

The ECLIPSE

September
2014

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:
September 17, 2014, 7:30 pm
Cumberland Valley
Girl Scout Council Building
4522 Granny White Pike

Program Topic:
"What's Up?"
Gary Eaton

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From the President:

September... fall will start, and with it some of the nice clement weather this time of year. Warm days and cool nights is also a recipe for dew, so have your heaters ready!

Despite the assurances of the weathermen, we were pretty clouded out at Bells Bend in August, so we are looking forward to a clear night at Long Hunter State Park on September 13. Mary Hance, also known as "Ms. Cheap" in the Tennessean, gave us a nice [shout-out](#) in an article about star parties, so bring your scopes if it looks like it will be a nice night!

Want to hang out on the next two Saturdays? Next Saturday the annual Dragon Boat races take place at Riverfront Park, and BSAS will have a space with solar telescopes and astronomical information. Come on out and have some fun talking to families about the night sky during the day! The following Saturday is Nature Fest at Bowie Park from 10am to 4pm, again solar observing weather permitting. Good opportunity to find Bowie Park in the daytime! We had a great night the last star party out there. Then you can get dinner in Nashville and head east to Long Hunter.

Next month we have some interesting observing opportunities... depending on your definition of interesting! First we have a Total Lunar Eclipse, but at an inconvenient time of the day. The partial phase begins at 4:15am, total at 5:25 - 6:24am. Sunrise that day is 6:48am, so it may be a challenge to see how long you can actually see the totally



Officers

Theo Wellington
President

tmwellington@comcast.net

Joe Boyd
Vice-President

boydjoe@comcast.net

Bud Hamblen
Secretary

wrhamblen@comcast.net

Bob Norling
Treasurer

rdncpa@mindspring.com

(no one)
Ex-officio

Directors at Large

Steve Cobb

s.a.cobb@comcast.net

Jeffrey Horne

Jeffrey.Horne@gmail.com

Melissa Lanz

melissa_lanz@yahoo.com

Kris McCall

planetmccall@gmail.com

Poppy Simmons

poppysmmns@gmail.com

Drew Gilmore

Newsletter Editor

eclipse@bsasnashville.com

Observing Highlights September and October

Open Clusters

M6 (Butterfly), M7, M23,
M21, M18, M25, M26,
M11 (Wild Duck),
M29, M73, M39, M52

Galaxies

M101/M102,
NGC 6822 (Barnard's)

Globular Clusters

M5, M80, M4, M107, M13, M12,
M10, M62, M19, M92, M9, M14,
M28, M69, M22, M70, M54, M56,
M55, M71, M75, M72, M15, M2,
M30

Multiple Star Systems

Epsilon Bootis (Izar or
Pulcherrima)
Mu Bootis (Alkalurops),
Beta Scorpii (Acraab),
Alpha Herculis (Rasalgethi),
Epsilon Lyrae (Double Double),
Beta Cygni (Albireo)

Variable Stars

Mu Cephei
(Herschel's Garnet Star)

Nebulae

NGC6302 (Bug),
NGC6309 (Box),
NGC6543 (Cat's Eye),
M20 (Trifid), M8 (Lagoon),
M16 (Eagle), M17 (Swan),
M57 (Ring),
NGC6818 (Little Gem),
NGC6826 (Blinking Planetary),
M27 (Dumbbell),
NGC6888 (Crescent),
NGC6905 (Blue Flash),
NGC6960/6974/6979/
6992/6995 (Veil),
NGC7000 (North America),
NGC7009 (Saturn),
IC 5146 (Cocoon),
NGC7293 (Helix),
NGC7635 (Bubble),
NGC7662 (Blue Snowball)

Other

Barnard's Star
M24 (Small Sagittarius Star Cloud)
Cr 399 (Coat Hanger)

Upcoming Star Parties

Sat 9/13 8:00 - 10:00 pm	Long Hunter State Park
Sat 9/20	Private Star Party Natchez Trace Parkway mile marker 412
Fri 9/26 7:00 - 9:00 pm	Bowie Nature Park (Fairview)
Sat 10/4 7:30 - 9:30 pm	Adventure Science Center
Sat 10/18	Private Star Party Natchez Trace Parkway mile marker 433.5



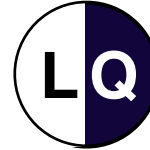
Sep 24
Oct 23



Sep 2
Oct 1



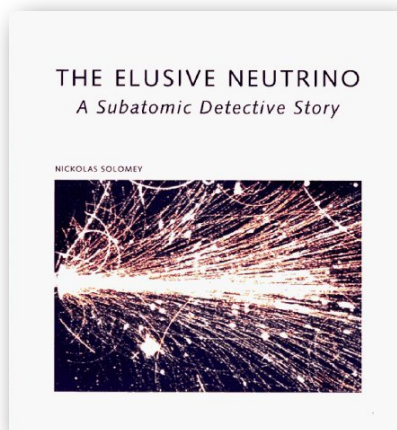
Sep 8
Oct 8



Sep 15
Oct 15

Book Review: The Elusive Neutrino reviewed by Robin Byrne

This month I'm back to ye olde bookshelf for another book review. This book is "The Elusive Neutrino: A Subatomic Detective Story" by Nickolas Solomey and was published in 1997.



Solomey gave a series of lectures in 1994 as part of his role as the 39th Compton Lecturer of Physics at the University of Chicago,

Enrico Fermi Institute. His lecture series was about the neutrino, and from those lectures, he created this book. From the date, this is obviously going to be a little dated (he briefly discusses the "future" Large Hadron Collider toward the end of the book). However, the information about the history of neutrinos, which is the majority of the book, is as relevant today as it was 17 years ago.

Solomey begins with the discovery of radioactivity and the work by the Curies. He moves on to the work by various scientists, including Bohr and Rutherford, who ultimately determined the structure of the atom. Then we venture into the world of quantum mechanics, with Fermi, Pauli, and Feynman and their contributions. The different types of radioactive decay are discussed, as well as the production of neutrinos during the decay process.

Solomey's area of expertise is instrumentation, so his descriptions of the various theories of physics leave something to be desired. He means well, but it just doesn't come through. Living in the South, the phrase "Bless his heart" comes to mind. He does a much better job describing the various techniques and apparatuses used to detect neutrinos and other subatomic particles through the ages. This is clearly where his passion lays. Thumbing through the book, you will see loving images of equipment and spray patterns from atomic particle collisions.

However, where I really cringed was when he ventured into the world of astronomy. He clearly didn't understand all of the astronomical concepts he wrote about, and often made them much more complicated than necessary to get his point across. Not being a nuclear physicist, it makes me wonder how much of his discussion of quantum physics was equally distorted.

Is this a book worth reading? If you are interested in the history of our understanding of neutrinos, then yes, but be prepared for a slog to get to where you want to be. If you are looking for a quick read on the beach, then an unqualified "no" would be my answer. All in all, the best part of "The Elusive Neutrino: A Detective Story" was the title.

The Elusive Neutrino: A Subatomic Detective Story by Nickolas Solomey; Scientific American Library, 1997

From the President, continued from page 1

eclipsed Moon as the Sun is rising! Still, if the weather is nice and we have some interest, contact me - we could talk to Bells Bend Park which has a good western horizon.

At the next new Moon on October 23 we have a partial Solar Eclipse beginning at 4:51pm, maximum at 5:52, setting while still partially eclipsed at 6:01pm. Will anyone notice? Well, of course YOU will, since you will break out the solar glasses left from the Transit of Venus to safely look. It's also possible that the Nashville Haze will allow for viewing just at sunset... but remember that you should NEVER look directly at the Sun. Again, if anyone is interested in group viewing that afternoon, please let me know. Bells Bend would be nice as would my favorite western horizon...the back of the Dickerson Road Wal-Mart parking lot!

You may have seen a few of us sporting classy BSAS t-shirts at meetings and star parties....you can own one for yourself! See me at a monthly meeting if you are interested, \$10.

Our friend Monique Johnson in far east Tennessee at Pickett State Park have an interesting proposition... they would like to do a star party in the early spring (March 20-22) and those interested in coming out would be able to stay in the group camp. Pickett has some of the darkest night skies in Tennessee, the public would be invited on Friday and Saturday night but we'd have the rest of the night to just have fun. I'd like to know who might be interested, that would be a good time for looking for Messier objects as well. The group camp (which has climate controlled bunkhouses!) is adjacent to the observing field. I have pictures of both. Weather is always an issue, but this could be a fun opportunity.

So (gently) polish your favorite eyepieces, and hope for clear skies!

Theo Wellington

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Hubble Sees a Galaxy With a Glowing Heart

This view, captured by the NASA/ESA Hubble Space Telescope, shows a nearby spiral galaxy known as NGC 1433. At about 32 million light-years from Earth, it is a type of very active galaxy known as a Seyfert galaxy – a classification that accounts for 10% of all galaxies. They have very bright, luminous centers that are comparable in brightness to that of our entire galaxy, the Milky Way.

Galaxy cores are of great interest to astronomers. The centers of most, if not all, galaxies are thought to contain a supermassive black hole, surrounded by a disk of in-falling material.

NGC 1433 is being studied as part of a survey of 50 nearby galaxies known as the Legacy ExtraGalactic UV Survey ([LEGUS](#)). Ultraviolet radiation is observed from galaxies, mainly tracing the most recently formed stars. In Seyfert galaxies, ultraviolet light is also thought to emanate from the accretion discs around their



central black holes. Studying these galaxies in the ultraviolet part of the spectrum is incredibly useful to study how the gas is behaving near the black hole. This image was obtained using a mix of ultraviolet, visible, and infrared light.

LEGUS will study a full range of properties from a sample of galaxies, including their internal structure. This Hubble survey will provide a unique foundation for future observations with the James Webb Space Telescope (JWST) and the Atacama Large Millimeter/submillimeter Array (ALMA). ALMA has already caught unexpected results relating to the center of NGC 1433, finding a surprising spiral structure in the molecular gas close to the center of NGC 1433. The astronomers also found a jet of material flowing away from the black hole, extending for only 150 light-years – the smallest such molecular outflow ever observed in a galaxy beyond our own.

European Space Agency

Credit: [ESA/Hubble & NASA](#), Acknowledgements: D. Calzetti (UMass) and the LEGUS Team

**Barnard-Seyfert Astronomical Society
Minutes of the Regular Meeting of the Board of Directors
Held On Wednesday, August 6, 2014**

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held August 6, 2014, at the Girl Scouts of Middle Tennessee, 4522 Granny White Pike, Nashville, TN 37204. Present were Bud Hamblen, Jeff Horne, Melissa Lanz, Kris McCall, Bob Norling and Theo Wellington, constituting a quorum. The meeting was called to order at 7:51 PM by President Theo Wellington. Treasurer Bob Norling reported that there was \$1,622.26 in the regular account and \$1,528.94 in the equipment account. Bob Norling moved adoption of the minutes from the June board meeting, Melissa Lanz seconded and the minutes were adopted as printed in the July, 2014, edition of the Eclipse.

Theo Wellington reported that there were approximately 150 attendees at the Bowie Nature Park star party on July 25, 2014. There is a problem with parking at the Bowie Nature Park because the public encounters the telescope operators' parking are before the arrive at the public parking area and it causes confusion about who should park where. Parking needs to be discussed with the Fairview park rangers. Upcoming star parties are scheduled for August 15 at Bells Bend Outdoor Center (public) and for August 23 at Natchez Trace Mile Marker 433.5 (private). Jeff Horne said that mail would be sent to the 12th and Broad group. Ms Monique Johnson Hodge wanted to know whether the society would be interested in being at Pickett State Park on the New Moon weekend of March, 2015. The society would have use of the group camp facility for free. The bunk houses are climate controlled, outdoor lighting can be turned off, and the site is on a hill in the northern part of the park, away from Jamestown. We would perhaps have schools on Friday and the public on Saturday. [The Moon is new on Friday, March 20, 2015 Nashville time.] There will be an opportunity for solar observing all day at the Dragon Boat Festival, Saturday, September 6, 2014, weather permitting. The September 13 Nature Fest at Bowie Nature Park is another opportunity for solar observing. Astronomy Magazine had an editorial on the August 21, 2017, total solar eclipse that said that Nashville, TN, would have the best view of any large city. Kris McCall said that she is going to attend a meeting in Missouri about planning events around the eclipse.

Chuck Schlemm will be asked to talk about being a NASA/JPL Solar System Ambassador at the August 20 meeting. Jeff Horne said he would be in contact with Laura Betts with NASA/Goddard and Tracy Carter with NASA/Marshall about speaking at membership meetings.

The organizing meeting for the Nashville chapter of the International Dark-Sky Association is going to be after the August 20 membership meeting.

Minutes of the Regular Meeting of the Board of Directors, continued

Bill Griswold has resigned from the board and Melissa Lanz's term ends this year, leaving room for two new board members. Canvas the regular attendees of the membership meetings for candidates for the board.

Bob Norling moved for adjournment and Melissa Lanz seconded. The meeting was adjourned at 8:30 PM.

Respectfully submitted,

Bud Hamblen, Secretary

Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held On Wednesday, August 20, 2014

The Barnard-Seyfert Astronomical Society held its monthly membership meeting for January at the Girl Scouts of Middle Tennessee, 4522 Granny White Pike, Nashville, Tennessee, on Wednesday, August 20, 2014. 14 members attended. Vice President Joe Boyd called the meeting to order at 7:39 PM. Joe Boyd asked for amendments to the minutes of the July 16, 2014, membership meeting as published in the August, 2014, issue of the Eclipse. There being no amendments offered, the minutes were adopted, as published, by unanimous voice vote. Bob Norling reported that there were \$1,622.26 in the regular account and \$1,528.94 in the equipment account. Joe Boyd announced that an organizational meeting of the Nashville chapter of the International Dark-Sky Association would follow the membership meeting of the BSAS.

Jose Boyd introduced Chuck Schlemm as one of the Solar System Ambassadors for NASA/JPL. Chuck described the outreach programs he has provided as part of the Solar System Ambassador program, encouraging science, technology, engineering and mathematics education, and informing the taxpayers about the work being done by NASA and JPL. Other Solar System Ambassadors who are members of the BSAS are Joe Boyd and Tom Murdic.

There being no further business the meeting was adjourned at 8:11 PM.

Respectfully submitted,

Bud Hamblen, Secretary

Become a Member of BSAS!

Visit bsasnashville.com to download and print an application for membership.

All memberships have a vote in BSAS elections and other membership votes. Also included are subscriptions to the BSAS and Astronomical League newsletters.

Then fill it out and bring it to the next monthly meeting or mail it along with your first year's membership dues to:

BSAS
P.O. Box 150713
Nashville, TN 37215-0713

Annual dues:

\$20 Individual
\$30 Family
\$15 Senior (+65)
\$25 Senior Family (+65)
\$12 Student*

* To qualify as a student, you must be enrolled full time in an accredited institution or home schooled.

You can check the status of your membership at bsasnashville.com.

There will be a two month grace period before any member's name is removed from the current distribution list.

About BSAS

Organized in 1928, the Barnard-Seyfert Astronomical Society is an association of amateur and professional astronomers who have joined to share our knowledge and our love of the sky.

The BSAS meets on the third Wednesday of each month at the Cumberland Valley Girl Scout Building at the intersection of Granny White Pike and Harding Place in Nashville. Experienced members or guest speakers talk about some aspect of astronomy or observing. Subjects range from how the universe first formed to how to build your own telescope. The meetings are informal and time is allotted for fellowship. You do not have to be a member to attend the meetings.

Membership entitles you to subscriptions to *Astronomy and Sky & Telescope* at reduced rates; the club's newsletter, the *Eclipse*, is sent to members monthly. BSAS members also receive membership in the Astronomical League, receiving their quarterly newsletter, the *Reflector*, discounts on all astronomical books, and many other benefits.

In addition to the meetings, BSAS also sponsors many public events, such as star parties and Astronomy Day; we go into the schools on occasion to hold star parties for the children and their parents. Often the public star parties are centered on a special astronomical event, such as a lunar eclipse or a planetary opposition.

Most information about BSAS and our activities may be found at bsasnashville.com. If you need more information, write to us at info@bsasnashville.com or call Theo Wellington at (615) 300-3044.

Free Telescope Offer!

Did someone say free telescope? Yes, you did read that correctly. The BSAS Equipment & Facilities Committee has free telescopes ranging in size from 2.6" to 8" that current members can actually have to use for up to 60 days at a time. We also have some other items in the loaner program such as a photometer, H-alpha solar telescope, educational CDs, tapes, DVDs, and books. Some restrictions apply. A waiting list is applicable in some cases. The BSAS Equipment Committee will not be held responsible for lost sleep or other problems arising from use of this excellent astronomy gear. For information on what equipment is currently available, contact info@bsasnashville.com.