

THE EVENT HORIZON



ST. LOUIS ASTRONOMICAL SOCIETY

Devoted to the Interest and Advancement of the Science of Astronomy

VOLUME 28, Issue 1
January, 2018

Black Holes and Hawking Radiation by **Dr. Carl Bender** **Washington University**

Dr. Carl Bender will be featured at the January meeting of the St. Louis Astronomical Society. The meeting will begin at 7:30 PM Friday, January 19, in McDonnell Hall, Room 162, on the Washington University campus, Saint Louis, MO 63130. McDonnell Hall is accessible from Forsyth Boulevard via Tolman Way. Yellow zone and garage parking are available to the audience. The event, cosponsored by NASA's Missouri Space Grant Consortium, is open to the public free of charge.

A black hole is a region of space that is so massive and so compressed that its gravity overwhelms all material objects in the area. At the black hole's boundary, the gravity is so strong that nothing, not even a beam of light, should be able to escape it. Black holes have, however, been detected indirectly, by the light and other energy emitted by gas spiraling in toward the black hole. Dr. Stephen Hawking proposed an exception to the "nothing can escape a black hole" rule. He figured out that particles and energy could

be emitted at the boundary of the black hole. The escaping particles are called "Hawking radiation". Dr. Bender will talk about the nature of black holes and discuss their emission of Hawking radiation.

Dr. Carl Bender is the Konneker Distinguished Professor of Physics at Washington University. His research involves several areas of quantum field theory. He also serves as Science Consultant to the Los Alamos National Laboratory in New Mexico.

Upcoming Meetings: 2018

February Ryan Ogliore, PhD, Washington Univ From Stardust to the Solar System Wash U
March Michael Medford, UC Berkeley Discovering Planet 9 (10) (Zoom event)
April Kun Wang, PhD, Washington University New Evidence for the Origin of the Moon
May Ryan Clegg-Watkins, PhD, Washington Univ Exploring the Moon from Orbit: Paving the Way for Future Astronaut Explorers
June Eddie Schlafly, UC Berkeley Big Bang (Zoom)
July Erika Gibb, PhD, UMSL Comets
August Michael Bouchard, Washington University Mars 2020 Rover
September Francesc Ferrer, PhD, Washington U. In the wake of the Higgs, what will the next breakthrough at the LHC?
October Mao Xiaochen Washington University The Dawn Mission: Vesta and Ceres
November Bard Joliff, PhD Washington University Lunar Geology
December Pamela Gay, PhD ASP Secret Squirrel Part 2

Mid States Region



Inside This Issue

President's Corner, Homemade Fest	2
Outreach, Volunteers	3
Rodney Rynearson	4
ASP Conference	5
For Sale	6
Financials	7
Events	8



2018 Night Sky Network Pins Are Here!

Attention SLAS Members!

We need you to check the accuracy of your 2017 volunteer hours in the NSN database

(Continued on page 3)

Homemade Fest
Saturday,
February 17, 2018
Kirkwood Community Center

(see page 2 for details)



Outreach Challenge
by
Bill Neubert

I am repeating the Outreach Challenge this year. Last year, laser pointers were given to the 20 SLAS member who completed at least 10 outreach events in 2016. This year, I will give a red astronomy flashlight to any SLAS member completing at least five registered outreach events by the end of December 2017,

as listed in the Event Horizon.

I realize this isn't what motivates so many of you to volunteer. It's just a fun way to recognize it in a very small way.

They will be distributed at the February meeting along with the Night Sky Network pins. Please try to attend the meeting if you have five events as listed below.

- Bill Neubert

NSN Pins (from page 1)

so we don't miss recognizing your achievements. So please log onto the NSN and check your hours before Feb 1st. Make corrections if needed so we can pull the final numbers. Any volunteer logging 6 or more hours for a single event is credited for 2 events, long events like Astronomy Day, Telescope Building and Sidewalk Solar Observing.

Initial count shows we had 20 members who have 5 or more events and qualified for the Night Sky Network Outreach pin and certificate. We logged more than 1650 hours for outreach for 214 events. Since 2007 SLAS members have logged 8386 hours for NSN events.

Thank you so much to all our volunteers! We couldn't have done it without you!

Below is the preliminary count, please check your hours and make corrections before February 1, 2018. We will be presenting volunteer pins and certificates at the February SLAS meeting.

Mark Jones and the SLAS Board

**Please try to attend the February meeting
to receive your pin!**

Donald Ficken	111 events;	207.7 hours
Cook Feldman	60 events;	179.5 hours
Rich Heuermann	49 events;	128.3 hours
Bradley Waller	44 events;	126 hours
John Beaury	38 events;	132.5 hours
James Small	35 events;	111.5 hours
Larry Campbell	35 events;	85.5 hours
Mark Jones	33 events;	95.5 hours
Frank Mack	33 events;	83 hours
Sharon Bertram	22 events;	56.5 hours
Richard Jennings	21 events;	48 hours

William Neubert	19 events;	58.5 hours
Rick Menendez	15 events;	42.5 hours
Richard Fefferman	10 events;	22 hours
Bill Breeden	9 events;	31.5 hours
Rita Breeden	7 events;	25.5 hours
Jim Trull	6 events;	19 hours
Ann Trull	5 events;	15 hours
Josh Zitko	5 events;	15 hours
William Winningham	5 events;	13 hours

Robert Drzymala	4 events;	3.8 hours
Raymond Mueller	4 events;	1.5 hours
Chris Nobbe	4 events;	11.3 hours
Kevin Koontz	4 events;	9 hours
Brian Mills	3 events;	12.5 hours
Donald Snyder	3 events;	10 hours
John Edwards	3 events;	7.5 hours
Alan Sapia	2 events;	8 hours
Thane Bopp	2 events;	8 hours
Tom Keutzer	2 events;	6.5 hours
Anthony Russo	2 events;	6 hours
John Boncek	2 events;	5 hours
Edward Frey	2 events;	4.5 hours
Benjamin Winningham	2 events;	4 hours
Bill Biermann	2 events;	4 hours
Charles Laughton	2 events;	3.5 hours
Angelika Buckley	2 events;	2 hours
Vicky Boncek	1 events;	4.5 hours
Cathy Hooper	1 events;	4 hours
David Barry	1 events;	4 hours
Jeffrey Strauss	1 events;	4 hours
Shanna Ramirez	1 events;	4 hours
Daniel Corso	1 events;	3 hours
Murray Fishman	1 events;	3 hours
Rosanne Naunheim	1 events;	3 hours
Roy Lieberman	1 events;	3 hours
David Barnes	1 events;	1.5 hours
Joshua Bradshaw	1 events;	1 hour



Rodney Rynearson at one of his outreach events near his home in Michigan.

“The Telescope Man” A Report From Our Most Distant Member

If you’ve been a member of SLAS for a while, you will probably remember our former observing programs chairperson, Rodney Rynearson. Rodney is a prolific observer and has a Master Observing award from the Astronomical League along with a plethora of other AL awards for observing programs.

Rodney moved to Michigan, and quickly found out that his local area did not have an active astronomy club, so he remains a SLAS member and has taken it upon himself to be a one-man outreach person for astronomy! If you take a look at his display above, he has acquired the nickname “The Telescope Man” in his endeavors near his home.

He still is interested in remaining active and will be happy to help anyone who could use assistance or advice about completing observing programs sponsored by the Astronomical

League. If you are interested in talking to him about working on these awards, feel free to contact him.

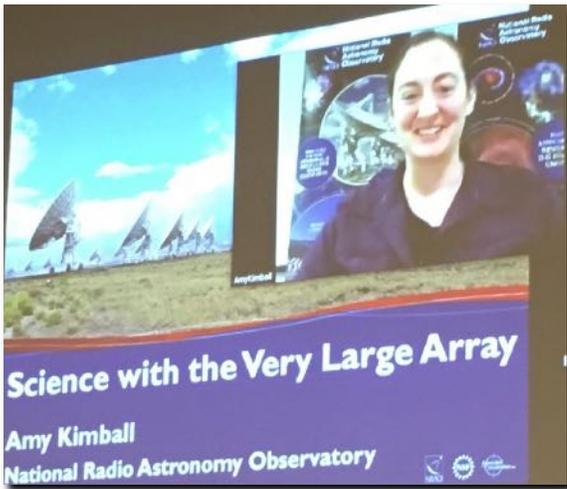
Here is Rodney’s latest report on his activities.

I spent 6 hours there today It is a great way to interact with the community. I had probably 150 people ask questions about the PST scope and about 50 had extended discussions about the 11 inflatables of the planets Today there was a steady breeze and at least 8 of the inflatables lived literally up to their name when they came loose and “wandered” around the Market. I had coloring sheets for the small children and word puzzles for the older kids.

I am planning a “Moon Party” on the International Observe the Moon Day. I am also planning a charitable entry for the big school auction to be held early this year It is great to hear of all of the activities of SLAS, especially those with the Library Telescopes Program.

Clear Skies

Rodney R Rynearson



Above: A nice crowd at the December meeting which featured Amy Kimball via Zoom conferencing from the National Radio Astronomy Observatory as the main speaker. Thanks to Bradley Waller for setting up the meeting for SLAS!



You've Been Mugged! Mug shots with Bradley for the Attendance Prize winners from the December meeting: **From left:** Greg Rigelmann, Nancy Clark, Mark Jones, Brent Buch



Left: Attendees at the Astronomical Society of the Pacific national convention which was held at the Moonrise Hotel in December. Appropriately, this photo is a shot of the Moon rising off the East side of the terrace at the hotel at the opening night reception held for the convention.



Right: Astronomers gathered for the reception at the Moonrise. The convention was well attended and the Moonrise provided an excellent venue for the meeting



Left: Renowned astrophysicist Hakeem Oluseyi provides the keynote address for the banquet for the ASP conference in December. The address provided an excellent insight into getting people involved in astronomy

Right: A hands-on workshop for activities to get girl scouts involved in astronomy. This particular activity was constructing a red light name tag from simple and inexpensive parts. The astronomy public was invited to attend the workshop and several SLAS members attended.



FOR SALE

8" LX200R Advanced Ritchey-Chretien Telescope with GPS and AutoStar II Hand Controller. This scope has an additional Right Angle Finder Scope. The original straight thru finder scope is included with the scope.

I have installed a rail and counterweight system on the outside of the tube for additional balance control for photography.

I have also included a Williams Optic Zenithstar SD Doublet APO STM-coated 66 mm.F5.9 scope attached to the main tube. See photos.

Also included, besides the traditional tripod spreader plate, is a base plate that has additional eyepiece holding capability, along with quick setup guide posts on the plate for correctly mounting the telescope base.

This is a very good scope and is in excellent working condition. No scratches or dings. Looks brand new. It breaks my heart to sell it but it is too heavy for me to lift as I will be 80 in February.

This package also contains the 2" steel tubular tripod, 120 volt transformer power supply for DC voltage conversion, a Meade Su-

per Plossl 26 mm. ocular and complete manual.

I paid in the neighborhood of \$2800 not including the right angle finder, additional spreader plate and Williams Optic Scope.

Asking price is \$1200 firm. I live in Webster Groves at 311 Dobbin Rd, close to the corner of Big Bend and Rock Hill. Phone 314 968 5388.



	Jan - Dec 17	Budget	\$ Over Budget
Ordinary Income/Expense			
Income			
Total Magazine Subscription	1,797.94	955.50	842.44
Membership Dues	4,100.00	2,980.00	1,120.00
Total Income	5,897.94	3,935.50	1,962.44
Cost of Goods Sold			
Total Magazine Subscriptions	1,716.30	955.50	760.80
Merchandise			
Inventory Adjustment	849.64	0.00	849.64
Merchandise - Other		45.00	(45.00)
Total Merchandise	849.64	45.00	804.64
Total COGS	2,565.94	1,000.50	1,565.44
Gross Profit	3,332.00	2,935.00	397.00
Expense			
1-Programs & Events ^{2,4}	2,041.69	2,225.00	(183.31)
2-Newsletter	169.83	175.00	(5.17)
3-Library expense	236.60	300.00	(63.40)
4-Astronomical League Dues	740.00	670.00	70.00
5-Loaner Scopes	5.00	50.00	(45.00)
7-Insurance ¹	825.50	380.00	445.50
8-Website	179.40	170.00	9.40
9-Administrative Expenses	883.88	1,625.00	(741.12)
Total Expense	5,081.90	5,595.00	(513.10)
Net Ordinary Income	(1,749.90)	(2,660.00)	910.10
Other Income/Expense			
Other Income			
Donations	2,450.00	0.00	2,450.00
Eclipse Escrow Receipts	18,559.24	0.00	18,559.24
Interest Income	62.55	100.00	(37.45)
LTP Receipts ⁵	8,400.57	0.00	8,400.57
Proceeds from Lens Sales	17,505.05	0.00	17,505.05
Total Other Income	46,977.41	100.00	46,877.41
Other Expense			
Eclipse Escrow Disbursements	23,378.76	0.00	23,378.76
Eclipse Escrow Funding ³	1,500.00	1,500.00	0.00
LTP Disbursements ⁵	8,668.67	0.00	8,668.67
LTP Escrow Funding	1,000.00	1,000.00	0.00
Total Other Expense	34,547.43	2,500.00	32,047.43
Net Other Income	12,429.98	(2,400.00)	14,829.98
Net Income	10,680.08	(5,060.00)	15,740.08

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

	Dec 31, 16	Dec 31, 17
ASSETS		
Current Assets		
Checking/Savings		
Checking - First Bank	3,957.19	5,262.74
Deposit, Certificate of	20,148.49	20,188.79
Library Telescope Escrow	799.33	299.98
PayPal	126.42	563.55
Savings - First Bank	29,755.97	46,297.03
SLAS Eclipse Conference Escrow	6,259.97	0.00
YMCA Trout Lodge Escrow	542.87	482.87
Total Checking/Savings	61,590.24	73,094.96
Other Current Assets		
Inventory Asset	1,360.92	511.28
Undeposited Funds	0.00	25.00
Total Other Current Assets	1,360.92	536.28
Total Current Assets	62,951.16	73,631.24
Total Fixed Assets	0.00	0.00
TOTAL ASSETS	62,951.16	73,631.24
LIABILITIES & EQUITY		
Equity		
Opening Bal Equity	8,137.66	8,137.66
Retained Earnings	24,813.26	54,813.50
Net Income	30,000.24	10,680.08
Total Equity	62,951.16	73,631.24
TOTAL LIABILITIES & EQUITY	62,951.16	73,631.24

Editors Note: A board meeting was not held in December, so there are no minutes to present in the newsletter for January.

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!**

SLAS EVENTS

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.
2018: Feb 1, Mar 1, April

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** See you in 2018!

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!
Feb 4, March 11

SLSC Public Telescope Viewing Events: These events are held the first Friday of the month
Planetarium shows start at 7pm
1-5, 2-2, 3-2

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

Pattonville Observatory Public Viewing Dates

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.

January

29 Mon Grants View Library
30 Tue Lewis and Clark Library

February

1 Thurs SLAS Board Meeting
1 Thurs North Glendale E School
2 Fri SLSC Public Telescope Viewing
4 Sun SLAS Dark Sky Orienteering
16 Fri SLAS Regular Meeting
17 Sat Homemade Fest!
21 Wed SLPL Star Party - Central
23 Fri Armstrong Elementary
27 Tue SLPL Star Party - Machacek
28 Wed Brentwood Star Party

March

1 Thurs Rock Road Library
1 Thurs SLAS Board Meeting
2 Fri Parkway Southwest Middle
2 Fri SLSC Public Telescope Viewing
5 Mon Weber Road Library
6 Tue Festus Public Library
7 Wed Prairie Commons Library
11 Sun SLAS Sky Orienteering
16 Fri SLAS Regular Meeting
17 Sat SLAS Dark Sky Observing
18 Sat Kirkwood Park Star Party
21 Wed SLPL - Central Library Star Party
21 Wed Natural Bridge Library
22 Thurs Cliff Cave Library
26 Mon SLCL Headquarters Library
28 Wed Daniel Boone Library

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)	636-357-2763
treasurer at slasonline.org		
Hospitality	Larry Campbell	636-244-2867
hospitality at slasonline.org		
Board Members at Large:		
	Tom Nickelson	314-346-9565
board20 at slasonline.org		
	Rich Heuermann	314-962-9231
Board19 at slasonline.org		
	Brent Buch	314-239-0329
Board18 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		

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
librarytelescope 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
membership at slasonline.org		
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		
Star Party Coordinator	Bill Breeden	314-276-3613
starparty at slasonline.org		
Telescope Making	Bill Davis, Jim Melka	314-469-3061
telescope at slasonline.org		

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

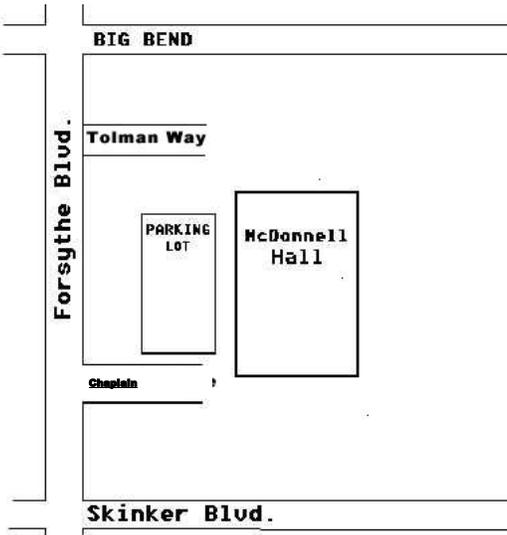


Who We Are and What We Do

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

