

The Focal Point

The Atlanta Astronomy Club
Established 1947
January 2005

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Editor: Kat Sarbell

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January General Membership Meeting

The meeting will take place on Friday, January 21st at White Hall at Emory University. Please join us for refreshments from 7:30 to 7:55 PM. The meeting will start at 8:00 PM. For directions to White Hall, see page 7.



This month, club member Jerry Armstrong will be speaking about CCD imaging. Jerry is a gifted realistic space artist. He paints space scenes as they really are, not what we wish them to be. He is a man of many interests. He collects fossils, meteorites, and astronomy atlases. Jerry has observed approximately 200 comets in a telescope and has discovered several himself. He was the codiscoverer of the supernova in M51 in April 1994. He is a Veteran of the Vietnam war and retired from the Cobb County Fire Department.

December General Meeting Minutes

by Brad Isley, Recording Secretary

December's general meeting was not your typical general meeting at all - it was our annual Pot Luck Holiday Dinner! Rick Williamon of Emory University's physics department was generous enough to host our annual party on Friday, the 10th of December in the Math and Science building across the street from our usual White Hall meeting place.

Hats off to Nancy Cronin, Rauna Long, and their crew of merry assistants for orchestrating a very special evening.

Guests were treated to a very special evening of inspiring astro art, excellent food, great company, and outstanding live performances by renowned space music artist Jonn Serrie. Nancy also produced a Powerpoint presentation of club members' astronomy images and art, which Rick had showing throughout the day on a large monitor in the dining area.

Inclement weather delayed the arrival of some guests, so early arrivers passed the time munching on snacks, chatting with old friends and making new friends while admiring the wide variety of astro art on display.

Chuck kicked off the event with a warm welcome and a brief review of the year's events. Nancy offered a round of thanks to the contributors.

When the dinner bell rang, we enjoyed an excellent buffet provided by the club and guests. Phil Sacco (aka Santa Claus) carved up and served the turkey. Guests helped themselves to the buffet of main courses, side dishes, and desserts.

After dinner, guests gathered in the planetarium for the highlight of the evening: Jonn Serrie performing his renditions of classic Christmas music to a relaxing planetarium show.

A hearty "Thank You" to Rick, Nancy, Rauna and their crew and especially to Jonn Serrie for a memorable evening with good friends, tasty food, and mesmerizing music.

For a photo gallery of our Holiday Pot Luck Dinner turn to pages 2 and 3.

Holiday Pot Luck Dinner Gallery

Photos by Joanne Cirincione and Juergen Berninger



From left to right: Rick Williamon, Jonn Serrie, and Mrs. Serrie.



Philip Sacco (in apron and Santa hat) and Rich Jakiel raise a toast.



Event planners Rauna Long (left, with daughter Sophia) and Nancy Cronin.



(From left to right) Peter and Leslie Macumber, Kat Sarbell, and Tom Faber.



Guests help themselves from the buffet.



Dan and Kelly Llewellyn and their daughter.



Some of the artwork and imagery on exhibit at the dinner.



Items for sale at the dinner included CD's by Jonn Serrie and AAC merchandise.



Sharon Carruthers leaves the kitchen to help set up the buffet.



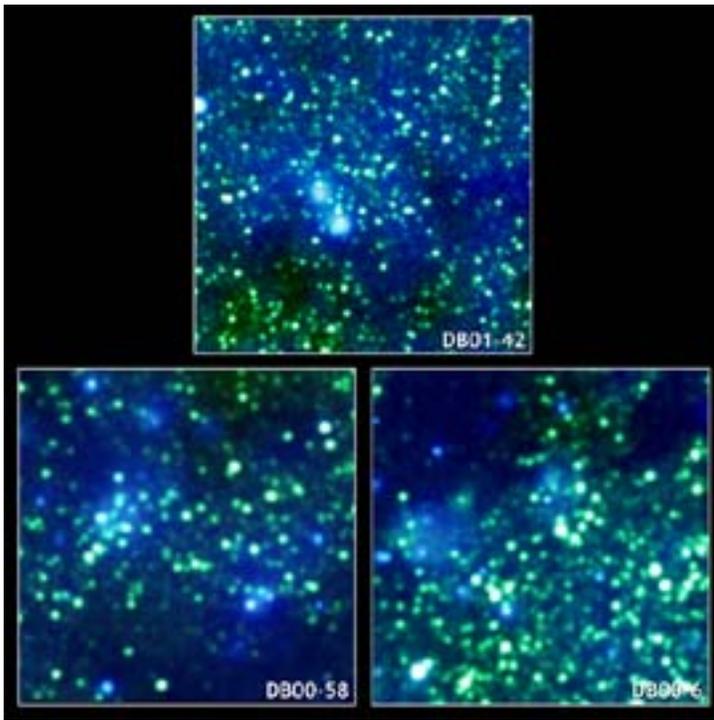
Keith Burns (left) and Chuck Painter, AAC president.



Guests gather in the planetarium for Jonn Serrie's performance.



Jonn Serrie (far right) answers questions after his show.



DB01-42, DB00-58 & DB00-6: Stars of Wonder, Stars of Infrared and X-ray Light

This montage above shows three clusters of bright, young stars in X-ray (blue) and infrared (green) light that lie in the direction of the center of the Galaxy. Like many stars in the disk of the Galaxy, they are difficult, if not impossible, to see with an optical telescope because of interstellar dust that blocks the visible light.

Infrared and X-ray data provide evidence for a large amount of dust and gas along the line of sight to the cluster, DB01-42. Invisible to optical telescopes, it is located near the Galactic Center, about 25,000 light years from Earth. Most of the stars in the image produce infrared radiation from their surfaces which have temperatures of several thousand degrees Celsius. The X-radiation from the

two bright X-ray sources near the center of the cluster requires gas with temperatures of millions of degrees.

Such extremely hot gas may be due to the collision of stellar winds from two closely orbiting stars. The two bright X-ray sources in the image are likely close binary stars with high-speed stellar winds. The diffuse X-ray glow could be caused by the combined heating of gas in the cluster by winds from many stars.

The light from the stars in the two clusters, DB00-58 and DB00-6 show much less X-ray and infrared absorption. This lower absorption, which still blocks much of the visible light, indicates that these star clusters are not in the Galactic Center, but are foreground objects. The way in which the X-rays are produced in these clusters is likely to be similar to DB01-42.

Image Credit: X-ray: NASA/CXC/Northwestern U./C.Law & F.Yusef-Zadeh; Infrared: 2MASS/UMass/IPAC-Caltech/NASA/NSF

Going to Extremes: Pulsar Gives Insight on Ultra Dense Matter and Magnetic Fields

December 14, 2004 CHANDRA X-RAY CENTER NEWS RELEASE

A long look at a young pulsar with NASA's Chandra X-ray Observatory revealed unexpectedly rapid cooling, which suggests that it contains much denser matter than previously expected. The pulsar's cool temperature and the vast magnetic web of high-energy particles that surrounds it have implications for the theory of nuclear matter and the origin of magnetic fields in cosmic objects.

An international team of scientists used the Chandra data to measure the temperature of the pulsar at the center of 3C58, the remains of a star observed to explode in the year 1181. Chandra's image of 3C58 also shows spectacular jets, rings and magnetized loops of high-energy particles generated by the pulsar.

"We now have strong evidence that, in slightly more than 800 years, the surface of the 3C58 pulsar has cooled to a temperature of slightly less than a million degrees Celsius," said Patrick Slane of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass., and lead author on a paper describing these results in the



Chandra X-ray Image of Galactic Center, Key Sources Labeled. This 400 by 900 light-year mosaic of several Chandra images of the central region of our Milky Way galaxy reveals hundreds of white dwarf stars, neutron stars, and black holes bathed in an incandescent fog of multimillion-degree gas. The supermassive black hole at the center of the Galaxy is located inside the bright white patch in the center of the image. The colors indicate X-ray energy bands - red (low), green (medium), and blue (high). Key sources have been labeled, including DB01-42, DB00-58 & DB00-6. (Credit: ASA/UMass/D.Wang et al.)

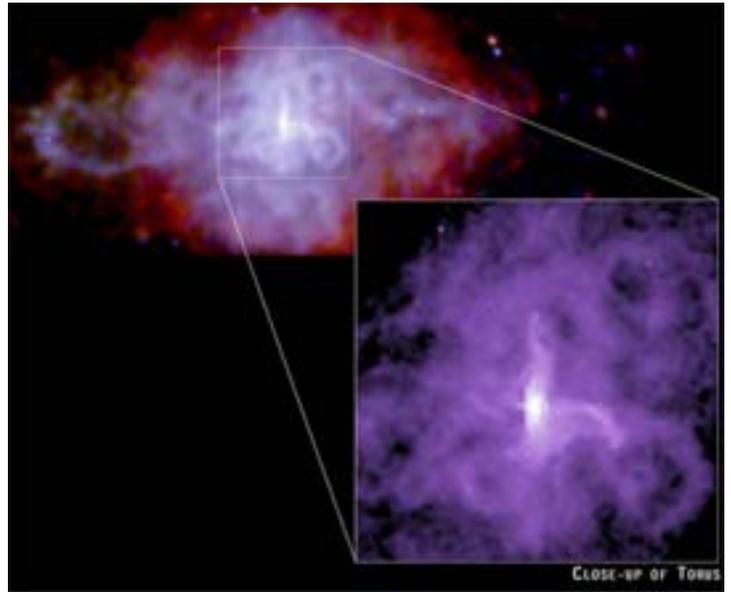
November 20, 2004 issue of The Astrophysical Journal. "A million degrees may sound pretty hot, but for a young neutron star that's like the frozen tundra in Green Bay, Wisconsin."

Pulsars are formed when the central core of a massive star collapses to create a dense object about 15 miles across that is composed almost entirely of neutrons. Collisions between neutrons and other subatomic particles in the interior of the star produce neutrinos that carry away energy as they escape from the star. This cooling process depends critically on the density and type of particles in the interior, so measurements of the surface temperature of pulsars provide a way to probe extreme conditions where densities are so high that our current understanding of how particles interact with one another is limited. They represent the maximum densities that can be attained before the star collapses to form a black hole.

The relatively cool temperature of the 3C58 pulsar, combined with evidence from the Vela pulsar and other young neutron stars, points to rapid cooling due to unexpected conditions in the neutron stars. One possibility is that more protons than expected survived the crush to neutron star densities, or perhaps an exotic form of sub-nuclear particles is responsible for more rapid cooling.

Surrounding the pulsar is a bright doughnut-shaped, or toroidal, structure, with jet-like features extending in a perpendicular direction away from the torus. These features, which are due to radiation from extremely high energy particles produced by the pulsar, show a strong resemblance to the rings and jets around the Crab pulsar.

Chandra images of the 3C58, Crab, and a growing list of other pulsars provide dramatic proof that strong electromagnetic fields



3C58 is the remnant of a supernova observed in the year 1181 by Chinese and Japanese astronomers. A long look by Chandra shows that the central pulsar - a rapidly rotating neutron star formed in the supernova event - is surrounded by a bright torus of X-ray emission. An X-ray jet erupts in both directions from the center of the torus, and extends over a distance of a few light years. Further out, an intricate web of X-ray loops can be seen. Credit: NASA/CXC/SAO/P.Slane et al.

around rapidly rotating neutron stars are powerful generators of high-energy particles. One of the more intriguing implications of these results is that pulsars can spin magnetic fields as well as high-energy particles far out into space.

The intricate structure of X-ray loops visible in the Chandra image and radio images of 3C58 in the nebula that extends a dozen light years from the pulsar likely represents the complex magnetic field structure there. Detailed analysis and comparison of these structures with those seen in the Crab Nebula and other pulsars should help astrophysicists to better understand how magnetic fields are produced by pulsars, and on a much larger scale by disks of matter swirling into supermassive black holes in galaxies.

Chandra observed 3C58, which is about 10,000 light years from Earth, for almost 100 hours between April 22-26, 2003, with its Advanced CCD Imaging Spectrometer instrument. Other members of the research team were David Helfand (Columbia University), Eric van der Swaluw (FOM Institute of Plasma Physics, the Netherlands), and Stephen Murray (Harvard-Smithsonian Center for Astrophysics).

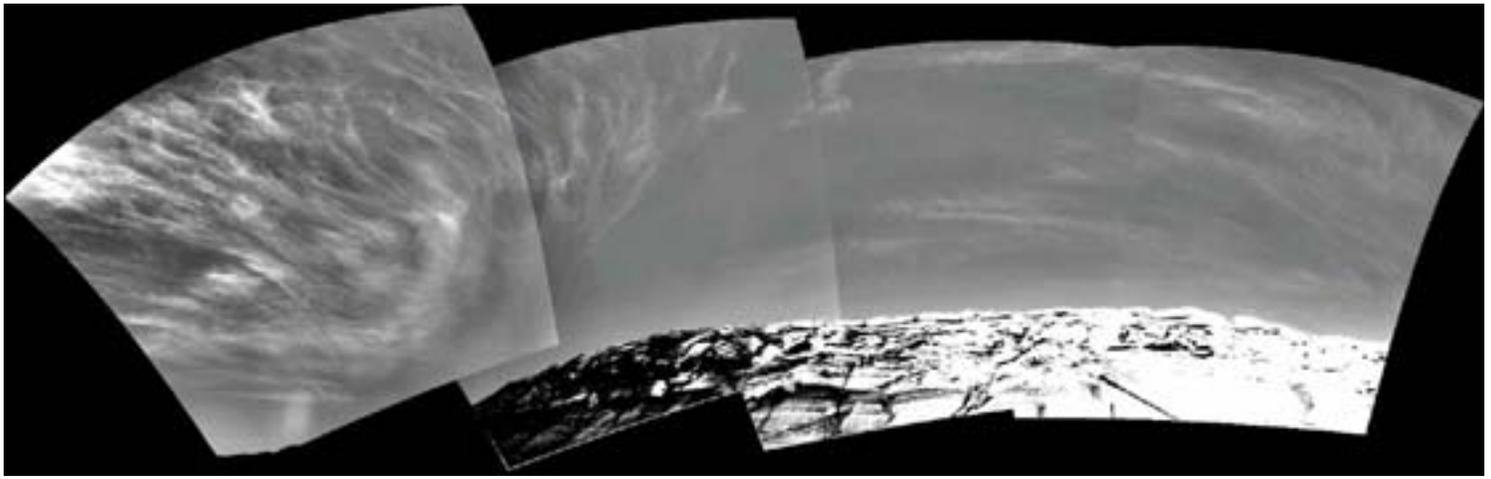
NASA's Marshall Space Flight Center, Huntsville, Ala., manages the Chandra program for NASA's Office of Space Science, Washington. Northrop Grumman of Redondo Beach, Calif., formerly TRW, Inc., was the prime development contractor for the observatory. The Smithsonian Astrophysical Observatory controls science and flight operations from the Chandra X-ray Center in Cambridge, Mass.

Additional information and images are available at:

<http://chandra.harvard.edu> and <http://chandra.nasa.gov>



Optical & Chandra X-ray Composite of 3C58. This image from the 1.3m McGraw-Hill shows 3C58 in visible light compared with Chandra's X-ray data of the same field of view. The optical image was taken on January 13, 2004. Scale: Image is 8.4 arcmin per side. (Credit: X-ray: NASA / CXC / SAO / P.Slane et al.)



Clouds over 'Endurance' on Sol 290

Clouds add drama to the sky above "Endurance Crater" in this mosaic of frames taken by the navigation camera on NASA's Mars Exploration Rover Opportunity at about 9:30 a.m. on the rover's 290th sol (Nov. 16, 2004). The view spans an arc from east on the left to the southwest on the right.

These clouds are part of a band that forms near the equator when Mars is near the part of its orbit that is farthest from the Sun. For Opportunity (and Spirit and the rest of the southern hemisphere), this occurs in late fall and early winter. During this period, atmospheric temperatures and the amount of water vapor combine to form large-scale clouds. These clouds look like Earth's cirrus clouds and share other similarities with cirrus clouds in that they are believed to be composed entirely of water-ice particles with sizes on the order of several micrometers (a few ten-thousandths of an inch).

The images that are combined to produce this view have been processed to remove geometrical distortion associated with the camera's 45-degree field of view. In addition, special image processing has been applied to enhance the clouds and make them visible across the entire mosaic. The rim of Endurance was processed using the same technique, illustrating how much enhancement was done. Glare from the Sun washed out the clouds on the left in the original images; this glare was removed. Image Credit: NASA/JPL.

Cassini diverts from collision course with moon Titan

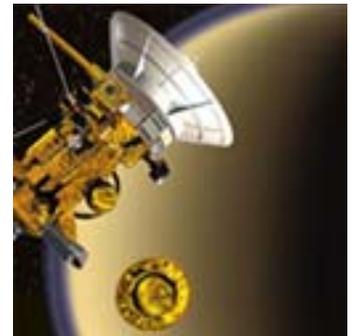
NASA News Release, December 28, 2004

NASA's Cassini spacecraft successfully performed a getaway maneuver on Monday, Dec. 27, to keep it from following the European Space Agency's Huygens probe into the atmosphere of Saturn's moon Titan. This maneuver established the required geometry between the probe and the orbiter for radio communications during the probe descent on Jan. 14. The probe has no navigating capability, so the Cassini orbiter had been placed on a deliberate collision course with Titan to ensure the accurate delivery of the probe to Titan.

The Huygens probe successfully detached from the Cassini orbiter on Dec. 24. All systems performed as expected.

The European Space Agency's Huygens probe will be the first human-made object to explore on-site the unique environment of Titan, whose chemistry is thought to be very similar to that of early Earth before life arose.

The Cassini spacecraft has been in orbit around Saturn since June 30, 2004, and has returned stunning pictures of Saturn, its rings and many moons.



An artist's concept shows Cassini deploying Huygens. Credit: ESA

Charlie Elliott Chapter December Meeting Minutes

Twenty-eight members and visitors attended the CEC December program. Larry Owens, Chapter Director, began the monthly programs of the Charlie Elliott Chapter of the Atlanta Astronomy Club at about 3:00 PM, Saturday, December 11, 2004.

Larry made announcements concerning the donation of a new trailer by CEC/AAC member Steve Kennedy to the Atlanta Astronomy Club for use by the Charlie Elliott Chapter to house its 16" and 6" telescopes.

CEC meeting dates for 2005 were set for January 8, February 12, March 12, April 9, May 7, June 4, July 9, August 6, September 10, October 1, November 5, and December 3, with the understanding the new officers elected in May 2005 could change dates. All are on, or near, a New Moon except for September 10, which is on the 1st Quarter Moon.

Jim Honeycutt presented a program covering current events. Debbie Jones, CEC Observing Supervisor, presented a program on "What's UP Tonight and How to Find the Objects". CEC was entertaining guests from Monroe: the George Walton Academy High School Junior and Senior Astronomy classes. Dr. Amy Lovell, Associate Professor of Physics and Astronomy at Agnes Scott College, presented a program titled "Super Nova, Black Holes, Dark Matter, Nebulae, Galaxies and other Solar Systems". After the meeting, a few optimistic souls attempted to view through the hole that had temporarily opened in the overcast - but it didn't last long.

Charles Elliot Chapter January Meeting

MEETING DATES AND PROGRAMS:

NEW FALL/WINTER SCHEDULE – meetings begin at 3:00 PM

JANUARY 8, 2005 Programs: Saturday at 3:00 PM.

Current Events: Larry Owens

What's Up Tonight: Observing report by Debbie Jones

Lecture: "Star Hopping" by Art Russell

FEBRUARY 12, 2005 Programs: Saturday at 3:00 PM.

Current Events: TBD

What's UP Tonight: Observing report by Debbie Jones

Lecture: TBD

PLEASE check the CEC website for the most current meeting information!

<http://www.atlantaastronomy.org/CEWMA/>

GASP (Georgia Astronomy in State Parks) Events

GASP events for 2005 will begin around March. For information about these events, contact Joanne Cirincione at Starrynights@AtlantaAstronomy.org.

Directions to White Hall at Emory

Meeting Location Information:

Turn onto Dowman Drive from North Decatur Road at the five way intersection (across from Everybody's Pizza). White Hall is located on the right across from the new Science & Math building. Parking is available along Dowman Drive on both sides of the road. There is also a gated parking lot on the left behind the Admissions Building. After 6PM there is no fee to park there. For more detailed directions on how to get to Emory University, visit www.atlantaastronomy.org.

The **Atlanta Astronomy Club Inc.**, the South's largest and oldest astronomical society, meets at **8:00 p.m.** on the third Friday of each month at Emory University's White Hall or occasionally at other locations. Membership is open to all. Membership fees are **\$30** for a family or single person membership. College Students membership fee is **\$15**. These fees are for a one year membership.

Magazine subscriptions to Sky & Telescope or Astronomy can be purchased through the club for a reduced rate. The fees are **\$33** for Sky & Telescope and **\$29** for Astronomy. Renewal forms will be sent to you by the magazines. Send the renewal form along with your check to the Atlanta Astronomy Club treasurer.

The Club address is: Atlanta Astronomy Club, PMB 305, 3595 Canton Road A9, Marietta, Georgia 30066.

Atlanta Astronomy Club Hot Line: Timely information on the night sky and astronomy in the Atlanta area. Call **770-621-2661**.

Internet Home Page: <http://www.AtlantaAstronomy.Org>

Send suggestions, comments, or ideas about the website to webmaster@AtlantaAstronomy.org. Also send information on upcoming observing events, meetings, and other events to the webmaster.

AAC Contacts

President: Chuck Painter 404-386-3899
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Observing Chair: Jim Holley 678-838-2906
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Corresponding Secretary: Kat Sarbell 404-352-0652
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Elliott Recording Secretary: Clevis Jones
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Elliott Coordinator: Alesia Rast Alesia_Rast@mail.dnr.state.ga.us

Webmaster Charlie Elliott: Larry Owens
planetographer@comcast.net

The Telescope Workshop: Dan Llewellyn 678-579-9661
zoser@mindspring.com

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starrynights@AtlantaAstronomy.org

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buchanant@bellsouth.net

Mentor Program: Keith Burns 770-427-1475
Keith_B@bellsouth.net

PSSG Chairman: Peter Macumber pmacumber@nightsky.org **Co-Chairman:** Joanne Cirincione starrynights@AtlantaAstronomy.org

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Woodruff Observ. Coordinator: John Lentini 770-984-0175
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Webmaster Atlanta Astronomy: Peter Macumber 770-941-4640
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Atlanta Astronomy Club Website

While this newsletter is the official information source for the Atlanta Astronomy Club, it is only up to date the day it is printed. So if you want more up to date information, go to our club's website. The website contains pictures, directions, membership applications, events updates (when available) and other information. <http://www.atlantaastronomy.org>

Calendar

- January 1st, Saturday: Earth at Perihelion.
- January 3rd, Monday: Quadrantid Meteor Shower. Moon Last Quarter.
- January 4th, Tuesday: Latest Sunrise (~7:42 AM EST at Atlanta).
- January 7th, Friday: Moon, Mars, & Antares grouping in morning sky.
- January 8th, Saturday: Charles Elliot Chapter Meeting.
- January 10th, Monday: Moon New.
- January 13th, Thursday: Saturn Opposition.
- January 17th, Monday: Moon First Quarter.
- January 21st, Friday: AAC General Membership Meeting.
- January 22nd, Saturday: The Telescope Workshop. 11 AM. Bradford Map Store, 300 Hammond Drive. Contact Dan Llewellyn or Sharon Carruthers at the map store at 404-843-9610. A great workshop to attend if you need to repair or improve your telescope.
- January 25th, Tuesday: Moon Full (Old Moon, Moon After Yule).
- January 27th, Thursday: February Focal Point submission deadline. 4PM.
- February 2nd, Wednesday: Moon Last Quarter.
- February 4th, Friday: Moon near Antares.
- February 8th, Tuesday: Moon New.

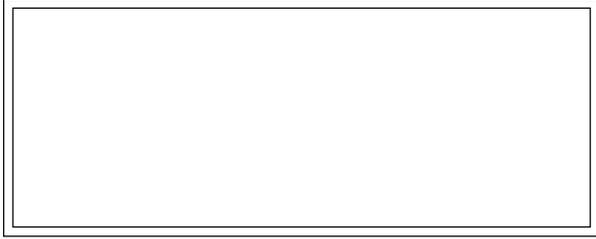
Atlanta Astronomy Club Listserve

Subscribe to the Atlanta Astronomy Club Mailing List: The name of the list is: AstroAtlanta. The address for messages is: AstroAtlanta@yahoogroups.com . To add a subscription, send a message to: AstroAtlanta-subscribe@yahoogroups.com . This list is owned by Lenny Abbey.

Focal Point Deadline and Info

Please send articles, pictures, and drawings in electronic format on anything astronomy related to Kat Sarbell at focalpoint@atlantaastronomy.org. **You can submit articles anytime up and including the deadline date. The deadline for February is Thursday, January 27th at 4:00 PM Submissions will no longer be accepted after the deadline.**

FIRST CLASS



The Focal Point

Newsletter of The Atlanta Astronomy Club,

Inc.

FROM:

Kat Sarbell

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Atlanta, GA 30309

We're here to help! Here's how to reach us:

Atlanta Astronomy Club

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Marietta, GA 30066