

The Focal Point

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The Atlanta Astronomy Club
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Editor: Tom Faber

Table of Contents

- Page 1... CE Chapter Observing, AAC General Meeting!
- Page 2... The AAC July Meeting Report
- Page 3... M8 and M20 by image Richard Jakiel
- Page 4... Comet ATLAS & Hoag's Object by Dan Llewellyn
- Page 5... "Detailed Infrared Image of Actively Forming Stars"
- Page 6... "Hubble Sees Boulders Escaping from Asteroid Dimorphos"
- Page 7... AAC Online, Memberships, Contacts
- Page 8... Calendar, AAC List Serv Info, Focal Point Deadline

Charlie Elliott August Observing

Summer is upon us! While the days may be long and the nights may be short, there are still plenty of opportunities for observing and imaging. Weather permitting, join us for Summer Observing at Charlie Elliott on August 19th, 2023 at 8:00 p.m. on Jon Wood Astronomy Field (There will be no indoor meeting this month). Please note, that this event is subject to the weather cooperating. We'll update this web page (<http://ceastronomy.org/blog/home/>) and the Charlie Elliott Facebook Page as we get closer to the date and the weather forecast becomes more reliable.



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 trash with you.

There is a regularly serviced Porte-Potty on the field.

The main gate on Elliott Trail closes to new entry by vehicle at 7 p.m., but will automatically open for exiting traffic at all times. If you are not a member and plan to arrive after 7 p.m., please make arrangements with a club member for access at least a day in advance.

Please refrain from using white light on the field. Red headlamps are cheap and easy to find at your favorite store. They're even cheaper to make with a spare flashlight and red nail-polish on the lens.

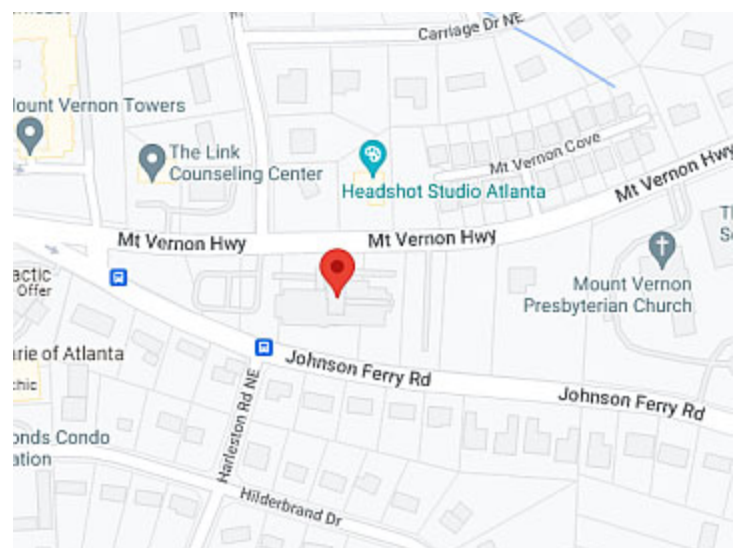
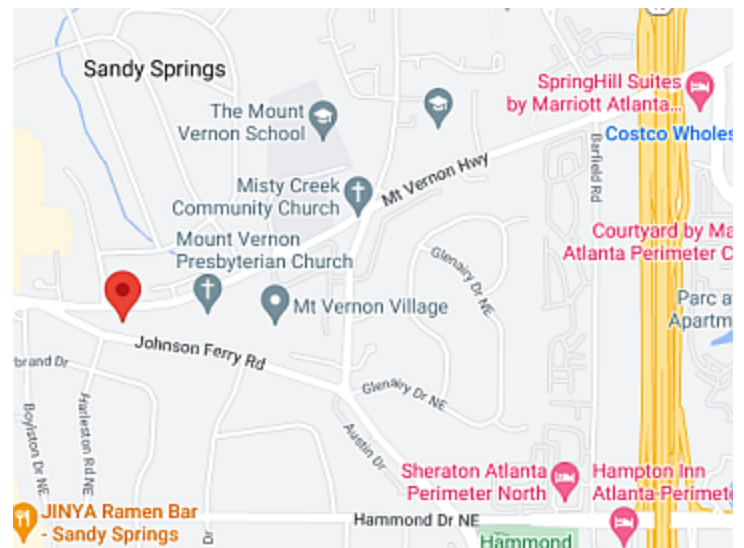
For more information about Charlie Elliott Wildlife Center, please visit the Charlie Elliott website.

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

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AAC Meeting Tuesday, Aug 8th!

The Atlanta Astronomy Club will hold its next general meeting on Tuesday, August 8, in the Sandy Springs Library at 395 Mount Vernon Hwy NE, Sandy Springs, GA 30328 (see maps below). The meeting will be held from 6:30-7:45PM. The meeting agenda is to be determined. Some club business will be presented and member catch-ups will occur. There will also be a speaker - topic TBD. Hope to see you there!



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. See map to the right.

Observing on the Jon Wood Astronomy Field

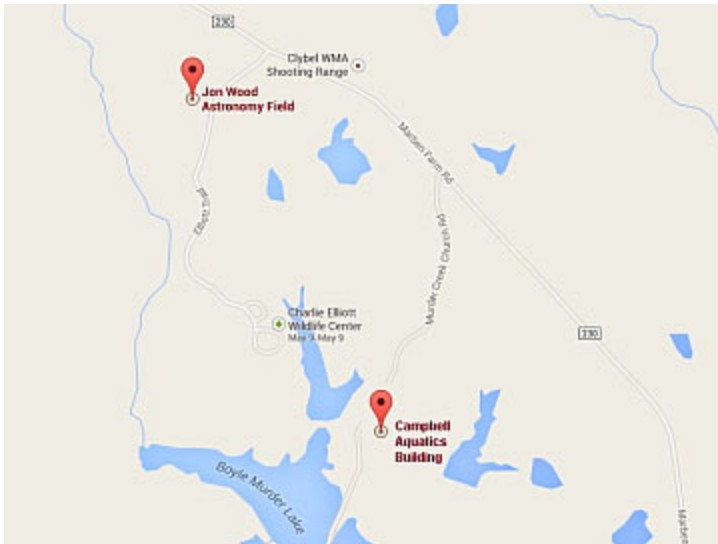
Please refrain from using white lights on the observing field to preserve night vision. Red lights are readily available at department and sporting goods stores in the Atlanta area. As stated above all are invited, however, to bring their own telescopes or binoculars or at least their interest in astronomy.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

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/>



Credit: Google Maps

AAC July Meeting Report

Photos by Tom Faber

The first in-person Atlanta Astronomy Club general meeting since the start of the Covid-19 pandemic was held on Tuesday, July 11, in the Sandy Springs Library at 6:30PM. About 30 club members and guests were present.

Club member Phil Danneman (photo below) presented a very interesting talk titled “Moons of the Solar System” in which he talked about the myriad moons accompanying the planets (and some asteroids) of the Solar System.

After Phil’s talk some club announcements were made by club officers President David Lumpkin, Treasurer Sharon Carruthers, and Observing Chair Daniel Herron.

Join us at the Sandy Springs Library at 6:30PM on Tuesday August 8 for the next AAC General Meeting.





The Lagoon and Trifid Nebulae by Richard Jakiel

Here are a couple of summer sky delights imaged by Richard Jakiel, Messier 8 and Messier 20.

M8 the Lagoon Nebula, is a bright star forming region in the heart of the Sagittarius Milky Way. Rich made this image using a 100 mm APO refractor and a Canon 60 DA. It was imaged from the Derrlick Astronomy Village. M20, aka the “Trifid Nebula”, also in Sagittarius, was imaged with an 8-inch from his home in light polluted suburbia.

For more information about these objects see: https://en.wikipedia.org/wiki/Messier_8 and

https://en.wikipedia.org/wiki/Messier_20



Comet ATLAS & Hoag's Object by Dan Llewellyn

Comet C/2019 T4 (ATLAS) near Hoag's object (above the comet head, ringy thingy). Note the 2 very small galaxies to the right of Hoag. Shout out to Ira Bell who imaged this combo the night before from Sierra Remote Observatory. Fortunately the next night the skies were clear here at DAV and I put the C14 Edge on it, June 10, 2023. Hoag's object is a crazy cool ring galaxy in the constellation of Serpens Caput.

For more about see: https://en.wikipedia.org/wiki/Hoag%27s_Object



NASA's James Webb Space Telescope has captured a tightly bound pair of actively forming stars, known as Herbig-Haro 46/47, in high-resolution near-infrared light. Look for them at the center of the red diffraction spikes, appearing as an orange-white splotch. Herbig-Haro 46/47 is an important object to study because it is relatively young – only a few thousand years old. Star systems take millions of years to fully form. Targets like this give researchers insight into how much mass stars gather over time, potentially allowing them to model how our own Sun, which is a low-mass star, formed – along with its planetary system. Credits: Image: NASA, ESA, CSA. Image Processing: Joseph DePasquale (STScI)

Webb Snaps Highly Detailed Infrared Image of Actively Forming Stars

NASA/STScI News Release - July 26, 2023

NASA's James Webb Space Telescope has captured the “antics” of a pair of actively forming young stars, known as Herbig-Haro 46/47, in high-resolution near-infrared light. To find them, trace the bright pink and red diffraction spikes until you hit the center: The stars are within the orange-white splotch. They are buried deeply in a disk of gas and dust that feeds their growth as they continue to gain mass. The disk is not visible, but its shadow can be seen in the two dark, conical regions surrounding the central stars.

The most striking details are the two-sided lobes that fan out from the actively forming central stars, represented in fiery orange. Much of this material was shot out from those stars as they repeatedly ingest and eject the gas and dust that immediately surround them over thousands of years.

When material from more recent ejections runs into older material, it changes the shape of these lobes. This activity is like a large fountain being turned on and off in rapid, but random succession, leading to billowing patterns in the pool below it. Some jets send out more material and others

launch at faster speeds. Why? It's likely related to how much material fell onto the stars at a particular point in time.

The stars' more recent ejections appear in a thread-like blue. They run just below the red horizontal diffraction spike at 2 o'clock. Along the right side, these ejections make clearer wavy patterns. They are disconnected at points, and end in a remarkable uneven light purple circle in the thickest orange area. Lighter blue, curly lines also emerge on the left, near the central stars, but are sometimes overshadowed by the bright red diffraction spike.

All of these jets are crucial to star formation itself. Ejections regulate how much mass the stars ultimately gather. (The disk of gas and dust feeding the stars is small. Imagine a band tightly tied around the stars.)

Now, turn your eye to the second most prominent feature: the effervescent blue cloud. This is a region of dense dust and gas, known both as a nebula and more formally as a Bok globule. When viewed mainly in visible light, it appears almost completely black – only a few background stars peek through. In Webb's crisp near-infrared image, we can see into and through the gauzy layers of this cloud, bringing a lot more of Herbig-Haro 46/47 into focus, while also revealing a deep range of stars and galaxies that lie well beyond it. The nebula's edges appear in a soft orange outline, like a backward L along the right and bottom.

This nebula is significant – its presence influences the shapes of the jets shot out by the central stars. As ejected material rams into the nebula on the lower left, there is more opportunity for the jets to interact with molecules within the nebula, causing them both to light up.

There are two other areas to look at to compare the asymmetry of the two lobes. Glance toward the upper right to pick out a blobby, almost sponge-shaped ejecta that appears separate from the larger lobe. Only a few threads of semi-transparent wisps of material point toward the larger lobe.

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Almost transparent, tentacle-like shapes also appear to be drifting behind it, like streamers in a cosmic wind. In contrast, at lower left, look beyond the hefty lobe to find an arc. Both are made up of material that was pushed the farthest and possibly by earlier ejections. The arcs appear to be pointed in different directions, and may have originated from different outflows.

Take another long look at this image. Although it appears Webb has snapped Herbig-Haro 46/47 edge-on, one side is angled slightly closer to Earth. Counterintuitively, it's the smaller right half. Though the left side is larger and brighter, it is pointing away from us.

Over millions of years, the stars in Herbig-Haro 46/47 will fully form – clearing the scene of these fantastic, multihued ejections, allowing the binary stars to take center stage against a galaxy-filled background.

Webb can reveal so much detail in Herbig-Haro 46/47 for two reasons. The object is relatively close to Earth, and Webb's image is made up of several exposures, which adds to its depth.

Herbig-Haro 46/47 lies only 1,470 light-years away in the Vela Constellation.

The James Webb Space Telescope is the world's premier space science observatory. Webb is solving mysteries in our solar system, looking beyond to distant worlds around other stars, and probing the mysterious structures and origins of our universe and our place in it. Webb is an international program led by NASA with its partners, ESA (European Space Agency) and the Canadian Space Agency.

Hubble Sees Boulders Escaping from Asteroid Dimorphos

NASA/STScI News Release - July 20, 2023

The popular 1954 rock son "Shake, Rattle and, Roll," could be the theme music for the Hubble Space Telescope's latest discovery about what is happening to the asteroid Dimorphos in the aftermath of NASA's DART (Double Asteroid Redirection Test) experiment. DART intentionally impacted Dimorphos on September 26, 2022, slightly changing the trajectory of its orbit around the larger asteroid Didymos.

Astronomers using Hubble's extraordinary sensitivity have discovered a swarm of boulders that were possibly shaken off the asteroid when NASA deliberately slammed the half-ton DART impactor spacecraft into Dimorphos at approximately 14,000 miles per hour.

The 37 free-flung boulders range in size from three feet to 22 feet across, based on Hubble photometry. They are drifting away from the asteroid at little more than a half-mile per hour – roughly the walking speed of a giant tortoise. The total mass in these detected boulders is about 0.1% the mass of Dimorphos.

"This is a spectacular observation – much better than I expected. We see a cloud of boulders carrying mass and energy away from the impact target. The numbers, sizes, and shapes of the boulders are consistent with them having been knocked off the surface of Dimorphos by the impact," said David Jewitt of the University of California at Los Angeles, a planetary scientist who has been using Hubble to track changes in the asteroid during and after the DART impact. "This tells us for the first time what happens when you hit an asteroid and see material coming out up to the largest sizes. The boulders are some of the faintest things ever imaged inside our solar system."

Jewitt says that this opens up a new dimension for studying the aftermath of the DART experiment using the European Space Agency's upcoming Hera spacecraft, which will arrive at the binary asteroid in late 2026. Hera will perform a detailed post-impact survey of the targeted asteroid. "The



This Hubble Space Telescope image of the asteroid Dimorphos was taken on December 19, 2022, nearly four months after the asteroid was impacted by NASA's DART mission (Double Asteroid Redirection Test). Hubble's sensitivity reveals a few dozen boulders knocked off the asteroid by the force of the collision. These are among the faintest objects Hubble has ever photographed inside the solar system. The free-flung boulders range in size from three feet to 22 feet across, based on Hubble photometry. They are drifting away from the asteroid at a little more than a half-mile per hour. The discovery yields invaluable insights into the behavior of a small asteroid when it is hit by a projectile for the purpose of altering its trajectory. Credits Image: NASA, ESA, David Jewitt (UCLA). Image Processing: Alyssa Pagan (STScI)

boulder cloud will still be dispersing when Hera arrives," said Jewitt. "It's like a very slowly expanding swarm of bees that eventually will spread along the binary pair's orbit around the Sun."

The boulders are most likely not shattered pieces of the diminutive asteroid caused by the impact. They were already scattered across the asteroid's surface, as evident in the last close-up picture taken by the DART spacecraft just two seconds before collision, when it was only seven miles above the surface.

Jewitt estimates that the impact shook off two percent of the boulders on the asteroid's surface. He says the boulder observations by Hubble also give an estimate for the size of the DART impact crater. "The boulders could have been excavated from a circle of about 160 feet across (the width of a football field) on the surface of Dimorphos," he said. Hera will eventually determine the actual crater size.

Long ago, Dimorphos may have formed from material shed into space by the larger asteroid Didymos. The parent body may have spun up too quickly or could have lost material from a glancing collision with another object, among other scenarios. The ejected material formed a ring that gravitationally coalesced to form Dimorphos. This would make it a flying rubble pile of rocky debris loosely held together by a relatively weak pull of gravity. Therefore, the interior is probably not solid, but has a structure more like a bunch of grapes.

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It's not clear how the boulders were lifted off the asteroid's surface. They could be part of an ejecta plume that was photographed by Hubble and other observatories. Or a seismic wave from the impact may have rattled through the asteroid – like hitting a bell with a hammer – shaking loose the surface rubble.

“If we follow the boulders in future Hubble observations, then we may have enough data to pin down the boulders' precise trajectories. And then we'll see in which directions they were launched from the surface,” said Jewitt.

The DART and LICIAcube (Light Italian CubeSat for Imaging of Asteroids) teams have also been studying boulders detected in images taken by LICIAcube's LUKE (LICIAcube Unit Key Explorer) camera in the minutes immediately following DART's kinetic impact.

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: David 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

- Aug 1st, Tuesday: Full Moon.
- Aug 6th, Sunday: Mercury near Mars next several evenings - needs good western horizon.
- Aug 8th, Tuesday: Moon Last Quarter - near Jupiter morning.
- Aug 9th, Wednesday: Moon near Pleiades morning.
- Aug 12th, Saturday: **CEA Chapter Member's Observing 8:30PM.** Perseids meteor shower peak.
- Aug 13th, Sunday: Venus at Inferior Conjunction.
- Aug 16th, Wednesday: New Moon.
- Aug 18th, Friday: Moon near Mars evening.
- Aug 19th, Saturday: **CEA Chapter Summer Observing 8:00PM.**
- Aug 24th, Thursday: Moon First Quarter - occults Antares evening.
- Aug 27th, Sunday: Saturn at opposition.
- Aug 30th, Wednesday: Full Moon.
- Sept 6th, Wednesday: Moon Last Quarter.
- Sept 11th, Monday: Moon near Venus morning.
- Sept 14th, Thursday: New Moon.
- Sept 22nd, Friday: Moon First Quarter.
- Sept 26th, Tuesday: Moon near Saturn.
- Sept 29th, Friday: Full Moon.
- Oct 6th, Friday: Moon Last Quarter.
- Oct 14th, Saturday: New Moon. Solar Eclipse.

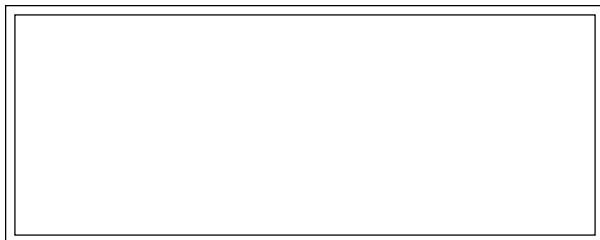
For more event listings and updates see the calendar at www.atlantaastronomy.org

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 September is Friday, August 25. Submissions received after the deadline will go in the following issue.**



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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

