

The Focal Point

The Atlanta Astronomy Club
Established 1947
March 2011

Vol. 23 No. 10

Editor: Tom Faber

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March General Meeting

Join us for the March meeting of the Atlanta Astronomy Club. The meeting takes place on Friday March 18th at 8PM. The location is in room 207 of White Hall on the Emory University Campus. There will be a talk by a guest speaker, then after the talk there will be announcements of upcoming club events. The meeting will run for about 2 hours. 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:

Theo Ramakers, AAC member and Elliott Chapter Director, will present a talk entitled “Imaging the Unusual.” Theo will show images, and explain methods to image, of what he feels are the “not so usual” astronomical objects, or events that happen at unique situations, very long intervals, or maybe only once in a lifetime events. He also will discuss the equipment used, and how to image these objects, and what you need to know to do successful imaging.

Speaker Bio:

Theo Ramakers is a retired professional executive. He is a native of the Netherlands and emigrated to the USA about 40 years ago. Theo spent most of his professional career in international business associated with computers, computer networks, and call center equipment. In addition, he expanded the business of one



of the largest background screening companies in the US to provide international background checks.

Since 2008, Theo has been the Director of the Charlie Elliott Chapter of the AAC and is a member of a number of astronomy related organizations and has been active in astro imaging for a number of years. His images include deep sky objects, the planets, the sun as well as natural and man-made satellites. They have been shown on NASA’s APOD, the Planetary Society, SpaceWeather.com, Sky & Telescope, SolarAstronomy.com and other astronomy websites, as well as international magazines and newspapers.

Upcoming AAC Meetings:

April 15th (**At Georgia Tech**), May 20th (**Club Elections**), and June 17th - Lecture topics TBA.

Parking News Update at Emory University

The parking deck behind the admissions building is now open. There is a Barnes and Noble and other shops on the top floor of the parking deck, 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.

March is Membership Renewal Month

MEMBERSHIP RENEWALS: The AAC has moved to a “one-date-for-all” membership renewal. ALL CLUB MEMBERS, with some exceptions, should submit their \$30 (\$42 if you wish to receive the *Focal Point* by mail) dues for 2011 by March 20th - The Vernal Equinox. (There will be an R1 in the upper right corner of your *Focal Point* mailing label if you receive it in the mail. If you receive the *Focal Point* online you will receive an email - be sure we have your current email address). If you see either an RF or an xxx on your mailing label that means that your membership is about to expire or has expired. Please send your renewal right away. Please note that as of January 1, 2011 the dues for receiving the mailed *Focal Point* have increased to \$42 per year. This increase is to cover the cost of printing and postage. Dues for members receiving the online version of the *Focal Point* will remain at \$30 per year. If you have questions, need to update your contact information, or wish to switch to receiving the *Focal Point* online (and save \$12 per year) please contact the AAC Treasurer Sharon Carruthers. Sharon’s contact information is on p. 7.

The Next AAC Board Meeting

The next Board meeting of the Atlanta Astronomy Club is scheduled for Sunday, April 17th at 3PM at Emory University in the Math and Science building room N301. Contact President Mark Banks or Board Chair Marie Lott for more information about the meeting agenda.

February Meeting Minutes

by Julie Moore, AAC Recording Secretary.

Photos by Tom Faber

The Atlanta Astronomy Club held its February meeting on Friday, February 18 at Emory University's White Hall. The meeting was started at 8:00 PM by President Mark Banks. There were approximately 30 members and guests in attendance. Our speaker for the evening was Dr. Bram Boroson of Clayton State University, who presented an interesting talk on x-ray astronomy.



After Dr. Boroson's talk there were several announcements made: Watch for road closings before the next meeting. Oxford Road is scheduled to be closed. Club Elections are in May. Volunteers are needed for the nominating committee and to run for offices. Why not give it a try!

Rich Jakiel brought us up to speed on upcoming meetings. In March Theo Ramakers will bring us up to speed on astronomy oddities. In April we will meet at the Georgia Tech Physics building with a speaker from the university there. May is TBA and in June former president and all round nice guy Art Russell will be visiting from Florida and speaking at our meeting.

Treasurer Sharon Carruthers reminded us that membership renewal is due in March, so be sure to turn that in to her. Art Zorka reminded us that the

Astronomical League needs up-to-date records, so if the club doesn't have a current e-mail address for you, contact him and Sharon with that information please.

GASP will be sharing the night sky with the public at Unicoi Park on March 26. Deerlick Astronomy Village will host an open house on Memorial Day.

The Focal Point Archives

The AAC began publishing the *Focal Point* as a PDF online in June 1998. Since then every issue has, and still is, available for download from the club's web page. Recently that archive has expanded. Sharon Carruthers has scanned 61 issues of the AAC's newsletter (then called *The Atlanta Astronomers' Report*) from 1948 to 1977. Although many issues from this period are still missing these provide a valuable record of the club's early years. In addition I (Tom Faber) came across 19 issues of the *Focal Point* from the years 1995-1998 that I scanned to make available on the club's web site. Again not every issue during this period is available but it is another step in maintaining and making available to all a record of the AAC's history. Our web master Daniel Herron has uploaded these to the web site as PDF's for download. Just visit www.atlantaastronomy.org and click on the "Focal Point Archives" link on the right side of the page. If you have any of the missing issues of the club's newsletter that you would like to scan and submit to Daniel as a PDF please do!

The Astronomical League

As a member of the **Atlanta Astronomy Club** you are automatically also a member of the **Astronomical League**, a nation wide affiliation of astronomy clubs. Membership in the AL provides a number of benefits for you. They include:

- * You will receive *The Reflector*, the AL's quarterly newsletter.
- * You can use the Book Service, through which you can buy astronomy-related books at a 10% discount.
- * You can participate in the Astronomical League's Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others.

To learn more about the Astronomical League and its benefits for you, visit <http://www.astroleague.org> You may also contact the AAC's Astronomical League Correspondent Art Zorka for more information about the AL's Observing Clubs at artzorka@yahoo.com or by phone at 404-633-8822.

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.

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)

February Charlie Elliott Chapter Minutes

by Marie Lott, CE Chapter Recording Secretary

The February meeting of the Charlie Elliott Chapter of the Atlanta Astronomy Club was held on Saturday, February 5 in the CEWC Visitor Center at 3 PM. Twenty nine people were in attendance. Chapter director Theo Ramakers shared recent news articles about the chapter which were published in two local papers, the Rockdale Citizen and the Covington News. Theo then gave outreach pins and award certificates from the Night Sky Network to eight members of the chapter. Recipients of these awards for 2011 were Frank Garner, Art Zorka, Theo Ramakers, Alan Bolton, Marie Lott, Stephen Ramsden, Steven Phillips, and Steve Bieger.

Theo was the featured speaker this month, presenting “Imaging the Unusual”. His talk gave tips and examples of how to take photos of special celestial events. Theo discussed taking images of Jovian moon occultations and eclipses, the changing views of Saturn’s rings as the planet tilts, and object impacts on Jupiter. He also shared stories of capturing images of comets, rocket fuel dumps, artificial satellite trails, Iridium flares, and SST-ISS-ATV close ups and transits across the sun, moon & Venus. Theo’s presentation, along with his movie of “Current Events in Astronomy and Space Exploration”, can be viewed online by clicking on the “Past Events” tab of the club web site at <http://www.ceastronomy.org>. Tim Geib’s beautiful image of NGC 253 (the Sculptor Galaxy) is currently featured on the home page of the web site.

Steven Philips, Observing Supervisor, gave the monthly “Observing 101” talk, a highlight of current sun, moon and planet rise and set times, observing targets and challenges. In February, Jupiter sets before 10 PM, Saturn rises after midnight and Venus rises before dawn. There will be a nice conjunction of February 28th of Venus and the Moon. Asteroid Iris will cross the area of Cancer this month.

Small Telescope/Binocular Target List for February: M31 (Andromeda Galaxy) and nearby M110, M33 (Pinwheel Galaxy); Supernova remnant M1 (the Crab Nebula); Diffuse Nebula M42 (Orion Nebula); Open Clusters M34-38, M45 (the Pleiades) and NGC457 (known as the Owl, ET or Kachina Doll cluster - the two brightest stars, Phi-1 & Phi-2 Cass, can be imagined as the eyes).

Steven announced that the club has \$361 in the Jon Wood Fund. This money will be used to purchase a commemorative sign for the observing field, which is being renamed in Jon’s memory. The chapter will have a Saturday work day to move the Safety Zone signs to their correct positions to protect the observing field from hunters.

The meeting was adjourned at 5:25 PM. There was no observing after the meeting due to high humidity and a soggy field.



CE Chapter Outreach Programs

by Theo Ramakers, CE Chapter Director

The Chapter had a very successful month in outreach. We did a total of nine outreach events at different schools from Norcross to Covington. The events were all daytime events with in-classroom presentations as well as (when the weather allowed) outside solar observing. The kids are just awed by what they can see on the sun and get very enthusiastic about it. The events included in-school presentations on three different days for Ficquett Elementary in Covington as well one additional day for solar viewing.

Solar observing and a presentation about NASA’s Stereo 360 mission at Summerour, as well as presentations and solar observing for the 4th grade students at Hightower Trail Elementary in Covington, and Puckett’s Mill Elementary school in Dacula. We will be back at some of these schools



later this year for an evening program during their “Science Nights”, “Space Camps” or “Astronomy Nights”.

In addition, a lead article in the Rockdale/Newton Citizen drew new people to our meeting on February 5. Thanks everyone for bringing our club into the lime light and hopefully we will gain some new members on the way.





The Night Sky Network Update

by Art Zorka, AAC ALCOR and NSN Coordinator

As the deadline approaches for me to submit our membership list to the Night Sky Network, something has come to mind. Many of you have family memberships and would like to be able to log on to Night Sky

Network individually. If other members of your family would like to have their own account on Night Sky Network in order to keep track of individual outreach hours, let me know (artzorka@yahoo.com), along with separate email addresses for each member. This will enable you each to receive your own Outreach certificate and pin.

Remember, your name will be sent in once Sharon Carruthers, our treasurer, notifies me that your

2011 membership is up-to-date. We will be up and running soon. In the meantime, you can visit the NSN website as a guest by going to: <http://nightsky.jpl.nasa.gov>



Nebulae Images by Chuck Painter

The following images were made recently by club member Chuck Painter.



IC5146, The Cocoon Nebula. Taken near Blue Ridge, GA on October 30, 2010. 22 images x 10 minutes each = 220 minutes total exposure time.



M42/43 The Orion Nebula. Taken from near Alpharetta, GA on February 6, 2011. 6 images x 10 minutes each = 60 minutes total exposure time.

The equipment Chuck used to produce these images was:

AstroTech 8" Ritchie Chretien telescope @ F/8, Orion Starshoot Pro Color CCD Camera, Orion ST-80 guidescope with Orion Starshoot Autoguider, Orion Atlas EQ-G mount, Image capture using Maxim DL Limited Edition, Image guided using PHD, Processed with Nebulosity and PixInsight.

M42 Image by Dan Llewellyn

I have been experimenting with my own version of High Dynamic Range Processing (HDR). This was a composite of (2) 2 minute, (2) 4 minute, and (4) 8 minute exposures of M42 and the Running Man Nebula with a Starshoot Pro II color ccd camera from Orion. This type of processing seems to have no middle ground, people either like it or don't. I find it interesting in the richer contrasting nebulosity, especially with the rather short compilation of exposures. However, it is a bit strong if you have never seen one, but I guess that is the nature of the beast, everyone is searching for the new angle to make their astro photos stand out. I would appreciate any feedback on this type of image processing.



Discovery's Final Launch Photo Gallery

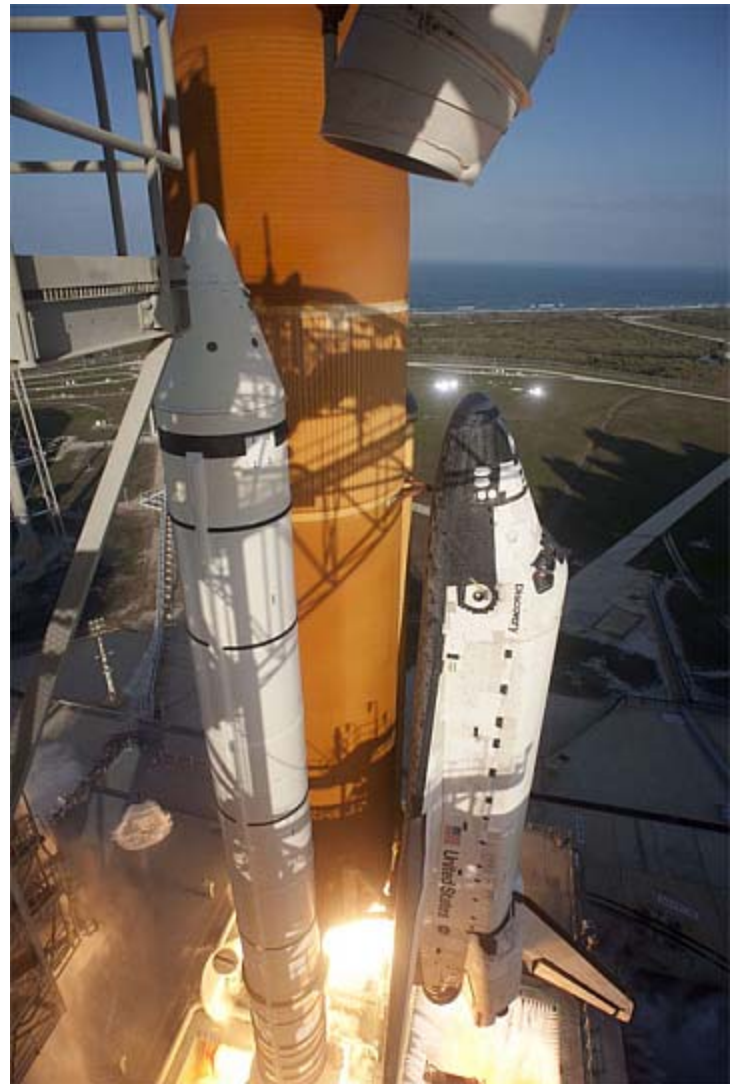
The Space Shuttle Discovery, the oldest in the fleet, was launched on its 39th and final mission on February 24th at 4:53PM EST. Discovery carried a crew of six veteran astronauts on its 13th flight to the International Space Station. Discovery's cargo included the Leonardo multipurpose logistics module that has flown to the ISS seven times before. Leonardo was converted into a Permanent Multipurpose Module that will be left at the ISS to provide about 2500 cubic feet of pressurized storage space. Leonardo was loaded with about 7000 lbs of supplies for the flight. Also aboard Discovery was the Express Logistics Carrier 4, which was installed on the main truss of ISS, and carried a spare set of radiators for the ISS cooling system. Two of Discovery's crew members performed two space walks while the Shuttle was docked to the ISS. These space walks were to attach the ELC-4 to the Station's truss and perform various maintenance tasks on the outside of the ISS.

Discovery's first launch was over 25 years ago, on August. 30, 1984, on mission STS-41D. That flight launched three communications satellites and tested an experimental solar array wing. The mission was commanded by astronaut Henry W. Hartsfield. Discovery's history has a number of notable events including the first spacecraft to retrieve a satellite and return it to earth, the shuttle that launched the Hubble Space Telescope in 1990, the first shuttle flight to carry a Russian cosmonaut, the first shuttle to rendezvous with the Russian Mir Space Station, and Discovery launched astronaut John Glenn, the first American to orbit the Earth, on his second

trip to orbit on the STS-95 mission in 1998. Discovery also had the duty of being shuttle used for the return to flight missions after both the Challenger and Columbia accidents.

Here are some photos of the launch. **Farewell Discovery!!**

Image Credit: NASA



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Advanced Instrument Gets Close-up on Mars Rocks

NASA/JPL News Release - February 18, 2011

NASA's Mars Science Laboratory rover, Curiosity, will carry a next generation, onboard "chemical element reader" to measure the chemical ingredients in Martian rocks and soil. The instrument is one of 10 that will help the rover in its upcoming mission to determine the past and present habitability of a specific area on the Red Planet. Launch is scheduled between Nov. 25 and Dec. 18, 2011, with landing in August 2012.

The Alpha Particle X-Ray Spectrometer (APXS) instrument, designed by physics professor Ralf Gellert of the University of Guelph in Ontario, Canada, uses the power of alpha particles, or helium nuclei, and X-rays to bombard a target, causing the target to give off its own characteristic alpha particles and X-ray radiation. This radiation is "read by" an X-ray detector inside the sensor head, which reveals which elements and how much of each are in the rock or soil.

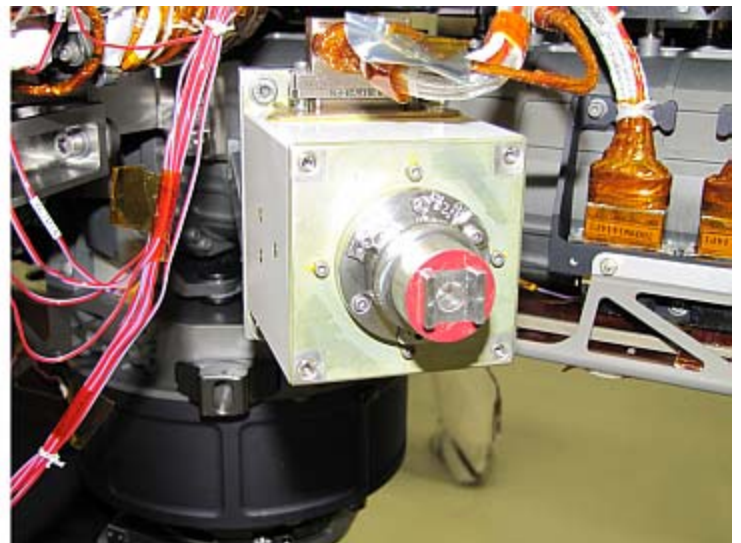
Identifying the elemental composition of lighter elements such as sodium, magnesium or aluminum, as well as heavier elements like iron, nickel or zinc, will help scientists identify the building blocks of the Martian crust. By comparing these findings with those of previous Mars rover findings, scientists can determine if any weathering has taken place since the rock formed ages ago.

All NASA Mars rovers have carried a similar instrument – Pathfinder's rover Sojourner, Spirit and Opportunity, and now Curiosity, too. Improvements have been made with each generation, but the basic design of the instrument has remained the same.

"APXS was modified for Mars Science Laboratory to be faster so it could make quicker measurements. On the Mars Exploration Rovers [Spirit and Opportunity] it took us five to 10 hours to get information that we will now collect in two to three hours," said Gellert, the instrument's principal investigator. "We hope this will help us to investigate more samples."

Continued on next page

The image on the left shows Grad student Nicholas Boyd (left) and Principal Investigator Ralf Gellert, both of the University of Guelph, Ontario, Canada, preparing for the installation of the sensor head on the Alpha Particle X-ray Spectrometer instrument during testing at NASA's Jet Propulsion Laboratory. The instrument is part of the Curiosity rover, which will fly on NASA's Mars Science Laboratory mission. The sensor head is 7.8 centimeters, or about 3 inches tall. Image credit: NASA/JPL-Caltech.



Another significant change to the next-generation APXS is the cooling system on the X-ray detector chip. The instruments used on Spirit and Opportunity were able to take measurements only at night. But the new cooling system will allow the instrument on Curiosity to take measurements during the day, too.

The main electronics portion of the tissue-box-sized instrument lives in the rover's body, while the sensor head, the size of a soft drink can, is mounted on the robotic arm. With the help of Curiosity's remote sensing instruments – the Chemistry and Camera (ChemCam) instrument and the Mastcam – the rover team will decide where to drive Curiosity for a closer look with the instruments, including APXS. Measurements are taken with the APXS by deploying the sensor head to make direct contact with the desired sample.

The rover's brush will be used to remove dust from rocks to prepare them for inspection by APXS and by MAHLI, the rover's arm-mounted, close-up camera. Whenever promising samples are found, the rover will then use its drill to extract a few grains and feed them into the rover's analytical instruments, SAM and CheMin, which will then make very detailed mineralogical and other investigations. Scientists will use information from APXS and the other instruments to find the interesting spots and to figure out the present and past environmental conditions that are preserved in the rocks and soils.

“The rovers have answered a lot of questions, but they've also opened up new questions,” said Gellert. “Curiosity was designed to pick up where Spirit and Opportunity left off.”

JPL, a division of the California Institute of Technology in Pasadena, manages the Mars Science Laboratory mission for the NASA Science Mission Directorate, Washington. The MSL APXS is funded by the Canadian Space Agency, with MDA Corporation as prime subcontractor to build the instrument. Funding for the science team comes from CSA, NASA, and the University of Guelph.

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/atlastr>.

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 (\$42)** for a family or single person membership. College Students membership fee is **\$15 (\$27)**. These fees are for a one year membership (\$12 per year extra charge to receive a printed *Focal Point* by mail).

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

Program Chair: Richard Jakiel 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: Julia Moore 678-531-2134
Secretary@AtlantaAstronomy.org

Board Chair: Marie Lott mtlott@comcast.net

Board: Jim Moore - 678-598-5820 hollin@bellsouth.net

Board: Misty Herron - mistyherron@gmail.com

Board: Theo Ramakers 770-464-3777 director@ceastronomy.org

ALCOR: Art Zorka 404-633-8822 (H) 404-247-2474 (C)
artzorka@yahoo.com

Elliott Ch. Director: Theo Ramakers 770-464-3777
director@ceastronomy.org

Elliott Observing Supervisor: Steven Phillips 770-601-9816
observing@ceastronomy.org

Elliott Recording Secretary: Marie Lott mtlott@comcast.net

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

Elliott Webmaster: Larry Owens 678-234-5399
webmaster@CEastronomy.org

Georgia Astronomy in State Parks:

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 on the Emory University campus. White Hall is located on Dowman Drive across the street from the Math & Science building. The best place to park is the new parking deck next to the Math & Science building. It provides easy access to both the Math & Science building and White Hall. There is a Barnes and Noble and other shops on the top floor of the parking deck, so there are some nearby things to do while waiting for the meetings to start. The best way to access this parking deck is to turn onto Oxford Road from the five way intersection across from Everybody's Pizza. The entrance to the parking deck is a short ways down Oxford on the right. For maps of the campus see <http://map.emory.edu>. For more detailed directions to Emory University, visit www.atlantaastronomy.org or go to the Emory University web site.

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

AAC Events are listed in BOLD

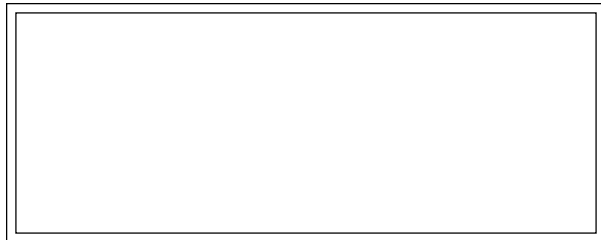
- Mar 12th, Saturday: Moon First Quarter.
- Mar 13th, Sunday: Daylight Saving Time begins at 2:00AM.
- Mar 16th, Tuesday: Mercury near Jupiter.
- Mar 18th, Friday: **AAC Meeting at White Hall, Emory Univ, 8PM.**
- Mar 19th, Saturday: Full Moon.
- Mar 20th, Sunday: Vernal Equinox at 7:21PM.
- Mar 21st, Monday: Uranus conjunction with Sun.
- Mar 22nd, Tuesday: Mercury at Greatest Elongation East.
- Mar 25th, Friday: **Focal Point Deadline.** Bradley Observatory Open House & Equinox concert.
- Mar 26th, Saturday: **GASP at Unicoi State Park.** Moon Last Quarter.
- Mar 31st, Thursday: Moon near Venus morning.
- Mar 31st-Apr 3: **Zombie Party & Messier Marathon at DAV - Contact Daniel Herron.**
- Apr 2nd, Saturday: **Charlie Elliott Chapter Meeting.**
- Apr 3rd, Sunday: New Moon. Saturn at Opposition.
- Apr 11th, Monday: Moon First Quarter.
- Apr 15th, Friday: **AAC Meeting at Georgia Tech Physics Building, 8PM.**
- Apr 17th, Sunday: **AAC BoD Mtg at Emory Math & Science Building 3PM.** Full Moon.
- Apr 19th, Tuesday: Mercury near Mars in morning.
- Apr 22nd, Friday: **Focal Point Deadline.** Lyrid Meteors.
- Apr 24th, Friday: Moon Last Quarter.
- Apr 29-May 1st: Morning grouping of the Moon, Mercury, Venus, Mars, and Jupiter.
- May 3rd, Tuesday: New Moon.
- May 5th, Thursday: Eta Aquarids Meteors.
- May 7th, Saturday: **Charlie Elliott Chapter Meeting.** Mercury at Greatest Elongation West.
- May 8th, Sunday: Mercury near Venus.

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 April is Friday, Mar 25th at 6:00 PM. Submissions will not be accepted after the deadline.**



FIRST CLASS



www.beclage.com



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

2206 Treeridge Parkway
 Alpharetta, GA 30022
 Atlanta Astronomy Club
 P.O. Box 76155
 Atlanta, GA 30358-1155
 www.atlantaastro.org
 On Twitter at <http://twitter.com/atlastro>



Newsletter of The Atlanta Astronomy Club, Inc.

FROM: Tom Faber