

The Focal Point

The Atlanta Astronomy Club
Established 1947
January 2018

Vol. 30 No. 5

Editor: Tom Faber

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Important Note!

Meeting Time and Day Change

At the Fernbank Science Center

Beginning in January the general meetings of the Atlanta Astronomy Club will move to the **3rd Friday of each month** and will be held at the Fernbank Science Center, near Decatur, in one of the classrooms. Following the meeting the Fernbank Observatory will be open for observing and new member orientation / training, when weather permits. The January meeting will be held on January 19th beginning at **7:30PM**. The 7:30PM meeting start time will be in effect for the January and February meetings. Beginning with the March meeting on the 16th, after the change to Daylight Saving Time on March 11, we anticipate moving the meeting start time back to 8:00PM.

January AAC Program

Our tentative speaker will be AAC member Daniel Herron, who will repeat his talk about his trip to Wyoming to view and photograph the total solar eclipse on August 21, for those who missed the November meeting. Please join us for this very interesting and informative talk. All Astronomy club meetings are free and open to the public. For more information on the Club go to www.atlantaastronomy.org

Image right: One of the many images of the total eclipse taken from a site in Wyoming by Daniel Herron.



Constellation Hunters at Charlie Elliott

Congratulations to the first ever Constellation Hunters Class at Charlie Elliott. A small group of intrepid Amateur Astronomers battled the elements for twelve months, to view and record 40 constellations. The group was lead by veteran Master Observer Valorie Whalen, who skillfully instructed her student astronomers. The group has completed their observations and will soon be submitting their work to the Astronomical League. Our Constellation Hunters for 2017 were: Cynthia Culver, Dan Culver, Richard Dickson, Stephanie Dickson, Ken Poshedly, Mike Shaw and Terrie Shaw.



December AAC Meeting Report

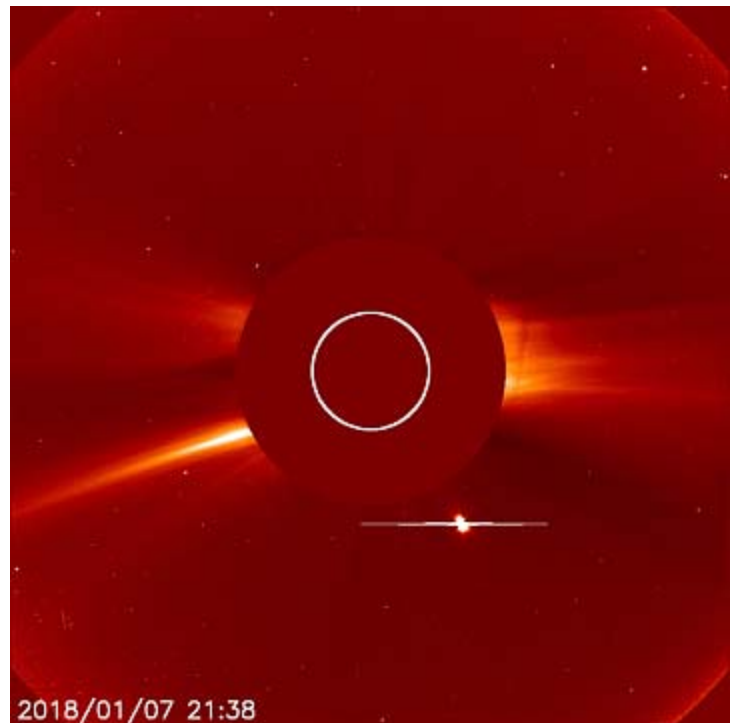
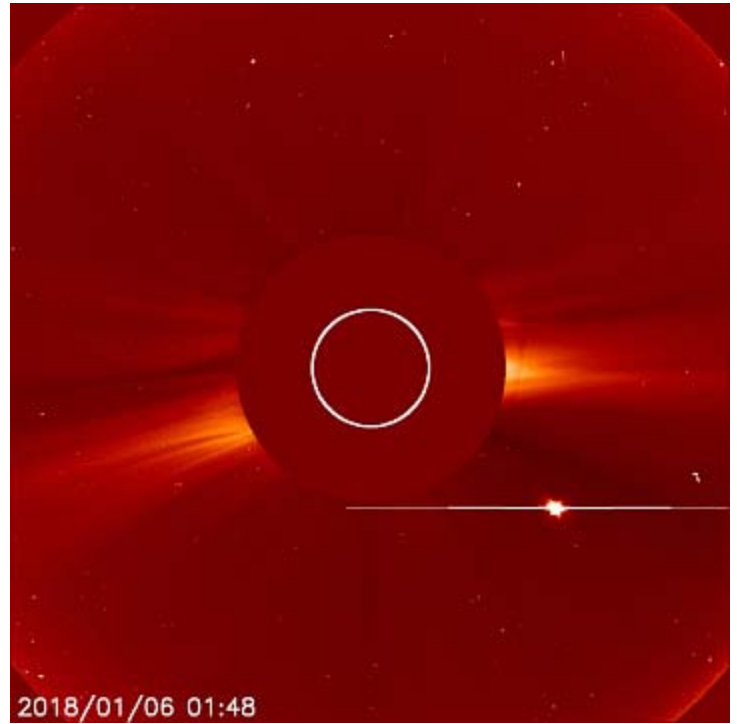
The December AAC Meeting and Holiday potluck was scheduled to be held on Saturday December 9, but due to the snow fall Friday and Friday night, which resulted in numerous power outages and the forecast for icy road conditions for Saturday evening, the officers of the AAC decided to cancel the meeting. These photos, taken by Tom Faber, show the falling snow Friday evening.



Venus passes the Sun

The planet Venus reaches superior conjunction with the Sun on January 9, after which it moves back into the evening sky on its way to its greatest elongation 46° east of the sun on August 17. Here are a couple of images taken by the Sun observing spacecraft SOHO on January 6 and 7. These images show Venus as a bright dot as it neared its closest approach to the sun. Venus is moving from right to left in the images and will pass below (south of) the sun on the 9th. The white circle on top of the camera's occulting disk shows the size of the sun's disk.

SOHO, the Solar & Heliospheric Observatory, is a project of international collaboration between ESA and NASA to study the Sun from its deep core to the outer corona and the solar wind.



The Next Charlie Elliott Meeting

Meeting Details

Another Beautiful day in the Stellar Neighborhood...

Join us Saturday, January 20th, at 3:30 p.m. at the Charlie Elliott Conference Center, Conference Room B, for an engaging and enlightening discussion with Georgia State University's Dicy Saylor! If you remember



Credit: Google Maps

all the way back to 2016, Dicy joined us and discussed her research, which was particularly interesting in that it took a new approach to find new information in existing data, eliminating the need to wait in line for time on the Hubble Space Telescope or one of the many already overwhelmed observatories. Dicy has made quite a bit of progress since she last joined us and will be on hand to give us an update on her research.

Dicy earned a B.S. in astrophysics from the University of Georgia and an M.S. in applied physics from Northern Arizona University. Dicy is currently a PhD candidate at Georgia State University and working under the advisement of Dr. Sebastian Lepine, studying the solar neighborhood. She will be joining us again to give us an update on her research to determine the rotational periods of nearby Sun-like stars. Stellar rotational periods are used to estimate the ages of stars using a method known as gyrochronology. Dicy will also discuss a test she hypothesized that can be used to test the strength of the gyrochronology method. For fun, Dicy likes to lift big heavy things and run across the state of Georgia. But not at the same time. She's a USAPL competitive powerlifter and she ran across the state of Georgia to raise money for a disabled veterans charity. I was sooo not ready to type 2018 by the way...

All of the Above!

David Whalen, Charlie Elliott Astronomy Observing Supervisor will give a short talk about what you can expect to see in the sky this month with binoculars and small telescopes, as well as the monthly observing challenge. If you've been to one of our meetings, you know that David is a

dynamic and engaging speaker and always delivers a lot of great information with plenty of laughs! Be sure to ask for the monthly target list and a SkyMap! David will be joined by Astrophotography Coordinator Mark Woolridge who will cover the imaging challenges of the month and tips on how to image them.

Observing After the Meeting

All are invited to Jon Wood Astronomy Field immediately after the meeting for observing (weather-permitting).

Tech Talks

Barry Fitzgerald will be on hand before the meeting, at 2:30 p.m., to give a Tech Talk on building an Arduino based motorized focuser with a lot of cool features, and some of them are actually useful! The Tech Talks are your chance to share something you've learned. If you have an idea for a 15-30 minute discussion or presentation that you would like to see or would like to give, contact the Charlie Elliott Program Coordinator, Steve Siedentop.

Our Monthly Meetings and Public Observing Nights for 2018

Future Charlie Elliott meetings will be held on: February 17, March 17, April 14, May 12, June 16, July 14, August 11, September 8, October 6, November 10, December 8, 2018. Meetings start approximately 2 hours before sunset.

The November Charlie Elliott Meeting

Stephanie Dickson, Secretary, Charlie Elliott Chapter

Meeting Minutes: 12/16/17

Pre-meeting presenter: Tim

Pre-meeting topic: AP

Attendees: Meeting 24, Field 25

Meeting time: 3:20pm Dinner, Meeting began at 4pm. Meeting called to order by: Mike Shaw

Outreach by Dan Thoman: Jan 2018 Berkley Lake Elem, Jan 2018 Starling Elem, 2/13/18 Morgan County Elem, 3/2/18 Astronomy Night.

Awards by Jack Fitzmeier: Marie Lott Globular Cluster, Marie Lott Carbon Star, Marie Lott Binocular Variable Star.

Other news:

Mike Shaw: Got new solar panels

Cynthia Culver: Stepping down as hospitality coordinator

Valerie Whalen: Presented with necklace from Constellation Class for all of her hard work

David gave his presentation on "All of the Above" at: 4:20pm

2 "Super Moons" in January 2018

Comet 26P, 62P, C/2016 R2 (Panstarrs)

Constellation Updates

Valerie Waylan - Constellation of the Month

Auriga - The Charioteer (Bottom star shared with Taurus)

Taurus - The Bull

Bring Completed drawings in January for submission

December Target List: Relaxing, Intriguing, Taxing

Observing Challenge: Observe a minima of Algol

12/18 2:22am

12/20 11:11pm

Continued on next page

12/23 8pm

12/26 4:49p

Celestial Events to Note:

12/21 Winter Solstice

1/7 Latest Sunrise of the year 7:43am

1/20 Next All of the Above

AP Targets by Mark Woolridge:

Caldwell 31 - Flaming Star

Beginner Target List - Flaming Star

Intermediate Target - Flaming Star

Narrowband Target - Flaming Star

Advanced Target - M77

Meeting Ended: 4:51pm

Field conditions: Very cold but mostly clear.

Hubble's Barred and Booming Spiral Galaxy

Jan. 5, 2018

Credit: ESA/Hubble & NASA

Text credit: European Space Agency

This image, captured by the NASA/ESA Hubble Space Telescope's Wide Field Camera 3 (WFC3), shows a galaxy named UGC 6093. As can be easily seen, UGC 6093 is something known as a barred spiral galaxy — it has beautiful arms that swirl outwards from a bar slicing through the galaxy's center. It is classified as an active galaxy, which means that it hosts an active galactic nucleus, or AGN: a compact region at a galaxy's center within which material is dragged towards a supermassive black hole. As this black hole devours the surrounding matter it emits intense radiation, causing it to shine brightly.

But UGC 6093 is more exotic still. The galaxy essentially acts as a giant astronomical laser that also spews out light at microwave, not visible, wavelengths — this type of object is dubbed a megamaser (maser being the term for a microwave laser). Megamasers such as UGC 6093 can be some 100 million times brighter than masers found in galaxies like the Milky Way.



Globular Cluster Messier 79

NASA/STScI News Release - Dec 12, 2017

The stars are residents of the globular star cluster Messier 79, or M79, located 41,000 light-years from Earth, in the constellation Lepus. The cluster is also known as NGC 1904.

Globular clusters are gravitationally bound groupings of as many as 1 million stars. M79 contains about 150,000 stars packed into an area measuring only 118 light-years across. These giant “star-globes” contain some of the oldest stars in our galaxy, estimated to be 11.7 billion years old.

Most globular clusters are grouped around the central hub of our pinwheel-shaped galaxy. However, M79’s home is nearly on the opposite side of the sky from the direction of the galactic center. One idea for the cluster’s unusual location is that its neighborhood may contain a higher-than-average density of stars, which fueled its formation. Another possibility is that M79 may have formed in an unusual dwarf galaxy that is merging with the Milky Way.

In the Hubble image, Sun-like stars appear yellow. The reddish stars are bright giants that represent the final stages of a star’s life. Most of the blue stars sprinkled throughout the cluster are aging “helium-burning” stars. These bright blue stars have exhausted their hydrogen fuel and are now fusing helium in their cores.

A scattering of fainter blue stars are “blue stragglers.” These unusual stars glow in blue light, mimicking the appearance of hot, young stars. Blue

stragglers form either by the merger of stars in a binary system or by the collision of two unrelated stars in M79’s crowded core.

The star cluster was discovered by Pierre Méchain in 1780. Méchain reported the finding to Charles Messier, who included it in his catalog of non-cometary objects. About four years later, using a larger telescope than Messier’s, William Herschel resolved the stars in M79, and described it as a “globular star cluster.”

The image is a combination of observations taken in 1995 and 1997 by Hubble’s Wide Field Planetary Camera 2. The red, green, and blue colors used to compose the image represent a natural view of the cluster.

The Hubble Space Telescope is a project of international cooperation between NASA and ESA (European Space Agency). NASA’s Goddard Space Flight Center in Greenbelt, Maryland, manages the telescope. The Space Telescope Science Institute (STScI) in Baltimore, Maryland, conducts Hubble science operations. STScI is operated for NASA by the Association of Universities for Research in Astronomy, Inc., in Washington, D.C.

Credits - NASA and ESA

Acknowledgment: S. Djorgovski (Caltech) and F. Ferraro (University of Bologna)



James Webb Space Telescope Early Science Observations Revealed

NASA/ESA/STScI News Release - Nov 13, 2017

Astronomers around the world will have immediate access to early data from specific science observations from NASA's James Webb Space Telescope, which will be completed within the first five months of Webb's science operations. These observing programs were chosen from a Space Telescope Science Institute call for early release science proposals, and include examining Jupiter and its moons, searching for organic molecules forming around infant stars, weighing supermassive black holes lurking in galactic cores, and hunting for baby galaxies born in the early universe.

"I'm thrilled to see the list of astronomers' most fascinating targets for the Webb telescope, and extremely eager to see the results. We fully expect to be surprised by what we find," said Dr. John C. Mather, Senior Project Scientist for the Webb telescope and Senior Astrophysicist at NASA's Goddard Space Flight Center, Greenbelt, Maryland.

The resulting observations will comprise the Director's Discretionary Early Release Science (DD-ERS), and cover the gamut of Webb science targets, from planets in our solar system to the most distant galaxies. The program provides the entire scientific community with immediate access to Webb data so they have the opportunity to analyze the data and plan follow-up observations.

"We were impressed by the high quality of the proposals received," said Dr. Ken Sembach, Director of the Space Telescope Science Institute (STScI) in Baltimore, Maryland. "These observing programs not only will generate great science, but also will be a unique resource for demonstrating the investigative capabilities of this extraordinary observatory to the worldwide scientific community."

The observations will also exercise all four of Webb's science instruments, so that the astronomical community can explore Webb's full potential. Webb has a minimum scientific lifetime of five years, so the scientific community will have to rapidly learn to use its advanced capabilities.

"We want the research community to be as scientifically productive as possible, as early as possible, which is why I am so pleased to be able to dedicate nearly 500 hours of director's discretionary time to these ERS observations," said Sembach.

One of the most widely anticipated areas of research by Webb is to study planets orbiting other stars. When such an exoplanet passes in front of its host star, starlight filters through the planet's atmosphere, which absorbs certain colors of light depending on the chemical composition. Webb will measure this absorption, using its powerful infrared spectrographs, to look for the chemical fingerprints of the atmosphere's gasses. Astronomers initially will train their gaze onto gaseous Jupiter-sized worlds like WASP-39b and WASP-43b because they are easier targets on which to apply this technique. The results will help guide observing strategies for smaller, mostly rocky and more Earth-like super-Earths, where atmospheric composition may give hints of a planet's potential habitability.

Webb also will peer into the distant universe, examining galaxies whose light has been stretched into infrared wavelengths by the expansion of space. This infrared region is beyond what Hubble can detect. Galaxy clusters are particularly rich sources of targets, since a cluster's gravity can magnify light from more distant background galaxies. DD-ERS observations will target regions of the sky already examined by Hubble's Frontier Fields program, such as the galaxy cluster MACS J0717.5+3745. Webb data will complement Hubble's, giving astronomers new insights into these cornucopias of galaxies.

Since Webb must remain shielded from sunlight, its field of view is limited to specific areas of the sky at certain times of year. As a result, the potential targets listed above may shift depending on the launch date.



More than 100 proposals for DD-ERS observations were submitted in August 2017. Of those, 13 programs requesting 460 hours of telescope time were selected following review by panels of subject matter experts and the STScI director.

Additional information about the selected DD-ERS proposals is available online.

The James Webb Space Telescope, the scientific complement to NASA's Hubble Space Telescope, will be the premier space observatory of the next decade. Webb is an international project led by NASA with its partners, ESA (European Space Agency) and CSA (Canadian Space Agency).

Light Echo around SN 2014J in M82

Hubble Spots Expanding Light Echo around Supernova

NASA/STScI News Release - Nov 9, 2017

Light from a supernova explosion in the nearby starburst galaxy M82 is reverberating off a huge dust cloud in interstellar space.

The supernova, called SN 2014J, occurred at the upper right of M82, and is marked by an "X." The supernova was discovered on Jan. 21, 2014.

The inset images at top reveal an expanding shell of light from the stellar explosion sweeping through interstellar space, called a "light echo." The images were taken 10 months to nearly two years after the violent event (Nov. 6, 2014 to Oct. 12, 2016). The light is bouncing off a giant dust cloud that extends 300 to 1,600 light-years from the supernova and is being reflected toward Earth.

SN 2014J is classified as a Type Ia supernova and is the closest such blast in at least four decades. A Type Ia supernova occurs in a binary star system consisting of a burned-out white dwarf and a companion star. The white dwarf explodes after the companion dumps too much material onto it.

The image of M82 reveals a bright blue disk, webs of shredded clouds, and fiery-looking plumes of glowing hydrogen blasting out of its central regions.

Close encounters with its larger neighbor, the spiral galaxy M81, is compressing gas in M82 and stoking the birth of multiple star clusters. Some of these stars live for only a short time and die in cataclysmic supernova blasts, as shown by SN 2014J.

Located 11.4 million light-years away, M82 appears high in the northern spring sky in the direction of the constellation Ursa Major, the Great Bear. It is also called the "Cigar Galaxy" because of the elliptical shape produced by the oblique tilt of its starry disk relative to our line of sight.

The M82 image was taken in 2006 by the Hubble Space Telescope's Advanced Camera for Surveys. The inset images of the light echo also were

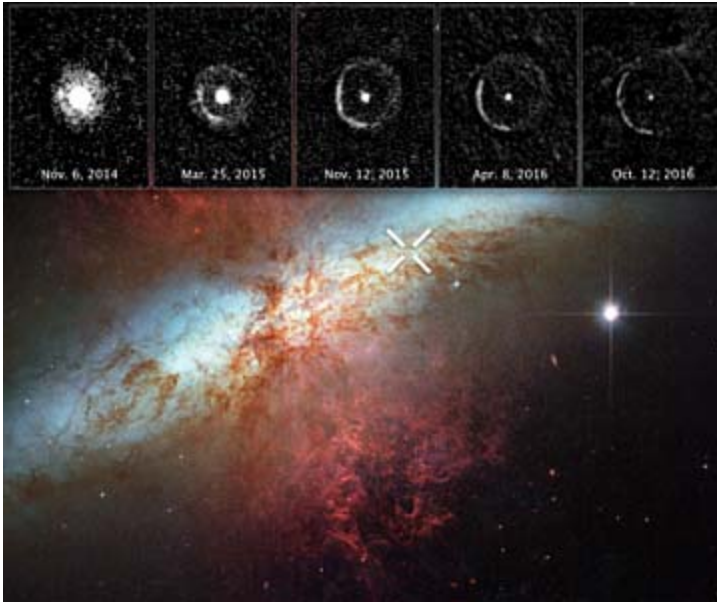
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taken by the Advanced Camera for Surveys.

The science team members are Y. Yang of Texas A&M University, College Station, and the Weizmann Institute of Science, Rehovot, Israel; P.J. Brown of Texas A&M University, College Station; L. Wang of Texas A&M University, College Station, and Purple Mountain Observatory, China; D. Baade, A. Cikota, F. Patat, and J. Spyromilio of the European Organization for Astronomical Research in the Southern Hemisphere, Garching, Germany; M. Cracraft and W.B. Sparks of the Space Telescope Science Institute, Baltimore, Maryland; P.A. Hoflich of Florida State University, Tallahassee; J. Maund and H.F. Stevance of the University of Sheffield, U.K.; X. Wang of Tsinghua University, Beijing Shi; and J.C. Wheeler of the University of Texas at Austin.

Credits: NASA, ESA, and Y. Yang (Texas A&M University and Weizmann Institute of Science, Israel)

Acknowledgment: M. Mountain (AURA) and The Hubble Heritage Team (STScI/AURA)



Credits: NASA, ESA, and Y. Yang (Texas A&M University and Weizmann Institute of Science, Israel). Acknowledgment: M. Mountain (AURA) and The Hubble Heritage Team (STScI/AURA)

The **Atlanta Astronomy Club, Inc.**, one of the South's largest and oldest astronomical society, meets at **3:00 P.M.** on the 2nd Saturday of each month at the Fernbank Science Center in Decatur, or occasionally at other locations or times. 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 **\$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 posted. 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

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PSSG Co-Chair: Open

Sidewalk Astronomy: Open

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Light Trespass: Ken Edwards, Contact info TBA

Woodruff Observ. Coordinator: Sharon Carruthers

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AAC Webmaster: Daniel Herron

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

AAC Events are listed in BOLD

- Jan 1st, Monday: Mercury at Greatest Elongation West.
- Jan 2nd, Tuesday: Full Moon.
- Jan 4th, Thursday: Earth at Aphelion. Latest Sunrise in Atlanta: ~7:42 AM.
- Jan 7th, Sunday: Conjunction Mars and Jupiter morning.
- Jan 8th, Monday: Moon Last Quarter.
- Jan 9th, Tuesday: Venus at superior conjunction.
- Jan 12th, Friday: Conjunction Mercury and Saturn morning.
- Jan 15th, Monday: Grouping of Moon, Mercury, and Saturn morning.
- Jan 16th, Tuesday: New Moon.
- Jan 19th, Friday: **AAC Meeting at Fernbank Science Center at 7:30PM.**
- Jan 20th, Saturday: **CEA Chapter Meeting at 3:30PM.**
- Jan 24th, Wednesday: Moon First Quarter.
- Jan 31st, Wed: Lunar Eclipse: Penumbra visible at ~6:20AM, Partial Begins 6:48, Moonset 7:35AM.
- Feb 7th, Wednesday: Moon Last Quarter.
- Feb 11th, Sunday: Moon near Saturn.
- Feb 15th, Thursday: New Moon.
- Feb 16th, Friday: **AAC Meeting at Fernbank Science Center at 7:30PM.**
- Feb 17th, Saturday: **CEA Chapter Meeting.**
- Feb 23rd, Friday: Moon First Quarter.
- Mar 1st, Thursday: Full Moon.
- Mar 9th, Friday: Moon Last Quarter.
- Mar 11th, Sunday: Daylight Saving Time Begins at 2:00AM.
- Mar 16th, Friday: **AAC Meeting at Fernbank Science Center at 8:00PM.**
- Mar 17th, Saturday: **CEA Chapter Meeting.** New Moon.

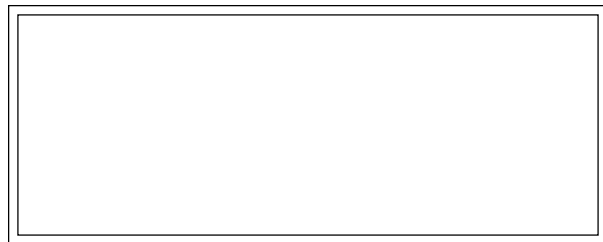
For more event listings see the calendar at www.atlantaastronomy.org.

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 with images separate but Word documents or PDFs are okay. **The deadline for February is Saturday, January 27. Submissions received after the deadline will go in the following issue.**



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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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