

The Focal Point

The Atlanta Astronomy Club
Established 1947
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Editor: Tom Faber

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October General Meeting

Please join us for the October meeting and of the Atlanta Astronomy Club on **Saturday**, October 19th starting at 8PM. For our October meeting AAC member Dan Llewellyn (photo below) will present a talk titled "Interesting and Bizarre Telescopes". Our October meeting will take place at the Atlanta Freethought Society (AFS) building in Smyrna. After the main meeting there will be stargazing if the weather permits.

Upcoming AAC Meetings

Our meetings will usually be held on the 3rd Saturday of the month. Future meeting dates are Oct 19th, Nov 16th, Dec 14 (2nd Saturday) for the December meeting and Holiday potluck dinner. Locations AFS unless noted.

Future Programs:

In order to keep our programs interesting and relevant for everyone from beginners to old pro's I need your help. Finding topics of interest to our members and speaker to do the programs is always a challenge. I am including a list of ideas I

have and would like your input of additional program ideas. If you would like to do a program or know someone who would be a good speaker please let me know. You can contact me at: programs@atlantaastronomy.org



1. The Drake equation updated with the latest information on exoplanets.

2. Exobiology: Life as we know it and what else may be out there.
3. Near earth objects: Comets, Asteroids and all that other stuff out there.
4. The electromagnetic spectrum: How we use it to explore what's out there.
5. Star life cycles: Use the H.R. Diagram to explore the life & death of stars.
6. Spectroscopic analysis: How we use it to explore the universe.
7. Radio Astronomy: What we can learn from the radio part of the spectrum.
8. Science Fiction vs. Fact: What fiction has become true and what the future holds.
9. Atmospheres: What we can learn by observing weather on other planets.
10. Earth observations: How NASA, ESA, JAXA & others observe Earth.
11. Solar observing: What we know about our home star & would like to know.
12. A biographical program on any famous Astronomer / Scientist.

The Next AAC Board Meeting

The next Board meeting of the Atlanta Astronomy Club is scheduled for Saturday, November 16th at 6PM, prior to our 8PM general meeting. Location of the meeting is at the Atlanta Freethought Society building in Smyrna. Contact President Mark Banks or Board Chair Daniel Herron for more information about the meeting.

The Focal Point Archives

The AAC began publishing the *Focal Point* as a PDF online in June 1998. Since then every issue has, and still is, available for download from the club's web page. Recently that archive has expanded. Sharon Carruthers has scanned 61 issues of the AAC's newsletter (then called *The Atlanta Astronomers' Report*) from 1948 to 1977. Although many issues from this period are still missing these provide a valuable record of the club's early years. In addition I (Tom Faber) came across 19 issues of the *Focal Point* from the years 1995-1998 that I scanned to make available on the club's web site. Again not every issue during this period is available but it is another step in maintaining and making available to all a record of the AAC's history. Our web master Daniel Herron has uploaded these to the web site as PDF's for download. Just visit www.atlantaastronomy.org and click on the "Focal Point Archives" link on the right side of the page. If you have any of the missing issues of the club's newsletter that you would like to scan and submit to Daniel as a PDF please do!

September AAC Meeting Report

Photos by Tom Faber unless noted.

The September meeting of the Atlanta Astronomy Club was held on Saturday, September 21 starting at 8PM at the Atlanta Freethought Society building (photos lower right). There were about 25 members and several guests present (photos below) for the general meeting. Our speaker for the evening was AAC member and Board Chair Daniel Herron (photo below). Daniel presented an interesting and informative talk about the International Space Station (photo bottom). The talk covered the construction and operation of the ISS, the countries involved, and research conducted on the ISS.

Peter Macumber gave an update on the next Peach State Star Gaze (the 20th anniversary PSSG) to be held September 29 to October 6. Other club officers presented updates about the club status and activities.



Charlie Elliott Chapter Outreach

By Theo Ramakers, Outreach Coordinator

<http://ceastronomy.org/tramakers>

The Summer calm has gone and CEA's outreach has come in full swing again and this seems to be the month of the large numbers!! In September the chapter did complete 16 outreach events. :-). All schools seemed to want to be the first to book their event. The month started off with East Newton, who had an event at the school and a second night in which 50 students and parents came to our observing session after our September meeting. They were joined by 12 members of the AOC and a large CEA group that attended the meeting. That evening CEA had over 100 people and 20 telescopes on the Jon Wood Field and everyone had a great time!! The fire marshal probably would have said that the Jon Wood Field was too small for such a crowd. :-). Sessions for Heard Mixon and Flint Hill were some of the other schools. Stone Mountain Middle not only had us come to their school for solar observing, but we were there also for an evening session during their Curriculum night! Harbour Oaks came again to Charlie Elliott and had a solar event as well as a night sky event. Rock Solid Baptist Church came with a request for their youth group, and Morgan County Middle school had a solar event in Madison. Needless to say that students in all these events also learn something in a class room setting about our Solar system and NASA's missions. Stone Mountain Park did their long awaited Home School day event in which we did participate right at the cross roads, and we were there when Stone Mountain Park invited Scouts for the following day, which was also the beginning of their Pumpkin Festival. Each day of these two events we had over 800 individuals learn about the solar system, take a look at the sun through different scopes, learn about the relative sizes of objects in the Solar system and look at the top of the mountain through our "Scope on a Stick". A great month for outreach. Thanks all who gave their time and effort to pull this off !! :-). Clear Skies!



The Next Charlie Elliott Meeting

Join us for our next meeting at 5:00 p.m., Saturday, October 12, at the Charlie Elliott Conference Center.

Meeting Agenda

Program TBA.

Sunset Time Alert

When the meeting is indoors, and if the meeting runs extra-long, a “Sunset Time Alert” will be announced. While we’d love for everyone to stay for the entire meeting, we also realize that some folks prefer to leave a bit earlier so as to set up their equipment at the observing field before dark.

“Observing after the Meeting”

All are invited to the observing field immediately after the meeting (weather-permitting) (or to stay on the observing field if the meeting was outdoors). Everyone is welcome.

Place: Jon Wood Astronomy Field at Charlie Elliott Wildlife Center.

2013 Meeting dates: November 2, December 7.

Two Charlie Elliott Astronomy Members Receive Prestigious Award

By Theo Ramakers

Two Charlie Elliott Astronomy members have supported the youth group of the Garden Club of Georgia since 2008 by bringing astronomy and space exploration to their “Wild and Wonderful” summer camps at Charlie Elliott Wildlife Center, rain or shine. Because of this support over six years, on September 18th, 2013 they received the highest award a non GCG member can obtain: the Seal of Honor Award. The GCG Seal of Honor Award was initiated to recognize and show appreciation to individuals who have helped GCG achieve its mission, goals, ideals and purposes on a state wide level.

Frank Garner and Theo Ramakers received the award while accompanied by their spouses, during the State Board of Directors Dinner at their meeting in the GCG headquarters at the State Botanical Garden in Athens. Following a short bio and accomplishments of each person presented by Mrs. Huddleston who is the chair of the awards committee, the award was presented by Mrs. Suzanne Wheeler, the President of the organization. The picture shows Frank and Theo with their award together with Mrs. Wheeler (center), Mrs. Kimler (left) and Mrs. Turner (right), who all attended this years astronomy session during the Wild and Wonderful Camp.



Hubble and Chandra Find Evidence for Densest Nearby Galaxy

Chandra X-ray Center/SAO/NASA News Release: September 24, 2013

The densest galaxy in the nearby part of the Universe may have been found. Packed with an extraordinary number of stars, this unusual galaxy is providing astronomers with clues to its intriguing past and how it fits into the galactic evolutionary chain.

The galaxy, known as M60-UCD1, is a type of “ultra-compact dwarf galaxy”. It was discovered with NASA’s Hubble Space Telescope and follow-up observations were done with NASA’s Chandra X-ray Observatory and ground-based optical telescopes.

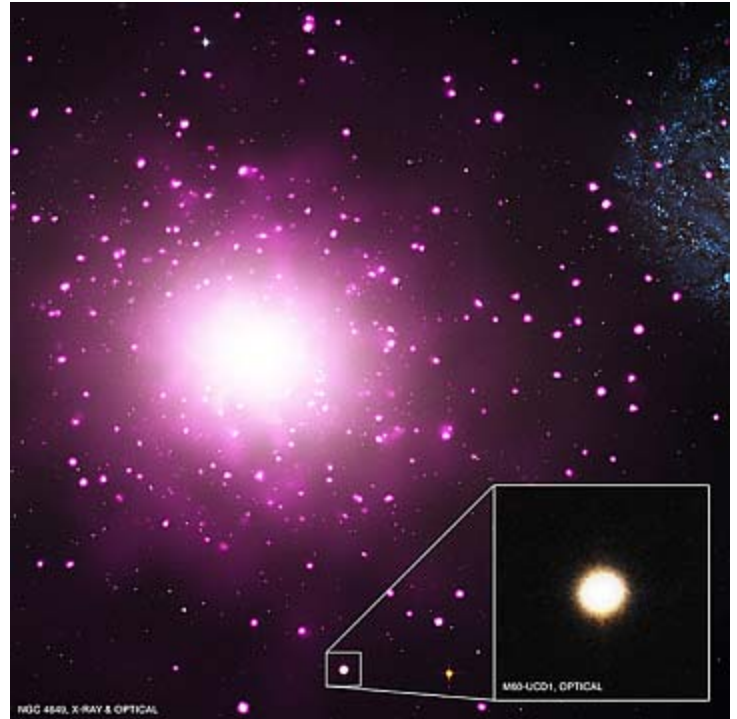
Observations from the W. M. Keck Observatory on the summit of Mauna Kea, Hawaii, characterized it as the most luminous known galaxy of its type and one of the most massive, weighing 200 million times more than our Sun.

What makes M60-UCD1 so remarkable is that about half of this mass is found within a radius of only about 80 light years. This would make the density of stars about 15,000 times greater than found in Earth’s neighborhood in the Milky Way, meaning that the stars are about 25 times closer.

“Traveling from one star to another would be a lot easier in M60-UCD1 than it is in our galaxy,” said Jay Strader of Michigan State University in Lansing, first author of a new paper describing these results. “But it would still take hundreds of years using present technology.”

The 6.5-meter Multiple Mirror Telescope in Arizona was used to study the amount of elements heavier than hydrogen and helium in stars in M60-UCD1. The values were found to be similar to our Sun.

“The abundance of heavy elements in this galaxy makes it a fertile environment for planets and, potentially, life to form,” said co-author Anil



Main Image: NGC 4649 in X-Ray (Pink); Optical (Red, Green, Blue) shows location of M60-UCD1 relative to NGC 4649 (M60).

Inset shows M60-UCD1 in optical wavelengths.

Scale: Image is 3.2 arcmin across (about 50,000 light years)

Credit: X-ray: NASA/CXC/MSU/J.Strader et al, Optical: NASA/STScI

Seth of the University of Utah.

Another intriguing aspect of M60-UCD1 is that the Chandra data reveal the presence of a bright X-ray source in its center. One explanation for this source is a giant black hole weighing in at some 10 million times the mass of the Sun.

Astronomers are trying to determine if M60-UCD1 and other ultra-compact dwarf galaxies are either born as jam-packed star clusters or if they are galaxies that get smaller because they have stars ripped away from them. Large black holes are not found in star clusters, so if the X-ray source is in fact due to a massive black hole, it was likely produced by collisions between the galaxy and one or more nearby galaxies. The mass of the galaxy and the Sun-like abundances of elements also favor the idea that the galaxy is the remnant of a much larger galaxy.

“We think nearly all of the stars have been pulled away from the exterior of what once was a much bigger galaxy,” said co-author Duncan Forbes of Swinburne University in Australia. “This leaves behind just the very dense nucleus of the former galaxy, and an overly massive black hole.”

If this stripping did occur, then the galaxy was originally 50 to 200 times more massive than it is now, which would make the mass of its black hole relative to the original mass of the galaxy more like the Milky Way and many other galaxies. It is possible that this stripping took place long ago and that M60-UCD1 has been stalled at its current size for several billion years. The researchers estimate that M60-UCD1 is more than about 10 billion years old.

The density of stars in the galaxy is so high astronomers do not expect to find a signature of dark matter in the motion of stars. However, these galaxies are considered likely to contain some dark matter. If they do, they are important for making comparisons with computer simulations of the formation of galaxies, which typically predict a larger number of clumps of dark matter than observed.

M60-UCD1 is located near a massive elliptical galaxy NGC 4649, also called M60, about 60 million light years from Earth. These results appear online and have been published in the September 20th issue of *The Astrophysical Journal Letters*.

NASA's Marshall Space Flight Center in Huntsville, Ala., manages the Chandra Program for NASA's Science Mission Directorate in Washington. The Smithsonian Astrophysical Observatory controls Chandra's science and flight operations from Cambridge, Mass.

For Chandra images, multimedia and related materials, visit: <http://www.nasa.gov/chandra>

For an additional interactive image, podcast, and video on the finding, visit: <http://chandra.si.edu>

Hubble Uncovers Largest Known Population of Star Clusters

STScI News Release - September 12, 2013

NASA's Hubble Space Telescope has uncovered the largest known population of globular star clusters, an estimated 160,000, swarming like bees inside the crowded core of the giant grouping of galaxies Abell 1689. By comparison, our Milky Way galaxy hosts about 150 such clusters.

Studying globular clusters is critical to understanding the early, intense star-forming episodes that marked galaxy formation. The Hubble observations also confirm that these compact stellar groupings can be used as reliable tracers of the amount of dark matter locked away in immense galaxy clusters.

Globular clusters, dense bunches of hundreds of thousands of stars, are the homesteaders of galaxies, containing some of the oldest surviving stars in the universe. Almost 95 percent of globular cluster formation occurred

within the first 1 billion or 2 billion years after our universe was born in the big bang 13.8 billion years ago.

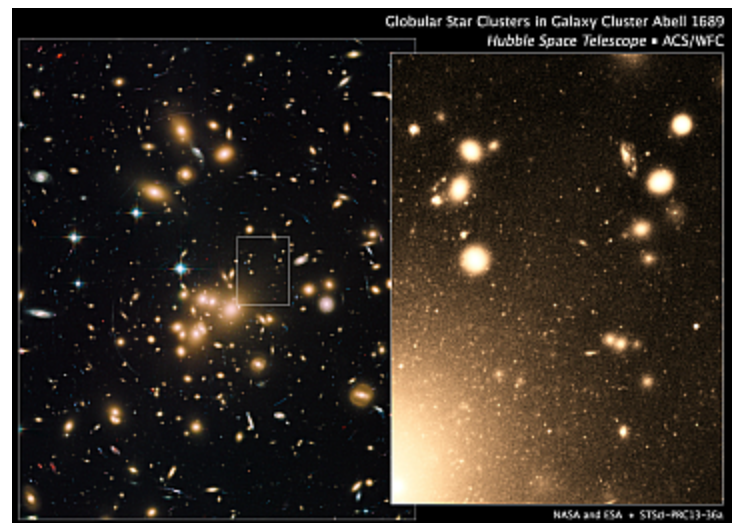
A team of astronomers, led by John Blakeslee of the NRC Herzberg Astrophysics Program at the Dominion Astrophysical Observatory in Victoria, B.C., used Hubble's sensitivity and sharpness to discover a bounty of these stellar fossils, which is roughly twice as large as any other population found in previous globular cluster surveys. The Hubble observations also win the distance record for the farthest such systems ever studied, at 2.25 billion light-years away.

The research team found that the globular clusters are intimately intertwined with dark matter. “In our study of Abell 1689, we show how the relationship between globular clusters and dark matter depends on the distance from the galaxy cluster's center,” explained team member Karla Alamo-Martinez of the Center for Radio Astronomy and Astrophysics of the National Autonomous University of Mexico in Morelia. “In other words, if you know how many globular clusters are within a certain distance, we can give you an estimate of the amount of dark matter.”

Alamo-Martinez is also the lead author on the team's science paper describing the results. The paper appears in the Sept. 20 issue of *The Astrophysical Journal*.

Although dark matter is invisible, it is considered the underlying gravitational scaffolding upon which stars and galaxies are built. Understanding dark matter can yield clues on how large structures such as galaxies and galaxy clusters were assembled billions of years ago.

Continued on next page



The image at left, taken by Hubble's Advanced Camera for Surveys, shows the numerous galaxies that make up Abell 1689. The box near the center outlines one of the regions sampled by Hubble, containing a rich collection of globular clusters.

The monochromatic view at right, taken at visible wavelengths, zooms into the region packed with globular clusters. They appear as thousands of tiny white dots, which look like a blizzard of snowflakes. The larger white blobs are entire galaxies of stars.

Globular clusters, dense collections of hundreds of thousands of stars, are the homesteaders of galaxies, containing some of the oldest surviving stars in the universe. Almost 95 percent of globular cluster formation occurred within the first 1 billion or 2 billion years after our universe was born in the big bang 13.7 billion years ago.

Hubble's Advanced Camera for Surveys snapped these images from June 12 to 21, 2002, and between May 29 and July 8, 2010.

Credit: NASA, ESA, J. Blakeslee (NRC Herzberg Astrophysics Program, Dominion Astrophysical Observatory), and K. Alamo-Martinez (National Autonomous University of Mexico). Acknowledgment: H. Ford (JHU)

The Hubble study shows that most of the globular clusters in Abell 1689 formed near the center of the galaxy cluster, which contains a deep well of dark matter. Their number decreases the farther away Hubble looked from the core, corresponding with a comparable drop in the amount of dark matter.

“The globular clusters are fossils of the earliest star formation in Abell 1689, and our work shows they were very efficient in forming in the denser regions of dark matter near the center of the galaxy cluster,” Blakeslee said. “Our findings are consistent with studies of globular clusters in other galaxy clusters, but extend our knowledge to regions of higher dark matter density.”

The astronomers used Hubble’s Advanced Camera for Surveys to peer deep inside the heart of Abell 1689, detecting the visible-light glow of 10,000 globular clusters, some as dim as 29th magnitude. Based on that number, Blakeslee’s team estimated that more than 160,000 globular clusters are huddled within a diameter of 2.4 million light-years. “Even though we are looking deep into the cluster, we’re only seeing the brightest globular clusters, and only near the center of Abell 1689 where Hubble was pointed,” he said.

The brightness of most of the globular clusters is estimated to be 31st magnitude. This is out of reach for Hubble, but not for NASA’s James Webb Space Telescope, an infrared observatory scheduled to launch later this decade. By going fainter, Webb should be able to see many more of the globular clusters.

Blakeslee’s quest to use Hubble to conduct a globular cluster census in Abell 1689 began 10 years ago after astronauts added the Advanced Camera for Surveys to Hubble’s arsenal of science instruments. While analyzing some gravitational lensing data of Abell 1689 obtained with the newly installed camera, Blakeslee spotted dots of light peppered throughout the images. The dots turned out to be the brightest members of a teeming population of globular clusters.

An Early Look at the 2013 Peach State

Photos by Tom Faber

Here are a few photos from the beginning of the 2013 Peach State Star Gaze - the 20th anniversary Peach State! Check back next month for more photos and reports from the 2013 PSSG!



The PSSG Staff got breakfast at Micki’s Kitchen Sunday morning before continuing set up activities in advance of the noon opening.



Kat and Sharon getting the check-in office ready.



The first arrivals on Sunday lined up around noon to check in.



The field starting to fill up on Sunday afternoon. The AAC’s new observatory is under construction in the lower left.



A colorful sunrise on Monday morning greets the first full day of the Peach State. Check back next month for more photos and coverage of the PSSG.

DSO Dates and Locations

The dates and locations for the AAC Dark Sky Observing for the remainder of the year are: November 2nd at DAV, and November 30th at the Charlie Elliott site.

Beginner's Guide to Astronomy

New to astronomy and have a few question on where to start? Check out our new Beginners Guide to Astronomy at: http://atlantaastronomy.org/?page_id=778

Check back frequently as we add more information and tips.

The **Atlanta Astronomy Club, Inc.**, one of the South's largest and oldest astronomical society, meets at **8:00 P.M.** on the **3rd Saturday of each month** at the Atlanta Freethought Society building in Smyrna, or occasionally at other locations or times. Membership fees are **\$30 (\$42)** for a family or single person membership. College Students membership fee is **\$15 (\$27)**. These fees are for a one year membership (\$12 per year extra charge to receive a printed *Focal Point* by mail).

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 **\$34** 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: Atlanta Astronomy Club, Inc., P.O. Box 76155, Atlanta, GA 30358-1155. AAC Web 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.

Atlanta Astronomy Club Online

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 and other information. <http://www.atlantaastronomy.org> You can also follow the AAC on Facebook by joining the AAC group, and on Twitter at <http://twitter.com/atlaastro>.

AAC Officers and Contacts

President: Mark Banks Programs@AtlantaAstronomy.org

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Observing@AtlantaAstronomy.org

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Recording Secretary: Open

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Board: David Lumpkin, Contact info TBA

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Elliott Observing Supervisor: John Towne
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PSSG Co-Chair: Joanne Cirincione
starrynights@AtlantaAstronomy.org

Sidewalk Astronomy: Brad Isley
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Light Trespass: Open - Contact Mark Banks if you would like to volunteer for this position

Woodruff Observ. Coordinator: Sharon Carruthers
Treasurer@AtlantaAstronomy.org

AAC Webmaster: Daniel Herron, Observing@AtlantaAstronomy.org

Calendar by Tom Faber (Times EDT/EST unless noted)

AAC Events are listed in BOLD

- Oct 1st, Tuesday: Moon forms triangle with Mars and Regulus.
- Oct 4th, Friday: New Moon.
- Oct 6th-7th, Sunday-Monday: Moon to right and left of Venus respectively.
- Oct 11th, Friday: Moon First Quarter.
- Oct 12th, Saturday: **CE Chapter Meeting.**
- Oct 14th, Monday: Mars near Regulus.
- Oct 16th, Wednesday: Venus near Antares.
- Oct 18th, Friday: Full Moon (Hunter's Moon) with a weak penumbral eclipse. Mid @ 7:50PM.
- Oct 19th, Saturday: **AAC Meeting, 8PM at AFS.**
- Oct 26th, Saturday: Moon Last Quarter.
- Nov 2nd, Saturday: **DSO @ DAV. CE Chapter Meeting @ 5PM.**
- Nov 3rd, Sunday: New Moon.
- Nov 10th, Sunday: Moon First Quarter.
- Nov 16th, Saturday: **AAC Meeting, 8PM at AFS.** Leonid Meteors.
- Nov 17th, Sunday: Full Moon.
- Nov 25th, Monday: Moon Last Quarter.
- Dec 30th, Saturday: **DSO @ CE Chapter.**
- Dec 2nd, Monday: New Moon.
- Dec 7th, Saturday: **CE Chapter Meeting & Potluck Dinner.**
- Dec 9th, Monday: Moon First Quarter.
- Dec 14th, Saturday: **AAC Meeting & Holiday Potluck Dinner, 6PM at AFS.** Gemind Meteors.
- Dec 17th, Tuesday: Full Moon.

For more event listings see the calendar at www.atlantaastronomy.org

Atlanta Astronomy Club Listserv

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 .

Focal Point Deadline and Submission Information

Please send articles, pictures, and drawings in electronic format on anything astronomy, space, or sky related to Tom Faber at focalpoint@atlantaastronomy.org. Please send images separate from articles, not embedded in them. Articles are preferred as plain text files but Word documents or PDF's are okay. You can submit articles anytime up to the deadline. **The deadline for November is Friday, October 25th. Submissions after the deadline will go in the following issue.**



FIRST CLASS



www.beclage.com



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

Newsletter of The Atlanta Astronomy Club, Inc.



The Focal Point

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On Twitter at <http://twitter.com/atlastro>