

The Focal Point

The Atlanta Astronomy Club
Established 1947
March 2023

Vol. 35 No. 7

Editor: Tom Faber

Table of Contents

- Page 1...** CE Chapter Meeting & Potluck, Membership Renewals
Page 2... M82 by Richard Jakiel
Page 3... M101 by Dan Llewellyn
Page 4... M97 and M108 by Richard Jakiel
Page 5... “Seeing Triple”
Page 6... Hubble Captures DART Asteroid Impact Debris
Page 7... AAC Online, Memberships, Contacts
Page 8... Calendar, AAC List Serv Info, Focal Point Deadline

Charlie Elliott March Meeting

This Month — Come for the food, stay for the stars! Join us Saturday, March 18, 2023 at 5:30 p.m. at the Charlie Elliott Wildlife Center Campbell Aquatics Building for our next potluck dinner!

If you’ve already been to any of our potlucks, you’re probably already looking forward to the good food and good company that these events have become known for.

Potlucks are great when everyone chips in and ours are no different. In addition to all of the good things like banana pudding, barbecue, and mac & cheese, we need help with set-up and clean-up as well.

Please click on the following link, then consider signing up to contribute as you can:
<https://bit.ly/CEpotluckRSVP>

Meeting Agenda — First, we’ll have opening remarks and general introductions by our club director Steve Siedentop for the benefit of newcomers. Then we line up and partake of the scrumptious goodies donated by all. We’ll also have another most informative presentation of what’s up in the sky this (and part of next) month by Observing Supervisor Dennis Ruzeski. And we’re also open to those who wish to share any of their own observing experiences or questions.

Following that (and weather-permitting), we’ll head out to the nearby Jon Wood Astronomy Field; all are invited to bring their own telescopes or binoculars or at least their interest in astronomy. Sunset on our meeting night will be at 7:46 p.m. and the Elliott Trail sliding gate closes at 7 p.m., so be sure to be on the observing field before then. The sooner, the better. Club members already have the Elliott Trail gate lock digital combination, others should be on the field by 7 p.m.

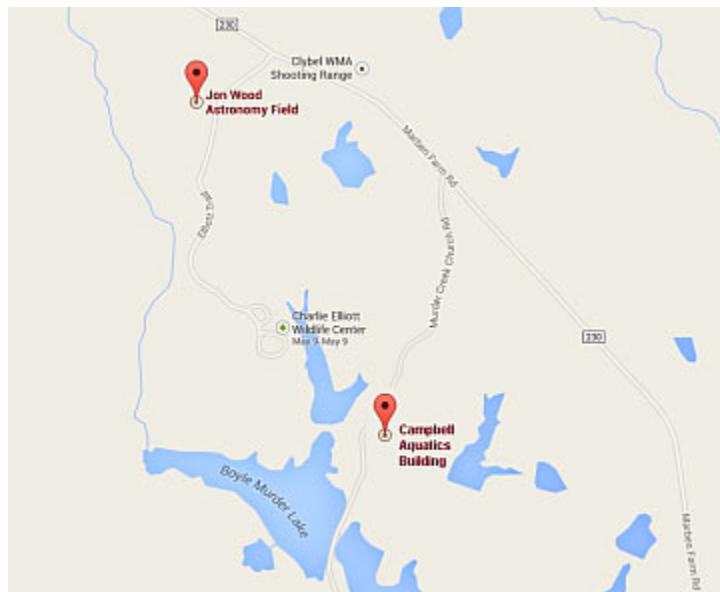


March is Membership Renewal Month

The AAC has moved to a “one-date-for-all” membership renewal. ALL CLUB MEMBERS, with certain exceptions, should submit their \$30 dues for 2023 by the end of March. Please send your renewals to AAC Treasurer Sharon Carruthers, or renew online using PayPal. For more information see:

http://atlantaastronomy.org/?page_id=22

Thank You for your support of the AAC!



Credit: Google Maps

Location, Location, Location — To find the Jon Wood Astronomy Field: Head to Mansfield on Hwy 11, Turn off Hwy 11 onto Marben Farm Road (just south of Mansfield), Turn right onto Elliott Trail, Go a short distance, then turn right onto the dirt driveway that leads up to the Jon Wood Astronomy Field.

Observing on the Jon Wood Astronomy Field

Please refrain from using white lights on the observing field to preserve night vision. Red lights are readily available at department and sporting goods stores in the Atlanta area. As stated above all are invited, however, to bring their own telescopes or binoculars or at least their interest in astronomy. For more information about Charlie Elliott Wildlife Center, visit:

<https://georgiawildlife.com/charlie-elliott-wildlife-center>

Continued on next page.

A Few Items to Note...

Plan to treat this outing like you would a camping trip and be prepared. Dress appropriately for the weather and the environment, bring snacks and drinks if needed, and plan to take your garbage with you. There is a regularly serviced Porta-Potty on Jon Wood Astronomy Field.

The main gate on Elliott Trail closes to new entry at 7 p.m., but will automatically open for exiting traffic at all times. Therefore, if you plan to observe on the Jon Wood Astronomy Field, please arrive before 7 p.m. or else make arrangements with a club member for access.

Our Monthly Meetings and Public Observing Nights

Our monthly meetings and public observing nights are free and open to the public. Visit the “Our Calendar” tab at the top of the page for our 2023 meeting, observing, and outreach schedule. Start times vary through the year so please check back for details.

View our Full Calendar of all meetings & outreach events here:

<http://ceastronomy.org/blog/outreach/charlie-elliott-astronomy-calendar>

It's easy to become a member of Charlie Elliott Astronomy!

Pay dues with PayPal here: <http://atlantaastronomy.org/membership/>



M82 by Richard Jakiel

Richard made this image of the bright starburst galaxy M82 in Ursa Major using the telescope at Hard Labor Creek Observatory. M82 is a member of the M81 Galaxy Group.

For more information about M82 see:

https://en.wikipedia.org/wiki/Messier_82

https://en.wikipedia.org/wiki/M81_Group



M101 by Dan Llewellyn

Messier 101 the Pinwheel Galaxy. This one won't hit the meridian early for a while, but back on February 18th, 2023 I woke up at 4:30am. The front had cleared and I still had the F7 reducer on the c14 Edge due to a previous imaging session under poor skies. I knew the seeing continued to be poor, but M101 hit the meridian just around 5am, so why not? Stack of 30-101 second subs Sony A7s Orion LPR. I imaged until astronomical twilight. It definitely would be sharper under better seeing but I think it turned out reasonable for conditions.

M101 contains numerous H-II regions visible in this image. Ten of them have their own NGC numbers.

For more information about M101 see https://en.wikipedia.org/wiki/Pinwheel_Galaxy



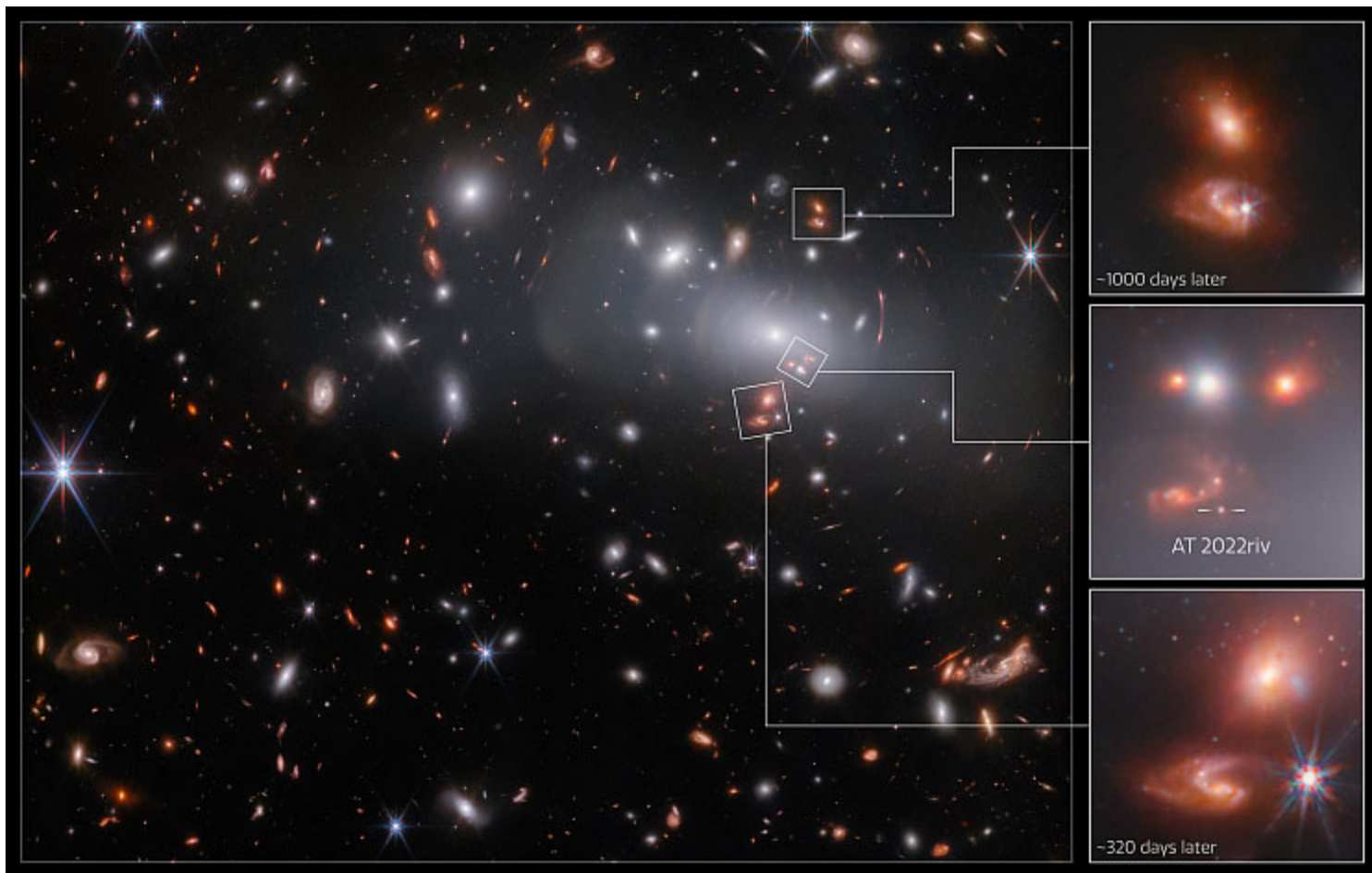
M97 and M108 by Richard Jakiel

Richard took this image of the planetary nebula M97 (the Owl Nebula) and the edge-on spiral galaxy M108 in Ursa Major from his suburban backyard using a 6-inch Ritchey–Chrétien telescope. The bright star about half way between the two is the 7th magnitude double star HD 97455.

For more information about these objects see:

https://en.wikipedia.org/wiki/Owl_Nebula and

https://en.wikipedia.org/wiki/Messier_108



Seeing Triple

JWST News Release: February 28, 2023

Good things come in threes!

This Webb image features a special galaxy that appears three times. Why? There's a galaxy cluster here whose mass and gravity are so great that time and space around it gets warped. This magnifies, multiplies, and distorts distant galaxies behind the cluster, such as the one highlighted in the three white boxes. The effect is known as gravitational lensing.

The tripled galaxy contains an exploding star, part of a Type Ia (pronounced One-A) supernova. These supernovae have a standard brightness, but this particular galaxy's supernova has been magnified by the cluster to look closer and brighter. By comparing the standard brightness with how bright this supernova appears to be, we can calculate the true distance of its galaxy.

The inset images show close-ups of each of the three white boxes that are highlighted. The gravitational lens has created three lensed images of the background galaxy, which are not uniform in size, position or age. Because mass in the galaxy cluster is distributed unevenly, rays of light emitted by the supernova are bent by the lens in different amounts, and so they take longer or shorter paths to the viewer — resulting in separate images. The light that took the longest path gives us the oldest image of the galaxy, in which the supernova is still visible. (Middle, with the supernova labeled as AT 2022riv) The next image is of the galaxy as it appears roughly 320 days later than the first one, and the last image roughly 1000 days after the first. At both later points in time, the supernova has already faded from view.

Learn more: esaweb.org/images/potm2302a/

Credit: ESA/Webb, NASA & CSA, P. Kelly

Stars and galaxies, in shades of white and reddish orange, are scattered across a dark background. Larger stars resemble snowflakes due to their eight-pointed diffraction spike pattern. The galaxies come in an assortment of sizes and shapes: spirals, arcs, blobs and dots. In the upper right corner, there is a foreground galaxy cluster with a diffuse white glow. Behind the cluster are galaxies that have been magnified, distorted and multiplied due to the sheer mass and gravity of the cluster, an effect called gravitational lensing. One of these magnified galaxies is of note to astronomers. It appears three times in the upper right corner, and each of its appearances is highlighted with a small white box. This galaxy looks like a tiny orange spiral. In all three white boxes, there are other tiny orange or white light sources right next to it. On the right side are three inset images, each corresponding to one of the small white boxed high-lighted views of the lensed galaxy. In the middle is the oldest image, which has multiple light sources in it which are depicted here as white and orange. A small orange dot is labeled AT 2022riv; this is the super nova. The bottom box has light that is 320 days older and there are 3 light sources. The top box is about 1000 days older than the middle image.



Hubble Captures Movie of DART Asteroid Impact Debris

NASA/ESA/STScI News Release - March 01, 2023

In 2022 NASA embarked on a bold experiment to see if they could change an asteroid's velocity by smacking it with a ballistic probe – kind of like hitting it with a hammer. This experiment was to test a potential technique to someday deflect an asteroid on a collision course to Earth. Perhaps, for the first time in the history of the universe, an intelligent planetary species sought ways to avoid its own potential extinction by threats from outer space (something the dinosaurs, who were wiped out 65 million years ago by a rogue asteroid, never evolved to accomplish). Called DART (Double

Asteroid Redirection Test), the target was a binary asteroid Didymos/Dimorphos. On September 26, 2022, Dimorphos was hit with the DART spacecraft, which was half the weight of a small car.

Hubble had a ringside seat to the demolition derby. It fired off a series of snapshots over several days capturing the outflow of tons of dusty debris from the 13,000-miles-per-hour impact. Astronomers didn't know what to expect. They were surprised, delighted, and somewhat mystified by the results. The dust blew off the asteroid into a cone shape, got twisted-up along the asteroid's orbit about its companion, and was then blown into a comet-like tail. Knowing how to steer a rogue asteroid away from a catastrophic collision with Earth might save humanity someday.

Like a sports photographer at an auto-racing event, NASA's Hubble Space Telescope captured a series of photos of asteroid Dimorphos when it was deliberately hit by a 1,200-pound NASA spacecraft called DART on September 26, 2022.

The primary objective of DART, which stands for Double Asteroid Redirection Test, was to test our ability to alter the asteroid's trajectory as it orbits its larger companion asteroid, Didymos. Though neither Didymos nor Dimorphos poses any threat to Earth, data from the mission will help inform researchers how to potentially divert an asteroid's path away from Earth, if ever necessary. The DART experiment also provided fresh insights into planetary collisions that may have been common in the early solar system.

Hubble's time-lapse movie of the aftermath of DART's collision reveals surprising and remarkable, hour-by-hour changes as dust and chunks of debris were flung into space. Smashing head on into the asteroid at 13,000 miles per hour, the DART impactor blasted over 1,000 tons of dust and rock off of the asteroid.

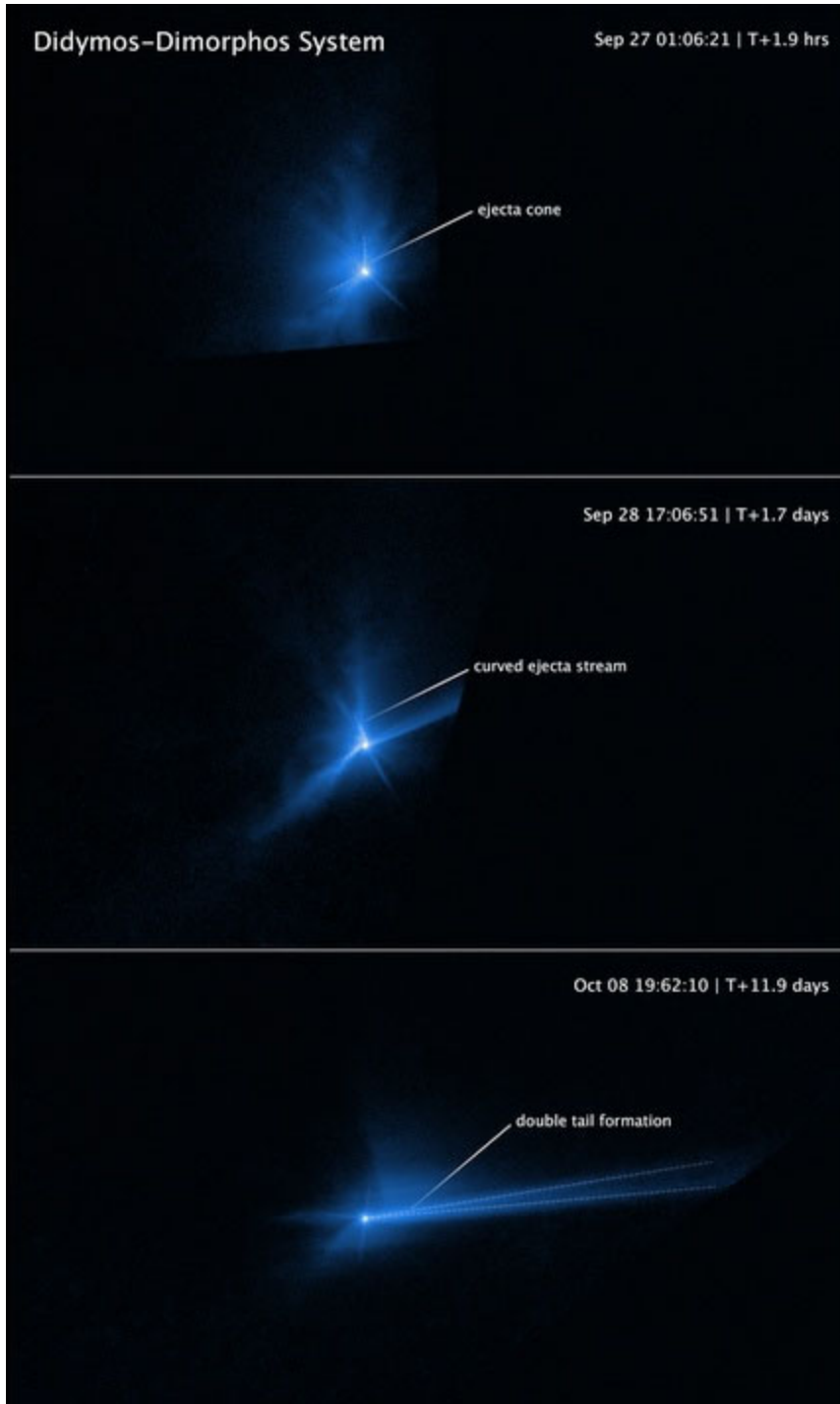
The Hubble movie offers invaluable new clues into how the debris was dispersed into a complex pattern in the days following the impact. This was over a volume of space much larger than could be recorded by the LICIAcube cubesat, which flew past the binary asteroid minutes after DART's impact.

"The DART impact happened in a binary asteroid system. We've never witnessed an object collide with an asteroid in a binary asteroid system before in real time, and it's really surprising. I think it's fantastic. Too much stuff is going on here. It's going to take some time to figure out," said Jian-Yang Li of the Planetary Science Institute in Tucson, Arizona. The study, led by Li along with 63 other DART team members, was published on March 1 in the journal Nature.

The movie shows three overlapping stages of the impact aftermath: the formation of an ejecta cone, the spiral swirl of debris caught up along the asteroid's orbit about its companion asteroid, and the tail swept behind the asteroid by the pressure of sunlight (resembling a windsock caught in a breeze).

The Hubble movie starts at 1.3 hours before impact. In this view both Didymos and Dimorphos are within the central bright spot; even Hubble can't resolve the two asteroids separately. The thin, straight spikes projecting away from the center (and seen in later images) are artifacts of Hubble's optics. The first post-impact snapshot is 2 hours after the event. Debris flies away from the asteroid, moving with a range of speeds faster than four miles per hour (fast enough to escape the asteroid's gravitational pull, so it does not fall back

Continued on next page.



onto the asteroid). The ejecta forms a largely hollow cone with long, stringy filaments.

At about 17 hours after the impact the debris pattern entered a second stage. The dynamic interaction within the binary system starts to distort the cone shape of the ejecta pattern. The most prominent structures are rotating, pinwheel-shaped features. The pinwheel is tied to the gravitational pull of the companion asteroid, Didymos. "This is really unique for this particular incident," said Li. "When I first saw these images, I couldn't believe these features. I thought maybe the image was smeared or something."

Hubble next captures the debris being swept back into a comet-like tail by the pressure of sunlight on the tiny dust particles. This stretches out into a debris train where the lightest particles travel the fastest and farthest from the asteroid. The mystery is compounded later when Hubble records the tail splitting in two for a few days.

A multitude of other telescopes on Earth and in space, including NASA's James Webb Space Telescope and Lucy spacecraft also observed the DART impact and its outcomes.

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



The **Atlanta Astronomy Club, Inc.**, one of the South's largest and oldest astronomical society, meets at **3:00 P.M.** on the 3rd 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

President: Dave Lumpkin President@AtlantaAstronomy.org
Program Chair: Open Programs@AtlantaAstronomy.org
Observing Chair: Daniel Herron Observing@AtlantaAstronomy.org
Corresponding Secretary: Tom Faber
Focalpoint@AtlantaAstronomy.org
Treasurer: Sharon Carruthers Treasurer@AtlantaAstronomy.org
Recording Secretary: Lilli Lindbeck,
Secretary@AtlantaAstronomy.org
Board Chair: Sharon Carruthers Treasurer@AtlantaAstronomy.org
Board: Brigitte Fessele, bhfessele1@gmail.com
Board: Open
Board: Steve Phillips sandsphillips@att.net
ALCor: Ken Olson, keneolson@yahoo.com
Elliott Chapter Director: Steve Siedentop
director@ceastronomy.org
Elliott Observing Supervisor: Dennis Ruseski
observing@ceastronomy.org
Elliott Recording Secretary: Daniel de la Reza
secretary@ceastronomy.org
Elliott Program Coordinator: Steve Siedentop
program@ceastronomy.org
Elliott Outreach Coordinator: Marie Lott
outreach@ceastronomy.org
Elliott Astrophotography Coordinator: Mike Mardis
Elliott Chapter AL Liaison: David Whalen
Elliott Facilities Coordinator: Matt Harvey
facilities@CEastronomy.org
Georgia Astronomy in State Parks: Sharon Carruthers
Treasurer@AtlantaAstronomy.org
PSSG Chairman: Peter Macumber pmacumber@nightsky.org
PSSG Co-Chair: Open
Sidewalk Astronomy: Open
sidewalkastronomy@AtlantaAstronomy.org
Light Tresspass: Ken Edwards, Contact info TBA
Woodruff Observ. Coordinator: Sharon Carruthers
Treasurer@AtlantaAstronomy.org
AAC Webmaster: Daniel Herron

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

AAC Events are listed in BOLD

- Mar 14th, Tuesday: Moon Last Quarter.
- Mar 18th, Saturday: **CEA Chapter Meeting, Potluck, and Observing starting at 5:30 PM.**
- Mar 19th, Sunday: Moon near Saturn Morning.
- Mar 20th, Monday: Spring Equinox 5:24 PM.
- Mar 21st, Tuesday: New Moon.
- Mar 22nd, Wednesday: Moon near Jupiter evening.
- Mar 23rd, Thursday: Moon near Venus evening.
- Mar 25th, Saturday: Moon near Pleiades evening.
- Mar 27th, Monday: Mercury near Jupiter evening.
- Mar 28th, Tuesday: Moon First Quarter.
- Apr 6th, Thursday: Full Moon.
- Apr 10th, Monday: Venus near Pleiades evening.
- Apr 11th, Tuesday: Jupiter conjunction with Sun.
- Apr 13th, Thursday: Moon Last Quarter.
- Apr 15th, Saturday: **CEA Chapter Members Observing Night.**
- Apr 16th, Sunday: Venus near Hyades evening.
- Apr 20th, Thursday: New Moon.
- Apr 22nd, Saturday: **CEA Chapter Meeting at 6:00 PM.** Lyrids Meteor Shower peaks.
- Apr 23rd, Sunday: Moon near Venus evening.
- Apr 25th, Tuesday: Moon near Mars evening.
- Apr 27th, Thursday: Moon First Quarter.
- May 5th, Friday: Full Moon. Eta Aquarids Meteor Shower peaks.
- May 12th, Friday: Moon Last Quarter.
- May 19th, Friday: New Moon.

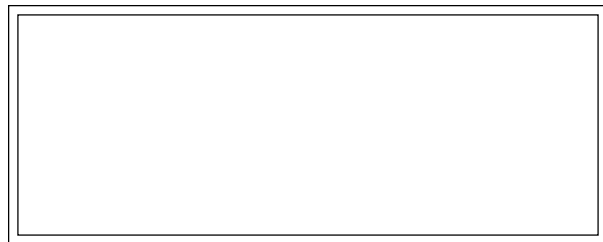
For more event listings and updates see the calendar at www.atlantaastronomy.org

Atlanta Astronomy Club Listserv

Because of the shutdown of Yahoo Groups, the Atlanta Astronomy Club Mailing List has been moved to IO Groups. You can visit the group, start reading messages and posting them here: <https://groups.io/g/AtlantaAstronomyClub>.

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 April is Sunday, March 26. Submissions received after the deadline will go in the following issue.**



FIRST CLASS



www.betagg.com



Atlanta Astronomy Club
P.O. Box 76155
Atlanta, GA 30358-1155
www.atlantaastronomy.org
On Twitter at <http://twitter.com/atlastro>

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

Newsletter of The Atlanta Astronomy Club, Inc.

The Focal Point

