

Upcoming Events

Board of Directors Meeting

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

February 3rd at the Cumberland Valley Girl Scout Council Building – 7:30 pm

Membership Meeting

January 20th at the Adventure Science Center – 7:30 pm

February 17th at the Adventure Science Center – 7:30 pm

Star Parties

January 21st – BSAS Public Star Party at Bells Bend Nature Center 7:30 – 9:30 pm

January 29th – BSAS Private Star Party at Natchez Trace mm 435.5

February 12th – BSAS Public Star Party at Shelby Bottoms Nature Center 7:30 – 9:30 pm

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I Got a Telescope for Christmas – Now What?

Thursday, January 20, 2011
Adventure Science Center
7:30 pm



Need help with your new telescope or accessory? Bring it to the next BSAS meeting at the Adventure Science Center on January 20th and knowledgeable and helpful BSAS members will give you a hand!



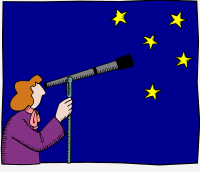
From The President

Welcome to the New Year from your BSAS president! 2011, or at least the second week of it, begins with a blast of snow and a plunge into the deep freeze. It is the depths of winter, though, so such conditions are not entirely unexpected. At least we don't have any star parties scheduled for the first couple of weeks of January that would have to be cancelled. Our first public star party of the year isn't until Friday January 21 at Bells Bend Outdoor Center (starting at 7:30pm). Hopefully by then the weather will moderate some and we will get clear skies and warmer temperatures.

We ended 2010 with a great pot-luck and silent auction Christmas meeting on December 16. The silent auction netted \$241 for the club and everyone enjoyed the program by Charlie Warren on planning and preparing for a nights observing along with his favorite objects to observe for the winter and spring. The Christmas program by Charlie Warren has become somewhat of a tradition over the last several years which I hope will continue into the future. Charlie always has a great presentation which is entertaining and informative; we are fortunate to have him as a club member. Thanks Charlie.

This month's program is another tradition: I got a new telescope for Christmas, Now What?!? While the November program was designed to help members and guests in making an informed choice about an astronomy toy, the January program is aimed at helping you figure out how to use the new toy you got. The two programs really are meant to work together so that members and guests will get the right telescope for themselves or their child and put it to use rather than put it in the closet. I encourage everyone that got a new telescope for Christmas (or whenever you got it) to bring it to the meeting on January 20. Even if you already know how to use it, bring it anyway because there is likely someone that got a telescope similar to if not just like yours and they might not know how to operate it. For the November meeting I brought a truck load of telescopes and equipment, for this month's meeting I am only bringing my new 8" Orion Go-To Dobs. After a brief introduction we will break up into groups around the various telescopes and mount styles and show each other how they are set-up and operated. Then, if the weather cooperates, we can bring our new telescopes out to the public star party at Bells Bend the following evening and put them to use observing the winter skies over Nashville.

Continued on Page 2



"We have a unique vantage point here aboard the International Space Station. As I look out the window, I see a very beautiful planet that seems very inviting and peaceful. Unfortunately, it is not."

Commander Scott Kelly
ISS Expedition 26

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

January 2011

01/04 NEW Moon
01/12 FIRST Quarter
01/19 FULL Moon
01/26 LAST Quarter

February 2011

02/02 NEW Moon
02/11 FIRST Quarter
02/18 FULL Moon
02/26 LAST Quarter

OBJECTS VISIBLE THIS MONTH

Messier Objects:

Galaxies:
M33, M74, M77

Open Clusters:
M34, M52, M103

Planetary Nebulae:
M76

From the President, cont.

The weekend after, January 29, is a private star party at Natchez Trace mile 435.5 so if we get clouded out on the 21st, hopefully we will have clear skies for the 29th. Whenever it becomes clear, I hope the January program will help you to get out your new toy and enjoy the beauty of the heavens with it.

This month marks the beginning of my second year as BSAS president. While several of the things I had hoped to accomplish in my first year did happen, there is still more to do this year. My biggest goal for this year is to grow the membership of the club and reduce the average age of our members. That doesn't mean I have found the fountain of youth that will make us all younger, it means I want to recruit younger people to join the club. I especially want to reach out to the college age crowd.

There are a number of universities in the Nashville area and I want to try and get them to come to our meetings. As a physics and astronomy professor at one of those schools (Austin Peay State University), I have found that bribing students with bonus points is a good way of getting them in the door. I know that Jana Ruth Ford and others at Middle Tennessee State University have used the same technique with some success but we are missing the biggest pool of students that lie between MTSU and APSU, namely Nashville. I plan to invite speakers from Vanderbilt and Tennessee State to give talks this year and hopefully bring some of their students to the meetings.

In addition, Santos Lopez had developed a BSAS Facebook page so that may help us to tap into the younger crowd. Finally, you can help. Invite the kid next door or down the street to one of our meetings or public star parties. If we can get them in the door, perhaps we can get them to join. Getting young people into the club is a snowball effect, the more we get, the more we will get; it's just a matter of getting those first few to get the ball rolling.

See you on the 20th!

Dr. Spencer Buckner
President

Happy Birthday Ceres

by Robin Byrne

This month we celebrate the anniversary of the discovery of a body whose place in our solar system has experienced several changes. In 1766, Johann Titius discovered a mathematical pattern relating to the distances of the known planets from the Sun. When Herschel's discovery of Uranus in 1781 continued to follow the mathematical pattern, even more credence was given to its validity. There was one problem. The pattern showed that a planet should exist at a distance of 2.8 Astronomical Units (AU) from the Sun, but none were known to exist. Johann Bode suggested such a planet should exist, so in 1800, twenty four respected astronomers were asked to initiate a search for this missing planet.

One of the astronomers contacted was Giuseppe Piazzi. Ironically, before even receiving the request, Piazzi had already found something. On the night of January 1, 1801, Piazzi was identifying stars from LaCaille's catalog. Next to one of the catalogued stars was another star-like object. However, he found, over the course of multiple observations, that this object moved relative to the stars. At first, Piazzi thought he had found a comet, but it's motion over the next month was slower than a comet, and Piazzi began to suspect he had discovered a planet. On January 24 of that year, Piazzi contacted two colleagues to inform them of his discovery. After several more observations through April, Piazzi made the announcement official, and his findings were published in September 1801 in a professional journal. At this time the object was in conjunction with the Sun, so it couldn't be observed again until the end of the year. On December 31, 1801, its location was confirmed.

Piazzi was given the honor of naming this new object. He chose the name Ceres Ferdinandea. Ceres was the Roman goddess of plants, the harvest and motherly love. "Ferdinandea" was in honor of King Ferdinand III of Sicily. Other nations did not approve of the Sicilian king being so honored, and the name became, simply, Ceres.

When it was first discovered and confirmed, the world hailed Ceres as the newest planet in the solar system. Over the next few years, three more objects were discovered in the same region: Pallas, Juno and Vesta, all of which were designated as planets. These four objects continued to be called planets for almost 50 years, at which time a new era of discovery found many more objects in the region. Reverting to William Herschel's suggestion of calling these objects "asteroids," Ceres, Pallas, Juno and Vesta were dethroned from planetary status and became members of the asteroid belt. With a similar process, Pluto lost its planetary status, and a new category, dwarf planet, was created for objects that orbit the Sun, are gravitationally round, but which share their orbit with similarly sized objects. With this new category, Ceres is now designated a dwarf planet, as well as, still being considered an asteroid.

After many different estimates were made, we now know Ceres to have a diameter of about 950 km (roughly the size of Texas). Best estimates of its mass place it near 9.4×10^{24} kg. This makes Ceres the largest and most massive object in the asteroid belt, containing roughly half the mass of all remaining asteroids combined. With that much mass, Ceres has a roughly spherical shape. It is the only non-irregular asteroid known.

Having a spherical shape, it is thought that Ceres may be the only surviving protoplanet in the asteroid belt. Most protoplanets either merged to form the known planets, were destroyed by collisions, or were ejected from the solar system due to gravitational interactions with Jupiter. If Ceres truly is a protoplanet, it will be one of the few places in our solar system comprised of materials that are relatively unchanged from the early solar system of 4.5 billion years ago.

Given its size and composition, Ceres is also thought to be differentiated, which means that its interior divided into layers during a period when its interior was molten. Its layers would primarily be comprised of a rocky core covered by an icy mantle. Ceres is thought to have a significant water and ammonia ice component. The presence of water ice has led to speculation that Ceres may

have a liquid ocean of water below an icy crust, much like Europa is thought to have. Given the estimated size of the mantle, Ceres could have more fresh water than Earth. Observations by the Keck telescope made in 2002 seem to confirm this hypothesis. With the potential of liquid water, Ceres has been considered another possible candidate for hosting life in our solar system. An alternative model is not nearly as provocative, suggesting that Ceres is a porous conglomerate of smaller asteroids and may not even be differentiated.

Spectral analysis of Ceres definitely indicate the presence of water, but do not indicate whether it is frozen or liquid, on the surface or trapped in the interior. Given its location in the asteroid belt, Ceres has likely experienced innumerable impacts. However, Hubble observations indicate a topography with few deep impact sites. This may be the result of the icy surface "relaxing" or slowly creeping to fill in the craters, similar to the motion of glaciers. Similar topography has been observed on the icy moons of Jupiter and Saturn. Ceres is also expected to have faulting features similar to those observed on Europa. A few permanent features have been imaged by Hubble, including what might be a large crater, which has been given the name Piazzi.

Ceres may also have a tenuous atmosphere. Any water ice on its surface will experience sublimation when sunlight hits it directly. If the mantle has any liquid component, then water will seep to the surface through faults and cracks, where it will freeze if in darkness, or sublimate in sunlight. There were observations of water vapor at Ceres' poles, but this has yet to be conclusively confirmed.

Many of these unanswered questions will be addressed by the Dawn Mission. Launched in 2007, Dawn will first fly by Vesta in 2011 before going into orbit around Ceres in 2015. With instruments that can study Ceres in both the visible and the infrared, plus detectors for both gamma rays and neutrons, we will learn more about Ceres than we've ever known. Fittingly, that same year, New Horizons will give us our first up-close look at another dwarf planet, Pluto.

Observations of Ceres from Earth are challenging due to its small size and faintness, but not impossible. When closest to Earth, Ceres shines at magnitude 6.7, which is well within the grasp of binoculars. Even at its faintest, magnitude 9.3, larger binoculars and small telescopes can pick it out. Our next opportunity to observe Ceres at opposition will be December 18, 2012. Uh oh! Could Ceres be the harbinger of the end of the world?!? Probably not. But the next time it is well placed for observing, make the effort to observe our closest dwarf planet neighbor and ponder about the mysteries surrounding this enigmatic world.

References:

Ceres (dwarf planet) - Wikipedia
[http://en.wikipedia.org/wiki/Ceres_\(dwarf_planet\)](http://en.wikipedia.org/wiki/Ceres_(dwarf_planet))

Asteroid 1 Ceres - Explore the Cosmos | The Planetary Society
http://www.planetary.org/explore/topics/asteroids_and_comets/ceres.html

Space.com -- Largest Asteroid Might Contain More Fresh Water than Earth by Bjorn Carey
http://www.space.com/scienceastronomy/050907_ceres_planet.html

Board Meeting Minutes – December 2, 2010

Donna Hummel, M.D., Vice President

The board of directors of the Barnard-Seyfert Astronomical Society met in regular session at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee on December 2, 2010. A sign-in sheet was passed around in lieu of a roll call. Board members Dr. Spencer Buckner, Bill Griswold, Dr. Donna Hummel, Kris McCall, Bob Norling, Curt Porter, Theo Wellington, and Dr. Terry Reeves were present. Board members Jana Ruth Ford, Santos Lopez, Bob Rice, and Tony Campbell were absent. A quorum being present, President Dr. Spencer Buckner called the meeting to order at 7:46 P.M.

Treasurer Bob Norling reported that the BSAS had \$2,170.43 in its regular checking account and \$166.30 in its equipment account. Mr. Norling also announced that he would be filing the annual report, and wished to list Mr. Joe Boyd as the Registered Agent of the BSAS, although this could be changed in the future. Mr. Norling also announced that has received the Deep Sky Mysteries calendars and will offer them to the membership at a cost of \$10 per calendar. The RASC 2011 handbooks have not arrived, but are due soon.

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

- Dec 04 – Private star party at Natchez Trace Parkway mile marker 435.5. There is a 40% chance of rain forecasted.
- Dec 11 – Public star party at the Warner Parks from 7:30 to 9:30 P.M.
- Dec 13- The BSAS received a request this week from Tennessee Greenways to assist them at an event they are hosting at Cummins Falls at 7:00 P.M. This is a Monday evening.
- Dec 16- Monthly meeting and Annual Potluck Dinner at ASC
 - BSA supplies meat, drinks, and utensils- Mr. Bob Rice will bring these to the meeting. Members will bring side dishes and desserts.
 - Silent Auction- members are welcome to bring their items for donation
 - Amateur Astronomy magazine editor Mr. Charlie Warren will be the speaker for the evening on a topic yet TBA
- Dec 21- Tuesday 12 midnight-2:30 A.M. Public star party to view the Lunar eclipse at ASC. Ms. Kris McCall confirmed the date and time. The eclipse will commence at 12:33 A.M. and reach totality at 1:41 A.M. The ASC plans to screen the movie "Dark Side of the Moon".

The calendar beyond January is not yet finalized. Dr. Buckner stated that the BSAS does not yet have an agreement with the National Parks Service for use of the Natchez Trace for private star parties in 2011. Mr. Bill Griswold volunteered to contact them and seek a new contract for the year.

Dr. Buckner mentioned potential upcoming star parties, with January 8 being the first likely date for a Private Star Party at mile marker 412, Water Valley Overlook. Other star parties include a planned Public Star Party on January 21 at Bell's Bend. Ms. Kris McCall stated that she would send the listing of 2011 Star Parties to the members of the Board by email.

At this point, Ms. Kris McCall and Ms. Theo Wellington were asked to recuse themselves while the Board discussed the issue of the planned Memorandum of Understanding with the ASC.

Mr. Curt Porter led the discussion. He and Dr. Buckner will contact the CEO of the ASC, Ms. Susan Duvenhage, to schedule a meeting as an initial approach. They plan to compose a draft MOU, and present it to the Board for further discussion and possible approval. Once approved by the Board, the MOU would then be presented to the general membership at a monthly meeting. The Board discussed possible items to be included in the MOU, such as the individual roles of the ASC and the BSAS in regard to their relationship. The discussion having concluded, Ms. Kris McCall and Ms. Theo Wellington returned to the meeting.

Dr. Buckner also announced that the following Committees for 2011 need to be established: Star Party Committee and Programs Committee. Mr. Bill Griswold and Dr. Terry Reeves volunteered to join Dr. Buckner to form the Star Party Committee, and they would seek Mr. Lonnie Puterbaugh to possibly join them as well. A potential meeting date of December 9 was discussed. The January program will be a follow-up of the "All I want for Christmas Are Astronomy Toys", with Mr. Santos Lopez and others assisting members in setting up their newly acquired equipment. Dr. Terry Reeve's mentioned that the February meeting is planned to be "What's Up?". Dr. Buckner stated that he would approach the following as potential members for the Programs Committee: Mr. Bob Rice, Dr. Terry Reeves, Ms. Jana Ruth Ford, Mr. Randy Smith.

Ms. Kris McCall mentioned that she was approached this week by a member of IRIS, the Incorporated Research Institutions for Seismology. Late 2011-2012 will be the 200th anniversary of the major earthquake that occurred along the New Madrid fault in TN. They asked whether the BSAS had any interest in participating in a public event yet to be announced, to commemorate this event. One suggestion mentioned was a joint meeting of the BSAS with a local Geology club.

Since there was no further business to discuss, Dr. Spencer Buckner declared the meeting to be adjourned at 8:36 P.M.

OFFICERS

Dr. Spencer Buckner
President

Dr. Donna Hummel
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

**Monthly meetings
are held at:**



**The Adventure
Science Center**

**800 Fort Negley Blvd
Nashville, TN 37203**

Monthly Meeting Minutes – December 16, 2010

Bob Rice, Secretary

Members began arriving at the Adventure Science Center (ASC) around 6:30 P.M. - an hour earlier than the usual starting time - for the Society's December meeting and annual Christmas potluck dinner. Following our long-standing tradition the BSAS provided the meats, drinks, plates, and dining utensils while the members brought a sumptuous array of side dishes and desserts. Once the food was set up on the tables President Dr. Spencer Buckner called the meeting to order at 7:03 P.M., welcomed members and guests, and asked Joe Boyd to say the blessing. Everyone then went through the buffet line and began dining. This activity was intermingled with forays to examine and place bids on items at the silent auction tables.

Treasurer Bob Norling reported that the BSAS had \$2,280.43 in its regular bank account and \$166.30 in its equipment account. Dr. Spencer Buckner announced these upcoming star parties and other events:

- Dec 21 - Dark Side of the Moon Lunar Eclipse Party at the ASC from midnight to 2:30 A.M.
- Jan 21 - Public Star party at Bells Bend Nature Center starting at 7:30 P.M.
- Jan 29 - Members only private star party at Natchez Trace Parkway mile marker 435.5.

Dr. Buckner noted that the January 29 private star party was contingent upon the National Park Service renewing our permit. He also reminded members that they could purchase copies of the Royal Astronomical Society of Canada's 2011 Observer's Guide, Guy Ottewell's 2011 Astronomical Calendar, and Kalmbach Publishing Company's 2011 Deep Space Mysteries calendar from Treasurer Bob Norling at a discount from the published price.

Dr. Spencer Buckner invited everyone who received a telescope for Christmas and wanted to learn more about using it to bring it to his presentation on "I Got a Telescope for Christmas - Now What?" at the January 20, 2011 membership meeting. He explained that after briefly covering the basic telescope types, he and other BSAS members would be available to assist owners with their new gifts. Curt Porter asked members to pick up their nametags following tonight's meeting and take them home.

Dr. Spencer Buckner introduced Amateur Astronomy Magazine editor and BSAS member Charlie Warren who delivered the evening's program on "Gallery of Winter & Spring Favorites: How I Plan and Observe." Mr. Warren outlined a structured approach to observing that included consideration of:

Location; Sky Conditions; Telescopes & Other Equipment; Audience - Fellow Amateurs, Guests, or Public; Current Astronomical Events; Current Inspiration & Enthusiasm Level; Project or Observing List/Program; Sketch or Record Data; Resources; Targets & Timing; Visible Horizons

Mr. Warren suggested researching objects to be viewed as an enhancement to the observing process and explained that even the faintest fuzzy took on more interest if you knew more about what you were seeing. He also recommended determining how far away the target was and consideration of the telescope as a "time machine" to further whet the observing appetite.

Mr. Warren then described and showed photos of some of his personal favorite objects. These included:

The Rosette Nebula, Thor's Helmet (NGC 2359 Nebula), NGC 2362 (Open cluster), The Eskimo Nebula, M46 & NGC 2438 (Open cluster with a planetary nebula), Hickson 44 (4 different types of galaxies), NGC 3242 (Ghost of Jupiter planetary nebula), NGC 3521 (Spiral galaxy), Leo Trio (Galaxy group), Whale & Pup (2 galaxies), Hockey Stick (Unusual galaxy), NGC 4565 (Spiral galaxy with prominent dark gas lanes), NGC 3839 Ring Tail (2 interacting galaxies)

Mr. Warren concluded his presentation with these four recommendations: (1) Maintain an inquisitive sense of wonder; (2) Pass on your enthusiasm for astronomy; (3) Offer yourself up to teachers; and (4) Most importantly - have fun! He then graciously offered to answer questions from the audience.

Since there was no additional business to discuss, President Buckner declared the membership meeting to be adjourned at 8:40 P.M.

PS: Immediately following the adjournment Kris McCall announced that the silent auction had taken in \$241.00.

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/>



Astronomers Stumble onto Huge Space Molecules

Space Place Partners Article, December 2010

By Trudy E. Bell and Dr. Tony Phillips

Deep in interstellar space, in the swirling gaseous envelope of a planetary nebula, hosts of carbon atoms have joined together to form large three-dimensional molecules of a special type previously seen only on Earth. Astronomers discovered them almost accidentally using NASA's Spitzer Space Telescope.

"They are the largest molecules known in space," declared Jan Cami of the University of Western Ontario, lead author of a paper with three colleagues published in *Science* online on July 22, 2010, and in print on September 3.

Not only are the molecules big: they are of a special class of carbon molecules known as "fullerenes" because their structure resembles the geodesic domes popularized by architect Buckminster Fuller. Spitzer found evidence of two types of fullerenes. The smaller type, nicknamed the "buckyball," is chemical formula C₆₀, made of 60 carbon atoms joined in a series of hexagons and pentagons to form a spherical closed cage exactly like a black-and-white soccer ball. Spitzer also found a larger fullerene, chemical formula C₇₀, consisting of 70 carbon atoms in an elongated closed cage more resembling an oval rugby ball.

Neither type of fullerene is rigid; instead, their carbon atoms vibrate in and out, rather like the surface of a large soap bubble changes shape as it floats through the air. "Those vibrations correspond to wavelengths of infrared light emitted or absorbed—and that infrared emission is what Spitzer recorded," Cami explained.

Although fullerenes have been sought in space for the last 25 years, ever since they were first identified in the laboratory, the astronomers practically stumbled into the discovery. Co-author Jeronimo Bernard-Salas of Cornell University, an expert in gas and dust in planetary nebulae, was doing routine research with Spitzer's infrared observations of planetary nebulae with its spectroscopy instrument. When he studied the spectrum (infrared signature) of a dim planetary nebula called Tc 1 in the southern-hemisphere constellation of Ara, he noticed several clear peaks he had not seen before in the spectra of other planetary nebulae.

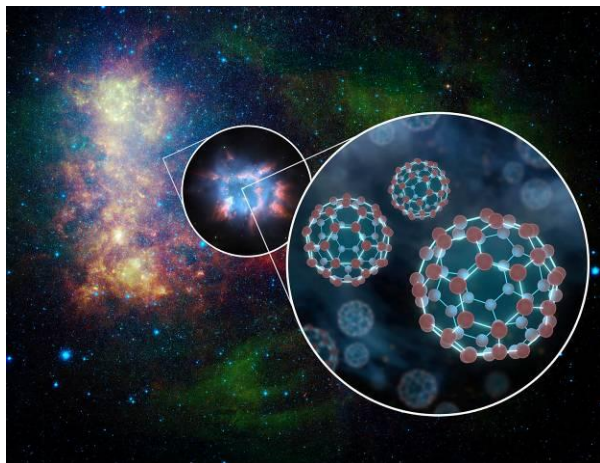
"When he came to me," recounted Cami, an astrophysicist who specializes in molecular chemistry, "I immediately and intuitively knew it I was looking at buckyballs in space. I've never been that excited!" The authors confirmed his hunch by carefully comparing the Tc 1 spectrum to laboratory experiments described in the literature.

"This discovery shows that it is possible—even easy—for complex carbonaceous molecules to form spontaneously in space," Cami said. "Now that we know fullerenes are out there, we can figure out their roles in the physics and chemistry of deep space. Who knows what other complex chemical compounds exist—maybe even some relevant to the formation of life in the universe!"

Stay tuned!

Learn more about this discovery at <http://www.spitzer.caltech.edu>. For kids, there are lots of beautiful Spitzer images to match up in the Spitzer Concentration game at <http://spaceplace.nasa.gov/en/kids/spitzer/concentration>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Superimposed on a Spitzer infrared photo of the Small Magellanic Cloud is an artist's illustration depicting a magnified view of a planetary nebula and an even further magnified view of buckyballs, which consist of 60 carbon atoms arranged like soccer balls.

Member Contributions



Messier 45 – The Pleiades Star Cluster **Imaged by Mark Manner**

For image details, visit <http://www.spotastro.com/M45.html> .

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

On your Eclipse mailing label is the expiration date for your current membership. There will be a two month grace period before any member's name is removed from the current mailing 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 Thursday of each month at the Adventure Science Center 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**
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