

The Focal Point

The Atlanta Astronomy Club
Established 1947
September 2004

Vol XVII No. 4

Editor: Kat Sarbell

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September General Membership Meeting

by Nancy Cronin, Program Chair

The meeting will take place on Friday September 17th at White Hall at Emory University. Please join us for refreshments from 7:30 to 7:55 PM. The meeting will start at 8:00 PM.

Our September guest speaker is Dr. Amy J. Lovell, Assistant Professor of Physics & Astronomy at Agnes Scott College. Dr. Lovell is a favorite speaker, as well as a member of the AAC. Her research specialties are small solar system objects, mainly inner-solar-system comets and asteroids. I'm especially thrilled that she was able to accept our invitation because she has just returned from a 7 month research sabbatical, where she was doing asteroid and comet research at the Instituto Nacional de Astrofisica, Optica, y Electronica (INAOE) in the state of Puebla in Mexico.

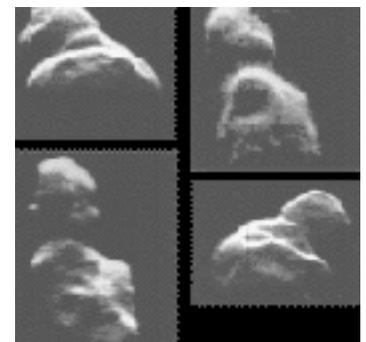
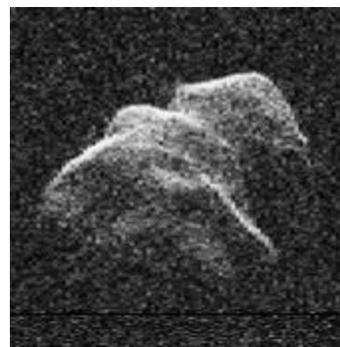
Her presentation is titled "Taking the Asteroids' Temperatures: Surprising Results in Thermal Emissions from Large Asteroids". It has been a tradition in astronomy to measure lightcurves: the variations in the brightness of asteroids over time as they rotate. However, only recently have telescopes and detector technology advanced to the point that such lightcurves can be made at longer wavelengths. This is important because at the long wavelengths the asteroids are emitting their own radiation, and not just reflecting sunlight. She has made preliminary sub-millimeter lightcurves (850 microns) of large main-belt asteroids, and found them to be

surprisingly large in amplitude, suggesting very inhomogeneous surfaces. She will show the lightcurves and how they correlate with recent Hubble Space Telescope images of these asteroids.

In addition, Dr. Lovell will describe a proposed program of simultaneous multi-wavelength observations. This program is in need of volunteers, and I expect it will be of high interest to our members.

It was at Agnes Scott College where Dr. Lovell did her undergraduate work; she joined the faculty in 2000. Her PhD is from the University of Massachusetts Amherst. Recent observations have been made with infrared and radio telescopes ranging from 3-300m in size: the NASA Infrared Telescope Facility (IRTF) in Hawaii, the Five College Radio Astronomy Observatory (FCRAO) 14m telescope in Massachusetts, the 10m Heinrich-Hertz Submillimeter Telescope (HHSMT) in Arizona, the 100-m Green Bank Telescope (GBT) in West Virginia, and the 300-m Arecibo Telescope in Puerto Rico.

* Fun fact: Asteroid 9274 Amylovell was named in her honor. For directions to White Hall at Emory University, see page 7.



Appropriately for Amy's talk, Asteroid 4179 Toutatis will make a close approach to the Earth on September 29th. This will be the closest in this century of any known asteroid of this size. At its closest, the asteroid will be only four times the distance to the moon. Source: JPL/NASA. For more info, visit http://echo.jpl.nasa.gov/asteroids/4179_Toutatis/toutatis.html.

A Message from the President

Well the dog days of summer are upon us. Who else is tired of endless hazy nights? Heck, there aren't even any bright planets in the evening sky to cut through the murk! But, keep the faith: autumn is on the way. As cold fronts return to North Georgia, this season traditionally offers us the best skies of the year, with excellent transparency and, if you allow your optics to cool down sufficiently, reasonable seeing. With the sun setting earlier each night, we still have a great opportunity to enjoy the glories of the summer Milky Way. There are some great autumn objects as well, including large galaxies such as Andromeda (M31), the Pinwheel (M33) and the Sculptor Galaxy (NGC 253); and beautiful planetary nebulae such as the Helix (NGC 7293), the Saturn (NGC 7009) and the Blue Snowball (NGC 7662) to name but a few.

To take advantage of the weather, let me draw your attention to a couple of events we're holding in the upcoming months. We'll be having our next deep sky event at Woodruff Boy Scout camp in mid September (check our website <http://atlantaastronomy.org> for details). And of course we have our annual Peach State Star Gaze October 13th to 17th. This event provides an outstanding opportunity to share the skies with your fellow observers, meet some new friends, and hear some terrific speakers. If you haven't already done so, register now – it's an event you won't want to miss!

So dust off your telescope, give your eyepieces a good cleaning. If you are an imager, make sure you've got all the glitches out of your system. Get ready to enjoy the best astronomical season of the year!

Keep looking up,

Chuck Painter

President, Atlanta Astronomy Club

August General Meeting Minutes

The August meeting for the Atlanta Astronomy Club was held at White Hall at Emory University on Friday, August 20, at 8 PM. There were about 66 people in attendance. Chuck Painter, president, and Nancy Cronin, program and board chair, called the meeting to order. The officers made their announcements. Art Russell spoke for this month's Member Focus, and he discussed his interest in star-hopping. Nancy Cronin introduced our speaker, Dr. Charles Meegan from NASA's Marshall Space Flight Center in Huntsville, Alabama. His lecture was entitled, "Gamma Ray Bursts: The Most Powerful Explosions in the Universe." Afterwards he answered questions. The meeting was then closed, and many members drove to Athens Pizza.

August Board Meeting Minutes

by Brad Isley

The Board Meeting took place on Aug 9, 2004 at Druid Chase Office Complex, 2801 Buford Highway.

Presidents review: Chuck met with Tom Wilson (Boy Scouts volunteer coordinator) at Woodruff. Both agreed things were going great. Tom asked us to mark horizon-encroaching trees with a red ribbon and they will cut them down (Yay!). Club will look consider building a roll-off shelter with permanent pier for the scout's C11 at the observatory.

Program Chair: Speakers at upcoming general meetings include Dr. Charles Meegan from NASA's Marshall Spaceflight Center as our August speaker, and Dr. Amy Lovell from Agnes Scott College will be our September speaker.

Observing Chair: Martin has brought up the idea for a tracking table for the 24" at Woodruff. Next VR open house is in September 25. Training is scheduled for Sept 18th. The next GASP event is Sept 4th. We have an ATM meeting September, as well. We will get a part machined for the Mak mount. This will complete the mount upgrade.

Mark Banks gave an update on the dark sky site search as well as a potential source for grant pursuit training.

Secretary: Presented summary of board decisions for review.

Chuck presented an update on the Strategic Plan. A post has been sent to the general mail list soliciting champions to lead our strategic efforts.

Charlie Elliott Chapter August Meeting Minutes

by Clevis Jones, CEC Recording Secretary

Larry Owens, Chapter Director, began the monthly meeting of the Charlie Elliott Chapter (CEC) of the Atlanta Astronomy Club (AAC) at about 5:00 PM, Saturday, August 21, 2004. Members and visitors totaling sixteen individuals attended the meeting.

Larry reviewed:

1. Restoration of the club's 16" telescope to operational condition.
2. His proposal to the members for the shed to house the club's two, virtually new, telescopes.
3. Dr. Richard Schmude, Jr.'s challenge to the chapter to prepare for photometry of the 2005 close approach of Mars.
4. That an article about the Hard Labor Creek Observatory and the Charlie Elliott Chapter of the Atlanta Astronomy Club will appear in the September issue of the Oconee Living Magazine.

Debbie Jones, Chapter Observing Supervisor, took to heart the featured program for the evening by Philip Sacco, "The Lover's Triangle, Three Love Stories", and designed her report around the The Summer Triangle. Larry Owens presented the current events portion of the meeting and dedicated it to Cassini's recent imaging of Saturn's moon, Phoebe. "The Lover's Triangle, Three Love Stories" was presented by Philip Sacco. The sky was obscured, so there was no observing.

Restoring the Charlie Elliott Chapter's 16" Meade Starfinder (Part I)

by Larry Owens

Last year, the Charlie Elliott chapter received a very generous donation from member Chuck Kibbling; a 16" Meade Starfinder. The scope is a fast F/4.5 Newtonian, on a very substantial Meade German equatorial mount with Magellan II computer. It's a semi-goto in that you move the scope manually to within a couple of degrees of the target, and the computer takes it from there and slews the remaining distance. Not a bad system.

I obtained the scope in June with the intention of evaluating the

mount and optics, and hopefully restoring the scope to use out at Charlie Elliott for observing events. There were 2 major challenges standing in the way of our goal, 1) the mount was obviously “weathered” with a considerable amount of rust and some obvious damage and so would take a considerable amount of effort to restore, and 2) once restored to operation, the scope would be difficult if not impossible to transport and assemble in the field without a bit of ingenuity. We are working on a proposal to assemble a small building with concrete pads on the Charlie Elliott observing field, but we didn’t want to wait for that before getting some use out of this big scope.



The use of the “OTA stool” is shown here (attached under the OTA). One simply sets the OTA upright on the ground at the setup site. It’s then a simple matter of rolling the mount to the scope and sliding the mounting bolts through the holes to complete the attachment.

Evaluating the condition of the mount was the first item on the agenda. The condition of the mount was unknown and the mount hadn’t been powered up since we received the scope last year. So the first step was to look it over for any obvious mechanical problems, make sure all of the electrical connections were secure within the RA assembly, attach cables and hand controller and apply power. This was done and much to my delight, the Magellan II computer came to life and the mount started tracking. A change

in pitch of the RA motor indicated that the slow motion controls were working as well. A press of the DEC slow motion control was met with the sound of a motor turning, but no scope motion. The cause was obvious, a broken and easily replaceable plastic gear, but most importantly this first test indicated that the basic electronics were operational.

In looking over the rest of the scope, I made a mental list of what needed to be done. Rust needed to be removed from both the RA and DEC shafts, the DEC encoder was about to fall off the mount, the DEC slow motion motor had a tendency to come off in my hand when I touched it, one of the DEC gears needed to be replaced, the optical tube was filled with dust and spider webs with a secondary mirror that was badly in need of cleaning. Not a bad list, but a couple of weekends of work.

Who wants to observe through a scope with a rusty DEC shaft? After all, that’s like driving a car with rusty wheels. So I removed the setting circles from both the RA and DEC axis, and I removed the RA assembly cover to expose more of the RA shaft for cleaning. I then covered anything I thought could be damaged by powdered rust with plastic bags. With several sheets of 100 grit sand paper, I started cleaning. After an hour or so of dust and a bit of elbow grease, the shaft rust was history. I wasn’t able to get a bright polish, but the rust was gone and a coat of light oil was applied to keep them looking new.

Next on the list was to find a solution to the fragile DEC slow motion motor mount and the broken gear. I had already called Meade about the broken gear, and they were nice enough to send me 2 replacements at no cost. I installed the gear and after trying several times to tighten the DEC motor housing and adjust the gear without success, I decided to fabricate a new motor mount that was



This is a view of the newly fabricated DEC encoder bracket (left – polished aluminum) and DEC slow motion assembly (upper right – polished aluminum parts). The original encoder bracket used only one screw and was a mere ½” wide causing the encoder to frequently bend away from the DEC shaft gear. The original slow motion assembly was equally fragile and would become misaligned with the slightest touch.

sturdier and easier to adjust. As a bonus, I designed the new mount to extend downward to protect the DEC gear from hitting the RA assembly (the probable cause for the broken gear in the first place).

After drilling and taping several holes, and cutting and heat bending some 1/8" aluminum stock, fabrication was complete. Next, a quick test of the newly mounted DEC motor connector to make certain there was no continuity to the chassis, and it was time to test. The DEC slow motion worked beautifully, problem solved.

I then turned my attention to the DEC encoder. This is used to detect rotation of the DEC shaft so the Magellan II computer can keep track of where the scope is pointed. The encoder was loose and mounted with only one screw to the DEC housing, so I decided to remove the encoder, clean it and remount it with a heavier bracket. With that accomplished, a quick test using the Magellan II hand controller showed both the RA and DEC encoders responding properly.

At this point I began thinking about how to move and assemble the telescope easily. This scope weighs several hundred pounds fully assembled, and the mount alone is difficult for one person to lift.

The Starfinder is mounted on a pier with 3 legs. At the end of each leg are 2 holes. One is tapped with a 7/16" standard thread and the second hole is not threaded. This is perfect for leg jacks and casters. So I headed off to a local hardware store and returned with 3 casters, a 7/16" threaded shaft and a few other odds and ends. A short time later the casters were installed and 3 "T" handle leg jacks fabricated and installed. The mount can now be moved with the touch of a finger, and it can be leveled and secured without removing the wheels.

Aside from the bulk of the German equatorial mount, one difficulty users of these scopes often have is attaching the OTA (Optical Tube Assembly – the telescope part) to the mount. It takes 2 people to hold the OTA and a 3rd person to guide the mounting



The fully assembled Starfinder 16 is shown here, ready to be rolled over to a set of polar alignment marks on the concrete where it can be easily leveled and secured with the leg jacks.

bolts and secure the scope to the mount. I want this to be a one person assembly scope. So I created an OTA "mounting stool". This stool actually bolts to the OTA in place of the primary mirror and provides a raised platform for the OTA. As luck would have it, when the OTA is sitting upright on the ground, the mounting bolts are just the right height for mating with the mount, with the DEC shaft in a horizontal position. Now, OTA mounting is a simple matter of sitting the OTA upright on the ground, then rolling the mount over to mate with it. Once the OTA is secured, counter weights are added and the mounting stool is replaced by the primary mirror cell. The leg jacks can also be used to fine tune polar alignment.

With the mount fully repaired and accessorized, I turned my attention to the OTA. A quick look at the primary revealed a very clean and blemish free surface; the advantage of keeping the mirror in a case – no cleaning necessary here. The secondary on the other hand was, in a word, "smoky" and a definite candidate for cleaning. So, the secondary was removed and taken in for the cleaning process.



This is a view down the business end of the big scope after replacing the mounting stool with the primary mirror cell.

Telescope mirrors are “first surface” which means that the coatings are on the top surface of the glass and this makes them very delicate, so cleaning does take a bit of care. The first step is to remove any particulate matter that may be on the surface because this could cause a scratch as you clean. To do this I held the mirror under running water for several seconds. The next step is to liberally apply a cleaning solution (many solutions can be used, I use a 50/50 mix of distilled water and Windex), immediately followed by downward strokes with cotton balls to clean the surface. With each downward stroke, I used a new cotton ball. This prevents recontamination of the surface with the film you’re removing from the mirror. The result was a bright, clean and streak free secondary, ready to reinstall.

Before remounting the secondary however, it was time for a thorough cleaning of the big 16” sonatube. For the inside, I used a clean damp floor mop to get to the unreachable areas followed by cleaning inside and out with a damp rag. I then carefully tightened the focuser, finder bracket and the cell mounting assembly.

With the tube clean and dust free, it was time to fully assemble the scope to check balance and to collimate the optics. The OTA was a bit off balance and this was fixed with a quick rearward shift of the mounting rings. Collimation was straight forward and only required a few minutes to get the alignment within tolerances.

The fully assembled scope weighs well over 200 pounds, yet it glides across the driveway with ease on its new wheels. This enables us to leave the scope assembled while not in use, and rolled out for quick leveling and polar alignment. The new leg jacks serve to anchor the scope in place and provide a means to fine tune polar alignment. When the scope is to be transported, assembly and disassembly is now a one person job using the OTA mounting stool. The mount’s wheels are also large enough to allow rolling the mount across the grass to the assembly point, thus minimizing heavy lifting.

The next step is to take the big scope out under the stars to see how it performs. I’ll write about that next month in part II.

Member Focus

by Art Russell

Like many amateur astronomers, I first became interested in astronomy as a child. Also, like many, somewhere between childhood and adulthood I forgot about astronomy.

My interest was first rekindled under the winter skies of Colorado, where as a young Lieutenant in the U. S. Army, I found myself using the angles between the stars Polaris and Kochab as a time reference to coordinate artillery fire. A few short years later and still in the Army, I found myself stationed in Washington state with my long forgotten childhood Tasco 60mm Alt-az refractor and rediscovering my love of astronomy in seeing the rings of Saturn! There I joined one of the local astronomy clubs, but try as I might, I had great difficulty finding anything other than the brightest of astronomical objects with a telescope. The art of “star-hopping” although well known among accomplished amateurs of the time,



was still a mystery to me. More importantly, members of that club were more interested in building their telescopes than teaching a newcomer how to use his store-bought telescope. They never did help out and I was left to stumble around the skies by myself. Jump 10 years and several assignments ahead and I found myself in Atlanta, Georgia. More importantly, I discovered the Atlanta Astronomy Club and a few members who took the time to give me a few key pointers that opened up the mysteries of star-hopping.

Since that time, I’ve learned a bit about star-hopping and have freely shared that knowledge and experience with amateurs in our local observing community and around the world through several websites, star-party presentations, publications, and as one of several hosts for the late astronomy forum “Star Talk” on the Microsoft Network.

In joining the AAC, I decided that I could be one of two types of members. Either I could be the type that attends meetings and does little else, or I could volunteer my services and do those things that I do best. I chose the later course and have served in a number of positions across the past 11 years while learning about and enjoying astronomy. I created and maintained a Beginners’ Interest Group in order to learn more about star-hopping and help others get started. As well as serving on a large number of club committees, I’ve also been at various times the AAC’s Observing Chairman, Recording Secretary, President, and Chairman of the Board, and wrote a monthly column for the Focal Point about Star-Hopping for over two years, as well as a number of other occasional articles.

My current interests continue to include observing extra-galactic globular clusters (50+ in M31 and counting) and planetary nebulae when my doctoral studies allow (educational psychology).

My articles on Star-hopping and other subjects are online at my website at: <http://education.gsu.edu/spehar/FOCUS/Astronomy/>



Space Weather

By Patrick Barry and Tony Phillips

Radiation storms, 250 mile-per-second winds, charged particles raining down from magnetic tempests overhead ... it sounds like the extreme weather of some alien world. But this bizarre weather happens right here at Earth.

Scientists call it “space weather.” It occurs mostly within the gradual boundary between our atmosphere and interplanetary space, where the blast of particles and radiation streaming from the Sun plows into the protective bubble of Earth’s magnetic field. But space weather can also descend to Earth’s surface. Because the Earth’s magnetic field envelops all of us, vibrations in this springy field caused by space weather reverberate in the room around you and within your body as much as at the edge of space far overhead.

In fact, one way to see these “geomagnetic storms” is to suspend a magnetized needle from a thin thread inside of a bottle. When solar storms buffet Earth’s magnetic field, you’ll see the needle move and swing. If you live at higher latitudes, you can see a more spectacular effect: the aurora borealis and the aurora australis. These

colorful light shows happen when charged particles trapped in the outer bands of Earth's magnetic field get "shaken loose" and rain down on Earth's atmosphere.

And because a vibrating magnetic field will induce an electric current in a conductor, geomagnetic storms can have a less enjoyable effect: widespread power blackouts. Such a blackout happened in 1989 in Quebec, Canada, during a particularly strong geomagnetic storm. These storms can also induce currents in the metallic bodies of orbiting satellites, knocking the satellite out temporarily, and sometimes permanently.

Partly because of these adverse effects, scientists keep close tabs on the space weather forecast. The best way to do this is to watch the Sun. The NASA/ESA SOHO satellite and NOAA's fleet of GOES satellites keep a constant watch on the Sun's activity. If a "coronal hole"—where high-speed solar wind streams out from the Sun's surface—comes into view, it could mean that a strong gust of solar wind is on its way, along with the geomagnetic storms it will trigger. And an explosive ejection of hot plasma toward the Earth—called a "coronal mass ejection"—could mean danger for astronauts in orbit. The advancing front of ejected matter, moving much faster than the solar wind, will accelerate particles in its path to near the speed of light, spawning a radiation storm that can threaten astronauts' health.

Look for coming articles for more about space weather and about NOAA's efforts to forecast these celestial storms. Meanwhile, read today's space weather forecast at <http://www.sec.noaa.gov/>. Kids can learn about the geostationary and orbits of the GOES satellites at http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml. This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Space Weather Gallery



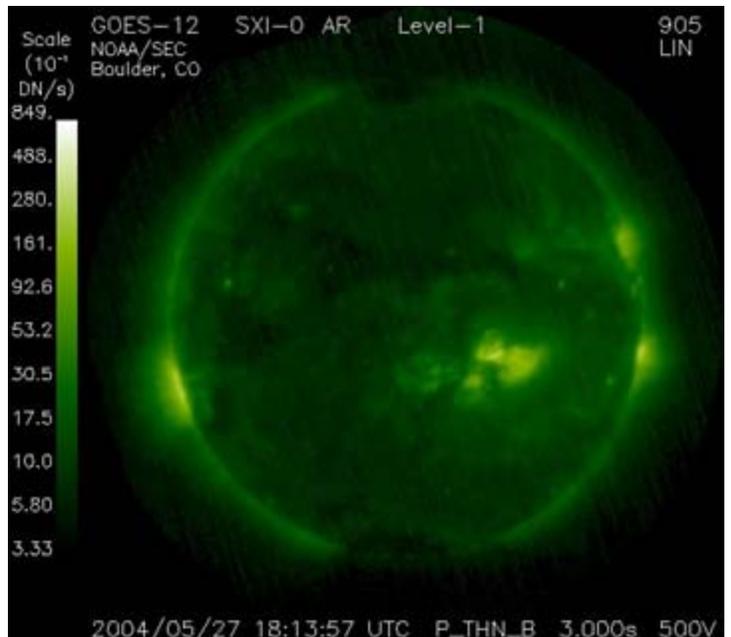
Above: Sailing upside down, 115 nautical miles above Earth, the crew of the Space Shuttle Endeavour made this spectacular time exposure of the southern aurora (aurora australis) in October of 1994. Aurora, also known as the northern and southern lights, appear as luminous bands or streamers of light which can extend to altitudes of 200 miles. They are typically visible from the Earth's surface at high latitudes and are triggered by high energy particles from the Sun. The delicate colors are caused by energetic electrons colliding with oxygen and nitrogen molecules in the upper atmosphere. In this picture, the rear structure of the shuttle Endeavour is in the foreground with the vertical tail fin pointed toward Earth. Star trails are the short streaks above Earth's horizon. Text Credit: Astronomy Picture of the Day Website, February 2001, <http://antwrp.gsfc.nasa.gov/apod>. Image Credit: NASA/STS-68



Left: SOHO MDI Continuum image of sun taken on August 12, 2004 showing large sunspot group 649 along with several tiny spots. Credit: NASA/SOHO/MDI



Above: Aurora curtain with rays. 06:50UT and 06:55UT, evening of 8 April, 2001. Taken near Fairbanks, Alaska, by Jan Curtis, Copyright (C) 2001.



Right: This image shows the outer solar atmosphere, or corona, as viewed by the GOES 12 Solar X-ray Imager (SXI). It shows the plasma at 4.0 MK (million degrees Kelvin). Bright areas are associated with sunspots seen in white light images and may produce explosive events known as flares. Dark regions are coronal holes where the fastest solar wind originates. Image courtesy of the Space Environment Center/NOAA. This image can be found at http://spaceplace.nasa.gov/astro_clubs/052704_sxi_4MKcorona.jpg.

Charles Elliot Chapter Meeting

Saturday, September 18th, 2004. At the Charlie Elliott Visitor's Center classroom. Enter through the left side door nearest the back of the building.

5:00-6:00 PM. General meeting open to the public.

6:00-6:30 PM. "Astronomy Current Events." Enjoy a presentation of the latest current events in astronomy. Speaker TBD.

6:30-7:30 PM. "Polarization Measurements during the December 2003 Martian Dust Storm." Enjoy a lecture on the latest research into the dust storms of Mars, by special guest speaker Dr. Richard Schmude, Jr. Dr. Schmude's presentation will also include detailed information on how amateurs can take polarization and photometric measurements of Mars for the 2005 apparition.

GASP (Georgia Astronomy in State Parks) Schedule

October 2 – Florence Marina State Park

November 20 – Unicoi State Park

If you have any questions about these events, contact Joanne Cirincione at Starrynights@AtlantaAstronomy.org. More information is posted on the AAC Website.

Directions to White Hall at Emory

Meeting Location Information:

Turn onto Dowman Drive from North Decatur Road at the five way intersection (across from Everybody's Pizza). White Hall is located on the right across from the new Science & Math building. Parking is available along Dowman Drive on both sides of the road. There is also a gated parking lot on the left behind the Admissions Building. After 6PM there is no fee to park there. For more detailed directions on how to get to Emory University, visit www.atlantaastronomy.org.

The **Atlanta Astronomy Club Inc.**, the South's largest and oldest astronomical society, meets at **8:00 p.m.** on the third Friday of each month at Emory University's White Hall or occasionally at other locations. Membership is open to all. 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 **\$29** 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 is: Atlanta Astronomy Club, PMB 305, 3595 Canton Road A9, Marietta, Georgia 30066.

Atlanta Astronomy Club Hot Line: Timely information on the night sky and astronomy in the Atlanta area. Call **770-621-2661**.

Internet Home 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.

AAC Contacts

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Atlanta Astronomy Club Website

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 (when available) and other information. <http://www.atlantaastronomy.org>

Calendar

September 11th, Saturday: Deep Sky Observing. Woodruff Boy Scout Camp. Contact Jim Holley for details.

September 17th, Friday: General Membership Meeting. White Hall at Emory University. 8PM. Speaker Dr. Amy Lovell.

September 18th, Saturday: Training at Villa Rica. Contact Jim Holley for details.

September 18th, Saturday: Charlie Elliott Chapter Meeting. Visitor Center. 5PM. Speaker Dr. Richard Schmude, Jr.

September 25th, Saturday: Open House at Villa Rica. Contact Jim Holley for details.

September 30th, Thursday: Focal Point submission deadline. 4PM.

October 2nd, Saturday: GASP at Florence Marina State Park. Contact Joanne Cirincione for details.

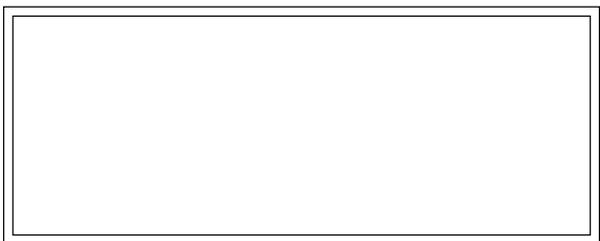
Atlanta Astronomy Club Listserve

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 Lenny Abbey.

Newsletter Deadline and Info

Please send articles, pictures, and drawings in electronic format on anything astronomy related to Kat Sarbell at focalpoint@atlantaastronomy.org. **You can submit articles anytime up and including the deadline date. The deadline for October is Thursday, September 30th at 4:00 PM ... Submissions will no longer be accepted after the deadline.**

FIRST CLASS



The Focal Point
Newsletter of The Atlanta Astronomy Club, Inc.

FROM: Kat Sarbell
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[We're here to help! Here's how to reach us:](#)

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