

Upcoming Events

Board of Directors Meeting

September 1st at the Cumberland Valley Girl Scout Council Building – 7:30 pm

October 6th at the Cumberland Valley Girl Scout Council Building – 7:30 pm

Membership Meeting *(note new dates and location)*

September 21st at the Cumberland Valley Girl Scout Council Building – 7:30 pm

October 19th at the Cumberland Valley Girl Scout Council Building – 7:30 pm

Star Parties

September 23rd – BSAS Public Star Party at Bells Bend Outdoor Nature Center

September 24th - BSAS Private Star Party at Natchez Trace mile marker 435.5

October 1st – BSAS Public Star Party at Long Hunter State Park

October 29th - BSAS Private Star Party at Natchez Trace mile marker 412

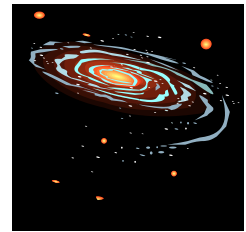
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Complexities of the Universe

Wednesday, September 21, 2011
Cumberland Valley Girl Scout Council Building
7:30 pm



Dr. Eric Klumpe, of MTSU's Department of Physics and Astronomy, will be delivering a fascinating lecture called "The Complexities of the Universe." See you there!



From The President

Greetings from your BSAS president. The long dry spell we went through in August has finally ended with the storm that won't quit: tropical storm Lee. The month of August brought us unprecedented clear skies and dry conditions. While astronomers were rejoicing over the excellent seeing conditions our yards were turning brown. Mine went from brown to green overnight, though, when the remnants of Lee first came through. Not only have I been unable to do any observing since the first of the month, now I'm going to have to cut my grass again.

The clear, dry conditions we had in August made for an excellent weekend of observing at Mark Manner's Spot Observatory for our annual BSAS Retreat. The Retreat was originally started as a substitute for the TNSP when the club decided to stop holding our fall star party. The first Retreats were held in the fall but this year it migrated to late summer. The skies were great and a number of people showed up with and without telescopes. Saturday evening I counted 11 'scopes on the field, not counting Mark's equipment. The last of us departed around 1am after a nearly perfect evening. For those of us that did stay late, we got an excellent view of Jupiter and its moons. The giant planet is slowly moving in to our evening skies to replace the loss of Saturn which has sunk into the evening twilight. Our thanks go out to Mark and Anne Manner for hosting us for another year.

I want to remind everyone that starting this month we will be meeting at the Cumberland Valley Girl Scout Council building on Granny White Pike and Harding Place. There is a map link to it on the BSAS website. For any that are interested, we are restarting a tradition that has faded over the last few years: dinner with the speaker before the meeting. We will join our speaker at the Piccadilly Cafeteria on Murfreesboro Road at around 5:30pm. Any that wish to join us are welcome. We start the meeting at 7:30pm as usual on Wednesday September 21. Our speaker this month is Dr. Eric Klumpe of Middle Tennessee State University talking to us on "Complexities of the Universe". I have it on good authority from someone that has seen him give this talk to another audience that it is a truly fascinating presentation so you won't want to miss it.

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"From our home on the Earth, we look out into the distances and strive to imagine the sort of world into which we are born."

Edwin Hubble
1889-1953

FREE TELESCOPES!

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, and a waiting list may be 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 Lonnie Puterbaugh at (615) 661-9540.

Observing Highlights all times listed are Central Standard Time

LUNAR PHASES

September 2011

09/04 FIRST Quarter
09/12 FULL Moon
09/20 LAST Quarter
09/27 NEW Moon

October 2011

10/04 FIRST Quarter
10/12 FULL Moon
10/20 LAST Quarter
10/26 NEW Moon

OBJECTS VISIBLE THIS MONTH

Messier Objects:

Globular Clusters:

M13, M14, M22, M28, M54, M69, M70, M92

From the President, cont.

I would like to thank Dr. Erika Grundstrom of Vanderbilt for her interesting talk on the massive binary system PSR B1269-63. Her fascination with this unusual binary system was obvious. Anyone who makes such a large prop to illustrate such a system and then keeps it for a number of years is definitely dedicated. I also want to thank her for the handout on TN science standards relevant to astronomy. Many of us visit schools with telescopes and/or displays and the ability to link what we do to the science standards that the teachers are required to cover is very helpful.

Finally, I want to be sure everyone knows about our upcoming star parties. Our first is on Friday September 23 at the Bells Bend Nature Center starting at 8:00pm. This is possibly the darkest site we hold public star parties at so bring your 'scope or just bring yourself for an evening of deep sky gazing. The other star party is a Long Hunter State Park on Saturday October 1 starting at 7:30pm. This one is a few days before the First Quarter Moon so we should have a pretty crescent moon to observe along with Jupiter rising later in the evening.

See you all at the public meeting at the Girl Scout Council Building on Granny White Pike and Harding Place on Wednesday September 21. Until then...

Clear Skies!

Dr. Spencer Buckner
President

Happy Birthday Star Trek

by Robin Byrne

This month we celebrate the anniversary of a work of fiction that went on to influence society in a myriad of ways. In 1961, Gene Roddenberry first conceived of a television series he described as a Western set in outer space. His intent was to incorporate into each episode a combination of action, adventure, plus a moral to the story. The pilot episode, "The Cage," was rejected by NBC, but they were interested enough to suggest a change of cast and encouraged a second pilot, which was titled "Where No Man Has Gone Before."

On September 8, 1966, NBC aired the first episode of "Star Trek," which was a success. Roddenberry was true to his intent and included morality tales in each episode. He wanted the show to illustrate what humanity had the potential to become. As Roddenberry said, "[By creating] a new world with new rules, I could make statements about sex, religion, Vietnam, politics, and intercontinental missiles. Indeed, we did make them on Star Trek: we were sending messages and fortunately they all got by the network." Despite a loyal fanbase that, through a letter writing campaign, succeeded in convincing NBC not to cancel after the second season, "Star Trek" was canceled after the third season. It then went on to even greater popularity through reruns, eventually spawning five more television series (including an animated series), eleven feature films, games, hundreds of novels, and traveling museum exhibits of props from the shows and movies. But "Star Trek" lived on in other ways, as well.

For the era of the late 1960's, "Star Trek" was definitely ahead of its time when dealing with race and ethnicity. Roddenberry insisted on having a crew comprised of people from diverse backgrounds, much to the displeasure of the network. Showing people who were American, African, Japanese, Scottish, Russian, and even Vulcan, working together as one crew demonstrated visually the ideal of Earth uniting as a single planet without conflicts over nationality. Women were depicted as holding positions such as: scientists, technicians, and medical personelle. And, in an era of racial strife, whites and blacks worked side-by-side as equals, with "Star Trek" daring to show the first televised interracial kiss, between Kirk and Uhura. Whoopi Goldberg has often recounted how, as a child, she was thrilled to see a black woman on TV who wasn't a maid, and the influence that had on her future. Mae Jamison, the first African-American woman in space also grew up watching "Star Trek" and being inspired by the character of Uhura. NASA even got the assistance of Nichelle Nichols, who played Uhura, to help recruit woman and African-Americans into the astronaut corps.

Not only woman and African-Americans were influenced by "Star Trek." Many people in the field of science and engineering grew up with the show, and were driven to make fantasy a reality. Physicist Stephen Hawking admits to being a fan, and has even made a

guest appearance on "The Next Generation." After receiving hundreds of letters from fans, NASA named the first space shuttle "Enterprise," though it never flew in space due to being too heavy. Even our everyday language has been influenced by this show, with phrases like "Beam me up, Scotty."

With "Star Trek" influencing so many future scientists, how much of its technology has become a reality? You don't need to look farther than your cell phone to see a communicator, Bluetooth earpieces share an eerie resemblance to what was worn by Uhura, and computers that use voice recognition don't even have to respond with "Working" for us to know that our commands have been understood. Even some of the more extreme "Star Trek" technology is appearing in rudimentary forms. The ever-present tricorder now has a counterpart in a handheld device used on the International Space Station to detect bacteria and fungi. The universal translator may be a ways off in the future, but our military use a Voxtec Phraselator which can understand and speak 15,000 commonly used phrases in 50 different languages. In "The Next Generation," the holodeck creates a holographic reality, which today's 3D technology is trying to reproduce, and British researchers are working on a helmet that electronically stimulates the brain and other senses to simulate a real experience. The visor worn by Geordi La Forge may not be a reality, but doctors can electronically stimulate the retina, or even create an artificial retina, for blind patients to regain a small amount of vision.

It is hard to believe that it was 45 years ago that "Star Trek" began, and amazing how much it still lives on today. Gene Roddenberry's dream is slowly becoming reality, and we are all the richer because of his vision of what this world could be.



Image: Wikipedia

Board Meeting Minutes – August 4, 2011

Bob Rice, Secretary

The board of directors of the Barnard-Seyfert Astronomical Society (BSAS) met in regular session at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee on August 4, 2011. A sign-in sheet was passed around in lieu of a roll call. Board members Dr. Spencer Buckner, Steve Cobb, Jana Ruth Ford, Bill Griswold, Dr. Donna Hummell, Curt Porter, Dr. Terry Reeves, Bob Rice, and Theo Wellington were present. Board members Santos Lopez, Kris McCall, and Bob Norling were absent. Past President Joe Boyd was present as a guest. A quorum being present, President Dr. Spencer Buckner called the meeting to order at 7:38 P.M.

Bob Rice, acting for Treasurer Bob Norling, reported that the BSAS had \$2,204.48 in its regular checking account and \$407.36 in its equipment account. He also informed the board that Mr. Norling had received a copy of the BSAS' insurance policy that he would bring to the next board meeting. In addition, Mr. Rice reported that the scheduled membership meeting speakers for August 17, Dr. Erika Grundstrom, and for September 13, Dr. Eric Klumpe, were able to change their speaking days from Thursday evening to Wednesday evening without any problem.

Dr. Spencer Buckner announced these upcoming events and star parties:

- Aug 06 – Public star party at the Warner Parks from 8:00 P.M. to 10.00 P.M.
- Aug 26 & 27 – BSAS Annual Retreat at former president Mark Manner's Spot Observatory.

Dr. Buckner reminded the board that the Society's public membership meeting dates will change from the third Thursday of each month to the third Wednesday starting with the upcoming August 17 meeting. He also pointed out that the board would continue to meet on the first Thursday of each month until January 2012 when the board will meet on the first Wednesday of each month beginning on January 4. However, he noted that the July 2012 board meeting would be held on Thursday, July 5 because Wednesday, July 4 was a holiday.

Dr. Spencer Buckner asked that a Nominating Committee be formed to determine a list of recommended candidates for officers and two board member positions for 2012. He noted that Jana Ruth Ford and Curt Porter were the two board members whose terms would expire at the end of the year. Curt Porter volunteered to serve as Chairman of the Nominating Committee and Bill Griswold, Bob Rice, and Theo Wellington volunteered to assist him. The Committee will announce its recommendations at the October public membership meeting with a vote to take place at the following November meeting. Members may also nominate candidates from the floor at the November meeting. All newly elected officers and directors will be introduced at the December meeting and assume their duties at the January 2012 meeting.

Dr. Spencer Buckner presented the board with a proposed final draft of the Memorandum of Understanding (MOU) being negotiated between the Adventure Science Center (ASC) and the BSAS regarding the Society's use of their facilities. Dr. Buckner suggested that, although this draft did not contain everything that the Society wanted, it was at least a feasible compromise. The board revisited several provisions contained in the draft MOU and, following additional discussion and expressed concerns, agreed with Dr. Buckner's assessment. However, several board members took exception to item number 4 in the Private Event/Meeting Policies attached as an addendum to the MOU that restricted the BSAS from announcing the annual December potluck dinner on its website. After reviewing this at some length the board noted that this communication could be effected by sending individual emails to the membership without using the website and, with some misgivings, decided to accept the MOU as written without additional negotiation. Curt Porter put this decision into a motion that was seconded by Bob Rice and subsequently passed by a unanimous voice vote of the board.

Curt Porter moved that the board formally accept the recent online vote by the membership to change the BSAS' public meeting date from the third Thursday of each month to the third Wednesday of each month beginning with the August 2011 meeting. Dr. Donna Hummell seconded this motion that was subsequently passed by a unanimous voice vote of the board. Curt Porter then moved that the board formally change its monthly meeting date from the first Thursday of each month to the first Wednesday of each month beginning with the January 2012 meeting. Jana Ruth Ford seconded this motion that was subsequently passed by a unanimous voice vote of the board.

Since there was no further business to discuss, President Dr. Spencer Buckner declared the meeting to be adjourned at 8:30 P.M.

OFFICERS

Dr. Spencer Buckner
President

Dr. Donna Hummell
Vice-President

Bob Rice
Secretary

Bob Norling
Treasurer

Directors at Large

Steve Cobb
Jana Ruth Ford
Bill Griswold
Santos Lopez
Curt Porter
Theo Wellington
Kris McCall (*ex officio*)

Steve Wheeler
Newsletter Editor
wsw261@hotmail.com

Our AUGUST monthly meeting will be held at:



The Adventure Science Center

800 Fort Negley Blvd
Nashville, TN 37203

Our SEPTEMBER monthly meeting will be held at:

The Cumberland Valley Girl Scout Council Building

4522 Granny White Pike
Nashville, TN 37204

Monthly Meeting Minutes – August 17th, 2011

Bob Rice, Secretary

President Dr. Spencer Buckner called the meeting to order at 7:36 P.M. in the Jack Wood Hall at the Adventure Science Center (ASC) and welcomed new members and visitors. Treasurer Bob Norling reported that the BSAS had \$2,204.48 in its regular bank account and \$407.36 in its equipment account. Dr. Buckner announced these upcoming events and star parties:

- Aug 06 – Public star party at the Warner Parks from 8:00 P.M. to 10:00 P.M.
- Aug 26 & 27 – BSAS Annual Retreat at former president Mark Manner's Spot Observatory. Please contact Mr. Manner if you are planning to spend Friday night (August 26) there.
- Sep 23 – Public star party at Bells Bend Park from 8:00 P.M. to 10:00 P.M.

Responding to a member's inquiry, Dr. Buckner also noted that the Society had answered a request from Bowie Nature Park in nearby Fairview, Tennessee to put on a star party there on September 30, 2011. Dr. Buckner explained that this event was not a regularly scheduled recurring star party. Bob Rice provided additional details regarding Bowie Park's location, staff, and features. Several members expressed an interest in helping out.

Dr. Spencer Buckner announced with regret that the BSAS and the ASC were unable to reach an agreement on the Memorandum of Understanding being negotiated between the two organizations. He therefore pointed out that future membership meetings will be held at the Cumberland Valley Girl Scout Council Headquarters building located at 4522 Granny White Pike in Nashville beginning with the upcoming September 21 meeting. Dr. Buckner stated that Dr. Eric Klumpe from Middle Tennessee State University will present a program on "Complexities of the Universe" at that meeting.

Kris McCall reminded the audience that it was not too early to begin planning for the solar transit of Venus that will occur on June 5, 2012 and invited members to join with the ASC in scheduling public activities for that event. Ms McCall explained that North American observers will only be able to see the first part of the transit due to the sun setting before it was over. She also noted that additional information was available on the internet at transitofvenus.org.

Dr. Spencer Buckner introduced Dr. Erika Grundstrom, Research Assistant Professor at Vanderbilt University, who delivered the evening's program on "Massive Binary Star System PSR B1259-63." However, drawing upon her experience as Vanderbilt University's Director of Astronomy Outreach and Dyer Observatory Liaison, Dr. Grundstrom first quickly passed along some suggestions for working with area school teachers. She pointed out that it was best to contact individual teachers involved in science instruction because there was no "central clearing house" that could be called upon in the Metro Nashville public school system. She strongly suggested using the required Tennessee Science Standards as touchstones for those contacts and handed out copies of her self-prepared "Tennessee Science Standards Relevant to Astronomy" to serve as guidelines.

Next Dr. Grundstrom spoke about the massive x-ray binary star system PSR B1259-63 comprised of a large, hot, and blue spectral type B star (SS 2883) and a much smaller neutron pulsar (PSR B1259-63). This pair, located in the southern hemisphere constellation Crux, is one of only three such known systems; however, two other possible candidates are currently being studied. The B star is about 30 solar masses and spins on its axis about once every 26 hours – fast enough to have thrown off gaseous material from its equator into a surrounding disk. When the companion pulsar passes through this disk, its strong magnetic field causes emissions of x-rays, gamma rays, and radio waves. Since the earth's atmosphere blocks gamma rays, these emissions can only be detected by orbiting man-made satellites. Dr. Grundstrom graciously and enthusiastically answered questions from the audience following her presentation.

Since there was no additional business for discussion, President Dr. Spencer Buckner declared the meeting to be adjourned at 8:58 P.M.

BSAS Affiliations

The Astronomical League
<http://www.astroleague.org/>



The Night Sky Network
<http://nightsky.jpl.nasa.gov/>



International Dark Sky Association
<http://www.darksky.org/>



The Adventure Science Center
<http://www.adventuresci.com>



Solar System Size Surprise

Space Place Partners Article August 2011

By Dr. Tony Phillips

News flash: You may be closer to interstellar space than you previously thought. A team of researchers led by Tom Krimigis of the Johns Hopkins University Applied Physics Laboratory announced the finding in the June 2011 issue of *Nature*. The complicated title of their article, "Zero outward flow velocity for plasma in a heliosheath transition layer," belies a simple conclusion: The solar system appears to be a billion or more kilometers smaller than earlier estimates.

The recalculation is prompted by data from NASA's Voyager 1 probe, now 18 billion kilometers from Earth. Voyagers 1 and 2 were designed and built and are managed by NASA's Jet Propulsion Laboratory. Aging but active, the spacecraft have been traveling toward the stars since 1977 on a heroic mission to leave the solar system and find out what lies beyond.

To accomplish their task, the Voyagers must penetrate the outer walls of the heliosphere, a great bubble of plasma and magnetism blown in space by the solar wind. The heliosphere is so big, it contains all the planets, comets, and asteroids that orbit the sun. Indeed many astronomers hold that the heliosphere defines the boundaries of the solar system. Inside it is "home." Outside lies the Milky Way. For 30+ years, the spacecraft have been hurtling toward the transition zone. Voyager 1 is closing in.

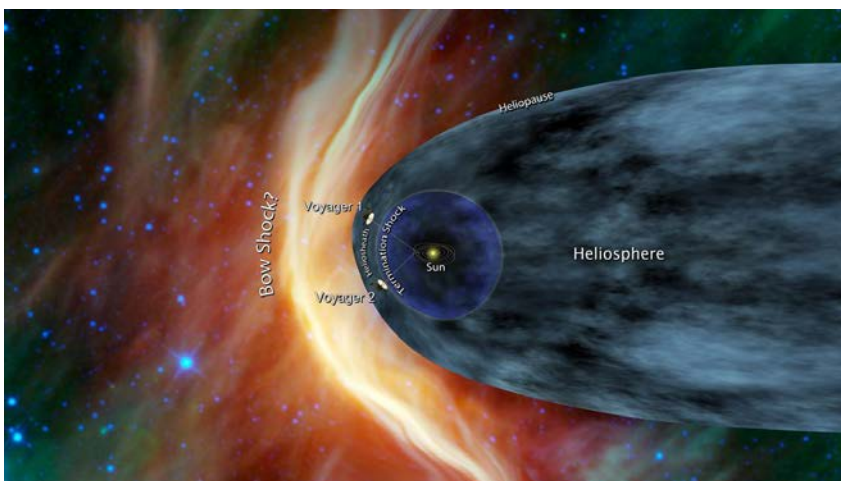
Much of Voyager 1's long journey has been uneventful. Last year, however, things began to change. In June 2010, Voyager 1 beamed back a startling number: zero. That's the outward velocity of the solar wind where the probe is now.

"This is the first sign that the frontier is upon us," says Krimigis.

Previously, researchers thought the crossing was still years and billions of kilometers away, but a new analysis gave them second thoughts. Krimigis and colleagues combined Voyager data with previously unpublished measurements from the Cassini spacecraft. Cassini, on a mission to study Saturn, is nowhere near the edge of the solar system, but one of its instruments can detect atoms streaming into our solar system from the outside. Comparing data from the two locations, the team concluded that the edge of the heliosphere lies somewhere between 16 to 23 billion kilometers from the sun, with a best estimate of approximately 18 billion kilometers.

Because Voyager 1 is already nearly 18 billion kilometers out, it could cross into interstellar space at any time—maybe even as you are reading this article.

"How close are we?" wonders Ed Stone, Caltech professor and principal investigator of the Voyager project since the beginning. "We don't know, but Voyager 1 speeds outward a billion miles every three years, so we may not have long to wait." Stay tuned for the crossing.



This artist's concept shows NASA's two Voyager spacecraft exploring a turbulent region of space known as the heliosheath, the outer shell of the bubble of charged particles around our sun. Image credit: NASA/JPL-Caltech.

Memorandum of a Vote by the Board of Directors Conducted Via Email on August 10-12, 2011

Bob Rice, Secretary

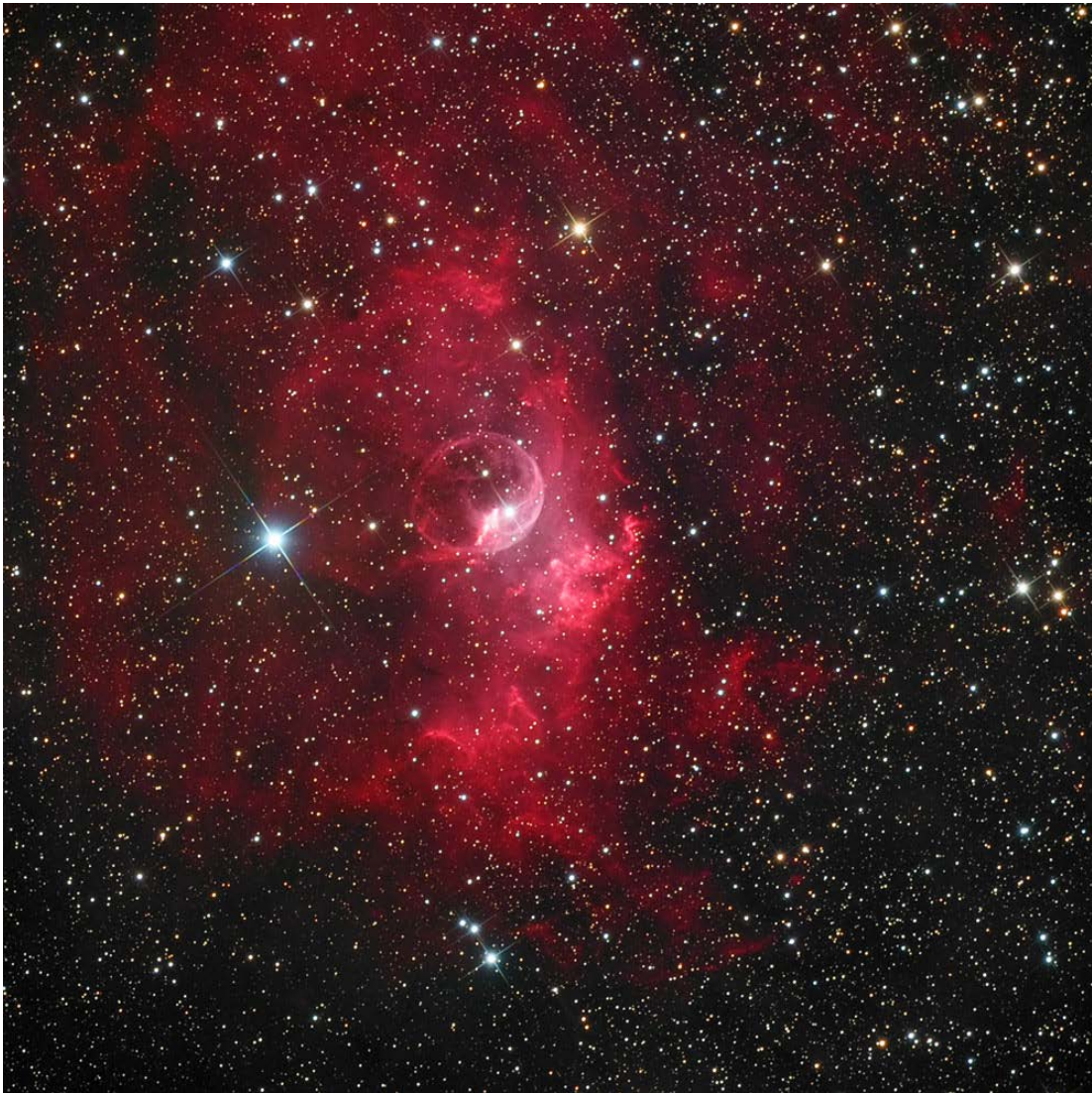
As documented in the minutes of the board of directors meeting held on August 4, 2011 the board voted with some reluctance to accept the draft Memorandum of Understanding (MOU) between the BSAS and the Adventure Science Center (ASC) regarding the Society's use of their facilities. On August 10, 2011 President Dr. Spencer Buckner informed the board by email that there had apparently been considerable second thoughts among the board members about the restrictions the MOU would place upon our club. These restrictions and related discussions of their possible effect are documented in the January through August 2011 board meeting minutes. Dr. Buckner reported that he had received emails from a number of board members and phone calls from others expressing dissatisfaction with the MOU and a desire to not sign it.

Dr. Buckner pointed out in his email that if we did not sign the MOU we would have to move our monthly public meetings to another location. However, he stated that Bill Griswold had contacted the Cumberland Valley Girl Scout Council Headquarters – where we hold our monthly board meetings – and that they would let us use a sufficiently large room for \$10.00 per meeting night. This would cost the Society \$120.00 per year which is \$30.00 less than we would have to pay the ASC as set out in the MOU. Unfortunately, the Girl Scout Council can only let us use that facility on the third Wednesday of the month so we would be unable to change back to the former meeting day on the third Thursday. Dr. Buckner emphasized that if we were going to make this change, it would have to be done before the MOU was signed. Therefore, as authorized in Section 309 of the BSAS Bylaws, he asked for a formal email vote by the board on whether or not to sign the MOU.

On August 12, 2011 Dr. Spencer Buckner emailed the board with the outcome of this vote:

- Board members Steve Cobb, Jana Ruth Ford, Bill Griswold, Dr. Donna Hummell, Santos Lopez, Bob Norling, Curt Porter, and Bob Rice voted not to sign the MOU
- Dr. Buckner also added his "no" vote in this email
- Ex officio board member Kris McCall was not eligible to vote
- Board member Theo Wellington, an ASC employee, abstained from voting
- Past President Dr. Terry Reeves had not yet voted at time of this email but sent his "no" vote the following day on August 13, 2011.

The final result was that ten of the eleven board members eligible to vote elected not to sign the MOU with one abstention. Dr. Buckner reported that Bill Griswold had contacted the Girl Scout Council and that we would begin holding our public monthly membership meetings in their headquarters located at 4522 Granny White Pike on September 21, 2011. He stated that this decision would be formally announced in his "From the President" message in the August 2011 Eclipse newsletter. Lastly, Dr. Buckner expressed his wish that, in light of the long cooperative association between our two organizations, the BSAS' exit from the ASC would be friendly, courteous, and free of acrimony – a sentiment also reflected by several board members during the email voting process.



The Bubble Nebula (NGC 7635)

Image by Mark Manner

Mark writes:

"The image was taken over four nights using the new Montgomery Bell Academy Observatory on Long Mountain near McMinnville, TN. The telescope was operated remotely during data collection. The observatory is complete, although the systems that will be used to vent air from the dome have not yet been activated, and seeing conditions in the dome should be improved in the future as a result. The FWHM of the final image is approximately 2.5 arc seconds."

Become a Member of the BSAS!

Download and print the Application for membership from www.bsasnashville.com (Adobe® Acrobat Reader® required).

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, which include membership in the BSAS and Astronomical League, and subscriptions to their newsletters, are:

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

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

All memberships have a vote in BSAS elections and other membership votes,

Also included are subscriptions to the BSAS and Astronomical League newsletters.

IMPORTANT DUES INFORMATION

To find the expiration date for your current membership, visit our web site at <http://www.bsasnashville.com> and click the Renewals link.

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

**We're on the Web!**

See us at:
www.bsasnashville.com

About Our Organization

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 Council Building 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 www.bsasnashville.com. If you need more information, write to us at info@bsasnashville.com or call Dr. Spencer Buckner at (931) 221-6241.

**BARNARD-SEYFERT
ASTRONOMICAL SOCIETY**
PO BOX 150713
NASHVILLE, TN 37215-0713

