

The Focal Point

The Atlanta Astronomy Club
Established 1947
November 2010

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Editor: Tom Faber

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November General Meeting

By Keith Burns, A-V Coordinator

Join us for the November meeting of the Atlanta Astronomy Club. The meeting takes place on Friday Nov 19th at 8PM. The location is the Planetarium in the Math and Science Building on the Emory University Campus. The meeting will run for about 2 hours. Before the meeting starts, there will be a the PowerPoint presentation running on the big screen showing you all of the latest information on up coming meetings, sidewalk astronomy events, and club observing events. If you have any information you want to put into the pre meeting announcement PowerPoint, please let me (Keith Burns) know. You can contact me at keith_b@bellsouth.net. If you have any announcements you want to make during the meeting, please contact our President Mark Banks, so that he can schedule the time for you during the meeting. His contact information is on page 7.

The Program:

When the president calls the meeting to order, we start the meeting with our featured speaker of the night, Dr. Angelle Tanner of Georgia State University (GSU). Dr. Tanner will give a talk titled "The Search for Another Earth". After she is finished with her talk, we will move on to the business portion of the meeting. We will then adjourn the meeting and head to one of the local eateries for food and conversation.

Dr. Tanner will discuss the many ways that astronomers are currently searching for extrasolar planets. With nearly 500 planets found outside our solar system - the race is on to find the "holy grail" - the first Earth-like planet in the habitable zone of a nearby star. She will review the state of the art telescopes involved in the race as well as novel methods being employed by herself and her colleagues at GSU. She will give an assessment of the future prospects for detecting Earth-like planets and will take a look into the far future as we attempt to determine if they might have life on them.

Speaker Bio:

Dr. Angelle Tanner is an astronomer working at the Physics and Astronomy department at GSU. She is currently studying extrasolar planets using a variety of astronomical tools. She is collaborating with astronomers at NASA's Jet Propulsion Laboratory on the SIM-Lite space telescope will be able to discover Earth-like planets orbiting stars like our sun. She is also using some of the largest telescopes in the world to collect images of Jupiter-like planets orbiting stars in our stellar neighborhood. In the next few years, the James Webb Space Telescope will be able to search for tell-tale signatures of methane gas on some of these worlds which imply the presence of alien life.



Dr. Tanner got her undergrad degrees and astronomy and physics from the University of Arizona and her PhD in astronomy from UCLA before working at Caltech and JPL as a postdoc. She is currently working at GSU as both a professor and postdoc specializing in pretty much all methods of planet detection known to human kind. Her current projects include the detection of hot Jupiters around nearby red dwarfs with infrared radial velocity measurements, studying the effects of sunspot activity on our ability to find Earth-like planets and the direct detection of sub-stellar companions to nearby stars.

Upcoming AAC Meetings:

December 11th (Saturday)- Christmas Dinner and Program. The program will feature Jim Summers as "Galileo". The dinner will take place in the Math and Science Building atrium and the presentation will follow in the 2nd floor Planetarium. The evening will begin at 6:30PM with drinks and snacks. Dinner will be from 7:00PM to about 8:00PM and then the program will begin at 8:30PM.

In 2011: January 21st, February 18th, March 18th, April 15th, May 20th, and June 17th - Lecture topics TBA.

Parking News Update at Emory University

The parking deck behind the admissions building is now open for parking. So those of you who have been walking from either the Peavine or Fishburne parking decks will not have to do that anymore. Plus there is a Barnes and Noble and other shops on the top floor. So there will be some things to do while waiting for the meeting to start. This new facility and parking area is located next to the Math and Science Building and directly behind the Admissions building. Math and Science Building is directly across the street from our usual meeting place.

October General Meeting Minutes

By Julie Moore, AAC Recording Secretary. Photos by Tom Faber

The general meeting of the Atlanta Astronomy Club was called to order at 8:00 PM on Friday, October 22 with Mark Banks presiding. Thirty-one members and guests were present.

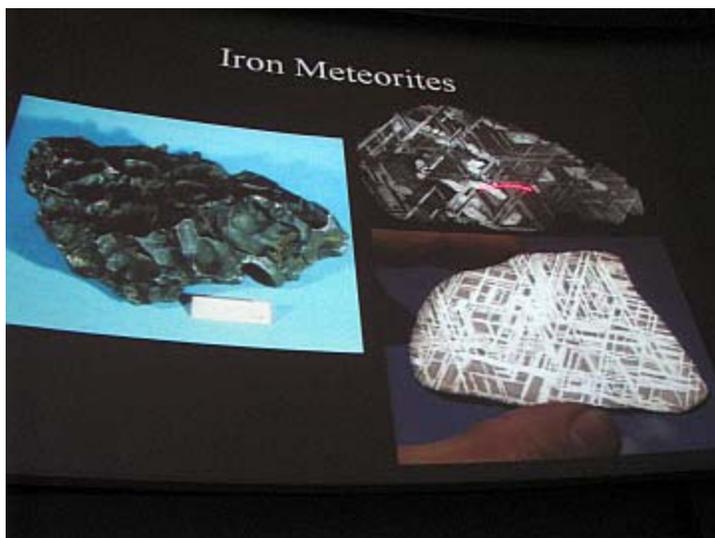
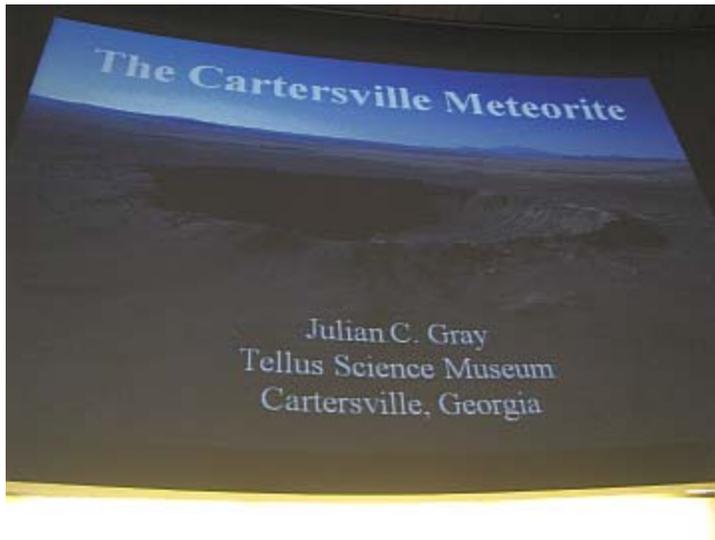
Our featured speaker for the night, Julian Gray, Curator of the Tellus Science Museum, gave a very interesting talk on meteorites (photo below). After presenting general information on the various types of meteorites (bottom photo) and the difference between meteoroids, meteors, and meteorites, he then talked about the meteorites that have been found in Georgia and the recent fall and recovery of a meteorite that fell and went through the roof of a house near Cartersville.

The next Board Meeting will be Nov. 7, at 3:00 PM in the Math and Sciences Building on the Emory Campus.

Observing VP Daniel Herron reported on upcoming observing events and sidewalk astronomy opportunities:

Oct. 23-Whiskey Blue, Oct. 23-Villa Rica open house, Nov. 12-School event in Norcross, see web for details, Nov. 12-Girl Scouts, Nov. 16-Annette Winn Elementary, Dec. 21-Lunar Eclipse Event at the Tellus museum.

The Dark Sky events are Nov. 6 at DAV and Dec 4, which will be combined with the Charlie Elliott monthly meeting.



From the President's Desk

Well, It's that time of year again that we get holiday related questions related to our knowledge of astronomy. Two that I always seem to get are what kind of telescope to buy for a gift and what about The "Star of Bethlehem"?

The "Star of Bethlehem" is problematic due to historical ambiguity. The Roman calendar in use during that time does not correlate exactly with the Christian calendar in use today. There is also contradictory information in the roman records about events going on around the same time. This makes it difficult to pin down an exact date or year for the birth of Jesus. Also, you have to consider that the only Gospel that mentions the "Star of Bethlehem" is Matthew (2: 1-10) and most historians believe that this was an attempt to incorporate an Old Testament prophecy (Numbers 24:17) into the New Testament. All this makes it virtually impossible to determine what was in the sky, when and where. So, if someone ask you to explain this to them, good luck!

The gift of a Telescope may be a little bit easier to deal with. You just need to take into consideration the level of interest the recipient has, their present knowledge level of astronomy and how much money the gift giver wants to spend. For a child a star finder chart and a pair of binoculars may be a good starting point. For an adult or a teenager with a little more knowledge a 4 inch reflector may be a good choice. But, you should always warn people about those cheap refractors with the wobbly legs and 500X power. Be sure they understand how bad these scopes are.

Happy Holidays to all!

Mark Banks, President AAC

Bradley Observatory Open Houses

2010-2011 Open House Lecture Series

Astronomy Since Galileo (1610 – 2010)

The 400 years since the first astronomical use of the telescope have brought enormous progress to the science of astronomy. Technologies and new areas of science have been brought to bear on outstanding astronomical questions. The development of photography, spectroscopy, quantum mechanics, to name just a few have had profound impacts on our understanding of the universe. This year's lectures will explore the development of astronomy since Galileo. Lectures/Concerts begin at 8 PM. There will be observing with the Beck Telescope afterwards weather permitting.

Fall 2010

November 12, 2010 - "Science and the Catholic Church (1610-2010)", D. McCann (Agnes Scott College)

December 10, 2010 - "Astronomical Technology since the Telescope (1610-2010)", C. De Pree (Agnes Scott College)

Spring 2011

February 11, 2010 - "Sugar and spice and everything nice - is that what space is made of?", Susanna Widicus Weaver (Emory University)

March 25, 2011 - Spring Equinox Concert and Open House

April 15, 2011 - "Jupiter's Galilean Satellites", Melissa McGrath (NASA Marshall Space Flight Center)

May 13, 2011 - "An Evening at the Edge of the Universe", James Webb (Florida International University)

October CE Chapter Minutes

by Marie Lott, CE Recording Secretary

The October meeting of the Charlie Elliott Chapter of the Atlanta Astronomy Club was held on Saturday, October 2 at the CE Wildlife Visitor Center, beginning at approximately 4:15 PM. Meeting attendance grew from 22 members and guests at the start to over 50 at the end due to students and parents visiting from George Walton Academy.

Suki Owens brought out a surprise birthday cake and the club sang "Happy Birthday" to Larry's dad, Angus Owens, who was celebrating his 92nd birthday. [Sadly, Angus died ten days later. Our condolences go out to Larry, Suki & family. Angus will be greatly missed.]



Chapter director Theo Ramakers announced that in the past month, our chapter held seven outreach events. Kudos go to Frank Garner, Steve Bieger, Phil Sacco, Art Zorka and Theo Ramakers for assisting with these events. Next month nine more outreach events are scheduled. See the CE chapter calendar at <http://ceastronomy.org> for details.

Theo announced that the PSSG begins tomorrow. Many of our members will be attending. The 2011 Charlie Elliott Chapter meeting schedule has been submitted to the CE Wildlife Center for approval. Proposed meeting dates for 2011 are: January 8, February 5, March 5, April 2, May 7, June 4, July 2, July 30, August 27, September 24, October 22, November 5, and December 17. At 4:40 PM, Stephen Ramsden presented the evening's program, "Binaries & Conspiracies in Fact and Fiction", a program about our sun, Jupiter & binary stars.

Steven Philips, Observing Supervisor, wound up the meeting with "Observing 101", a highlight of current sun, moon and planet rise & set times, observing targets and challenges. Venus and Mars are currently setting before 9 PM, but Jupiter, Uranus & Neptune are good to observe this month as they rise just before sunset and set shortly before dawn. In November, Venus and Saturn return to the morning sky. Comet 103P/Hartley will be peaking in October as it passes down the side of Cassiopeia and the Double Cluster in Perseus. On Oct. 31st, moons Ganymede and Europa will transit Jupiter at 1:35 AM. Steven pointed out that the Jovian moon Ganymede is bigger than Mercury and is more than twice as big as Pluto. The Orionid meteor showers peaks October 21st, but will likely be hard to see due to the full moon. October star charts from skymaps.com were distributed to our visiting students.

Beginner/Small Telescope/Binocular Target List for October: M31; Globular Clusters M2, M12, M13, M15; Open Clusters M11, M39; the Perseus Double Cluster (NGC 869/884); Nebulas M8, M17; and asterism Cr399 (the Coathanger). Intermediate/Advanced Target List: NGC 185, 205 (=M110), 6629, 6712, 6934, 7209, 7008, 7009 and NGC 6913 (M29).

The meeting was adjourned at approximately 5:50 PM. Many members and guests went to the Jon Wood Field to set up telescopes for observing.

The next meeting of the Charlie Elliott chapter will be November 6, 2010 at 4 PM. Phil Sacco will be presenting "The Howl-eeen Hunt List: 13 of the Unluckiest Heavenly Objects".

CE Chapter Outreach Events

by Theo Ramakers, Director, Charlie Elliott Chapter of the AAC

First I need to make a correction to the statistics which were published on the AAC website and Facebook in the beginning of October. From October 1, 2009, until September 30, 2010, the Charlie Elliott Chapter has conducted 57 outreach events for schools and other organizations, which include several of our meetings and observing sessions to which other organizations were invited to attend.

The CE Chapter conducted 19 events for schools and college in September and October of 2010. Our outreach events are a combination of teaching about astronomy in formal classroom settings, or interactive projects outside,

with sidewalk astronomy. Our philosophy is that a combination of teaching the kids some wow-facts about astronomy, our Solar System, and the Universe, and letting them observe the sun and the night sky is an effective way of spawning interest in astronomy, physics and space exploration. By getting more and more middle schools and high schools involved in a program like this might have a direct impact on someone's future studies and possibly their jobs. Our last event was an interactive



presentation in the auditorium of Memorial Middle School in Conyers about the Solar System and Space Weather. The entire school, over 900 students and faculty members, attended this event. More information about some of these events can be found on the Chapter's Outreach page of our website: <http://ceastronomy.org/blog/outreach>



I would like to thank everyone who dedicated their time, equipment, and knowledge, to make this such a success.

It also should serve as an inspiration to others to consider getting more involved in participating in these rewarding events. Here some pictures of some of these events and how the Chapter was referenced on the lead page of NASA-JPL's Night Sky Network in their effort to draw attention to Fall Astronomy Day.



ISS Encounters Venus

Theo Ramakers and Frank Garner captured this amazing image of the International Space Station crossing in front of Venus from near Social Circle, GA. This was a daytime image made on September 25th at 4:38PM. The image was featured on the SpaceWeather.com web site and the Planetary Society's blog written by Emily Lakdawalla. Congratulations to Theo and Frank for getting this great image!



Measuring the Cosmos - Part 5

“More rungs on the Ladder”

By Sharon Carruthers, AAC Treasurer

We now have 2 "rungs" in our cosmic ladder: 1) Parallax, which can measure the distance to stars up to ~ 1,500 ly, 2) Cepheid variables, that can measure the distance to stars up to 20 Mpc (Megaparsec = one million parsecs ~ 3,262,000 ly). We can now use these methods and the Tully-Fischer Relationship to add a new rung to the ladder and measure the distance to all observable galaxies (up to ~10 billion ly). The Tully-Fischer Relationship, based on the *Spin Rate* of spiral galaxies, was derived by R. Brent Tully and J. Richard Fischer in 1977. We know that the more mass (stars) in a spiral galaxy, the more luminous (brighter) it will be and the faster it will spin. So there is a fixed relationship between the *Spin Rate* and the Absolute Brightness of the galaxy. The *Spin Rate* is determined by measuring the *Doppler Effect* of light from the galaxy.

The *Doppler Effect* is determined by looking at the red shift in the spectographs of the galaxy. Light coming towards us is shifted into the red end of the spectrum; light moving away from us is shifted into the blue end of the spectrum. The faster the movement, the greater the shift. (This is similar to the sound waves from a train whistle. As it approaches us, the sound waves are compressed and have a higher pitch; as it moves away from us, the sound waves are “stretched” out and have a lower pitch.)

Pulling this altogether, astronomers use Cepheid Variable stars to measure the distance to the closer spiral galaxies. Knowing the distance and the Apparent Brightness, they can calculate its Absolute Brightness. They use the Doppler Effect to measure the Spin Rate of these galaxies. They can then calculate the relationship of Spin Rate to Absolute Brightness and derive a fixed relationship between them: $L = kV^4$, where L = Absolute Brightness, and V = *Spin Rate*, and k is the derived constant. Now, they can measure the *Spin Rate* of spiral galaxies that are too far away to observe individual Cepheid Variable stars and use the above equation to measure their distance.

Several other methods to create more accurate measures of luminosity (standard candles) have been derived.

- 1) The Wilson-Bappu Effect (1956) - some stars have element lines in their spectographs that make calculating Absolute magnitude relatively easy (such as the calcium absorption line). It is generally used for stars only several hundreds of parsecs distant.
- 2) Type Ia Super Nova light curves - a Type Ia supernova occurs when a white dwarf star accretes matter from a red dwarf companion star, until it reaches the Chandrasekar Limit and explodes. Because all Type Ia supernovae explode at the same mass, their luminosity is the same. By comparing the ABB to the APB, the distance can be calculated. It is one of the more accurate methods for calculating extra-galactic distances.
- 3) Novae - are white dwarf stars accreting matter off their companion stars (as in the Type Ia SN) but they “blow off” the extra mass at some point without destroying themselves. Some repeatedly accrete then expel the extra mass. Like the Type Ia SN, novae their luminosity is known, with fixed magnitude peaks and roughly the same absolute magnitude 15 days after their peak (-5.5). After they fade, their brightness is comparable to Cepheid Variables and are accurate to the same distance (about 20 Mpc).
- 4) Globular Cluster Luminosity Functions (GCLF) - compares the luminosity of globular clusters in the Virgo Cluster galaxies with those in the Andromeda Galaxy. This assumes that they have the same luminosity, which cannot be assured for all the globular clusters in the Universe, and is thus not a highly accurate method.
- 5) Planetary Nebula Luminosity Function (PNLF) - assumes that all planetary nebulae have similar maximum intrinsic brightness, and could be used as a standard candle for extragalactic measurement.

6) Surface Brightness Fluctuation (SBF) - uses CCD camera images of galaxies. CCD cameras will have brighter and darker pixels on closer galaxies, because they are picking out individual stars. Images of farther galaxies will have the light in the pixels “evened” out. Comparing the magnitude of the pixel-to-pixel variation can determine the galaxies luminosity and distance.

7) The D-Delta Relation (DDR)- is used in elliptical galaxies. If the *Absolute Size* of a galaxy is known, one can compare it to the *Apparent Size*, as measured by its angular diameter (D), and calculate the distance.

Method	Uncertainty for Single Galaxy (magnitude)	Distance to the Virgo Cluster (Mpc)	Range (Mpc)
Cepheid	0.16	15 - 20	29
Nova	0.4	21.1 ± 3.9	20
PNLF	0.3	15.4 ± 1.1	50
GCLF	0.4	18.8 ± 3.8	50
SBF	0.3	15.9 ± 0.9	50
DDR	0.5	16.8 ± 2.4	>100
Type Ia SN	0.1	19.4 ± 5.0	>1000

Chart taken from Wikipedia article “Cosmic Distance Ladder” http://en.wikipedia.org/wiki/Extragalactic_Distance_Scale#cite_note-11

Information for this series was based on:

Parallax: The Race to Measure the Cosmos by Alan W. Hirshfeld.

Distance: A History of Parallax and Brief Introduction to Standard Candles, B.J. Guillot http://www.bgfax.com/school/distance_history.pdf

Astrometric Measurement Techniques by Sabine Reffert, Landessternwarte, Konigstuhl 12, 69117 Heidelberg, Germany http://www.vlti.org/events/assets/4/documents/03_reffert-techniques.pdf

Various Wikipedia articles.

The Peach State Star Gaze 2010 Photo Gallery - Part 1

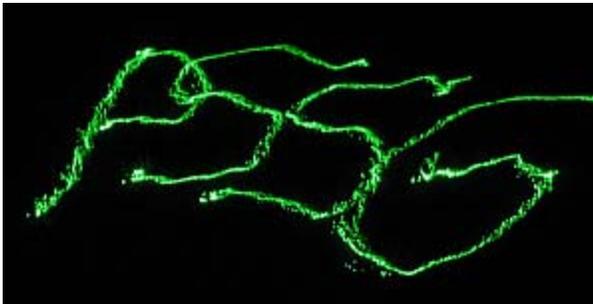
Wow! What a difference a year makes! This year the PSSG had wonderful weather. There were a few passing clouds on a couple of nights, but otherwise clear skies ruled the week! A big thanks to PSSG Chair Peter Macumber, Co-Chair Joanne Cirincione, the PSSG staff, and volunteers for organizing and running another great Peach State! On the next two pages are photos from this year's Peach State. Next month there will be more photos including photos of the speakers and door prize winners. See you at the 2011 PSSG! Photos by Tom Faber unless noted.



PSSG Chair Peter Macumber and Co-Chair Joanne Cirincione take a well deserved short break. Photo by Frank Marchese.



Kat Sarbell (left) and Joanne Cirincione look at the kitchen set up by Peter Macumber and Sharon Carruthers to fill in for Micky's Kitchen on "set-up" Saturday.



Kat Sarbell painted "PSSG" on the ground with my green laser pointer.



AAC President Mark Banks helps Sharon Carruthers prepare breakfast for the staff Sunday morning, the opening day of the Peach State.



Peter Macumber and Ralph Bowman put up tarps for the speaker area as Joanne and Mrs Bowman assist.



Mark Banks (left) and Keith Burns put up the AAC Banner on the pavilion.

The Strolling Astronomer

by Ken Poshedly, Publisher & Editor-in-Chief

The Autumn 2010 issue of The Strolling Astronomer, Journal of the Assn. of Lunar & Planetary Observers, is now freely available for viewing and downloading at <http://www.alpo-astronomy.org/djalpo>. This issue is free (not password-protected). The file name is JALPO52-4.pdf

The ALPO makes its Journal freely available once per year. So if you're not an ALPO member, or if your ALPO membership includes only the paper Journal, now is the time to download and view the online version and enjoy all of its benefits. Afterwards, contact ALPO membership secretary Matt Will (matt.will@alpo-astronomy.org) about either joining the ALPO (\$13 for 4 quarterly issues of the JALPO) or upgrading your current membership to include the online JALPO with your membership.

Georgia Astronomy in State Parks

There is one GASP event remaining for this year:

Nov 13 - Red Top Mtn SP.

Events for 2011 will be announced soon. For more information about these events, contact Keith Burns at 770-427-1475 or Keith_B@bellsouth.net.



The GASP volunteers at FDR State Park on Labor Day weekend 2004 - From left to right: Joanne Cirincione, Keith Burns, Harold and Claudia Champ with Ginger, Peter Macumber, Sharon Carruthers, Tom Faber, Kat Sarbell, and Holly and John Ritger. Photo by Holly Ritger.

Atlanta Astronomy Club Online

While this newsletter is the official information source for the Atlanta Astronomy Club, it is only up to date the day it is printed. So if you want more up to date information, go to our club's website. The website contains pictures, directions, membership applications, events updates and other information. <http://www.atlantaastronomy.org> You can also follow the AAC on Facebook by joining the AAC group, and on Twitter at <http://twitter.com/atlastro>.

The **Atlanta Astronomy Club, Inc.**, the South's largest and oldest astronomical society, meets at **8:00 P.M.** on the Friday closest to full moon of each month at Emory University's White Hall or occasionally at other locations or times. Membership fees are **\$30 (\$35)** for a family or single person membership. College Students membership fee is **\$15 (\$20)**. These fees are for a one year membership (\$5 per year extra charge to receive the *Focal Point* mailed).

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.

AAC Officers and Contacts

President: Mark Banks President@AtlantaAstronomy.org

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Focalpoint@AtlantaAstronomy.org

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Elliott Coordinator: Alesia Rast Alesia_Rast@mail.dnr.state.ga.us

Elliott Webmaster: Larry Owens 678-234-5399
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Georgia Astronomy in State Parks: Keith Burns 770-427-1475
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Audio-Video Coordinator: Keith Burns 770-427-1475
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PSSG Chairman: Peter Macumber pmacumber@nightsky.org

PSSG Co-Chair: Joanne Cirincione
starrynights@AtlantaAstronomy.org

Sidewalk Astronomy: Brad Isley
sidewalkastronomy@AtlantaAstronomy.org

Light Trespass: Open - Contact Mark Banks if you would like to volunteer for this position

Woodruff Observ. Coordinator: Sharon Carruthers
Treasurer@AtlantaAstronomy.org

AAC Webmaster: Daniel Herron observing@AtlantaAstronomy.org

Directions to White Hall at Emory

Our meetings are generally held in White Hall. To get to White Hall, turn onto Dowman Drive from North Decatur Rd at the five way intersection (across from Everybody's Pizza). White Hall is located across from the new Science & Math building. The best places to park are the Peavine and the Fishburne Parking Decks. The Fishburne deck is located on Fishburne Drive which is accessible from N. Decatur Rd. Turn onto Dowman and then right on Fishburne. You can also access Fishburne Drive from Clifton Road just north of N. Decatur. The Peavine parking deck is accessible from N. Decatur Rd. Turn onto Oxford Rd, go to the back entrance of Emory and turn onto Eagle Row. Take that to the Peavine deck. You can also access the Peavine deck from Clifton Rd. Turn onto Asbury Circle. It's the intersection next to the railroad tracks on Clifton. For maps to the decks see <http://map.emory.edu>. For more detailed directions to Emory University, visit www.atlantaastronomy.org or go to the Emory web site.

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

AAC Events are listed in BOLD

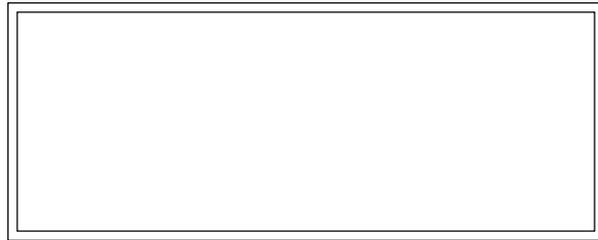
- Nov 13th, Saturday: **GASP at Red Top Mountain State Park** - see pg 7. Moon First Quarter.
- Nov 17th, Wednesday: Leonids Meteors.
- Nov 19th, Friday: **AAC Meeting at White Hall, Emory Univ, 8PM.** Jupiter Stationary.
- Nov 20th, Saturday: Mars near Mercury.
- Nov 21st, Sunday: Full Moon.
- Nov 26th, Friday: **December Focal Point Deadline.**
- Nov 28th, Sunday: Moon Last Quarter.
- Dec 1st, Wednesday: Mercury at Greatest Elongation East.
- Dec 4th, Saturday: **Charlie Elliott Chapter Meeting.** Venus at Greatest Brilliancy.
- Dec 5th, Sunday: New Moon.
- Dec 7th, Tuesday: Earliest Sunset in Atlanta. ~5:27PM.
- Dec 11th, Saturday: **AAC Dinner and Mtg at the Math & Science Bldg, Emory Univ, 6:30PM.**
- Dec 13th, Monday: Moon First Quarter.
- Dec 14th, Tuesday: Geminids Meteors.
- Dec 17th, Friday: **January Focal Point Deadline.**
- Dec 19th, Sunday: Mercury at Inferior Conjunction.
- Dec 21st, Tuesday: Full Moon, Lunar Eclipse, Solstice at 6:38PM.
- Dec 25th, Saturday: **Merry Christmas!**
- Dec 26th, Sunday: Pluto Conjunction with Sun.
- Dec 27th, Monday: Moon Last Quarter.
- Dec 31st, Friday: Moon 7° south of Venus.
- Jan 3rd, Monday: Quadrantid Meteors.
- Jan 4th, Tuesday: New Moon.
- Jan 12th, Wednesday: Moon First Quarter.
- Jan 21st, Friday: **AAC Meeting at White Hall, Emory Univ, 8PM.**

Atlanta Astronomy Club Listserv

Subscribe to the Atlanta Astronomy Club Mailing List: The name of the list is: AstroAtlanta. The address for messages is: AstroAtlanta@yahoogroups.com . To add a subscription, send a message to: AstroAtlanta-subscribe@yahoogroups.com . This list is owned by Lemmy Abbey.

Focal Point Deadline and Submission Information

Please send articles, pictures, and drawings in electronic format on anything astronomy, space, or sky related to Tom Faber at focalpoint@atlantaastro.org. Please send images separate from articles, not embedded in them. Articles are preferred as plain text files but Word documents or PDFs are okay. You can submit articles anytime up to the deadline. **The deadline for December is Friday, Nov 26th at 6:00 PM. Submissions will not be accepted after the deadline.**



FIRST CLASS



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

Newsletter of The Atlanta Astronomy Club, Inc.



The Focal Point

FROM: Tom Faber
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Alpharetta, GA 30022

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P.O. Box 76155
Atlanta, GA 30358-1155

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

www.atlantaastro.org