

# The Focal Point

The Atlanta Astronomy Club  
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Editor: Kat Sarbell

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## March General Membership Meeting

By Keith "Kosmic Kow" Burns

The next General meeting of the Atlanta Astronomy Club will be on March 17th at 8 P.M. at Emory University in White Hall. The room number is 207. Directions to White Hall are on page 7 of this newsletter. We will have refreshments in the hallway outside the room before the meeting.

Our March speaker will be longtime AAC member Rich Jakiel and his talk is about ancient coins displaying astronomical imagery and is entitled "Striking Ancient Skies". Here is Rich's write-up:

### "Striking Ancient Skies"

By Rich Jakiel

Several years ago, Jerry Armstrong got me hooked on collecting ancient coins (I think it was "revenge" for getting him hooked on trilobites). We both soon noticed large numbers of "astronomical coins" - those having stars, crescents, comets and a wide variety of other astrological symbols. After some digging, we found that many could be tied into major astronomical events such as conjunctions, occultations, eclipses and brilliant comets. In 2005, we co-wrote an introductory article on these unusual coins entitled "Striking Ancient Skies" for the March, 2005 issue of Astronomy.

In my presentation, I will discuss various types of astronomical events that were observed by the ancients, and use coins to illustrate them. Many of these Roman and Greek coins are spectacular works of numismatic art and are stunning to behold. The Romans in particular, were masters of bureaucratic bookkeeping and thus these coins can be dated to high degree of accuracy. Using a highly accurate planetarium program, it is possible to simulate the many of the conjunctions, occultations and eclipses depicted on these coins.

Today this is still a wide-open field and it was possible to make a significant discovery. Well over 100,000 different types of Roman and

Greek coins are known, with new ones being found all the time. Many of these ancient coins have never been formally catalogued. Using a good computer program, online resources and a bit of research the amateur can make significant contributions.



Rich gives a talk about Mars at the 2004 Peach State Star Gaze. Photo by Frank Marchese.

### A Short "Biographical Sketch"

I grew up in small college town (Fredonia) located in Western New York, about 40 miles southwest of Buffalo. Though I lived within the village, my backyard was blessed with good dark skies that were often better than 6.5 mag. (visual). I got my first telescope in 1974, when I was a junior in high school. It was a 4 1/4" f/10 Edmund Newtonian on a steel pedestal German Equatorial mount (GEM). Within a year, I had seen all the "Messiers" and hundreds of other deep-sky objects. Two years later, after much scrimping and saving, I bought an 8-inch Cave OTA mounted on a massive, home-made GEM, plus a small domed observatory. It would become my main instrument and it was used extensively to observe nearly 2000 objects until I moved to Atlanta, GA in August of 1987. Today I own several telescopes including a 120mm richfield refractor, 17.5-inch rebuilt Coulter Dobsonian and a 12-inch LX200 GPS that I'm still trying to figure out.

In a very short time I became an active member of the AAC serving a dozen times as a club officer or on the Board of Directors since late 1987. I spent a great deal of time using the telescopes at Villa Rica during much of that time, plus attended all of the PSSG's since their inception. Though I've concentrated on 'deep sky' observing, I am also a dedicated solar system observing and (of late) - an imager. Before acquiring a decent imaging platform, I spent a great deal of time sketching the cosmos and have a half dozen notebooks filled with many hundreds of drawings. Over the years a number of these have been published in magazines and in several books.

*Continued on next page*

Back in 1990, I had my first major article (on galaxies in Ursa Major) published by Astronomy magazine. Since then I have had over 50 articles published in Astronomy, Sky & Telescope, ALPO's - Strolling Astronomer, Astronomie Heute, Magellanics, Amateur Astronomy, and the Deep Sky Observer (Webb Society) to name a few. Most of these articles have been on "deep sky" observing, though I've had written several book reviews, biographical sketches and other historical pieces. I have also written a ½ dozen technical articles in geochemistry and radiochemistry for several major refereed scientific journals. Recently, I helped co-author (with Wolfgang Steinicke) an observer's guide to galaxies - Galaxies: How to Observe Them as part of Springer's continuing amateur observer series. Hopefully, it will be published in the next few months.

Currently I work for the Environmental Protection Division of Georgia as a research scientist II in the state's radiation protection program. I have a BS in the fields of Geology and Biology (1979), and an MS in Geochemistry (1983). More recently I was a Ph.D. candidate in geochemistry at Georgia Tech. From 1987 to 1990 I was a high school science teacher in Atlanta and Villa Rica, and was an adjunct professor for the University of West Georgia from 1997 - 2002 (astronomy and physics).

## NEW Membership Renewal Date!!

by Sharon Carruthers

As of March 2006, after an unanimous vote at the last General Meeting, the renewal date for all memberships to the AAC (except new members) will be in March on the Vernal Equinox, a.k.a. as the First Point of Aries, a.k.a. as the First Day of Spring (March 21 or 22).

As of March 2007, payments can be made at any time in March of each year. Payments made up to April 30th will be back applied to the March renewal. The membership of anyone who has who has NOT paid by May 1st of the year will expire and they will be classified as NEW MEMBERS, issued a new membership ID number and assessed a new member fee (should it be different from the renewing membership rate). Dates will be based on the postmark or PayPal posting of the payment.

To bring all members up to this new date, in the next month I will send every member, by regular mail or e-mail (depending on how you requested your FP to be delivered) a notice that has your join date, your current renewal date, and a fee that will renew you up to March 2007. The fee will be the number of months between your renewal date and March 31, 2007 times \$2.50. (i.e. if your renewal is in October 2006, you will pay 6X\$2.50= \$15.00). If you choose to pay this now, I will change your current renewal date to March 2007. (Your join date, which is also your member I.D., will not change).

If you do NOT wish to pay this fee now, you will be sent a renewal notice just before your expiry date, as in the past, but with this new dollar amount rather than the usual \$30. New members will pay for a year's membership and be pro-rated to the March renewal date (as above) when they re-join. You can also send me your subscription payment at the same time; I will just send payment to the magazines for you and they will tack on another year to your subscription(s). Or you can send payment to me when you receive your notices from them, as in the past. Also, you can pay your dues using PayPal if you have an account with them. Log onto PayPal and post your payment to: AACDues@AtlantaAstronomy.com

An on-line registration form that will accept PayPal payments is currently under construction. Until we get it up & running, you do NOT have to send me a renewal form with your PayPal payments unless you have included some unusual payments / donations that I don't recognize. In that case, drop me an e-mail. MAKE SURE I HAVE YOUR CURRENT E-MAIL ADDRESS & PHONE NUMBER in case I have any questions about your payment.

## February General Meeting Minutes

by Art Russell, Recording Secretary

February 10, 2006

Approximately 60 members and 4 guests attended the February General Membership Meeting of the AAC held at Emory University's White Hall. Philip Sacco, AAC President, opened the meeting at 8:00 PM. In his welcoming comments, he gave away 4 astronomical calendars to Paul, and AAC members Ray Major, Tom Faber, and Dan Herron because they answered his trivia questions correctly.

Art Zorka, Astronomical League Coordinator (ALCOR), discussed the Astronomical League's observing programs and encouraged member participation. Art also announced the birth of a new grandson.

Tom Crowley, AAC Chairman of the Board of Directors (BOD) announced to the membership that Art Russell, AAC Recording Secretary, and Dark-Sky Committee Chairman, was leaving Atlanta to take a job in Jacksonville, FL., but promised to let the club there know he was coming. Art then spoke for a few minutes saying goodbye to the club. He also spoke briefly about the coming opportunity for the AAC to acquire its own Dark-Sky Site at Deerlick Astronomical Village (DAV) east of Atlanta.

Philip also added a few comments lauding the opportunity presented by DAV, and then asked Joanne Cirincione, Georgia Astronomy in State Parks (GASP) Chairman, to address forthcoming GASP activities. Following Joanne's comments, he then noted the in-town public resources available at Fernbank Science Center and their Thursday and Friday evening Observatory public open-house.

AAC Light Trespass Chairman Marc Sandberg briefly noted recent progress made in Fulton County's adoption of light pollution control initiatives. Marc asked that any member interested in reducing light pollution contact him.

AAC BOD Member and Charlie Elliot Chapter Representative Larry Owens announced their forthcoming meeting next week. Assuming cooperation of the weather, the evening should see first light for the chapter's newly-refurbished Beyers equatorial mount and 16" telescope. Larry also made special mention of AAC member Michael Covington's donation of an electronics control package to drive the mount.

AAC Treasurer Sharon Carruthers discussed proposed changes to the club's annual dues structure and queried the membership about the acceptability of several options. Key among the proposed revisions are a single date for renewal, and prorating by month of initial membership for new members. She noted that the proposed changes are currently under study and would be further reviewed at the next meeting of the BOD.

AAC Vice-President for Programs Keith Burns then asked AAC BOD Member Chris Hetlage to introduce the evening's speaker, Dr. Adam Block, most recently of the Kitt Peak National Observatory. Dr. Block's presentation was entitled "The Digital Observer" and during which he made the case that the observer using digital means has much to contribute to astronomy. At the conclusion of his presentation, he then asked Emory University's Dr. Richard Willamon to join him on stage. At that point, Adam noted he had been one of Dr. Willamon's students at Fernbank Science Center when much younger, and that it was Dr. Willamon who had inspired him to pursue a career in astronomy. He further announced that he had recently been given credit for the discovery of a main-belt asteroid, and as its discoverer, had the privilege of naming it. In Dr. Willamon's honor, Dr. Block named it "Willamon" (although known officially as "2000AE42 Willamon").

Philip closed the meeting at 9:40 PM. "The meeting after the meeting" was then held at Athens Pizza where the members attending closed down the restaurant.

## Charlie Elliott February Meeting Minutes

by Clevis Jones, CEC Recording Secretary

Charlie Elliott Chapter (CEC) Meeting Minutes: Saturday February 18, 2006

**SPECIAL NOTICE:** The CEC now has its own Yahoo group: If you're planning to head out to the field for observing or just have something on your mind about astronomy or the chapter, post a message. Here's how: [http://groups.yahoo.com/group/charlie\\_elliott\\_chapter](http://groups.yahoo.com/group/charlie_elliott_chapter)

**ATTENDANCE:** Thirteen guests and members attended the February meeting held at the Charlie Elliott Visitor Center.

**BUSINESS:** Chapter Director, Larry Owens, began the meeting with a report on the **FIRST LIGHT** of the newly coated 16-inch mirror for the Newtonian on the Byers mount. The event was scheduled for after the club meeting on Saturday the 18th. But, due to a forecast of deteriorating weather, first light took place Thursday the 16th in Alpharetta, GA. The mirror appears to be excellent! A tracking problem with the Byers mount was discovered. Larry has since experimented and tested – swapping the RA and Dec motors (which have different rotational speeds) should correct the problem. Capella was the first in the field of view – diffraction rings looked very good and were very symmetrical on both sides of focus. Left to do: 1. obtain the 3.1-inch secondary mirror as recommended by Galaxy Optics, 2. resolve the tracking issue, 3. wiring for the auto guider, 4. install a lunar/sidereal switch, and 5. lots of work to do on the 2nd 16-inch truss tube project

[CEC Recording Secretary note: the Byers mount, 16-inch Newtonian, 16-inch truss tube, and the 6-inch Criterion are all club projects. Larry has spent several hundred hours, a lot of sweat (the Byers is HEAVY), and more than four hundred dollars on the superb restoration of the Byers and first 16-inch thus far. He is also taking the lead on the 16-inch Truss-Tube project. To those of you who have donated – MANY THANKS. More donations of money and time would be greatly appreciated: If you would care to donate either to help defray costs and labor, contact Larry Owens at [planetographer@comcast.net](mailto:planetographer@comcast.net)]

Jim Honeycutt of Oxford College gave an overview of what is on tap for next month's meeting (see below):

**OBSERVING REPORT:** What's Up Tonight: Steve Bieger presented "What's Up Tonight" with a theme of "Galaxies". February is the Full Hunger, or Full Snow Moon. Close encounters with the Moon will be Jupiter 2-20, Mars 3-5, Saturn 3-9, and the Vernal Equinox is on 3-20.

**CURRENT EVENTS REPORT:** Clevis Jones' "Current Events" covered the Mars Rovers and Cassini ... with a bit of humor thrown in – intended and not.

**OBSERVING SESSION:** No observing due to overcast.

## Charlie Elliot March Meeting

"Explore the Universe at Charlie Elliott"

March 25, 2006, 3:00 - 6:00 p.m.

**Note: this meeting will be at Oxford College**, Pierce Hall, 2nd floor - directions: [http://www.atlantaastronomy.org/CEWMA/oxford\\_directions.html](http://www.atlantaastronomy.org/CEWMA/oxford_directions.html)

**What's Up Tonight** - Steve Bieger, the chapter's Observing Supervisor, will present a short program on what's available for observing from Charlie Elliott, with a bit of science and history for good measure.

**Feature Program:** "Stellar Spectra and Hubble's Law" Jim Honeycutt, Instructor in astronomy at Oxford College, will host a hands-on class on taking stellar spectra and calculating the distance of galaxies using Hubble's Law. Don't miss this opportunity to learn how spectra are taken and analyzed and how astronomers calculate the distances to the galaxies! After the meeting there will be observing at the Charlie Elliott Observing field, weather permitting: [http://www.atlantaastronomy.org/CEWMA/satellite\\_hires.htm](http://www.atlantaastronomy.org/CEWMA/satellite_hires.htm)

The remaining 2006 Charlie Elliott Chapter meeting schedule is as follows: Mar 25, Apr 22, May 20, Jun 17, Jul 15, Aug 19, Sep 16, Oct 14, Nov 11, Dec 09.

**FOR UPDATES & DIRECTIONS:** PLEASE check the CEC website for the most current meeting information! <http://www.atlantaastronomy.org/CEWMA/>

## The Telescope & Instrument Workshop

by Sharon Carruthers

The next T&IW will be on Saturday, March 18th at 11:00 a.m. at Bradford Map & Telescopes. We are planning to purchase some cheap 6" mirrors to build Club "loaner" scopes. We are looking for 6" - 8" blanks so we can grind our own, and for donations of supplies we can use to build scopes or old scopes that we can either refurbish or cannibalize for parts.

Location: Bradford Map, Globe & Telescopes, 300 Hammond Dr, Sandy Springs 30328

For More information, contact: Dan Llewellyn at [zoser@mindspring.com](mailto:zoser@mindspring.com) or 404-633-7562; or Sharon Carruthers at [Treasurer@AtlantaAstronomy.org](mailto:Treasurer@AtlantaAstronomy.org) or 404-843-9610



*Club member Art Russell with his 18" Dobsonian at the Peach State Star Gaze. Unfortunately, he took his scope with him.*

## Art Departs for Florida

Long time AAC member, Recording Secretary, and past President Art Russell recently left Atlanta to take a new job in Jacksonville. He also held other offices in the club and volunteered at club events. He was known especially for his star-hopping talks and demonstrations which he gave at many of the Peach State Star Gaze star parties and open houses at Villa Rica. A few months ago he earned his doctorate in educational psychology at Georgia State University.

Art had this to say about his and his wife Jane's departure: "As you might imagine, our departure is bittersweet. We are excited about the move and opportunity, but unhappy about leaving so many friends behind. As to job, I'll be working for Logistics Services International (LSI) of Jacksonville, FL., where I'll most likely be working as an Army "Subject-Matter Expert" (SME) focusing on developing courses for leadership training and management development, as well as developing courses for the Army's Material Management College."



Mars. 2-10-06 @ 0233 UT. 12" LX200 GPS @ f/30, NexImage cam - 4800 frames. Seeing - fair 4 (10). CM = 26.7, Diameter = 8.12", Phase = 0.892.



## Craters of the Moon and Colors of Mars

Images and write-up by Rich Jakiel

The "sunrise" on Copernicus (center) was taken on 1/9/06 at 0130 UT, and the crater Clavius (bottom) a short time later at 0140 UT. Both were imaged with a C11 operating at f/10, and a NexImage planet cam. Since my Jupiter runs have been ruined by nasty seeing, I've included an image of Mars taken with a 12-inch LX200 GPS at f/30. At the time, Mars was barely over 8" in diameter.

## 2006 Zombie Party March 29th-April 2nd

Mark your Calendars!!! The Zombie Party is an annual no frills star party hosted by the Atlanta Astronomy Club. This year it is being held at the Deerlick Astronomy Village (DAV) near Sharon, GA. The Zombie Party will be held from noon on Wednesday, March 29th to noon Sunday April 2nd. Wednesday and Thursday night will be the best night for those looking to do the Messier Marathon. If you are interested in doing the Messier Marathon this year I uploaded two documents to the files section of the AstroAtlanta Group (<http://groups.yahoo.com/group/AstroAtlanta/>) that may help you bag them all!

Messier Marathon Search List.doc - Contains a list of all the objects and details on each, the preferred search order, a form to track your progress, and images of the objects.

Messier Telrad Charts.doc - Contains Telrad charts of MOST on the Messier objects to help you locate them easier.

I have also uploaded two Zombie Party documents. One (Zombie Party.doc) is a registration document for those wishing to go ahead and register. The other (Zombie Brochure.doc) is a handout about the Zombie Party. Both documents contain the Registration and Hold Harmless forms for the event. The Zombie Brochure.doc has a little more information about the site, rules, and directions.

**Cost** - Single person: \$10 per day - \$30 for all four days. Family (family consists of two adults and a max of two kids): \$20 per day or \$50 for all four days

**The Site** - The DAV is a unique planned community catering to the specific needs of amateur and professional astronomers. DAV is located in the very darkest skies in central Georgia, far away from big city lights but at the same time convenient to many major metropolitan areas in the South Eastern USA. The DAV has a warm-up shed with microwave and coffee. The site has two port-a-potties. For more information on the site visit [www.deerlickgroup.com](http://www.deerlickgroup.com).

**Questions?** If you should have any additional questions please call our Observing Chair, Daniel Herron, at (770) 330-9679 or send an email to [Observing@atlantaastronomy.org](mailto:Observing@atlantaastronomy.org).

## Spacecraft Detects new kind of Cosmic Explosion

NASA News Release - February 25, 2006

Scientists using NASA's Swift satellite have detected a new kind of cosmic explosion. The event appears to be a precursor to a supernova, which is expected to reach peak brightness in a week.

Scores of satellites and ground-based telescopes are now trained on the sight, watching and waiting. Amateur astronomers in the northern hemisphere with a good telescope in dark skies can also view it.

The explosion has the trappings of a gamma-ray burst, the most distant and powerful type of explosion known. Yet this explosion, detected on February 18, was about 25 times closer and 100 times longer than the typical gamma-ray burst. And it possesses characteristics never seen before.

"This is totally new and unexpected," said Neil Gehrels, Swift principal investigator at NASA's Goddard Space Flight Center in Greenbelt, Md. "This is the type of unscripted event in our nearby universe that we hoped Swift could catch."

The explosion, called GRB 060218 after the date it was discovered, originated in a star-forming galaxy about 440 million light-years away toward the constellation Aries. This is the second-closest gamma-ray burst ever detected, if indeed it is a true burst.

*Continued on next page*

The burst of gamma rays lasted for nearly 2,000 seconds; most bursts last a few milliseconds to tens of seconds. The explosion was surprisingly dim, however, suggesting that scientists might be viewing the event slightly off-axis. Yet this is just one explanation on the table. The standard theory for gamma-ray bursts is that the high-energy light is beamed in our direction.

"There are still many unknowns," said John Nousek, the Swift mission director at Penn State University, State College, Penn. "This could be a new kind of burst, or we might be seeing a gamma-ray burst from an entirely different angle. This off-angle glance --- a profile view, perhaps --- has given us an entirely new approach to studying star explosions. Had this been farther away, we would have missed it."

A team at Italy's National Institute for Astrophysics (INAF) has found hints of a budding supernova. Using the European Southern Observatory's Very Large Telescope in Chile, the scientists have watched the afterglow of this burst grow brighter in optical light. This brightening, along with other telltale spectral characteristics in the light, strongly suggests that a supernova is unfolding.

"We expected to see the typical featureless spectrum of a gamma-ray burst afterglow, but instead we found a mixture between this and the more complex spectrum of a supernova similar to those generally observed weeks after the gamma-ray burst," said Nicola Masetti of INAF's Institute for Space Astrophysics and Cosmic Physics (IASF) in Bologna. "A supernova must be in the works."

Masetti said this could be a Type Ic supernova, characterized by its massive size and the abundance of certain chemical elements. This implies a scenario in which a very massive star has collapsed into a black hole and subsequently exploded; the debris from the explosion is trapping optical light inside and as the dust settles, more and more light will break free.

If they are correct, scientists will have an unprecedented view of a supernova from start to finish across many wavelengths, from radio through X-ray. Radio telescopes in fact have seen this burst from the day it was detected, another first.

Because the burst was so long, Swift was able to observe the bulk of the explosion with all three of its instruments: the Burst Alert Telescope, which detected the burst; and the X-ray Telescope and Ultraviolet/Optical Telescope, which provide high-resolution imagery and spectra across a broad range of wavelengths.

Scientists will attempt observations with the Hubble Space Telescope and Chandra X-ray Observatory. Amateur astronomers in dark skies might be able to see the explosion with a 16-inch telescope as it hits 16th magnitude brightness.

Goddard manges Swift. Swift is a NASA mission with the participation of the Italian Space Agency and the Particle Physics and Astronomy Research Council in the United Kingdom.



Scientists are studying a strange explosion that appeared on February 18. The "before" image (left) is from the Sloan Digital Sky Survey. The "after" image (right) is from NASA Swift's Ultraviolet/Optical Telescope. The pinpoint of light (tick marks at center) from this star explosion outshines the entire host galaxy. Credit: SDSS (left), NASA/Swift/UVOT (right)

## New Hubble images offer best view of Pluto and moons

JHU Applied Physics Lab News Release - February 23, 2006

In the Feb. 23 issue of the journal *Nature*, a team led by Dr. Hal Weaver of the Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, Md., describes its discovery of two new moons around Pluto - a finding that made the ninth planet the first Kuiper Belt object known to have multiple satellites.

In a companion paper, also in the Feb. 23 *Nature*, discovery team members led by Dr. Alan Stern of the Southwest Research Institute, Boulder, Colo., conclude that the two small moons were very likely born in the same giant impact that gave birth to Charon. They also argue that large binary Kuiper Belt objects like Pluto-Charon may also have small moons accompanying them, and that Pluto's small moons may generate debris rings that orbit the planet.

The Kuiper Belt is a band of icy, rocky objects and dwarf planets that orbit the Sun in the outer region of our solar system, beyond the orbit of Neptune. It has been known since 1992; Pluto is its most prominent member.

Using the Hubble Space Telescope's Advanced Camera for Surveys, the team originally discovered the moons in two sets of Pluto observations in May 2005. Their discovery was confirmed in new Hubble images taken Feb. 15 and released this week.

"We used Hubble's exceptional resolution to peer close to Pluto and pick out two small moons that had eluded detection for more than 75 years," says Weaver, who also serves as project scientist for NASA's New Horizons mission, which is on track to make the first close-up reconnaissance of the Pluto system in 2015.

Pluto's previously known moon, Charon, was discovered in 1978, nearly half a century after Pluto's discovery in 1930. With diameters estimated to lie between 35 and 100 miles, the new moons, provisionally designated S/2005 P1 and S/2005 P2, are roughly 10 times smaller than Charon. They're also about 600 times fainter than Charon and 4,000 times fainter than Pluto, and hidden in the glare of nearby Pluto and Charon when viewed by ground-based optical telescopes. The scientists say this is the reason the moons evaded detection before Hubble looked for them.

The Weaver team writes in *Nature* that the satellites were easy to see in the Hubble pictures. "That was somewhat surprising because ground-based observers had been trying for more than a decade to find new satellites around Pluto," says Max Mutchler, from the Space Telescope Science Institute in Baltimore, and the first person to spot the moons in the May 2005 images. "But I felt almost certain even when I first saw them that they were real objects - not any sort of artifact - and that they were exhibiting orbital motion around Pluto."

That orbital motion - inferred from the different locations of the moons in pictures taken May 15 and May 18 - is what convinced scientists that they were indeed looking at moons and not stray light, cosmic rays or other Kuiper Belt objects that happened to be passing by.

"If we assumed the orbits were circular and in the same orbit plane as Charon, we could predict the exact positions of the objects on the second day," says Dr. William Merline, a coauthor and discovery team member from Southwest Research Institute (SwRI). "When the objects on the second day appeared almost exactly where we predicted, we were convinced - no two artifacts could follow the rules of orbital physics that 'real' objects must obey."

"The presence of the new moons in orbits with so many similarities to Charon's sheds light on the formation and evolution of the Pluto system, as well as on the process by which satellites are formed in the Kuiper Belt," says SwRI's Stern, who is principal investigator of the New Horizons mission.

The new moons will be important targets of New Horizons, which was launched Jan. 19 to provide the first detailed reconnaissance of Pluto and the Kuiper Belt. The New Horizons spacecraft will fly within several thousand miles of Pluto and its moons in July 2015.

Weaver says the APL-built Long Range Reconnaissance Imager (LORRI) telescopic camera on New Horizons should be able to probe the new moons and resolve surface features down to 600 yards wide. These observations build on primary mission science plans to characterize the global geology and geomorphology of Pluto and Charon, map their surface compositions and temperatures, and examine Pluto's atmospheric composition and structure. New Horizons also will map the two smaller satellites in color and black-and white, and map their surface compositions and temperatures.

"We're getting four fascinating targets for the price of two," says Weaver. "The opportunity to explore the 'bookends' of Kuiper Belt object size distribution, with Pluto and Charon at one end and P1 and P2 at the other, is an unexpected treat."

The team is already analyzing the new Hubble images, which confirm the results published in the Nature paper and provide the most detailed view yet of this fascinating mini solar system. Hubble is scheduled to take another set of Pluto images in early March.

"The more we learn about the orbits and physical properties of P1 and P2, the better we can fine-tune our spacecraft investigation and focus on the objectives that are impossible to achieve from Earth-based observations," says Stern.

The Hubble Pluto companion search team also includes Dr. Marc Buie of Lowell Observatory, Flagstaff, Ariz., and Dr. John Spencer, Dr. Eliot Young, Dr. Leslie Young and Dr. Andrew Steffl of Southwest Research Institute, Boulder.

New Horizons is the first mission in NASA's New Frontiers Program of medium-class spacecraft exploration projects. Stern leads the mission and science team as principal investigator. APL manages the mission for NASA's Science Mission Directorate and is operating the spacecraft in flight.



NASA, ESA, H. Weaver (JHU/APL), A. Stern (SwRI), and the HST Pluto Companion Search Team. STScI-PRC 06-09.

## Neutron Star Swaps Lead to Short Gamma-ray Bursts

Harvard-Smithsonian Center for Astrophysics Release - January 31, 2006

For decades their origin was a mystery. Scientists now believe they understand the processes that produce gamma-ray bursts. However, a new study by Jonathan Grindlay of the Harvard-Smithsonian Center for

Astrophysics (CfA) and his colleagues, Simon Portegies Zwart (Astronomical Institute, The Netherlands) and Stephen McMillan (Drexel University), suggests a previously overlooked source for some gamma-ray bursts: stellar encounters within globular clusters. "As many as one-third of all short gamma-ray bursts that we observe may come from merging neutron stars in globular clusters," said Grindlay.

GRBs come in two distinct "flavors." Some last up to a minute, or even longer. Astronomers believe those long GRBs are generated when a massive star explodes in a hypernova. Other bursts last for only a fraction of a second. Astronomers theorize that short GRBs originate from the collision of two neutrons stars, or a neutron star and a black hole.

Most double neutron star systems result from the evolution of two massive stars already orbiting each other. The natural aging process will cause both to become neutron stars (if they start with a given mass), which then spiral together over millions or billions of years until they merge and release a gamma-ray burst.

Grindlay's research points to another potential source of short GRBs - globular clusters. Globular clusters contain some of the oldest stars in the universe crammed into a tight space only a few light-years across. Such tight quarters provoke many close stellar encounters, some of which lead to star swaps. If a neutron star with a stellar companion (such as a white dwarf or main-sequence star) exchanges its partner with another neutron star, the resulting pair of neutron stars will eventually spiral together and collide explosively, creating a gamma-ray burst.

"We see these precursor systems, containing one neutron star in the form of a millisecond pulsar, all over the place in globular clusters," stated Grindlay. "Plus, globular clusters are so closely packed that you have a lot of interactions. It's a natural way to make double neutron-star systems."

The astronomers performed about 3 million computer simulations to calculate the frequency with which double neutron-star systems can form in globular clusters. Knowing how many have formed over the galaxy's history, and approximately how long it takes for a system to merge, they then determined the frequency of short gamma-ray bursts expected from globular cluster binaries. They estimate that between 10 and 30 percent of all short gamma-ray bursts that we observe may result from such systems.

This estimate takes into account a curious trend uncovered by recent GRB observations. Mergers and thus bursts from so-called "disk" neutron-star binaries - systems created from two massive stars that formed together and died together - are estimated to occur 100 times more frequently than bursts from globular cluster binaries. Yet the handful of short GRBs that have been precisely located tend to come from galactic halos and very old stars, as expected for globular clusters.

To explain the discrepancy, Grindlay suggests that bursts from disk binaries are likely to be harder to spot because they tend to emit radiation in narrower blasts visible from fewer directions. Narrower "beaming" might result from colliding stars whose spins are aligned with their orbit, as expected for binaries that have been together from the moment of their birth. Newly joined stars, with their random orientations, might emit wider bursts when they merge.

"More short GRBs probably come from disk systems - we just don't see them all," explained Grindlay.

Only about a half dozen short GRBs have been precisely located by gamma-ray satellites recently, making thorough studies difficult. As more examples are gathered, the sources of short GRBs should become much better understood.

The paper announcing this finding was published in the January 29 online issue of Nature Physics. It is available online at <http://www.nature.com/nphys/index.html> and in preprint form at <http://arxiv.org/abs/astro-ph/0512654>.

## Georgia Astronomy in State Parks (GASP) Events

Here are the currently scheduled GASP events for 2006:

March 25th - Unicoi St Park.

April 15th - Tallulah Gorge State Park.

June 10th - Amicalola Falls State Park.

September 2nd - FDR State Park (Labor Day Weekend)

November 11th - Florence Marina St Park.



For more information about these events, contact Joanne Cirincione at [Starrynights@AtlantaAstronomy.org](mailto:Starrynights@AtlantaAstronomy.org).

*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.*

## Next AAC Board Meeting

The next Board Meeting of the Atlanta Astronomy Club will be on Sunday, March 12th at 5:00PM at Bradford Map, Globe & Telescopes, 300 Hammond Dr, Sandy Springs.

## Message from the AAC Board Chairman

by Tom Crowley

If you need capital expenditure for your group or project, please submit it to the board ASAP for consideration.

## 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>

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 or times. 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 **\$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.

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

AAC Web Page: <http://www.AtlantaAstronomy.Org>

Send suggestions, comments, or ideas about the website to [webmaster@AtlantaAstronomy.org](mailto:webmaster@AtlantaAstronomy.org). Also send information on upcoming observing events, meetings, and other events to the webmaster.

## AAC Contacts

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**Georgia Astronomy in State Parks:** Joanne Cirincione 404-824-4751  
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**Light Trespass:** Marc Sandberg 404-531-4227  
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**PSSG Chairman:** Peter Macumber [pmacumber@nightsky.org](mailto:pmacumber@nightsky.org)

**Co-Chair:** Joanne Cirincione [starrynights@AtlantaAstronomy.org](mailto:starrynights@AtlantaAstronomy.org)

**Sidewalk Astronomy:** position open

**Woodruff Observ. Coordinator:** John Lentini 770-984-0175  
[johnlentini@yahoo.com](mailto:johnlentini@yahoo.com)

**Webmaster Atlanta Astronomy:** Peter Macumber 770-941-4640  
[pmacumber@nightsky.org](mailto:pmacumber@nightsky.org)

## 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](http://www.atlantaastronomy.org).

## Calendar by Tom Faber (All times EST/EDT unless noted)

- March 1st, Wednesday: Uranus Conjunction with Sun.  
March 3rd, Friday: Emory University Observatory Open House & Saturn Viewing, 7:30-10:30PM.  
March 6th, Monday: Moon First Quarter.  
March 10th, Friday: Bradley Observatory Open House, 8PM, Agnes Scott College, Equinox Concert and Planetarium Show.  
March 12th, Sunday: AAC Board Meeting, 5PM - See page 7 for details.  
March 14th, Tuesday: Moon Full (Sap, Crow, or Lenten Moon).  
March 17th, Friday: AAC Meeting at White Hall, 8PM, Emory University.  
March 18th, Saturday: Telescope & Instrument Workshop, 11AM at Bradford Map & Telescopes.  
March 20th, Monday: Vernal Equinox at 1:26PM.  
March 22nd, Wednesday: Moon Last Quarter.  
March 25th, Saturday: Venus at Greatest Western Elongation. GASP at Unicoi State Park - See page 7 for details. CEC Meeting, 3PM.  
March 26th, Sunday: Venus near Neptune.  
March 29th, Wednesday: New Moon. Mercury near Uranus. **AAC Zombie Party & Messier Marathon** (thru Apr 2), See page 4 for details.  
April 1st, Saturday: Moon in M45.  
April 2nd, Sunday: Daylight Savings Time Begins, 2AM.  
April 5th, Wednesday: Moon First Quarter.  
April 7th, Friday: Bradley Observatory Open House, 8PM, Agnes Scott College, "Plato's Vision of the Universe in the Timaeus", Richard Parry.  
April 8th, Saturday: Mercury Greatest Western Elongation.  
April 13th, Thursday: Full Moon (Grass, Egg, Easter, or Paschal Moon).  
April 15th, Saturday: GASP at Tallulah Gorge State Park - See page 7 for details.  
April 17th, Monday: Moon near Antares.  
April 18th, Tuesday: Venus near Uranus.  
April 20th, Thursday: Moon Last Quarter.  
April 21st, Friday: AAC Meeting at White Hall, 8PM, Emory University.

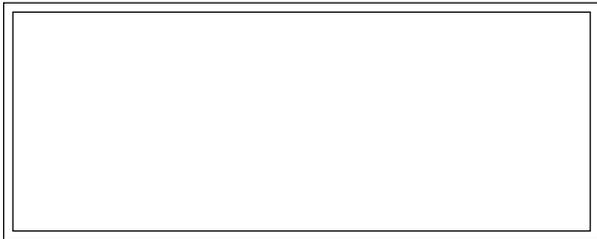
## Atlanta Astronomy Club Listserve

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

## Focal Point Deadline and Info

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

## FIRST CLASS



Newsletter of The Atlanta Astronomy Club, Inc.



FROM:

Kat Sarbell

2025 Peachtree Road, Apt.#408  
Atlanta, GA 30309

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

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