facility info.

Please RSVP so we can add more campsites to accommodate the crowd. Spots will be prioritized for persons who RSVP.

Some of us will do visual observing of Spring galaxies and nebula. Others will experiment with astro-photography. Bring you telescope and camera

Please bring your camping supplies, tents, etc.

If you need further details contact Mark Jones at darksite@slasonline.org

See the following websites: <http://tinvurl.com/lnzmbk3>

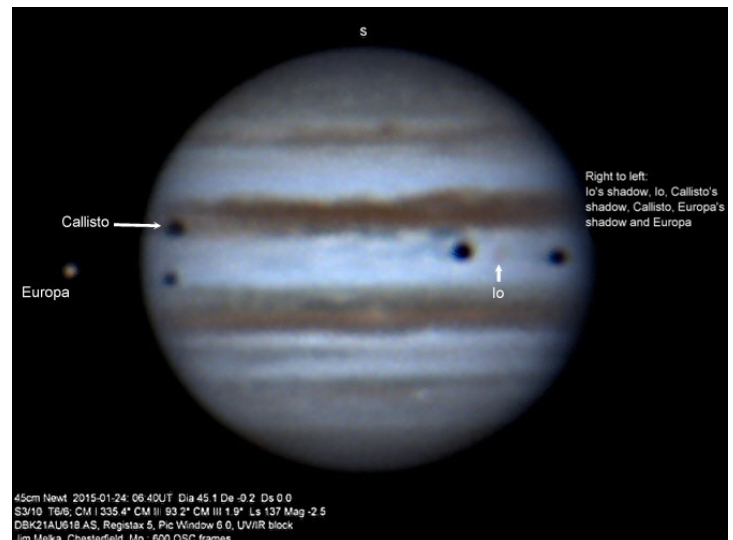


Image of the shadows of Io, Callisto and Europa on the cloud tops of Jupiter. Used NGT-18 in backyard in Chesterfield with Imaging Source steaming video color camera. Photo by Jim Melka

Unseen planets beyond Pluto?

by Mark Jones

Every few years, there is a news article with speculation about large and unseen planets beyond Pluto. With the upcoming spacecraft flyby of Pluto, speculation is ramping up yet again. The history of unseen outer planets goes back to the late 1700's when William Herschel shook the foundations of science by discovering the distant planet Uranus. Almost immediately scientist speculated that Uranus may not be alone. As accurate measurements of Uranus' orbit became available, a couple of phenomenal mathematicians began to compute where the next unseen planet might be found. This effort culminated with the discovery to Neptune in 1846 not far from its predicted location. Scientist lauded this discovery as proof that with the power of mathematics, nothing was beyond the power of discovery. Other mathematicians, followed trying their skills to discover more unseen worlds. However, nothing in science is as easy as it seems and not a single planet or major body has been found by this method since Neptune. Instead photographic searches took on the challenge in the early 1900's, with Pluto being the result of one such search. Once again astronomers looked beyond Pluto but to-date no planetary-sized body has been found. In fact the diminutive size of Pluto lead to its own demise as a planet as it is hardly distinguishable from the dozens of new similar KBO's now being discovered. Sadly it seems to be easier to discover planets around other stars than it is to add to the Sun's collection of Earth-sized objects.

Will the speculation of unseen planets ever end? In mid-January 2015, the news media carried an article by a scientist in Madrid on the possibility of at least two "extreme trans-Neptunian objects".

In middle school I read about the discovery of Pluto by Clyde Tombaugh. Tombaugh was an inspiration because of his modest beginnings and amateur telescope making abilities. This encouraged me to read more books on the discovery of Neptune and Pluto and the subsequent searches for more distant planets. If another planet was to be discovered it would take hard work, skill or maybe just dumb luck.

My first star atlas was in the back of "The Observer's Guide, A Handbook for Amateur Astronomer's" by Newton and Margaret Mayall. As I flipped through this old book the other day I found my plots for Comet Kohoutek (1973) and Comet Tuttle-Giacobini-Kresak (1973). On the north polar map, I found my annotation for a "position of hypothetical planet". Just a solitary dot sitting just inside Cassiopeia's border with Cepheus

I no longer remember how I derived this location, but I was convinced at the time that any undiscovered massive planet must be in a highly inclined orbit and very distant, moving very slowly against the background stars. Maybe in an elliptical orbit, heading towards aphelion. Therefore moving directly away from our view point. Making it appear to move even slower against the stars. Well that annotation was 42 years ago, maybe a tiny fraction of this planet's yearly motion. Could it still be there, near that small ink pen dot? Who knows, maybe time will tell.



So for all the champions of dumb luck, here is the location I plotted in 1973.

Good Luck

"position of hypothetical planet" RA 0h 40m.
Dec +72 deg 30m

Library Telescope Program Update

The Library Telescope program has really taken off since last month. In that time, the program has libraries from the following systems that have agreed to either add to the number of telescopes they currently have or to begin the program. Systems include Belleville, Jefferson County, St. Charles county (administered by ASEM with telescopes for their club as well). St. Louis County has also requested more telescopes to try and reduce the waiting list they have. It currently stands at about 168! The remaining libraries in the consortium with Kirkwood and University City are also requesting telescopes. This includes libraries such as Valley Park and Maplewood, etc.

Be sure to volunteer for the Library Telescope events we have planned on the calendar. We will be needing many volunteers for these events over the course of the year!

Many thanks to Don Ficken for his hard work in putting the program together! The next build will be for about 40 telescopes and will take place in April. More announcements to come!



Larry Campbell takes the lead in presenting at one of the Library Telescope Star Parties. Check the calendar on NSN to see what events are available for YOU to help with!

Report from the International Solar Eclipse Conference of 2014, SEC2014

And from the Eclipse Workshop of August 21 and 22

Editors note: This is a report of the meeting that took place in Columbia last summer. We are currently working on a workshop for the St. Louis area with a St. Louis based committee. We will have a report from that committee in the next issue.

Get ready! On August 21, 2017 a solar eclipse will be visible coast to coast from the 48 contiguous states. The path of totality will cross Oregon, Idaho, Wyoming, Nebraska, Missouri, Kentucky, Tennessee, Georgia, North Carolina, and South Carolina. A number of major cities, universities, some national parks, recreation centers, as well as numerous schools, and other population centers are in its path. This will be one of the defining events of our lifetime.

David and I recently attended two very interesting conferences which brought together eclipse observers at all levels, from amateur to professional solar astronomers. The first conference, the Eclipse Workshop held at the University of Missouri in August, was to prepare for the Great North American Eclipse of 2017. The second, SEC2014, with a pre-conference in Sunspot and a conference in Cloudcroft, New Mexico, brought together eclipse observers to discuss past eclipse work and future plans.

Eclipse Workshop – Amateur, professional, and commercial representatives gathered to plan how to share observing information with every resident of the USA. August 21, 2017 is going to be a Monday and is currently planned to be the first day of the 2017 school year at the University of Missouri (in the path of totality) as well as many other public and private schools across the country. This eclipse will be one of the most accessible of modern times. And 7 years later, April 8, 2024, there will be another total eclipse that also will be visible from a large swath of the USA. The paths cross in Illinois, so areas around Cedar Lake, Carbondale, Route 127 between Murphysboro and Anna will be in the path of totality in both 2017 and 2024.

The workshop was in support of the American Astronomical Society's Solar Eclipse Task Force, formed to support safe observing of the partial or total eclipse by approximately half a billion citizens and visitors. Some of the logistics are mind boggling – just the time and effort involved in manufacturing and distributing solar viewers to every person is amazing. There are many individuals and organizations preparing for this eclipse, but

there are still many areas where others can contribute. If you are interested in participating in the planning or preparation efforts, let me know at joanbdunham@gmail.com and I will see that you are connected with one of the groups.

SEC2014 - The first day of the pre-conference was highlighted by observations of the partial eclipse and the amazing sunspot visible that day. Eclipse-viewing shades were provided to attendees, and many brought their own equipment. Particularly impressive were setups designed to share telescopic views with displays on screens of the filtered Sun. And as the photo of the group observing near the solar telescope shows, the seeing was very good with a beautiful, blue, cloudless sky. We observed the sunspot from Sunspot, NM.

Following are brief summaries of a few of the presentations directed at general observers.

Jay Anderson, author of the Eclipser web site (<http://www.eclipser.ca>), gave a thorough presentation of the weather prospects for the 4 solar eclipses from 2015 to 2017. Two of the relevant points he made addressed cloud cover and terrain issues. A “clear” sky to an instrument called a ceilometer means clear below its range. Older ceilometers range to 12,500 feet, which means that skies covered with cirrus can be “clear” to a ceilometer. Jay presented a graph showing the average cloud amount along the center line from the Pacific to the Atlantic. As would be expected, the cloud cover average increases from west to east. This does not mean, however, that east coast observers have no chance, as there are clear days in August across the country. Jay also presented maps of where mountains around Svalbard will block the Sun during totality for the March, 2015 eclipse. There were stories told of past eclipses where not considering the terrain led to heartbreak at totality. There are other viewing considerations as in Madras, OR which had obscuring forest fire smoke last August. Jay's web site has maps and cloud cover information.

Kris Delcourte spoke on getting dramatic photos of the eclipsed Sun in the landscape. His emphasis was on searching for appropriate foreground landscapes to feature with the eclipsed Sun. Search for “Kris Delcourte eclipse” to find examples of his images.

Fred Espenak had news of new eclipse canons and his new eclipse web sites. A canon is a document listing elements and maps for eclipses over multiple years. In 1966, a canon covering the years 1898 to 2510 was published by Jean Meeus and others. In 2006, Fred and Jean published a 648 page canon covering the 50 centuries from 1999 to 3000. In 2009, they published another canon and catalogs for solar as well as lunar eclipses. Fred **ECLIPSE:**

**St. Louis Astronomical Society
Balance Sheet
As of January 31, 2015**

7:07 AM
02/12/15
Accrual Basis

**St. Louis Astronomical Society
Profit & Loss Budget vs. Actual
January 2015**

	<u>Dec 31, 14</u>	<u>Jan 31, 15</u>
ASSETS		
Current Assets		
Checking/Savings		
Checking - First Bank	5,161.12	2,598.71
Deposit, Certificate of	20,068.06	20,068.06
Library Telescope Escrow*	1,660.10	637.33
Merchandise Change Fund	20.00	20.00
PayPal	82.81	358.64
Savings - First Bank	3,359.27	5,359.43
YMCA Trout Lodge Escrow	542.87	542.87
Total Checking/Savings	30,894.23	29,585.04
Other Current Assets		
Inventory Asset	1,614.22	1,614.22
Undeposited Funds	261.95	90.00
Total Other Current Assets	1,876.17	1,704.22
Total Current Assets	32,770.40	31,289.26
Fixed Assets		
Accum Depr - Office Equip	(216.65)	(216.65)
Office Equipment	216.65	216.65
Total Fixed Assets	0.00	0.00
TOTAL ASSETS	<u>32,770.40</u>	<u>31,289.26</u>
LIABILITIES & EQUITY		
Liabilities		
Current Liabilities		
Accounts Payable	167.90	0.00
Total Current Liabilities	167.90	0.00
Total Liabilities	167.90	0.00
Equity		
Opening Bal Equity	8,137.66	8,137.66
Retained Earnings	22,221.50	24,464.84
Net Income	2,243.34	(1,313.24)
Total Equity	32,602.50	31,289.26
TOTAL LIABILITIES & EQUITY	<u>32,770.40</u>	<u>31,289.26</u>

* Funds restricted for the Library Telescope Program

Ordinary Income/Expense

Income

	<u>Jan 15</u>	<u>Budget</u>	<u>\$ Over Budget</u>
Total Magazine Subscription	267.80	166.85	100.95
Membership Dues	495.00	430.00	65.00
Merchandise Sales	133.48	0.00	133.48
Total Income	896.28	596.85	299.43
Cost of Goods Sold			
Total Magazine Subscriptions	166.85	166.85	0.00
Total COGS	166.85	166.85	0.00
Gross Profit	729.43	430.00	299.43
Expense			
Programs & Events	766.19	691.66	74.53
Newsletter	66.72	15.00	51.72
Administrative Expenses	180.60	97.33	83.27
Total Expense	1,013.51	803.99	209.52
Net Ordinary Income	(284.08)	(373.99)	89.91

Other Income/Expense

Other Income

Total Donations	0.05	0.00	0.05
Interest Income	0.16	8.00	(7.84)
LTP Receipts	600.00	0.00	600.00
Total Other Income	600.21	8.00	592.21
Other Expense			
LTP Disbursements	1,629.37	0.00	1,629.37
Total Other Expense	1,629.37	0.00	1,629.37
Net Other Income	(1,029.16)	8.00	(1,037.16)
Net Income	<u>(1,313.24)</u>	<u>(365.99)</u>	<u>(947.25)</u>

(Continued from page 5)

then retired from NASA, and decided to update both the solar and lunar canons and catalogs for the most frequently used time period of 1501 to 2500. Fred and Jay Anderson are also preparing an eclipse handbook for the August 21, 2017 solar eclipse, to be released early next year.

The NASA eclipse web site, started by Fred in 1996, is still in operation (and Fred is still the webmaster), but Fred has found it increasingly difficult to manage as a retiree. So he now has sites under his control, MrEclipse and Eclipsewise, which have the most important information and features from the NASA site. He showed us examples of the information available from those sites.

Fred's sites also include information on how to observe, photographing eclipses and post-processing the photos for composites. They also have galleries of total and lunar eclipse photographs, basic information for those just beginning to learn about eclipses, and observation safely advice. The canons are available through those sites, and can be

ordered in color or in black and white.

Dr Glenn Schneider of Steward Observatory presented retrospective look at past-to-recent eclipses. He showed illustrations of the early photographic efforts, dedicating his talk to David P. Todd who led 10 eclipse expeditions from 1878 to 1919, and who invented the eclipse commutator, a system that controlled 12 to 30 telescopes and cameras. The pictures of these commutators were marvelous, with a version prepared for each expedition. The early ones were pneumatic systems controlled by player pump-organ and punched paper music rolls; later ones were electrically operated.

More Information in the next issue

The conclusion of the conference summaries and the full website list of additional resources will appear in the January 2015 issue of Start Dust. In the meantime, obtain additional information from: www.eclipse2017.org and get your solar viewing glasses that meet the new standards: www.eclipse2017.org/glasses_order.htm

St. Louis Astronomical Society Executive Board Meeting Minutes for January 8, 2015

1. Opening Activities: Read and approve minutes from December Jim Small, Paul Baldwin, Bill Winningham, Larry Campbell, Brad Waller, Mark Jones, Tom Nickelson

Meeting called to order 7:02pm

December meeting minutes reviewed and approved

2. External Business SLSC First Friday, February 6: *Avengers* Assemble SLSC is not available for Astronomy Day on April 25th due to parking lot construction. Board recommends contacting Kirkwood to see if they would sponsor Astronomy Day. Jim Small to contact Kirkwood, There is a fall Astronomy Day on Oct 4th, we may decide to support this event if we don't find an April venue.

Motion to donate one box of 6 Galileoscopes for raffle at Astronomy Day. Motion by Tom seconded by Paul. Motion passed.

Next board meeting: Feb 12, March 12, April 9, May 7, June 11, July 9, August 6, Sept 10, Oct 8, Nov 12, Dec 10.

3. Director Reports:

President: Goals for 2015 and beyond.

1. Attract new members – We need to plans to increase our base membership significantly during the course of the year.
2. Retain members – We need plans to retain members that join, beyond the first year. Of the members who joined SLAS in 2012 only 23% retained through 2014.
3. Get members involved – We need significant plans to involve our members in both programs and as volunteers.

Board Discussion:

New structure to Friday meeting. What is the membership benefit? Can we have a Lake Carlyle event? Lectures are too high level. Need to acknowledge new members, more courteous behavior by members during meetings. Improve the meeting experience: engaging speakers, welcome new members and visitors at beginning of meeting, socialize before the meeting, A101 that are helpful to new members. Keep business portion of the meeting short. Have a sign-in sheet.

New Member Packet; SLAS patch or decals; copy of newsletter; more information on the loaner scope and library access; NSN and Dialogs instructions; short term calendar; and Sky maps

Social events outside monthly meetings – observing, picnics, etc. goal the once per month, training

Jan 5- email, carry case contest, Jan 29 training program

Homemade Fest is set for February 21, 2015 in Room 201a-b at Kirkwood Community Center from 5-10 pm. Kirkwood Parks Dept has graciously provided the facilities at no charge again. The room has 10 8' tables and 75 chairs. Brad will get door prizes and MC. Mark will bring all the SLAS provided paper goods, drinks, ice etc. Projector screen and laptop, Sound equipment Jim Small

Vice President –Paul Baldwin: January Paul Baldwin - "Future Telescopes On The Ground And In Space And What They Will Discover" February – William Smith on Kepler; March – find speaker on Ceres; April - Dr. Joseph Marcus M.D. who will talk about Comet 67P And the Rosetta Spacecraft"; May - Kathrin Powell might talk on "All the Mars Rovers and What They Have Discovered"

Astro 101: Topic: Library Telescope Training, storage container

Secretary – Mark Jones no report

Treasurer/ALCor – 2015 Budget approved at December meeting. Net income for 2014 was \$2243.

Hospitality – vacant Larry has volunteered to bring January refreshments.

Board member at large reports

Larry Campbell Recognition Committee no volunteers yet.

Tom Nickelson: Disable telescope program.

Brad Waller: Brad made motion to buy 2 Neil deGrasse Tyson tickets to raffle as a membership initiative. Price for raffle ticket for 2 seats will be \$2. Seconded by Tom motion passed.

4. Committee Reports: If needed

Library Telescope Program: Telescope case contest announced. Spoke with Jefferson County Library today. In contact with Belleville system.

Membership – work on retention rate, volunteers

Merchandise – SLAS logo is in progress with Infini-Tees. Profit of \$150 from shirt sales. Dirk will provide us with shirts for occasional prizes.

Telescope Making – no report submitted

Librarian – No changes

Website – The new website is in progress and will still go live by February board meeting. www.slasonline.org/joomla

Night Sky Network – Many star parties on the list. Be sure to volunteer!

Publicity – release sent

Observing Programs – no report

Star Parties: Upcoming star parties: Jan 22: Lewis and Clark, Jan 26: SLPL, Jan 28: Tesson Ferry, Jan 29 Membership training for Library Programs, Feb 2: Thornhill, Feb 6: SLSC,

5. Old Business

None

6. New Business. Should Hospitality be split into the board position of Membership and the committee head of Hospitality? Discussion needs to be By-laws change.

7. Closing Activities



Comet Lovejoy - Jim Melka There are 9 blue-toned streamers in the ion tail caused by ionization of gases in the tail. The bright Coma(atmosphere) of the comet is green also caused by ionization of gases.

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

3/12/2015	4/9/2015	5/7/2015
6/11/2015	7/9/2015	8/6/2015
9/10/2015	10/8/2015	11/12/2015
12/10/2015		

Dark Sky Observing Dates

See you in March!

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

4/22/2015	5/27/2015	6/24/2015
7/22/2015	8/19/2015	9/16/2015
10/21/2015		

SLSC Public Telescope Viewing Events: These events are held the first Friday of the month Planetarium shows start at 7pm

3/6/2015	4/3/2015	
5/1/2015	6/3/2015	None in July
8/7/2015	9/4/2015	10/2/2015
11/6/2015	12/4/2015	

YMCA Edward Jones Star Parties

3/16/2015	4/13/2015	5/11/2015
6/8/2015	7/13/2015	8/10/2015
9/7/2015	10/5/2015	

Pattonville Observatory Public Viewing Dates

February 27, 2015	Friday 7:00-9:00 p.m.
March 13, 2015	Friday 8:00-10:00 p.m.
March 27, 2015	Friday 7:00-9:00 p.m.
April 10, 2015	Friday 8:30-10:30 p.m.
April 24, 2015	Friday 9:00-11:00 p.m.
May 1, 2015	Friday 9:00-11:00 p.m.
May 22, 2015	Friday 9:00-11:00 p.m.

SLAS EVENTS

February

20 Fri	SLAS Regular Meeting
21 Sat	Homemade Fest !!
24 Tues	Machacek Library SLPL
27 Fri	Pattonville Observatory

March

2 Mon	Explore the Night Sky SLCL
4 Wed	Daniel Boone Library
5 Thurs	2 EVENTS Premier Charter School STEAM Fest
6 Fri	SLSC Public Telescope Viewing
12 Thurs	SLAS Board Meeting
20 Fri	SLAS Regular meeting SLAS Dark Sky Campout
21 Sat	SLAS Dark Sky Campout SLAS Dark Sky Observing

22 Sun	SLAS Dark Sky Campout
23 Mon	Edward Jones YMCA
31 Tues	Schlafly Library SLPL

MAY 29-31 MSRAL at Univ AR - Little Rock

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 Soon to be Available at Infini-tees and Johnny Mac's

The SLAS logo is in the process of setup at Infini-Tees. When it is ready, you will be able to have the SLAS logo placed on any shirt IT sells.

In addition, we will be setting up the logo with Johnny Mac's so there is a local dealer with multiple locations that may make SLAS merchandise. We will let you know when that is ready for sales.



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 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 @ \$34.00 / 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	Paul Baldwin	314-781-4080
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	Vacant effective Dec 31	
hospitality at slasonline.org		
Board Members at Large:		
	Tom Nickelson	314-346-9565
board17 at slasonline.org		
	Larry Campbell	636-244-2867
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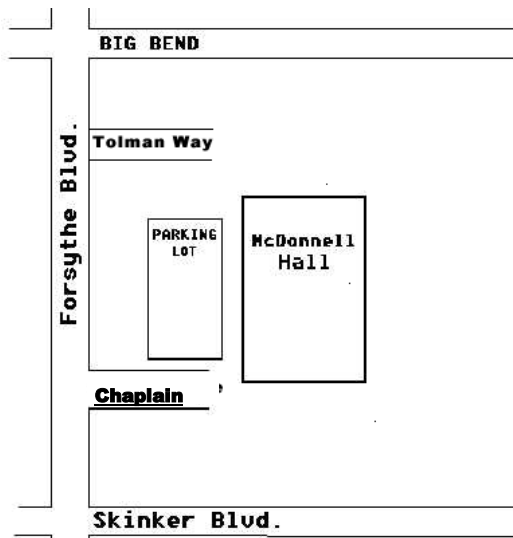


Who We Are and What We Do

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.



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