

The Focal Point

The Atlanta Astronomy Club
Established 1947
February 2013

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Editor: Tom Faber

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February General Meeting

Join us for the February meeting of the Atlanta Astronomy Club on Friday, February 15th at 8PM. The meeting will take place in the Parlor Room of the Hitson Center of the Sandy Springs Methodist Church, 86 Mt Vernon Hwy, NE, Sandy Springs, GA 30328 (see map on pg 7). Refreshments will be provided starting around 7:30PM.

The Program:

Our program for February will be about Galaxy Collisions. Galaxy collisions are a normal part of the evolution of galaxy groups or clusters. They can be direct collisions, cannibalism of smaller by bigger or just a close pass with interaction. Shock waves can trigger star formation. The Milky Way will eventually collide with Andromeda, but don't worry, we have a few billion years to go. You don't need to buy any galaxy collision insurance policy now.

Our Speaker:

Our speaker will be Tamara Bogdanovic. She is an assistant professor at the Georgia Tech Center for Relativistic Astrophysics. She earned her Bachelor of Science in Astrophysics at the University Of Belgrade, Serbia and her PhD in Astrophysics at Penn State University. The Center for Relativistic Astrophysics (CRA) is devoted to interdisciplinary research and education linking astrophysics, astroparticle physics, numerical relativity and gravitational wave physics. Our research focuses on extreme



astrophysics such as mergers of black holes and neutron stars, central engines of active galactic nuclei, gamma ray bursts, and sources of the high energy cosmic rays and neutrinos.

Future Programs:

In order to keep our programs interesting and relevant I need your help. Please let me know (Mark Banks at: programs@atlantaastronomy.org) of any subjects you may be interested in for a future program. Also, if you or someone you know would like to do a program for us please contact me.

Upcoming AAC Meetings:

Our meetings will usually be held on the 3rd Friday of the month. Future meeting dates are Mar 15, Apr 19, May 17, June 21, July 19, Aug 16.

March is Membership Renewal Month

MEMBERSHIP RENEWALS: The AAC has moved to a "one-date-for-all" membership renewal. ALL CLUB MEMBERS, with some exceptions, should submit their \$30 (\$42 if you wish to receive the *Focal Point* by mail) dues for 2013 by March 20th. Please renew your membership by this date. There will be an R1 in the upper right corner of your *Focal Point* mailing label if you receive it in the mail. If you receive the *Focal Point* online you will receive an email - be sure we have your current email address. If you see either an RF or an xxx on your mailing label that means that your membership is about to expire or has expired. Please send your renewal right away. If you wish to switch from the mailed *Focal Point* to downloading the PDF version (and save \$12) notify Sharon Carruthers at Treasurer@AtlantaAstronomy.org. Also please notify Sharon with any changes to your contact information.

Small Asteroid to Whiz Past Earth

NASA/JPL News Release - February 01, 2013

The small near-Earth asteroid 2012 DA14 will pass very close to Earth on February 15, so close that it will pass inside the ring of geosynchronous weather and communications satellites. NASA's Near-Earth Object Program Office can accurately predict the asteroid's path with the observations obtained, and it is therefore known that there is no chance that the asteroid might be on a collision course with Earth. Nevertheless, the flyby will provide a unique opportunity for researchers to study a near-Earth object up close.

Asteroid 2012 DA14 will be closest to Earth on Feb. 15, at about 11:24 p.m. PST (2 p.m. EST and 1924 UT), when it will be at a distance of about 27,700 kilometers (17,200 miles) above Earth's surface. Although this is close enough for the asteroid to pass inside the ring of geosynchronous satellites, located about 35,800 kilometers (22,200 miles) above the equator, it will still be well above the vast majority of satellites, including

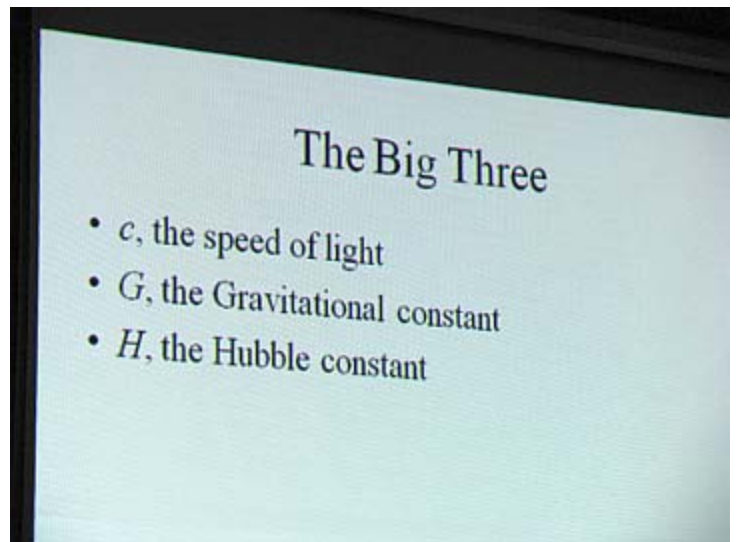
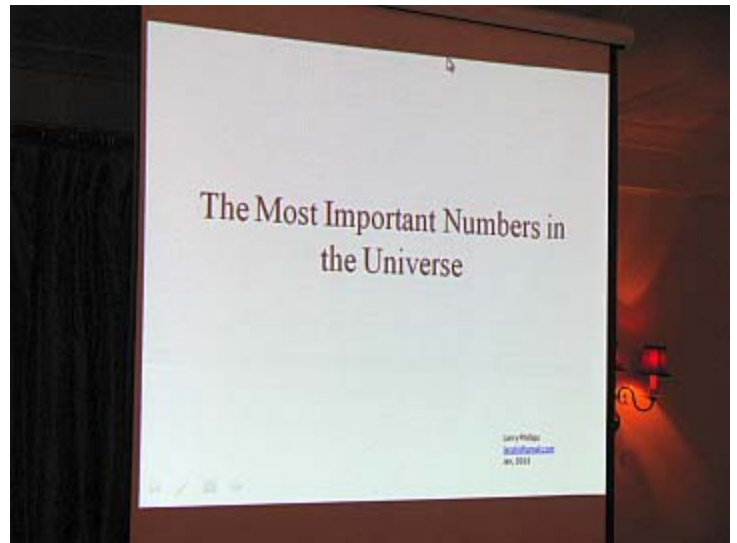
Continued on page 4

January AAC Meeting Report

By Pixie Bruner, AAC Recording Secretary. Photos by Tom Faber

The January AAC meeting was held on the 18th had 41 attendees including many new faces. Welcome to the club, one of the oldest in the Southeast. Club members, Larry Phillips (photo right), presented a program about important “cosmic” numbers. Larry’s talk covered the “Big Three”: the speed of light “ c ”, the Gravitational Constant “ G ”, and “ H ” the Hubble Constant (photo bottom right).

Our next meeting will be on the exciting topic of galaxy collisions and should be very fascinating. The AAC Board had a meeting and award nominations were given. This year will mark the return of The Presidents Award and an award in honor of Lenny Abbey. The club is looking for a new location to host meetings so if you have leads on a great place to meet and learn about the skies, please let President Richard Jakiel know. The next meeting is on Friday, February 15th and the AAC will be at AnachroCon the last weekend of February hosting “Victorian Gentlemen’s Observing Sessions” as skies permit, so join us for tea under the stars. www.anachrocon.com has more information and much of the Science and Tech track programming is on astronomy topics and volunteers get in free and get to enjoy an educational and fun convention that caters to the Dork Side. Comedian/Scientist Pete Ludovice will be performing Saturday night so if you enjoyed him at the Holiday Party, be sure to see him perform again. Wishing you clear skies!



CE Chapter Outreach

By Theo Ramakers, Outreach Coordinator

<http://ceastronomy.org/tramakers>

The chapter was off to a fast start in 2013, again. It started with the second Panola Mountain State Park Solar Event on the 5th. 45 Attendants saw the Sun in the late morning through our solar scopes and learned in the visitors' center about the effects of it on Earth. A week later the same program at Oak View elementary school where a large number of students and adults took the opportunity to learn about this. Then, in the afternoon



it went to Charlie Elliott Wildlife Center for our monthly meeting and observing at its Jon Wood Astronomy field, 23 attendants total. 6 New faces showed up for this meeting with their telescopes and after the theory inside, they received proper attention and help at the field in how to best use them. Jeff Rebitzke was also presented with the proper attire to wear when he cooks a "Cooking a Comet."



A special event for us was again Hightower Trail Elementary Space Camp. This was the 9th year of our participation. In the evening program over 100 students learned in our presentations what it takes to launch a rover to Mars and more important, they learned in detail how it safely decelerates from 13,000 miles per hour to a safe landing in only 6 minutes. In addition, their eyes opened when they saw and learned about how one can



drink a "cup" of coffee in the weightlessness of the International Space Station. Looking through the scopes they could discover the rings of Jupiter and four of its moons, the Orion nebula and craters on our moon.

Two sessions for the Girl Scout leaders training weekend at Magic Mountain, and on the same day another of our Solar program this time at Sagamore Elementary school in Atlanta. The last event for the month was the second year participation in the Science Night at Palmetto Elementary School.

We are very happy to have been able to address this month students of three underprivileged schools in the area and expose all to the science we take for granted.

The Next Charlie Elliott Meeting

Join us for our next meeting at 4 p.m., Saturday, February 9, at the Charlie Elliott Conference Center

Meeting Agenda

Feature Presentation: What's Up

Please join us for "What's Up"; a presentation about what you can see in the skies over Charlie Elliott this month, by our observing Observing Supervisor John Towne. Place: The Charlie Elliott Conference Center, February 9th, at 4:00 PM.

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.

Continued from page 1

the International Space Station. At its closest, the asteroid will be only about 1/13th of the distance to the moon. The asteroid will fly by our planet quite rapidly, at a speed of about 17,400 mph (7.8 kilometers per second) in a south-to-north direction with respect to Earth.

Even though 2012 DA14 is coming remarkably close, it will still only appear as a point of light in the biggest of optical telescopes, because of its small size. Based on its brightness, astronomers estimate that it is only about 45 meters (150 feet) across. It will brighten only to magnitude 7.5, too faint to be seen with the naked eye, but easily visible with a good set of binoculars or a small telescope. The best viewing location for the closest approach will be Indonesia, from which the asteroid will be seen to move at a rate of almost 1 degree per minute against the star background. Eastern Europe, Asia and Australia are also well situated to see the asteroid around its closest approach. But by the time Earth rotates enough for observers in the continental United States to have a chance to see the asteroid, it will have receded and faded to about the 11th magnitude. Radar astronomers plan to take images of the asteroid about eight hours after closest approach using the Goldstone antenna in California's Mojave Desert, which is part of NASA's Deep Space Network.

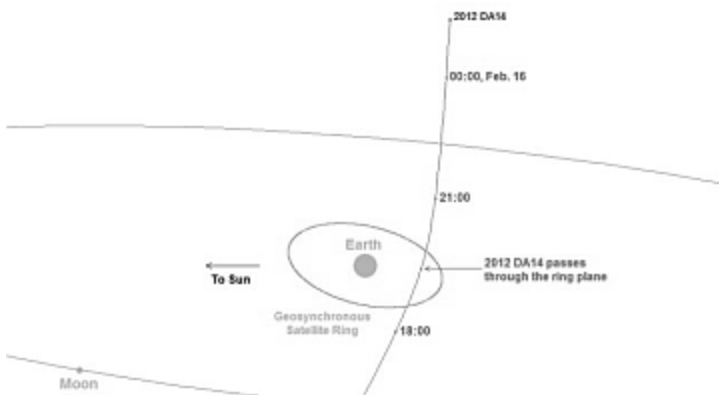


Diagram depicting the passage of asteroid 2012 DA14 through the Earth-moon system on Feb. 15, 2013. Image credit: NASA/JPL-Caltech

2012 DA14 has not been in the catalogues for very long -- it was discovered in February of 2012 by astronomers at the La Sagra Sky Survey program in southern Spain and reported to the Minor Planet Center, which designates minor bodies in our solar system. At the time of the discovery, the asteroid had just made a fairly distant passage by Earth, about seven times farther than the distance to the moon. Since 2012 DA14's orbital period around the sun has been about 368 days, which is very similar to Earth's, the asteroid made a series of annual close approaches. This year's is the closest approach, and is the closest the asteroid will come for at least three decades. But this encounter will shorten 2012 DA14's orbital period to about 317 days, changing its orbital class from Apollo to Aten, and its future close approaches will follow a different pattern.

This passage of 2012 DA14 by Earth is a record close approach for a known object of this size. A few other known asteroids have flown by Earth even closer, but those asteroids were smaller. On average, we expect an object of this size to get this close to Earth about once every 40 years. An actual Earth collision by an object of this size would be expected much less frequently, about once every 1,200 years, on average.

NASA Telescopes See Weather Patterns in Brown Dwarf

NASA/JPL/Caltech News Release - January 8, 2013

Astronomers using NASA's Spitzer and Hubble space telescopes have probed the stormy atmosphere of a brown dwarf, creating the most detailed "weather map" yet for this class of cool, star-like orbs. The forecast shows wind-driven, planet-sized clouds enshrouding these strange worlds.



This artist's conception illustrates the brown dwarf named 2MASSJ22282889-431026. NASA's Hubble and Spitzer space telescopes observed the object to learn more about its turbulent atmosphere. Brown dwarfs are more massive and hotter than planets but lack the mass required to become sizzling stars. Their atmospheres can be similar to the giant planet Jupiter's. Spitzer and Hubble simultaneously observed the object as it rotated every 1.4 hours. The results suggest wind-driven, planet-size clouds. Image credit: NASA/JPL-Caltech

Brown dwarfs form out of condensing gas, as stars do, but lack the mass to fuse hydrogen atoms and produce energy. Instead, these objects, which some call failed stars, are more similar to gas planets with their complex, varied atmospheres. The new research is a stepping-stone toward a better understanding not only of brown dwarfs, but also of the atmospheres of planets beyond our solar system.

"With Hubble and Spitzer, we were able to look at different atmospheric layers of a brown dwarf, similar to the way doctors use medical imaging techniques to study the different tissues in your body," said Daniel Apai, the principal investigator of the research at the University of Arizona in Tucson, who presented the results at the American Astronomical Society meeting Tuesday in Long Beach, Calif.

A study describing the results, led by Esther Buenzli, also of the University of Arizona, is published in the *Astrophysical Journal Letters*.

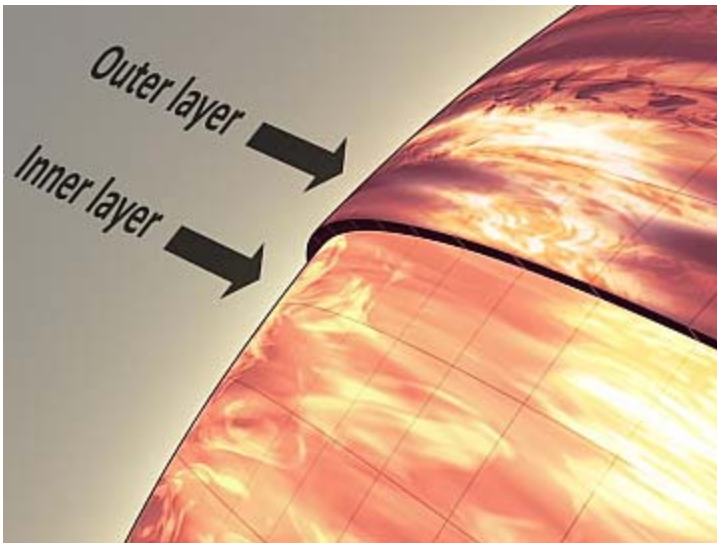
The researchers turned Hubble and Spitzer simultaneously toward a brown dwarf with the long name of 2MASSJ22282889-431026. They found that its light varied in time, brightening and dimming about every 90 minutes as the body rotated. But more surprising, the team also found the timing of this change in brightness depended on whether they looked using different wavelengths of infrared light.

These variations are the result of different layers or patches of material swirling around the brown dwarf in windy storms as large as Earth itself. Spitzer and Hubble see different atmospheric layers because certain infrared wavelengths are blocked by vapors of water and methane high up, while other infrared wavelengths emerge from much deeper layers.

“Unlike the water clouds of Earth or the ammonia clouds of Jupiter, clouds on brown dwarfs are composed of hot grains of sand, liquid drops of iron, and other exotic compounds,” said Mark Marley, research scientist at NASA’s Ames Research Center in Moffett Field, Calif., and co-author of the paper. “So this large atmospheric disturbance found by Spitzer and Hubble gives a new meaning to the concept of extreme weather.”

Buenzli says this is the first time researchers can probe variability at several different altitudes at the same time in the atmosphere of a brown dwarf. “Although brown dwarfs are cool relative to other stars, they are actually hot by earthly standards. This particular object is about 1,100 to 1,300 degrees Fahrenheit (600 to 700 degrees Celsius),” Buenzli said.

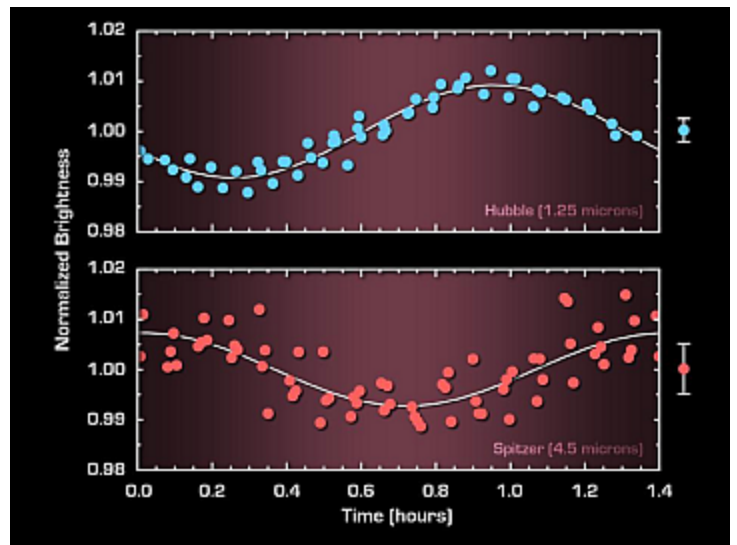
“What we see here is evidence for massive, organized cloud systems, perhaps akin to giant versions of the Great Red Spot on Jupiter,” said Adam Showman, a theorist at the University of Arizona involved in the research. “These out-of-sync light variations provide a fingerprint of how the brown dwarf’s weather systems stack up vertically. The data suggest regions on the brown dwarf where the weather is cloudy and rich in silicate



This artist’s illustration shows the atmosphere of a brown dwarf called 2MASSJ22282889-431026, which was observed simultaneously by NASA’s Spitzer and Hubble space telescopes. The results were unexpected, revealing offset layers of material as indicated in the diagram. For example, the large, bright patch in the outer layer has shifted to the right in the inner layer. The observations indicate this brown dwarf -- a ball of gas that “failed” to become a star -- is marked by wind-driven, planet-size clouds.

The observations were made using different wavelength of light: Hubble sees infrared light from deeper in the object, while Spitzer sees longer-wavelength infrared light from the outermost surface. Both telescopes watched the brown dwarf as it rotated every 1.4 hours, changing in brightness as brighter or darker patches turned into the visible hemisphere. At each observed wavelength, the timing of the changes in brightness was offset, or out of phase, indicating the shifting layers of material.

Image credit: NASA/JPL-Caltech



This graph shows the brightness variations of the brown dwarf named 2MASSJ22282889-431026 measured simultaneously by both NASA’s Hubble and Spitzer space telescopes. As the object rotates every 1.4 hours, its emitted light periodically brightens and dims. Surprisingly, the timing, or phase, of the variations in brightness changes when measured at different wavelengths of infrared light. Spitzer and Hubble’s wavelengths probe different layers in the atmosphere of the brown dwarf. The phase shifts indicate complex clouds or weather patterns that change with altitude. Image credit: NASA/JPL-Caltech/University of Arizona

vapor deep in the atmosphere coincide with balmy, drier conditions at higher altitudes -- and vice versa.”

Researchers plan to look at the atmospheres of dozens of additional nearby brown dwarfs using Spitzer and Hubble.

“From studies such as this we will learn much about this important class of objects, whose mass falls between that of stars and Jupiter-sized planets,” said Glenn Wahlgren, Spitzer program scientist at NASA Headquarters in Washington. “This technique will see extensive use when we are able to image individual exoplanets.”

NASA’s Jet Propulsion Laboratory, Pasadena, Calif., manages the Spitzer Space Telescope mission for NASA’s Science Mission Directorate, Washington. Science operations are conducted at the Spitzer Science Center at the California Institute of Technology in Pasadena. Data are archived at the Infrared Science Archive housed at the Infrared Processing and Analysis Center at Caltech. Caltech manages JPL for NASA. For more information about Spitzer, visit <http://spitzer.caltech.edu> and <http://www.nasa.gov/spitzer>.

The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency. NASA’s Goddard Space Flight Center in Greenbelt, Md., manages the telescope. The Space Telescope Science Institute (STScI) in Baltimore, Md., conducts Hubble science operations. STScI is operated by the Association of Universities for Research in Astronomy, Inc., in Washington. For more information about Hubble, visit <http://www.hubblesite.org> and <http://www.nasa.gov/hubble>.

Bradley Observatory Open Houses

The following are the dates of the Bradley Observatory Open House Lecture Series for the 2012-2013 school year. All Open Houses are on Fridays and begin at 8PM. Lecture topics TBA. See <http://legacy.agnesscott.edu/academics/bradleyobservatory> for more information.

Feb. 8, 2013, March 22, 2013 (Spring Equinox Concert), April 12, 2013, May 10, 2013.

The Astronomical League is coming to Atlanta!



ALCON 2013 ATLANTA

July 24-27, 2013 • Atlanta, Georgia Summer Skies, Southern Hospitality

Location: Fernbank Science Center

Host Organizations: Atlanta Astronomy Club, Astronomical League

Partnering Organization: Association of Lunar and Planetary Observers (ALPO)



Accommodations...

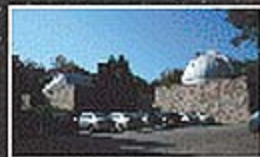
Emory Conference Center Hotel

- Shuttle service between hotel and presentations at Fernbank Science Center, and Agnes Scott College Bradley Observatory for those without transportation
- Be sure to ask for the Astronomical League rate. 1-800-933-6679, emoryconferencecenter-px.trivclick.com
- Saturday night's Awards Banquet



Primary Venue: Fernbank Science Center

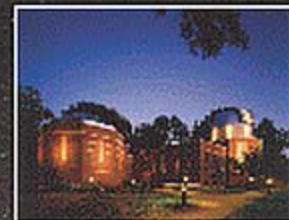
- Talks held in 70ft planetarium
- Evening shows with Zeiss Mark V projector coupled with various special effects projector
- 0.9 meter Cassegrain reflector in the Ralph Buice Memorial Observatory
- Vendor displays



Excursions around Atlanta

Agnes Scott College Bradley Observatory

- Friday night's Star BQ
- Delafield Planetarium
- 30 inch Lewis H. Beck telescope
- Atlanta Astronomy Club's Villa Rica Observatory
- Full size roll-off roof observatory
- 20 inch Newtonian reflector

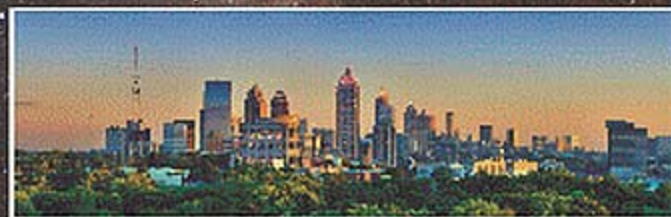


Atlanta Attractions

World of Coca-Cola
Georgia Aquarium
Zoo Atlanta
Inside CNN
Atlanta Botanical Garden
Olympic Games venues



Check www.astroleague.org
for more information
as it becomes available.

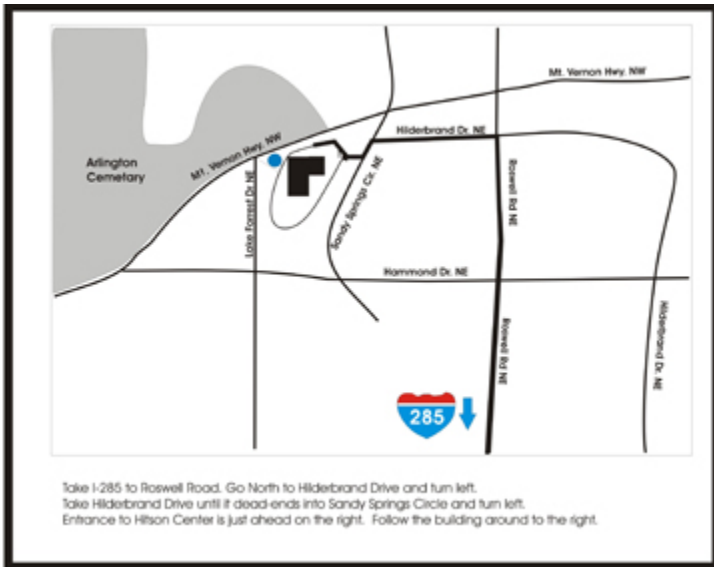


The Astronomical League

As a member of the **Atlanta Astronomy Club** you are automatically also a member of the **Astronomical League**, a nation wide affiliation of astronomy clubs. Membership in the AL provides a number of benefits for you. They include:

- * You will receive *The Reflector*, the AL's quarterly newsletter.
- * You can use the Book Service, through which you can buy astronomy-related books at a 10% discount.
- * You can participate in the Astronomical League's Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others.

To learn more about the Astronomical League and its benefits for you, visit <http://www.astroleague.org>



The AAC's meeting location at the Hitson Center in Sandy Springs.

The **Atlanta Astronomy Club, Inc.**, one of the South's largest and oldest astronomical society, meets at **8:00 P.M.** on the **3rd Friday** of each month in the Parlor Room - Hitson Center in Sandy Springs, 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:** Richard Jakiel President@AtlantaAstronomy.org
- Program Chair:** Mark Banks Programs@AtlantaAstronomy.org
- Observing Chair/BoD Chair:** Daniel Herron
Observing@AtlantaAstronomy.org
- Corresponding Secretary:** Tom Faber
Focalpoint@AtlantaAstronomy.org
- Treasurer:** Sharon Carruthers Treasurer@AtlantaAstronomy.org
- Recording Secretary:** Pixie Bruner
Secretary@AtlantaAstronomy.org
- Board Chair:** Daniel Herron, Observing@AtlantaAstronomy.org
- Board:** Brigitte Fessele, Contact info TBA
- Board:** David Lumpkin, Contact info TBA
- Board:** Steve Phillips sandsphillips@att.net
- ALCor:** Open - President@AtlantaAstronomy.org
- Elliott Chapter Director:** Larry Owens director@ceastronomy.org
- Elliott Observing Supervisor:** John Towne
observing@ceastronomy.org
- Elliott Recording Secretary:** Marie Lott mtlott@comcast.net
- Elliott Coordinator:** Alesia Rast Alesia_Rast@mail.dnr.state.ga.us
- Elliott Webmaster:** Theo Ramakers 770-788-0843
webmaster@CEastronomy.org
- Elliott Outreach Coordinator:** Theo Ramakers 770-788-0843
outreach@ceastronomy.org
- Georgia Astronomy in State Parks:** Sharon Carruthers
Treasurer@AtlantaAstronomy.org
- PSSG Chairman:** Peter Macumber pmacumber@nightsky.org
- PSSG Co-Chair:** Joanne Cirincione
starrynights@AtlantaAstronomy.org
- Sidewalk Astronomy:** Brad Isley
sidewalkastronomy@AtlantaAstronomy.org
- 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

- Feb 3rd, Sunday: Moon Last Quarter.
- Feb 9th, Saturday: **CE Chapter Meeting, 3 PM.**
- Feb 10th, Sunday: New Moon.
- Feb 11th, Monday: Moon near Mercury & Mars.
- Feb 15th, Friday: **AAC Meeting, 8PM.**
- Feb 17th, Sunday: Moon First Quarter.
- Feb 22nd, Friday: **March Focal Point Deadline.**
- Feb 25th, Monday: Full Moon.
- Feb 28th, Thursday: Moon near Spica.
- Mar 4th, Monday: Moon Last Quarter. Mercury at Inferior Conjunction.
- Mar 10th, Sunday: Daylight Saving Time begins 2AM.
- Mar 11th, Monday: New Moon.
- Mar 15th, Friday: **AAC Meeting, 8PM.**
- Mar 16th, Saturday: **CE Chapter Meeting, 3 PM.**
- Mar 17th, Sunday: Moon near Jupiter.
- Mar 19th, Tuesday: Moon First Quarter.
- Mar 20th, Wednesday: Vernal Equinox 7:02AM. **Membership Renewals Due**
- Mar 22nd, Friday: **April Focal Point Deadline.**
- Mar 27th, Wednesday: Full Moon.
- Mar 28th, Thursday: Venus at Superior Conjunction.
- Mar 29th, Friday: Uranus conjunction with sun.
- Apr 3rd, Wednesday: Moon Last Quarter.

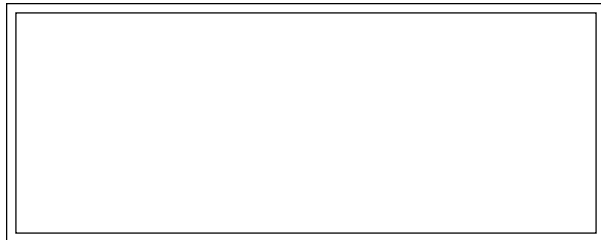
For more event listings see the calendar at www.atlantaastronomy.org

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 . This list is owned by Lemmy Abbey.

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 March is Friday, February 22nd. 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.



FROM: Tom Faber
2206 Treeridge Parkway
Alpharetta, GA 30022

Atlanta Astronomy Club

P.O. Box 76155

Atlanta, GA 30358-1155

www.atlantaastronomy.org

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