

The Focal Point

The Atlanta Astronomy Club
Established 1947
August 2007

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Editor: Kat Sarbell

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August General Membership Meeting

By Peter Macumber, President and Keith "Kosmic Kow" Burns, Retired AAC Program Chair

The next general meeting of the Atlanta Astronomy Club will be on Friday, August 17th, at 8 P.M. at Emory University at White Hall. The meeting will take place in room 207. This is the first room on the left after entering into the building through the double doors. We will have refreshments just outside of the room before the meeting. A small donation in the "kitty" box is requested but not required. Directions to White Hall and new parking info are on page 7.

The meeting starts at 8 PM sharp. We will have our business meeting first. This includes any announcements and other things of astronomical interest. Anyone who wishes to make any announcements please notify Peter Macumber at president@atlantaastronomy.org and also email me at

Keith_B@Bellsouth.net. That way Peter knows who is speaking ahead of time and he can schedule the time required. I need to know so I can put your information on a Power Point presentation slideshow that will run before and during the beginning of the business meeting. Please have the announcement info to me by no later than August 14th (Tuesday).

Our featured speaker for the night is to be announced. We will adjourn the meeting and head off to a local eating establishment for supper, dessert, or just a drink.

Get ready for the Peach State Star Gaze!

by Peter Macumber - PSSG Chair, and Joanne Cirincione - PSSG Co-Chair

The Atlanta Astronomy Club's Peach State Star Gaze (PSSG), is back in Georgia! We will be moving to a permanent home at the Deerlick Astronomy Village (DAV) in Sharon, Georgia. It is east of Atlanta and 50+ miles west of Augusta, GA. It has some of the darkest skies in Georgia and away from city lights. Below is a photo of Grier's Field, the main observing area.

The Peach State for this year will take place October 7 - 14. We will have speakers, vendors and workshops.

Please visit us at AtlantaAstronomy.org/pssg/. You can also email us at pssg@atlantaastronomy.org. Please also visit the Deerlick Astronomy Village's site at Deerlickgroup.com.

You can now register via links on the PSSG site, AAC site or the DAV site. Just download the forms and either mail to Peter or give to one of the PSSG Staff at the meetings. The on-line registration will be up and running soon. (Just a few kinks to work out.)

If anyone would like to volunteer and be a part of this, send an email to pssg@atlantaastronomy.org and let us know. We need volunteers to help us with the new venue.

We look forward to seeing y'all this year!!



July 20th General Meeting

Photos by Tom Faber

Dr. Richard Schmude Jr. of Gordon College presented a talk about Jupiter and what is currently happening on the planet. Details of the talk will appear along with the August meeting minutes in next month's *Focal Point*.



Members and guests fill the lecture hall before the meeting.



Dr. Richard Schmude prepares to begin his talk.

Upcoming Telescope & Instrument Workshop Meeting

by Sharon Carruthers

The next meeting of the Telescope and Instrument Workshop will be 11 AM Saturday August 4 at the Bradford Map & Telescope Atlanta store, 300 Hammond Rd, Sandy Springs. We are planning to build loaner scopes. Or bring your scope problems and we will try to help you out. For more info you can contact me at 404-843-9610 (work) or scarruthers@AtlantaAstronomy.org.

Observing Events for 2007

by Daniel Herron, Observing Chair

Here are some dates in 2007 for Observing events (all dates subject to change). I am sure some will be added or changed during the course of the year but I will try and stick to them if possible. I will update the locations and times later as well as add them to the AAC web site and the Yahoo Astro Atlanta List.

DSO Dates (locations noted if known/decided) August 11th, September 8th, October @ DAV (PSSG), November 10th, December 8th

GASP Events November 3rd - Red Top Mtn State Park.

New member Orientation/Open Houses (all at Villa Rica for now unless noted) September 22nd (Open House), October 20 (New member Orientation), December 15th (Open House - New member Orientation).

Sky & Telescope Subscription Change

by Sharon Carruthers

S&T has been bought out by a new company and their subscription service has been transferred to an off-site location. They have changed their subscription procedures which should make it easier for our members and the Club Treasurer (me!!)

Renewal Subscriptions Only: Members can now renew directly at S&T via mail or phone (1-800-253-0245). Payment is due when you re-order. You can still renew through the Club, if you wish. S&T will send the Treasurer a subscription list once a year to vet whether or not the subscribers contacting them are actually AAC members.

New Subscriptions: Must still be submitted through the Club!

If you have any questions, please contact me at Treasurer@AtlantaAstronomy.org

Message from the Editor

Most of the images in the *Focal Point* are in color, but you won't see that if you are getting the mailed version. You can download the full color version from the AAC web site each month. By receiving the *Focal Point* over the Internet instead of having it mailed, you can save the club about \$12 a year in printing and mailing costs. It may not sound like much, but the more people that use the Internet to receive the *Focal Point*, the more money the club will have to support its other activities. Just send an email to Kat Sarbell (FocalPoint@AtlantaAstronomy.Org) requesting that your name be removed from the *Focal Point* mailing list.

Charlie Elliott June Minutes

by Clevis Jones, CE Recording Secretary

(Editor's Note: The CE Minutes have been edited for space)

ATTENDANCE: Twenty-six guests and members attended the July CE meeting on July 7.

BUSINESS: Director Larry Owens showed images and discussed the progress of the 16-inch truss tube project and the status of the equipment list of the 'baby sitter' program.

Larry also announced the future meeting schedule: August 18 - Philip Sacco, "Birds of a Feather: The Lovers Triangle". September 15 - Fred Buls on Super Bright Super Nova – LOCATION CHANGE to Perimeter Campus north of Mansfield (directions will be posted on the CE Website). October 6 - Patrick Durusau (and back to the CE visitor's center). November 3 (back to 3 PM for the winter) - Dr. Richard Schmude on Mars (its close approach is in December), and December 15.

FEATURE PRESENTATION: Jon Wood presented, "The Ultimate Home Observatory": Jon discussed why even have an observatory, and showed all kinds of home observatory ideas.

What's Up Tonight: Steve Bieger covered upcoming events, interesting objects, observing techniques and info, and a preview of his Project Galileo.

Current Events: Clevis Jones covered the 7-7-7 aphelion, the June 30 near-miss (as seen from Earth) of Saturn and Venus, showed recent images of the astounding changes taking place on Jupiter, and many other interesting news items.

OBSERVING SESSION: The sky did not cooperate.

Charlie Elliot Future Meetings

by Clevis Jones, CE Recording Secretary

MEETING DATES AND PROGRAMS:

August 18 at 5:00 P.M.. - TOGA PARTY

– **dress code is a toga:** <http://www.howtomakeatoga.info/> , <http://www.roman-empire.net/society/soc-dress.html>

Feature Presentation: Philip Sacco presents, "Birds of a Feather: The Lovers Triangle". Please join author Philip Sacco for an entertaining mythology lecture. Philip will also offer a trivia challenge during the lecture and will reveal the story of a "mystery" constellation on the observing field later that night. ALL AGES welcome. Then, What's up Tonight by Steve Bieger and Current Events by Clevis Jones, followed by Observing on the field, weather permitting. Note - for the observing, a change from togas is optional :)

Place: Charlie Elliott Visitor's Center

September Meeting: September 18, 5:00 P.M..

Feature Presentation – Fred Buls on Super Bright Super Nova.

FOR UPDATES & DIRECTIONS & LIVE broadcasts: PLEASE check the CEastronomy website for the most current meeting information!

<http://www.CEastronomy.org>

Planets with Four Parents?

SPITZER SCIENCE CENTER NEWS RELEASE - July 24, 2007

How many stars does it take to "raise" a planet? In our own solar system, it took only one -- our Sun. However, new research from NASA's Spitzer Space Telescope shows that planets might sometimes form in systems with as many as four stars.



Astronomers used Spitzer's infrared vision to study a dusty disk that swirls around a pair of stars in the quadruple-star system HD 98800. Such disks are thought to give rise to planets. Instead of a smooth, continuous disk, the telescope detected gaps that could be caused by a unique gravitational relationship between the system's four stars. Alternatively, the gaps could indicate planets have already begun to form, carving out lanes in the dust.

"Planets are like cosmic vacuums. They clear up all the dirt that is in their path around the central stars," said Dr. Elise Furlan, of the NASA Astrobiology Institute at the University of California at Los Angeles. Furlan is the lead author of a paper that has been accepted for publication in The Astrophysical Journal.

HD 98800 is approximately 10 million years old, and is located 150 light-years away in the constellation TW Hydrae.

Before Spitzer set its gaze on HD 98800, astronomers had a rough idea of the system's structure from observations with ground-based telescopes. They knew the system contains four stars, and that the stars are paired off into doublets, or binaries. The stars in the binary pairs orbit around each other, and the two pairs also circle each other like choreographed ballerinas. One of the stellar pairs, called HD 98800B, has a disk of dust around it, while the other pair has none.

Although the four stars are gravitationally bound, the distance separating the two binary pairs is about 50 astronomical units (AU) -- slightly more than the average distance between our Sun and Pluto. Until now, technological limitations have hindered astronomers' efforts to look at the dusty disk around HD 98800B more closely.

Continued on next page



This artist concept depicts a quadruple-star system called HD 98800. The system is approximately 10 million years old, and is located 150 light-years away in the constellation TW Hydrae. Credit: NASA/JPL-Caltech/T. Pyle (SSC)

With Spitzer, scientists finally have a detailed view. Using the telescope's infrared spectrometer, Furlan's team sensed the presence of two belts in the disk made of large dust grains. One belt sits at approximately 5.9 AU away from the central binary, HD 98800B, or about the distance from the Sun to Jupiter. This belt is likely made up of asteroids or comets. The other belt sits at 1.5 to 2 AU, comparable to the area where Mars and the asteroid belt sit, and probably consists of fine grains.

"Typically, when astronomers see gaps like this in a debris disk, they suspect that a planet has cleared the path. However, given the presence of the diskless pair of stars sitting 50 AU away, the inward-migrating dust particles are likely subject to complex, time-varying forces, so at this point the existence of a planet is just speculation," said Furlan.

Astronomers believe that planets form like snowballs over millions of years, as small dust grains clump together to form larger bodies. Some of these cosmic rocks then smash together to form rocky planets, like Earth, or the cores of gas-giant planets like Jupiter. Large rocks that don't form planets often become asteroids and comets. As these rocky structures violently collide, bits of dust are released into space. Scientists can see these dust grains with Spitzer's supersensitive infrared eyes.

According to Furlan, the dust generated from the collision of rocky objects in the outer belt should eventually migrate toward the inner disk. However, in the case of HD 98800B, the dust particles do not evenly fill out the inner disk as expected, due to either planets or the diskless binary pair sitting 50 AU away and gravitationally influencing the movement of dust particles.

"Since many young stars form in multiple systems, we have to realize that the evolution of disks around them and the possible formation of planetary systems can be way more complicated and perturbed than in a simple case like our solar system," Furlan added.

Satellites Discover Biggest Collisions in the Universe

European Space Agency News Release - July 18, 2007

The orbiting X-ray telescopes XMM-Newton and Chandra have caught a pair of galaxy clusters merging into a giant cluster. The discovery adds to existing evidence that galaxy clusters can collide faster than previously thought.

When individual galaxies collide and spiral into one another, they discard trails of hot gas that stretch across space, providing signposts to the mayhem. Recognising the signs of collisions between whole clusters of galaxies, however, is not as easy.

Undaunted, Renato Dupke and colleagues from the University of Michigan, Ann Arbor, have used ESA's XMM-Newton and NASA's Chandra orbiting X-ray observatories, to disentangle the puzzling galaxy cluster, Abell 576.

Previous X-ray observations had hinted that the gas was not moving uniformly across the cluster. Using the superior sensitivity and spectral resolution of XMM-Newton and Chandra's high spatial resolution, Dupke took readings from two locations in the cluster and saw that there was a distinct difference in the velocity of the gas. One part of the cluster seemed to be moving away from us faster than the other.

The puzzle was that the moving gas itself was cold by astronomical standards. If this gas moved at such high speeds, it should have had a temperature of more than double the measured 50 million degrees Celsius.³The only explanation was to take the Bullet Cluster and turn it in the line of sight, such that one galaxy cluster is directly behind the other² says Dupke.

The Bullet Cluster is a much-studied pair of galaxy clusters, which have collided head on. One has passed through the other, like a bullet travelling through an apple. In the Bullet Cluster, this is happening across our line of sight, so we can clearly see the two clusters.

Dupke realised that Abell 576 is also a collision, but seen head on, so one cluster is now almost directly behind the other. The 'cold' clouds of gas are the cores of each cluster, which have survived the initial collision but will eventually fall back together to become one.

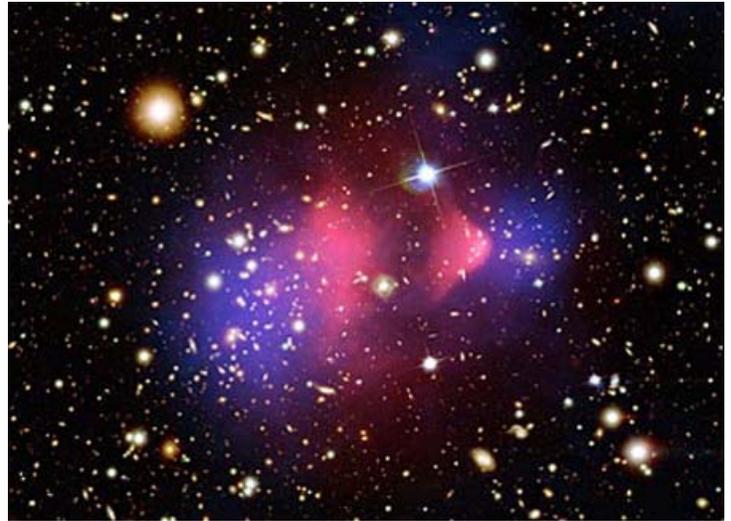
The data reveals that the clusters have collided at a speed of over 3300 km/s. This is interesting because there are some computer models of colliding galaxy clusters that suggest that such a high speed is impossible to reach.

Nevertheless, the Bullet Cluster is estimated to have a collision speed similar to the Abell 576 system.³There is now a growing body of evidence that these high collision velocities are possible,² says Dupke. The job of explaining these high speeds now rests with the cosmologists.

Major cluster-cluster collisions are expected to be rare, with estimates of their frequency ranging from less than one in a thousand clusters to one in a hundred. On collision, their internal gas is thrown out of equilibrium and if unrecognised, causes underestimation of its mass by between 5 and 20 percent.

This is important because the masses of the various galaxy clusters are used to estimate the cosmological parameters that describe how the Universe expands. So, identifying colliding systems is extremely important to our understanding of the Universe.

Dupke and colleagues are already investigating a number of other clusters that also appear to be interacting.



This is a composite image of the Bullet Cluster. The optical image from the Magellan and the Hubble Space Telescope shows galaxies in orange and white in the background. Hot gas, which contains the bulk of the normal matter in the cluster, is shown by the Chandra X-ray image, which shows the hot intracluster gas (pink). Gravitational lensing, the distortion of background images by mass in the cluster, reveals the mass of the cluster is dominated by dark matter (blue). Credits: X-ray: NASA/CXC/CfA/M.Markevitch, Optical and lensing map: NASA/STScI, Magellan/U.Arizona/D.Clowe, Lensing map: ESO WFI

'Blue Needle' Presents New Challenge for Theorists

W. M. KECK OBSERVATORY NEWS RELEASE - July 19, 2007

MAUNA KEA - Astronomers using the W. M. Keck Observatory and NASA's Hubble Space Telescope to study disks of debris around stars have found one that is extremely lopsided.

While scientists are accustomed to finding asymmetrical accumulations of dust and larger bodies around stars, the debris disk around a star known as HD 15115 has a needle-like shape.

Astronomers believe the shape of debris disks can be affected by extrasolar planets or nearby stars on very elliptical orbits. Researchers are studying whether the gravity of a star known as HIP 12545, located about 10 light years from HD 15115, is the reason for the needle formation which appears blue when viewed in optical light with Hubble and near-infrared light with Keck.

While protoplanetary disks around young stars are thought to be the basis for the birth of planets, debris disks such as the one around HD 15115 are believed to be made up of the remnants of planet production. They are also similar to the Kuiper Belt, the region of our solar system extending from and beyond the orbit of Neptune that contains numerous objects made up of rock and ice. About 800 of those objects have been identified in recent years including a number of dwarf planets which the International Astronomical Union last year ruled also includes Pluto.

Astronomers believe debris disks, which are replenished by dust from collisions among its member objects, also can be affected by planets nearer to the star, much as Neptune's gravity can have an effect on Kuiper Belt objects. Paul Kalas, lead author of a study on HD 15115, cited one theory about planet-disk interaction closer to home as an example of how the needle formed. Some astronomers have developed a theory that Neptune originally formed between Saturn and Uranus, but was eventually kicked out to its present location beyond Uranus by a gravitational dance between Saturn and Jupiter before their orbits stabilized.

"Therefore, we speculate that if such a planetary upheaval were occurring around HD 15115 at the present time, it could explain the highly asymmetric disk," Kalas said.

The disk around HD 15115, which is the result of its highly elliptical orbit, is believed to begin at about the same distance from its star as the Kuiper Belt does from our Sun, but extends outward by at least ten times farther. The outer extend of the Blue Needle is detected to at least 550 AU making it the second-most extended debris disk seen to date.

Dusty disks are known to exist around at least 100 stars, but because of the difficulty in observing material close to the brightness of a star, less than a dozen have been studied closely. But the installation of the Advanced Camera for Surveys aboard the Hubble -before it malfunctioned early this year - led to increased discoveries of debris disks over the past three years. Kalas said while the Hubble has been used to survey debris disks in optical light, Keck has been invaluable for more detailed analysis in infrared wavelengths and to image the regions close to the star, where planet formation may have occurred.

From the evidence so far, Kalas considers both HD 15115 and HIP 12545 to be among nearly 30 stars that belong to the Beta Pictoris Moving Group. Moving groups are expanded clusters of stars believed to have a common birthplace and age, in this case about 12 million years, which are moving together loosely through space. HD 15115 has many similarities to another star know as AU Microscopii, a closely studied member of the Beta Pictoris Moving Group Located 32 light years form earth.

However, the debris disk around HD 15115 is not only far more asymmetrical than those observed around three other stars in the group, it also has significantly less dust than two of them of similar mass. Kalas said

that the missing material might be related to the process that created the needle formation. "The missing mass is quite interesting," he said. "Perhaps the mechanism which perturbed the disk into its current asymmetric morphology also shaved away a significant fraction of the mass."

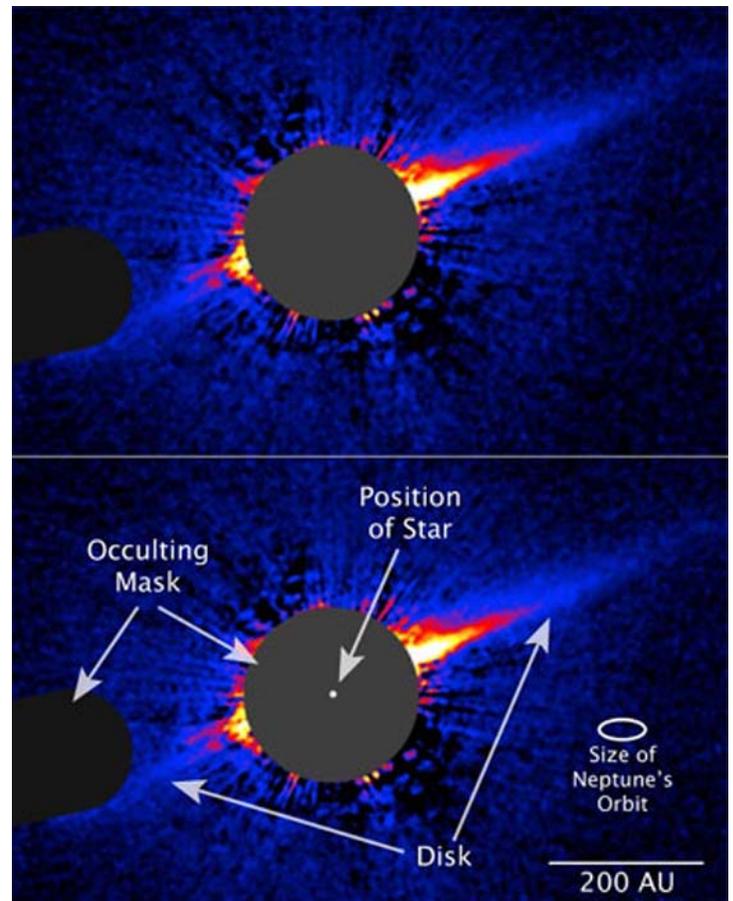
The dusty disk around HD 15115 was first indirectly detected in 2000 and first imaged using the Hubble Space Telescope in July 2006. The disk's needle-like shape was extremely unusual, prompting the astronomers to request observations at W.M. Keck Observatory to confirm the disk's existence and to image it closer to the star than was possible with Hubble. When the Keck near-infrared images were compared to the Hubble optical images, the disk was found to have an extremely blue color, which is also relatively rare among such disks. It was investigated further using Keck adaptive optics last year.

It is not yet known whether HIP 12545, the suspected gravitational perturber, has its own dusty disk. Kalas hopes to take advantage of Keck's adaptive optics - which removes the distortions caused by the Earth's atmosphere - to investigate that further this fall.

HD 15115 is classified as an "F" star, slightly larger than the Sun. HIP 12545 is an M star which has roughly half as much mass as the Sun.

As the discovery of Beta Pictoris a decade ago resulted in more than 300 scientific papers, Kalas believes that the research of HD 15115 will prompt a wealth of follow-up observations. Questions remaining to be answered include whether the needle formation is a temporary phenomenon. "The blue needle presents a host of new challenges for theorists," Kalas said.

Continued on next page



This image taken by NASA's Hubble Space Telescope shows a lopsided debris disk around the young star HD 15115. NASA, ESA, and P. Kalas (University of California, Berkeley)

Funding for the project was provided by NASA. The research on HD 15115, has been accepted for publication in *Astrophysical Journal Letters*. The study was co-authored by James Graham, like Kalas an astronomer at the University of California at Berkeley and the Center for Adaptive Optics at the University of California at Santa Cruz, with graduate student Michael P. Fitzgerald.

The W. M. Keck Observatory (www.keckobservatory.org) is operated by the California Association for Research in Astronomy (CARA), a non-profit 501 (c) (3) corporation whose governing board consists of directors from the California Institute of Technology and the University of California. In addition, the National Aeronautics and Space Administration and the W. M. Keck Foundation each have liaisons to the board. Construction of the twin Keck telescopes and domes was made possible with generous grants totaling more than \$140 million from the W. M. Keck Foundation in Los Angeles.

From Dark Obscurity: New Saturn Moon Comes to Light

CICLOPS NEWS RELEASE - July 19, 2007

Like a hawk's eyes, the high resolution cameras on NASA's Cassini spacecraft have spotted yet another small, previously unknown moon circling giant Saturn and one which may indicate the existence of other small bodies in the same region.

The tiny world -- presently thought to be only about 2 kilometers (1 mile) wide -- orbits at 197,700 kilometers (122,800 miles) from Saturn. Until a name for the moon is chosen by the International Astronomical Union, the moon has been given the provisional designation S/2007 S 4.

The moon was first spotted in Cassini images taken on May 30, 2007. Subsequent searches through images taken by Cassini over the previous three years turned up additional detections of the moon and helped researchers refine their calculations of its orbital path.

S/2007 S 4 orbits Saturn between the paths of Methone and Pallene, two small moons, about 4 kilometers (2.6 miles) wide, also discovered in Cassini images in 2004. All three moons orbit between much larger Mimas and Enceladus.

Moons surrounding the giant planets generally are not found where they originally formed because tidal forces from the planet can cause them to drift from their original locations. In drifting, they may sweep through 'resonances' -- i.e., locations where other moons disturb them -- and suffer orbit-changing perturbations. The new moon, like Methone, is in such a resonance with Mimas and appears to have undergone such an evolution.

"The fact that both Methone and S/2007 S 4 are dynamically locked with Mimas gives us a clue about their orbital history," said Carl Murray, a professor at Queen Mary, University of London, and the member of the Cassini Imaging Team leading the work on the new moon. "There are numerous examples of these resonant mechanisms between moons in the Saturn system and they probably arise due to tides. In the case of these two small moons, the resonance ensures that they cannot hit Mimas, at least in the short term."

Because the orbits of all three small moons lie close together, researchers think they may be remnants of a larger population.

"This trio of objects could be remnants of a collision or perhaps they are the lucky survivors of a larger population of material that failed to form a moon," said Murray. "Either way there does seem to be a family connection. If we could get good data about their surfaces with Cassini, we could begin to unravel some of these mysteries."

Cassini imaging scientists are already busy looking for future opportunities to zoom in on the new moon and refine its orbit, and to search for other companions.

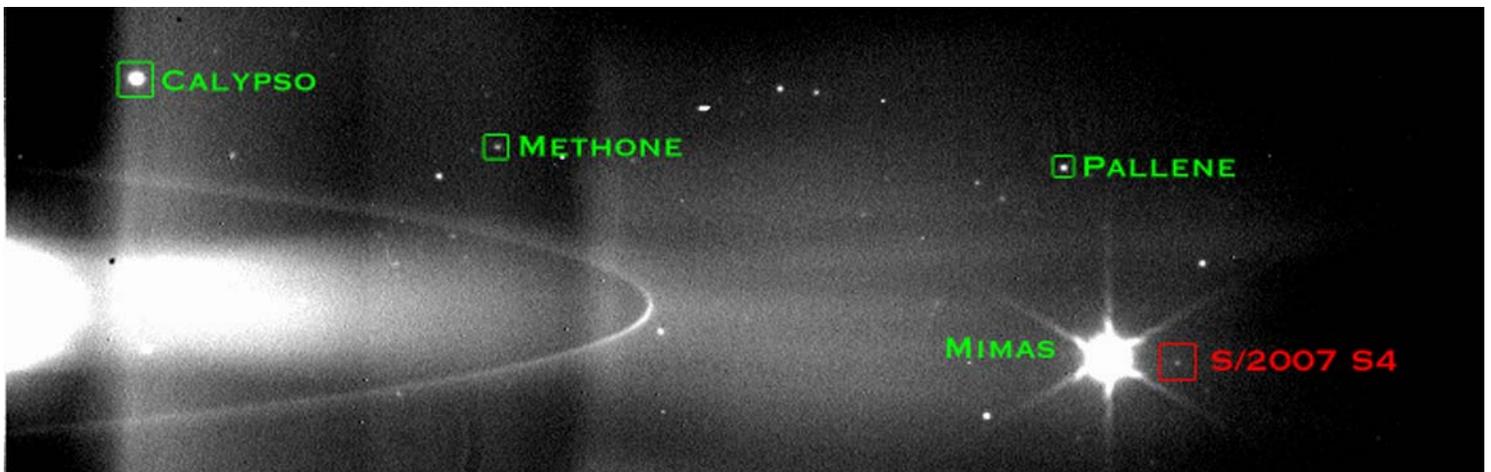
"We've already identified times in the near future when we can take some pre-planned images and re-target them to get a closer look at this new body," said Carolyn Porco, imaging team leader and director of CICLOPS at the Space Science Institute. "And of course we're always on the lookout for additional moons. There are likely to be more of these very small bodies out there, and we hope to find them."

By chance, Cassini will approach the newly discovered moon at a distance of 11,700 kilometers (7,300 miles) at the end of December 2009, assuming the mission is extended beyond the summer of 2008, its nominal end. Images taken at that time could be useful for understanding the moon's shape, composition, and history.

A movie showing S/2007 S 4 orbiting Saturn can be found at <http://ciclops.org>, <http://www.nasa.gov/cassini> and <http://saturn.jpl.nasa.gov>.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory (JPL), a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Science Mission Directorate, Washington. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging team consists of scientists from the U.S., England, France, and Germany. The imaging operations center and team leader (Dr. C. Porco) are based at the Space Science Institute in Boulder, Colo.

Below: The 60th moon to be discovered at Saturn. NASA/JPL/Space Science Institute



Directions to White Hall at Emory

Our meetings are generally held in a classroom in White Hall. To get to White Hall turn onto Dowman Drive from North Decatur Road at the five way intersection (across from Everybody's Pizza). White Hall is located on the across from the new Science & Math building. Parking is available along Dowman Drive on both sides of the road. **The parking lot on the left behind the Admissions Building may be closed.** Additional parking is available in two parking decks near White Hall. For maps to the decks see <http://map.emory.edu>. For more detailed directions to Emory University, visit www.atlantaastronomy.org, to the Emory web site.

Georgia Astronomy in State Parks (GASP) Events

There is one more scheduled GASP event for 2007:

November 3rd - Red Top Mountain State Park

For more information about these events, contact Joanne Cirincione at 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. Photo by Holly Ritger.

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.

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

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Woodruff Observ. Coordinator: Sharon Carruthers
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pmacumber@nightsky.org

Atlanta Astronomy Club Website

While this newsletter is the official information source for the Atlanta Astronomy Club, it is only up to date the day it is printed. So if you want more up to date information, go to our club's website. The website contains pictures, directions, membership applications, events updates (when available) and other information. <http://www.atlantaastronomy.org>

Calendar by Tom Faber (All times EDT unless noted)

August 4th, Saturday: **Telescope & Instrument Workshop at Bradford Map/Telescope Atlanta - See p.2 for details.**

August 5th, Sunday: Moon Last Quarter.

August 7th, Tuesday: Moon near M45.

August 11th, Saturday: **DSO at location TBA - Contact Daniel Herron for details.**

August 12th, Sunday: New Moon.

August 13th, Monday: Perseid Meteors (Morning). Neptune at Opposition.

August 16th, Thursday: Venus at Inferior Conjunction.

August 17th, Friday: **AAC Meeting at White Hall, 8PM, Emory University.**

August 18th, Saturday: **CEC Meeting - See p.3 for details.**

August 20th, Monday: Moon First Quarter.

August 21st, Tuesday: Saturn Conjunction with Sun.

August 28th, Tuesday: Full Moon - Total Eclipse begins at 5:52AM.

August 29th, Wednesday: Vesta 0.4 deg north of Jupiter.

September 1st, Saturday: Saturn near Regulus.

September 2nd, Sunday: Moon near M45.

September 3rd, Monday: Moon Last Quarter.

September 8th, Saturday: **DSO at location TBA - Contact Daniel Herron for details.** Uranus at Opposition.

September 9th, Sunday: Moon between Venus and Saturn.

September 11th, Tuesday: New Moon.

September 15th, Saturday: **CEC Meeting - See p.3 for details.**

September 19th, Wednesday: Moon First Quarter.

September 21st, Friday: **AAC Meeting at White Hall, 8PM, Emory University.**

September 22nd, Saturday: **Open House at VR - Contact Daniel Herron for details.**

October 7th - 14th: **Peach State Star Gaze at DAV - See p.1 for details.**

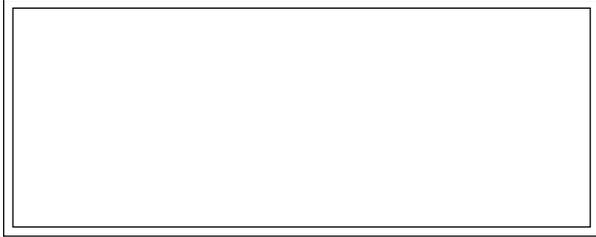
Atlanta Astronomy Club Listserve

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

Focal Point Deadline and Submission Information

Please send articles, pictures, and drawings in electronic format on anything astronomy related to Kat Sarbell at focalpoint@atlantaastronomy.org. Please send images separate from articles, not embedded in them. Articles are preferred as plain text files but Word documents are okay. You can submit articles anytime up and including the deadline date. **The deadline for August is Thursday, August 23th at 4:00 PM Submissions will no longer be accepted after the deadline.**

FIRST CLASS



The Focal Point

Newsletter of The Atlanta Astronomy Club, Inc.

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