

The Focal Point

The Atlanta Astronomy Club
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Editor: Kat Sarbell

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February General Meeting

By Keith "Kosmic Kow" Burns, AAC Program Chair

The next general meeting of the Atlanta Astronomy Club will be on the **second** Friday, February 9th, at 8 P.M. at Emory University at the Goodrich Whitehall building. 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 are on page 7. **NOTE THE MEETING IS ON THE SECOND FRIDAY AND NOT THE THIRD FRIDAY AS USUAL.**

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 slide that will run before and during the beginning of the business meeting. **Please have the announcement info to me by no later than February 6th, 2006 (Tuesday).**

Our featured speaker of the night, Paul Hardersen, will give his talk with questions and answers to follow. We will adjourn the meeting and head off to a local eating establishment for supper, dessert, or just a drink.

Paul will talk about asteroid spectroscopic work. Specific research areas include a detailed survey of the M-type asteroids and a detailed study of the mineralogy of asteroid 1459 Magnya. Hardersen is interested in asteroid surface mineralogies as well as the information asteroids can provide about the conditions in the early inner solar system. This type of information can provide important clues about the conditions prevalent during the formation of terrestrial planets ~4.6 billion years ago. Other

areas of interest include solar physics, stellar processes, young stars, variable stars and meteoritics. Finally he will also discuss how he is trying to build up a research capability at the University of North Dakota and discuss their Internet telescope, radio telescope, and other future plans.

Speaker biography:

Born and raised in Davenport, Iowa, Hardersen enlisted in the US Navy following high school and served honorably for almost five years. During his undergraduate years at Iowa State, he led a local chapter of the National Space Society and coordinated activities such as field trips to NASA centers, sponsored notable speakers for campus lectures and organized Iowa's first-ever space development conference. In 1997, *The Case for Space* became Hardersen's first published work.



In the Department, Hardersen teaches a course on observational astronomy and will be teaching future courses in astrobiology, general space exploration rationales and solar physics. Hardersen is also spearheading an effort to redesign and renovate UND's astronomical observatory, which is located ~12 miles west of the university near Emerado. Plans call for the construction of a 1-meter class observatory that will be used as a research and educational resource for the entire state of North Dakota. Research activities focus on main-belt asteroids, their near-infrared spectra and the surface compositions of the asteroids.

Paul S. Hardersen currently serves as an assistant professor in the Department of Space Studies at the University of North Dakota. He is the newest member of the Department's faculty. Hardersen received his Ph.D. in geology in May 2003 (specialization: asteroid near-IR spectroscopy) from Rensselaer Polytechnic Institute in Troy, New York. Before earning his doctorate, Hardersen received a Master's degree in geology from Rensselaer in December 2001 and dual degrees (BS in geology; BA in political science) from Iowa State University in 1997.

Hardersen is married to Cristina Calin, a medical doctor, and they live in Grand Forks. In his minuscule free time, Hardersen enjoys cooking, reading, politics, science fiction, sleeping - and dreaming of the day he can get off the planet.

Upcoming speaker and program:

March 16th, 2007 - I have no updates right now but more info will be available in the weeks to come. Announcements will be posted on the AAC website, listserv, and by carrier pigeon. (*sic*)

January General Membership Minutes

By Richard Jakiel, AAC Recording Secretary

The first general membership meeting of the new year started on Jan 19, 2007 at 08:10 P.M. with president Peter Macumber presiding. Around 45 AAC members and their guests were in attendance. Peter opened the meeting with a discussion that all AAC members need to renew their membership this March. This is a change that was put into effect by the Board of Directors (BOD) earlier last year (2006) in order to make membership tracking easier. Peter also mentioned that AAC nominating committee is being formed, and if you are interested in being part of this committee or an AAC officer/BOD member - please contact Peter or Keith Burns. Dan Heron (AAC Observing Chair) discussed the upcoming spring Zombie Party - April 12 to the 15th. It is one of the primary fundraisers for the AAC and cost is 15 dollars per day. More details can be found at the "Zombie Party" site on the club webpage (<http://www.atlantaastronomy.org/Zombie/>)



Following the business portion of the meeting, Peter introduced the program speaker for the evening - the illustrious astro-bovine, AL League program ace, 1st VP and Program Chair - Keith Burns. He gave a detailed talk on the joy of observing the Moon. Filled with information on just about every aspect, it included a few of the typical Kosmic Kow weird PowerPoint animations and lots of high-resolution lunar images by some Stoooge named "Curly". (Editor's note: "Curly" is the name of Rich's stoooge alter-ego.)



Photos by Tom Faber



After the meeting was adjourned, large numbers of hungry AAC members headed over to Athens Pizza for the 'after-meeting' consisting of good fellowship and mass consumption of tasty Greek fare.

Villa Rica Open House Report

by Daniel Herron, Observing Chair

The open house last night was a huge success! We started at 3:00PM and had a scout troop show up. There were about 9 adults and 12 kids. I showed them the site, the 20inch and 10inch scopes, and Chrissy's corner. I showed them my scope and explained how it worked and the differences between the other types of scopes on the field. I told them about the club and what we had to offer. Keith showed up and I asked if he could run and pick up the pizzas I ordered and he headed back out and quickly returned pizzas in hand. Michael Smith showed up soon after with drinks (non-alcoholic) for everyone.

Jack Nelson arrived shortly after Misty and I, and I tasked Jack with helping Steve Lobby put his XT10 Intelliscope together since Jack has the same scope. While Jack and Steve put his base together, Michael Smith and I helped a few people learn how to set up and align their Meade scopes. Who writes these instructions anyway? I work for Siemens and most of the documents and policies we get from corporate are what we call Genglish! German instructions and documents translated into English. And they are easier to understand than the Meade instructions!

Sharon soon arrived and we got the projector set up and gave a presentation on the club and general astronomy. Keith talked about the Astronomical League and Virtual Moon software. Sharon showed a few slides from one of her scout presentations and we had a Q and A session to answer any questions people had about astronomy and different scopes.

All in all a successful event! We had about 35 people throughout the day show up and I think we were able to help most of them or at least point them in the right direction.

Special thanks to Sharon, Jack, Michael, Keith, Dave Lumpkin and Misty for helping me out with the event!!!

Next Open House will be at the Fernbank Science Center on Friday, May 4th at 6:30 PM. This is something new I am going to try to see if we can get more people to show up for an in-town event. Also if it is clear Fernbank will have their observatory open as they do every clear Thursday and Friday night.

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) February 17th @ DAV, March 17th @ Mentone, AL (Messier Marathon), April 12-15th @ DAV (Zombie Party), May 12th @ Woodruff, June 16th, July 14th, August 11th, September 8th, October @ DAV (PSSG), November 10th, December 8th

GASP Events (only 2 known as of today, more to come) March 24th - Unicoi State Park, November 3rd - Red Top Mtn State park

New member Orientation/open houses (all at Villa Rica for now unless noted) March 10th (New member Orientation), May 4th @ Fernbank Science Center, May 26th (Open House), July 21 (New member Orientation), September 22nd (Open House), October 20 (New member Orientation), December 15th (Open House - New member Orientation)

Sidewalk events (known as of today) March 3rd - Lunar Eclipse Viewing @ Fernbank Science Center, April 21st - Astronomy Day 2007 @ Fernbank Science Center

Upcoming Telescope & Instrument Workshop Meetings

by Sharon Carruthers

The next meeting of the Telescope and Instrument Workshop will be February 10th at the Bradford Map/Telescope Atlanta store, 300 Hammond Rd, Sandy Springs. We will try to find you help with your equipment related questions or problems. We have a few 6" mirror blanks for those who wish to try their hand at mirror-grinding; and are currently searching for some small mirrors to build some small Club loaner scopes. For more info you can contact me at 404-843-9610. The next meeting will be on March 10th at the same location.

Charlie Elliott January Minutes

by Clevis Jones, CEC Recording Secretary

ATTENDANCE: Twenty guests and members attended the January 13 meeting.

BUSINESS: Chapter director, Larry Owens, took a moment to thank all the volunteers who do anything for the club [personal note - LARRY OWENS Included!]. Larry continued with a status report on the club's equipment and projects. The February event will be POT LUCK and with vote taken, the time for that event will remain at 3 PM. The Gwinnett Regional Science & Engineering Fair is February 24th - they have requested help from us in the form of judges (degree required) and instructors. For future meetings, Larry is adding a "Sunset Alert" right after the Feature Presentation. Alesia Rast, Charlie Elliott Liaison, pointed out that small game season is through February 28, and the astronomy field is NOT in a 'safe zone'.

Jon Wood gave a detailed presentation on the 12.5-inch Optical Craftsman telescope donation which the club is restoring. Jon also advised the members that Tim Nix of CAMERA BUG made a donation of a 102 mm Celestron refractor to the club.

FEATURE PRESENTATION: Steve Bieger gave an information filled presentation [among about a ton of show and tell telescopes] titled, "Basic Telescopes, their features and how to use them."

CURRENT EVENTS: Clevis Jones opened his presentation with a flashback to the "Charlie Elliott Launch Control Center" at the last CE meeting and showed Jon Wood's photo taken on the CE astronomy field of the Launch of Space Shuttle Discovery and STS-116. He went on with the Wolf Moon, discovery and details on comet C/2006 P1 McNaught, STEREO, SOHO, and ended with a live current movie of McNaught's pass through SOHO's LASCO C3 camera's FOV.

OBSERVING REPORT: Steve Bieger filled us in on Up Coming Events, Native Myths and Legends, Constellations and Objects, Science Features, and included resources with web links and a target list that will be on the CE Web-site.

OBSERVING SESSION: The skies were NOT cooperating, but a few determined souls tried for McNaught, just above the horizon, and whatever else they could find.

Charlie Elliot Future Meeting

by Clevis Jones, CEC Recording Secretary

February 10 at 3:00 p.m. (winter schedule) at CE Visitor's Center

FEATURE PRESENTATION: POT LUCK - bring your favorite covered dish (optional) and ENJOY! Time permitting - **Observing Report:** What's Up Tonight by Steve Bieger and **Current Events** by Clevis Jones and the Saturn Opposition Party! [Personally, I am not opposed to Saturn :-)]

For updates & directions, check the CEastronomy website for the most current meeting information! <http://www.CEastronomy.org>

Rich Jakiel's Images

These three images all taken with a 12-inch LX200. The two galaxy images (NGC 891 and M51) were taken with a DSI Pro II CCD camera and the telescope working at f/5. The effective exposures was 10 and 15 minutes respectively. The lunar image was taken with a TouCam Pro planetary webcam and the scope working at f/10. About 600 frames were stacked and processed with Registax 4.0 and AIP4Win 2.0.



Left: M51 Below: NGC 891



Abbey's Eyeball Test

by Lenny Abbey

Reprinted from March of 1986

At the December meeting, we were treated to a really first rate discussion of the different types of telescopes and their individual characteristics. We learned how to analyze the diffraction patterns of out-of-focus star images to detect defects in a telescope's optical system.

This reminded me of a little test I discovered about 15 years ago which is a little more difficult to perform, but is much easier to analyze.

This test is much like the familiar Foucault test, which is used by every amateur telescope maker. The idea is to use a star for our light source and the iris of the eye for the knife-edge.

First pick a moderately bright star, which you can comfortably observe through the telescope without having to assume an awkward position.

Very bright stars such as Sirius are not suitable because of the great amount

of atmospheric turbulence that they seem to always be able to find. Remove the eyepiece and if you wear glasses, take them off. Rack the focusing tube in as far as possible and look through it, resting your eyebrow against the end of the tube.

If the telescope is aligned properly, and if you are very lucky you. Will see the mirror or objective fully illuminated by the star. If this not the case, you will have to move the telescope tube around a little to find it. Once the mirror is fully illuminated, move the telescope tube, along with your eye (which should remain immobile against the focusing tube) towards your right. You should see the black edge of your imaginary "knife" moving across the mirror from the left, as in any Foucault test. Now rack the focuser out a little and try again. If your "knife edge" moves in from the right, you have moved outside the focus, and must back up a little.

When you finally locate the exact focus, and it does take quite a bit of work, you will see the mirror darken all-over at once, and just before the light completely disappears, every detail of the mirror's figure will stand out in amazing relief. There are two words of caution that you must bear in mind. First, since the light rays are parallel instead of diverging, the apparent figure of a perfect mirror will be absolutely flat. And last of all; be careful of your footing. You do not want to undergo enucleation. Enucleation is the removal of the eyeball by surgical means (or otherwise)!



NASA/JPL/Space Science Institute

Pan's Progress

Cassini Photo Release - January 26, 2007

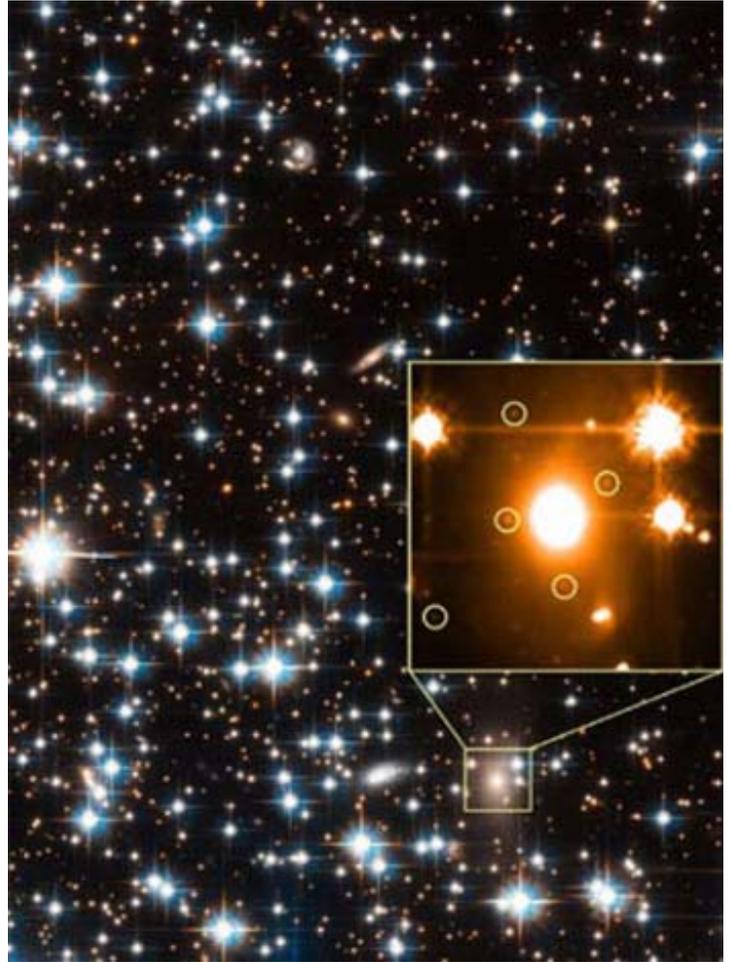
Pan is seen in this color view as it sweeps through the Encke Gap with its attendant ringlets. As the lemon-shaped little moon orbits Saturn, it always keeps its long axis pointed along a line toward the planet. From this vantage point, the dark side of the moon is visible.

This view looks toward Pan (26 km) within the Encke Gap (325 km), on the unlit side of the rings, and from an inclination of about 33 degrees above the ringplane.

Images taken using red, green and blue spectral filters were combined to create this natural color view. The image was taken with the Cassini spacecraft narrow-angle camera in December at a distance of approximately 779,000 km from Pan and at a Sun-Pan-spacecraft, or phase, angle of 83 degrees. Image scale is 5 km per pixel.



The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging operations center is based at the Space Science Institute in Boulder, Colo.



This Hubble Space Telescope image shows a small field within the Milky Way globular star cluster NGC 6396; the inset image shows a close-up view of a distant elliptical galaxy in the background, revealing more than 100 globular clusters within a galaxy located more than 1 billion light years from Earth. Credit: NASA, ESA, H. Richer (UBC), J. Kalirai (UCSC)

Most Distant Star Clusters Found Hidden Nearby

University of California - Santa Cruz News Release - January 23, 2007

Seattle, WA -- Astronomers have discovered the most distant population of star clusters ever seen, hidden behind one of the nearest such clusters to Earth. At a distance of more than a billion light-years, the newly discovered star clusters provide a unique probe of what similar systems in our own galaxy once looked like.

"Given their distance, the light that we see today from these clusters was emitted more than one billion years ago and may hold important clues for understanding the evolution of globular clusters," said Jason Kalirai, a postdoctoral fellow at the University of California, Santa Cruz, who will present the findings in a talk at the American Astronomical Society meeting in Seattle.

Continued on next page

Kalirai and Harvey Richer of the University of British Columbia led the study, which began as an investigation of a globular star cluster in the Milky Way galaxy known as NGC 6397. The researchers acquired one of the deepest optical images ever taken with the Hubble Space Telescope's Advanced Camera for Surveys, focusing on a small field within NGC 6397. This cluster, home to hundreds of thousands of stars, is 8,500 light-years away, making it one of the closest globular clusters to Earth.

The new data from stars within NGC 6397 have yielded important insights into the age, origin, and evolution of this cluster. Hidden in the background, however, were findings that may hold even greater promise for understanding the evolution of such clusters, Kalirai said. Within the population of stars and galaxies behind NGC 6397, the Hubble image revealed a large elliptical galaxy that contains several hundred globular clusters.

Although each of these clusters probably contains hundreds of thousands of stars, they are so far away from the Earth that each cluster appears as a single faint point of light in the Hubble image. In fact, a single giant star in NGC 6397 appears 10 million times brighter than one of the distant globular clusters. Nevertheless, the faint light from these clusters could yield valuable information, Kalirai said.

Kalirai and Richer followed up the Hubble imaging observations with spectroscopic observations using the Gemini Multi-Object Spectrograph on the Gemini South Telescope on Cerro Pachon in Chile. They were able to determine the distance of the elliptical galaxy hosting the globular clusters by measuring its redshift (a measure of how the expansion of the universe shifts the wavelengths of light from a distant object). This showed that the globular clusters are the most distant ever studied.

"The properties that we infer for these clusters may therefore represent an important clue in understanding what our own Milky Way globulars, such as NGC 6397, looked like in the past," Kalirai said.

Previous studies by other researchers of globular clusters in nearby galaxies, including the Milky Way, have shown that these systems play a very important role in understanding the formation and evolution of galaxies. With a sample of almost 200 clusters in this one distant galaxy, Kalirai's team will test whether the properties of these globulars are consistent with the idea that elliptical galaxies formed the bulk of their stars at early times. For the first time, the observations may also allow astronomers to test for evolution in the properties of globular clusters themselves, Kalirai said.

In addition to Kalirai and Richer, the team involved in this research includes Jay Anderson of Rice University and Jay Strader and Kieran Forde of UC Santa Cruz. This work was supported by NASA through a Hubble Fellowship grant awarded by the Space Telescope Science Institute to Kalirai. Support for this work was also provided by a grant from NASA/STScI, the Natural Sciences and Engineering Research Council of Canada, and the Canada-U.S. Fulbright Program through the award of a Fulbright Fellowship to Richer.

The Jet Stream of Titan

European Space Agency News Release - January 24, 2007

A pair of rare celestial alignments that occurred in November 2003 helped an international team of astronomers investigate the far-off world of Titan. In particular, the alignments helped validate the atmospheric model used to design the entry trajectory for ESA's Huygens probe.

Now the unique results are helping to place the descent of Huygens in a global context, and to investigate the upper layers of Titan's atmosphere.

Occasionally Titan passes directly in front of a distant star. When it does so, the light from the star is blocked out. Because Titan has a thick atmosphere, the light does not 'turn off' straight away. Instead, it drops gradually as the blankets of atmosphere slide in front of the star. The way

the light drops tells astronomers about the atmosphere of Titan.

By pure chance on 14 November 2003, fourteen months before Huygens' historic descent through Titan's atmosphere, Titan passed in front of two stars, just seven and a half hours apart. Bruno Sicardy, Observatoire de Paris, France, organized expeditions to record the occultations, as such events are called.

The first occultation was visible just after midnight from the Indian Ocean and the southern half of Africa. The second could be seen from Western Europe, the Atlantic Ocean, Northern and Central Americas. Teams of astronomers set up along the occultation tracks.

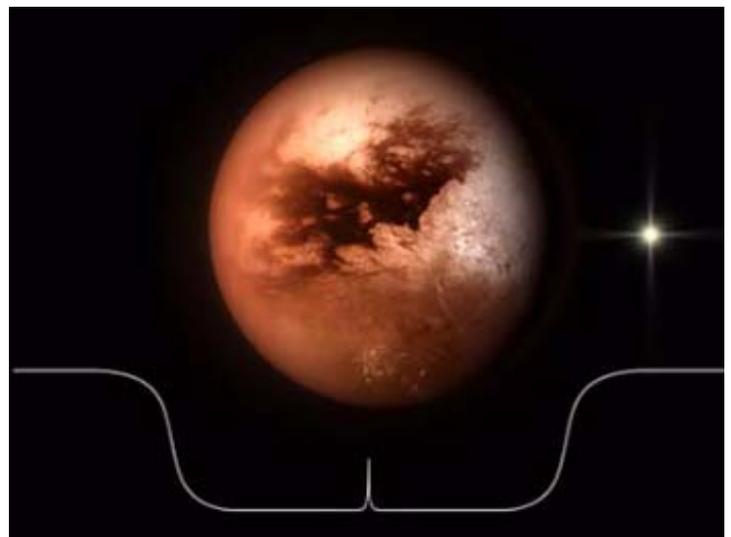
Sicardy was looking for one observation in particular. "Titan's atmosphere acts like a lens, so at the very middle of the occultation, a bright flash occurs," explains Sicardy. If Titan's atmosphere were a perfectly uniform layer, the central flash would be a pinpoint of light, visible only at the very centre of the planet's shadow. However, comparing the results from many telescopes, Sicardy found that the central flash fell across the Earth in a triangular shape.

"It is like the light falling through a glass of water and making bright patterns on the table. The focused light is not perfectly round because the glass is not a perfect lens," says Sicardy. Analyzing the shape of the flash showed that Titan's atmosphere was flattened at the north pole. This was because at the time of the occultation, Titan's south pole was tilted towards the Sun. This warmed the atmosphere there, causing it to rise and move towards the north of the moon, where the atmosphere cooled and sank towards the surface.

There was one other key discovery that the occultation data allowed Sicardy and his team to make. A fast moving, high altitude wind (above 200 kilometres) was blowing around Titan at latitude of 50 degrees north. They estimated that it was moving at 200 metres per second (or 720 kilometres per hour) and would encircle the planet in less than one terrestrial day.

"It is like the jet stream on Earth," says Sicardy, "Furthermore, we told the Huygens team to expect some bumps near 510 kilometres altitude, due to a narrow and sudden temperature variation." Indeed, Huygens was jolted by exactly such a layer during its 14 January 2005 entry. "A temperature inversion was indeed detected by the accelerometers during entry at this very altitude" says Jean-Pierre Lebreton, Huygens project scientist.

The work does not stop there. Even though the Huygens descent took place almost two years ago, the understanding of its data continues to provide key insights into Titan.



This artist's impression shows the 'light curve' produced by a star passing behind Titan, Saturn's biggest moon. Credits: NASA/JPL/Space Science Institute, ESA. Image by C.Carreau

Spacecraft Swing Past Moon to Prepare for Solar Studies

NASA-GSFC News Release - January 24, 2007

NASA's twin STEREO (Solar TERrestrial Relations Observatory) spacecraft, managed by NASA Goddard Space Flight Center, Greenbelt, Md., completed a series of complex maneuvers January 21 to position the spacecraft in their mission orbits. The spacecraft will be in position to produce the first 3-D images of the sun by April.

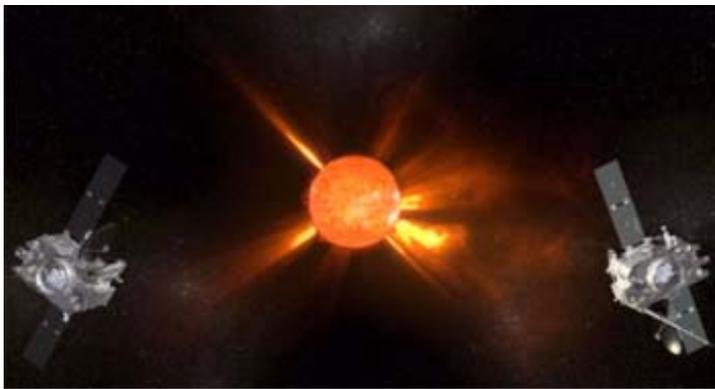
"STEREO is now officially ready to start its science missions," says Michael Kaiser, STEREO Project Scientist at Goddard.

Spacecraft trajectories and lunar swing-by maneuvers were created by mission design engineers at Johns Hopkins University Applied Physics Laboratory (APL). "STEREO is the first mission to use the moon's gravity to redirect multiple spacecraft, launched aboard a single rocket, to their respective orbits," says Ron Denissen, APL STEREO project manager.

During the initial weeks following launch, mission operations personnel at APL guided both spacecraft through a series of four highly elliptical phasing orbits around Earth to position them for their lunar gravitational assists that propelled them into their respective mission orbits.

On Dec. 15, 2006, STEREO's "A" observatory flew past the moon at a distance of approximately 4,550 miles (7,340 kilometers) above its surface, using lunar gravity to redirect the spacecraft away from Earth and into its orbit "ahead" of Earth.

The "B" observatory passed approximately 7,300 miles (11,776 kilometers) above the lunar surface where gravity is slightly weaker. Although the "B" observatory's orbit was slightly boosted, the spacecraft didn't undergo its full lunar gravitational assist until January 21 when it re-encountered the moon. The spacecraft then came within approximately 5,468 miles (8,818 kilometers) of the surface, swinging past the lunar body in the opposite direction of the "A" spacecraft and into an orbit "behind" Earth.



The two observatories will orbit the sun from this perspective, separating from each other by approximately 45 degrees per year. Just as the slight offset between your eyes provides you with depth perception, this mirror-image-like positioning of the spacecraft will allow them to take 3-D images and particle measurements of the sun.

During post-launch instrument checkouts, scientists got a close-up view of intense solar activity from our nearest star, the sun, when the "A" observatory sent back its first images in early December.

When the cover to the "A" observatory's SECCHI Extreme Ultraviolet Imager telescope was removed on Dec. 4, 2006, it captured images of a very powerful active region on the sun known as AR903 that produced a series of intense flares last month. SECCHI (Sun-Earth Connection Coronal and Heliospheric Investigation), built by the Naval Research Laboratory (NRL) in Washington, D.C., is the imaging instrument suite aboard both observatories.

A few days later during an unusually active solar period, the "A" observatory captured images of a coronal mass ejection with one of SECCHI's two white-light coronagraphs.

Coronal mass ejections are giant clouds of plasma shot into space from the sun's atmosphere. One of the largest explosions in the solar system, they can equal the force of a billion megaton nuclear bombs. When they collide with Earth at speeds approaching one million mph, CMEs can produce spectacular auroras and trigger severe magnetic storms. The energetic particles associated with these storms can cause electrical power outages, disrupt and/or damage communications satellites, and are often hazardous to astronauts.

Each STEREO observatory carries more than a dozen instruments. APL designed and built the spacecraft platform housing the instruments. When combined with data from observatories on the ground or in space, STEREO's data will allow scientists to track the buildup and liftoff of magnetic energy from the sun and the trajectory of Earth-bound coronal mass ejections in 3-D.

STEREO is the third mission in NASA's Solar Terrestrial Probes Program. STEREO is sponsored by NASA's Science Mission Directorate, Washington, D.C. NASA Goddard's Solar Terrestrial Probes Program Office, in Greenbelt, Md., manages the mission, instruments and science center. APL designed and built the spacecraft and is operating them for NASA during the mission. Image Credit: NASA.

Ulysses' Third Set of Polar Passes

ESA News Release - November 18, 2006

On November 17, the joint ESA-NASA Ulysses mission reached another important milestone on its epic out-of-ecliptic journey: the start of the third passage over the Sun's south pole.

Launched in 1990, the European-built spacecraft is engaged in the exploration of the heliosphere, the bubble in space blown out by the solar wind. Given the capricious nature of the Sun, this third visit will undoubtedly reveal new and unexpected features of our star's environment.

The first polar passes in 1994 (south) and 1995 (north) took place near solar minimum, whereas the second set occurred at the height of solar activity in 2000 and 2001. "During the first polar passes, Ulysses found a well-ordered heliosphere, with clear differences between the solar wind at the poles and equator", says Richard Marsden, ESA's Ulysses Project Scientist and Mission Manager. "At solar maximum things were more complex, making it hard to distinguish any particular region from another."

As Ulysses approaches the polar regions for the third time, the Sun has settled down once again and will be close to its minimum. "Ulysses orbits the Sun once every 6.2 years, making it perfect for studying the 11-year solar activity cycle", says Marsden. "In fact, we can really say that Ulysses is exploring the heliosphere in four dimensions -covering all three spatial dimensions as well as time."

Even though the Sun will be close to its activity minimum just as it was in 1994-95, there is one fundamental difference: the Sun's magnetic field has reversed its polarity. In addition to the 11-year activity cycle, the Sun has a magnetic cycle of 22 years, known as the Hale Cycle. Ulysses, now in its 17th year in orbit, is giving scientists the chance to observe the heliosphere from a unique, out-of-ecliptic vantage point and with the same set of instruments over almost a complete Hale Cycle.

What is the Ulysses science team expecting to find this time around? "If our ideas are correct, the change in polarity of the Sun's magnetic field will have a clear effect on the way cosmic ray particles reach our location in the inner heliosphere", says Marsden. "During the last solar minimum, positively charged particles had a slightly easier time reaching the polar regions; this time, the negatively charged electrons should have the advantage."

But there could be surprises. In 1994, the pole-to-equator difference in the number of particles observed, although present, was much smaller than expected. This led to several new models for the way charged particles move in the complex environment of interplanetary space. The new observations will test if these new theories are correct.

Continued on next page

Another surprise from the first polar passes was the fact that the heliosphere is not as symmetric as scientists believed. The Sun's magnetic field was found to be slightly stronger in the south than in the north. "We'll be watching out for this effect as Ulysses swings from the south pole to the north in 2007", says Marsden.

Although important in its own right, Ulysses is also a key member of the fleet of spacecraft known as the Heliospheric Network that includes SOHO and NASA's ACE, Wind and Voyager spacecraft. The Network recently welcomed two new members, the twin STEREO spacecraft that were launched by NASA at the end of October. "We are really excited about the possibilities for joint observations using STEREO, ACE and SOHO during Ulysses' pole-to-pole transit in 2007", says Marsden.

Georgia Astronomy in State Parks (GASP) Events

The GASP events for 2007 are being planned. Scheduled so far are:

March 24th - Unicoi State Park

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.

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. Also send information on upcoming observing events, meetings, and other events to the webmaster.

AAC Officers and Contacts

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president@atlantaastronomy.org

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programs@atlantaastronomy.org

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Co-Chair: Joanne Cirincione starrynights@AtlantaAstronomy.org

Sidewalk Astronomy: Brad Isley - Contact Info TBA

Woodruff Observ. Coordinator: John Lentini 770-984-0175
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Webmaster Atlanta Astronomy: Peter Macumber 770-941-4640
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.

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

February 2nd, Friday: Full Moon (Snow, Hunger, or Wolf Moon).

February 7th, Wednesday: Mercury Greatest Eastern Elongation. Venus near Uranus.

February 8th, Thursday: Neptune Conjunction with Sun.

February 9th, Friday: **AAC Meeting at White Hall, 8PM, Emory University (Special Date).**

February 10th, Saturday: Moon Last Quarter. Saturn Opposition. **Telescope & Instrument Workshop at Bradford Map/Telescope Atlanta. CEC Meeting.**

February 17th, Saturday: New Moon. **DSO at DAV - Contact Daniel Herron for details.**

February 22nd, Thursday: Mercury Inferior Conjunction. **Sidewalk Astronomy at Hopewell Middle School 5PM - Contact Daniel Herron.**

February 23rd, Friday: Moon near M45.

February 24th, Saturday: Moon First Quarter.

February 28th, Wednesday: Moon near M44.

March 2nd, Friday: Moon near Saturn.

March 3rd, Saturday: Full Moon (Crow, Sap, or Lenten Moon) - Lunar Eclipse - moon rises in totality. **Eclipse viewing at Fernbank Science Center - Contact Daniel Herron for details.**

March 5th, Monday: Uranus Conjunction with Sun.

March 10th, Saturday: **Telescope & Instrument Workshop at Bradford Map/Telescope Atlanta. New member orientation at VR - Contact Daniel Herron for details. CEC Meeting.**

March 11th, Sunday: Moon Last Quarter. Daylight Savings Time begins.

March 16th, Friday: Moon near Mercury and Mars. **AAC Meeting at White Hall, 8PM, Emory University.**

March 17th, Saturday: **DSO & Messier Marathon at Mentone, AL - Contact Daniel Herron.**

March 18th, Sunday: New Moon.

March 20th, Tuesday: Moon below Venus. Equinox at 8:07PM EDT.

March 24th, Saturday: **GASP at Unicoi State Park - See pg 7 for details.**

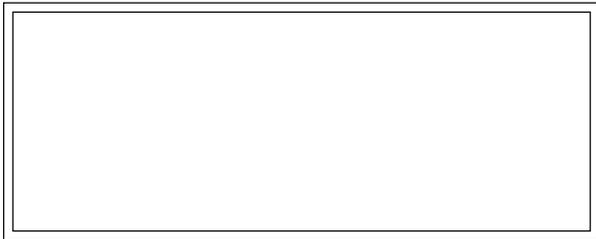
Atlanta Astronomy Club Listserve

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 March is Thursday, February 22nd 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:

Atlanta Astronomy Club

P.O. Box 76155

Atlanta, GA 30358-1155

www.atlantaastronomy.org