

The Focal Point

The Atlanta Astronomy Club
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Editor: Kat Sarbell

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March General Meeting

By Keith "Kosmic Kow" Burns, AAC Program Chair

The next general meeting of the Atlanta Astronomy Club will be on Friday, March 16th, 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.

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 March 13th (Tuesday).**

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

Speaker Biography:

Jim will talk about his work on an instrument package for the Voyager project. The Photopolarimeter Package flew on both Voyager 1 and 2 spacecraft launched in 1977, and later Voyager 2 passed by all the giant planets in a Grand Tour of the outer solar system (Voyager 1 only visited Jupiter & Saturn). Jim was involved with the testing and calibration of the hardware and also development of some of the early science prior to launch. His talk will focus on the process of developing of a scientific instrument for an interplanetary flight, some of the difficulties they encountered (physical and political), and some of the results obtained.

March is membership renewal month! See page 2 for details.

Jim Hutchinson obtained his Ph.D. in 1974 in Astronomy from the University of Wisconsin with minors in Physics and Electrical Engineering. He studied Cepheid variable stars in ultraviolet light using the first astronomical satellite, the OAO-II, for his dissertation. He then spent several years at the Laboratory for Atmospheric and Space Physics in Colorado using rocket vehicles to study stellar and comet luminosities in the ultraviolet. At LASP, Jim also worked on the pre-launch phase of the Photopolarimeter experiment that flew on Voyager 1 & 2. Subsequently, he taught Physics and Astrophysics at Vassar College. He then parlayed his engineering knowledge in industry for twenty-five years. Today, Jim is a real estate investor who lives in the Atlanta metro area.

The Photopolarimeter:

(Editor's Note: The following excerpt is from Voyager Bulletin - Mission Status Report No. 29, January 4, 1979, Credit: JPL/NASA). By studying sunlight scattered by the atmospheres and surfaces of planets and satellites, Voyager's photopolarimeter experiment will unveil many secrets of the outer planets. Eight wavelengths in the ultraviolet and visible regions of the spectrum (from 2350 to 7500 Angstroms) will be measured in intensity to determine the physical properties of the atmospheres of Jupiter and Saturn, the rings of Saturn, the satellite surfaces, and the sodium cloud around Io.

Mounted on the scan platform, Voyager's photopolarimeter is a combination photometer/polarimeter with filters. Light is gathered through a 6-inch diameter Cassegrain telescope and passed through an aperture, a polarization analyzer, a filter, and a depolarizer before being converted into electrical pulses which indicate the number of photons in a particular energy band, and polarization. The apertures, analyzers, and filters are all mounted on separate wheels which turn independently of each other and so provide a great number of combinations. Normal operation during Encounter would consist of stepping through a programmed sequence of 40 filter/analyzer wheel combinations every 24 seconds.



Artist's view of one of the Voyager Spacecraft in interplanetary space. The scan platform carrying the photopolarimeter and other instruments is at the top. Credit: NASA/JPL

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Upcoming Speaker and Program: *(continued from page 1)*

The April meeting will be on the 20th of April. As of this date the speaker and program are still in the planning stages. The May meeting is on May 18th. Elections for club officers and board members will be held during this meeting. We will also have a May speaker. Here again the program chairman is actively working on the program. Updates will be posted on the AAC website, listserv, and sent via telegraph wire.

March is Membership Renewal Month!

Peter Macumber, President Atlanta Astronomy Club

MEMBERSHIP RENEWALS: Last year, we moved the AAC to a "one-date-for-all" membership renewal. ALL CLUB MEMBERS, with some exceptions, should submit their \$30 dues for 2007 by March 20th - The Vernal Equinox. (There will be an R1 in the upper right corner of your Focal Point). New members and those who have not yet paid their prorated dues, will receive a notice in their Focal Point stating the amount you owe to bring you in line with the March date. (There will be either an xxx or an RF on your label). If you have questions or concerns, please let me or the Treasurer know.

The Next AAC Board Meeting

The next Board Meeting of the Atlanta Astronomy Club is scheduled for Tuesday, March 6th at 7:00PM at Bradford Map, Globe & Telescopes, 300 Hammond Dr, Sandy Springs. Contact Tom Crowley for details.

Upcoming Telescope & Instrument Workshop Meeting

by Sharon Carruthers

The next meeting of the Telescope and Instrument Workshop will be March 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.

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) 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

February General Membership Minutes

By Richard Jakiel, AAC Recording Secretary

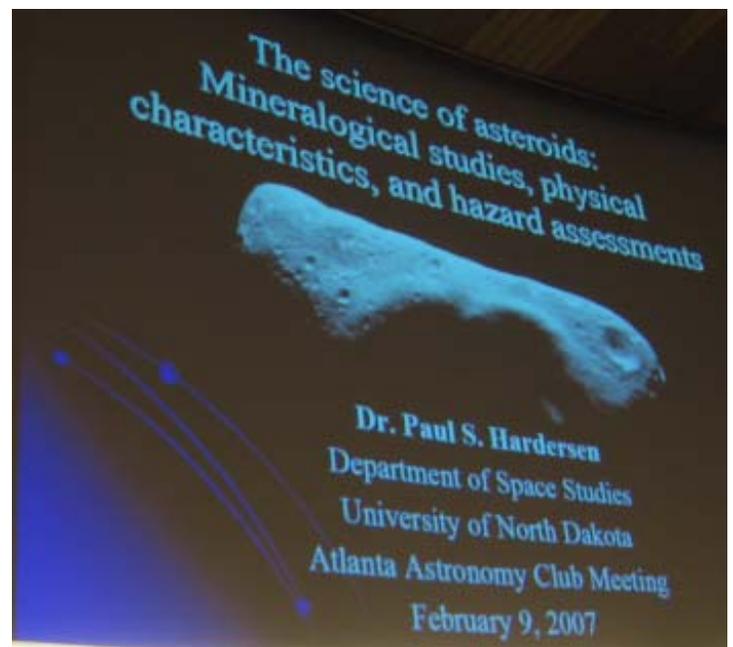
The February general membership meeting of the AAC started at 0805 PM, with President Peter Macumber presiding. Approximately 40 AAC members and guests were in attendance. Peter reminded the membership that dues are up for renewal in March, plus AAC nominating committee is still looking for volunteers to fill various officer and Board of Directors positions. Other matters that were covered included the CEWC potluck dinner and AAC Telescope workshop - both scheduled on 2/10/07. Dan Heron reported that the next DSO was to be held at DAV, and the details/costs for April's "Zombie Party" (April 12 - 15th at DAV) are now posted at the club's website.

Other important club matters that were discussed included a sidewalk astronomy event (8 PM, 3/1/07) on the Sierra Club's parking lot. Marc Sandberg also brought his meeting with Georgia Power and displayed a new handout ("Light Trespass") discussing the advantages of using Full Cutoff light fixtures for outdoor lighting.



Peter introduced the night's speaker - Dr. Paul Hardersen (left) from the University of North Dakota. His presentation started out with the topic of infrared spectroscopy on M-type asteroids (below). He discussed the various types of spectral features associated with various minerals and how this information can be used to generate a model on the formation and evolution of asteroid bodies. Following a discussion that involved "fun with crystal field theory", he spent the last 15 minutes on the development of a viable astronomy program in the frozen wastes better known as "North Dakota".

After the general meeting, many of the members headed over to Athens Pizza for tasty Greek food, drinks and socialization.



Photos by Tom Faber

Charlie Elliott February Minutes

by Clevis Jones, CEC Recording Secretary

ATTENDANCE: On February 10, 2007, twenty-seven guests and members attended the February CE chapter "Pot Luck & Saturn Opposition Party"!

BUSINESS: Chapter director, Larry Owens, opened the meeting with an announcement that the NASA/JPL/Night Sky Network had sent awards for the 2007 year to three of our members. Debbie Jones made the presentations of awards to Jon Wood, Clevis Jones, and Larry Owens.

Larry announced that for the third year running, Hightower Trail Elementary in Conyers, GA has asked the CEC/AAC to be a part of this year's third annual "Space Camp" the evening of Friday, March 9.

The 2007 remaining schedule for the CEC meetings is: March 10, April 14 (back to 5 p.m. for the summer), May 19 (JAKES DAY - volunteers needed, and ELECTION of Officers), June 9, July 7, Aug 18, September 15, October 6 (note: Peach State on the 13th), November 3 (back to 3 p.m. for the winter), December 15.

FEATURE PRESENTATION: POT LUCK! Thanks to all the loving hands who prepared and brought the food - to all who helped clean up afterward - to all who attended for sharing their good cheer - and to the Charlie Elliott Wildlife Center (whose friendly face we know as the hard working and supportive Alesia Rast) for making such a fine facility available to us.

OBSERVING REPORT: Steve Bieger filled us in on Upcoming Events and Native Myths and Legends of the Pawnee. His Science Feature covered how, in the past, astronomers' methods of measurements took us into the Geocentric and then Heliocentric views of our Solar System. The Featured Scientist was Johannes Kepler.

CURRENT EVENTS: Clevis Jones covered the "New Horizons" mission to Pluto and the Kuiper Belt. He also covered astronomer McNaught shooting comet McNaught, the sad shut-down of Hubble's most used ACS camera, and lots of information relating to tonight's Saturn Opposition.

OBSERVING SESSION: A chilly but rewarding evening of viewing by many of the members and guests. Two youngsters about 5 and 9 years got their first telescope views of Mercury and Venus, not to mention Saturn. Wide views of the Perseus Double Cluster, M81 & M82, and Andromeda with her two companions were stunning! Jon Wood treated all to the joys of the views through the 30 year old Optical Craftsman telescope he had just finished refurbishing. Thanks, Jon for your efforts, literally. Steve Bieger had 4 (I think) telescopes set up. Jim Honeycutt was showing everybody everything! Angela Poor tried to outlast everyone, but came in 6th right behind the hardcore observers (WELL DONE Angela).

Charlie Elliot Future Meetings

by Clevis Jones, CEC Recording Secretary

MEETING DATES AND PROGRAMS: March 10, 2007 at 3:00 PM (winter schedule)

FEATURE PRESENTATION: BLACK HOLE SURVIVAL - Please join Steve Bieger for a fascinating NASA Night Sky Network-based presentation on Black Holes.

Place: Charlie Elliott Visitor's Center

April meeting info: April 14, 5:00 PM (NOTE TIME CHANGE):
DARK MATTER presented by Fred Buls

Bradley Observatory Open House Series Spring 2007

"Astronomy Through Time" - Humans have looked up at the heavens for as long as they have had eyes to see and minds to wonder. The Open House Lecture Series this year concentrates on astronomy through the centuries, the history of astronomy. Explore the impact of changing technology on astronomical understanding, hear inspiring human stories of discovery and exploration and delve into the myths and architecture of ancient cultures.

All talks are free and open to the public. Lectures begin at 8 p.m.; doors open at 7:30 p.m. Bradley Observatory and Delafield Planetarium at Agnes Scott College. Here is the schedule for Spring 2007.

March 9, 2007, 8 PM - William A. Calder Spring Equinox Concert

"Rhythm Under the Stars" by Emrah Kotan (Artist Affiliate, Agnes Scott College Department of Music)

Percussion and rhythm have been an important part of society since ancient times. Members of the ASC Music Department will lead a discussion of traditional forms of percussion in society. Attendees are welcome to participate in a drum circle following the discussion. Bring a percussion instrument if you have one. All levels of experience welcome. Weather permitting, this will be an outside event. In the event of inclement weather, the talk and subsequent drumming will take place in the planetarium.

April 13, 2007 - Lecture topic TBA

May 11, 2007, 8 PM - "Of Druids and Priests: Ancient Astronomy and its Tools" by C. G. De Pree of Agnes Scott College

NASA's Spitzer Gets First Sniffs of Air From Alien Worlds

NASA News Release - February 21, 2007

WASHINGTON - NASA's Spitzer Space Telescope has captured for the first time enough light from planets outside our solar system, known as exoplanets, to identify signatures of molecules in their atmospheres. The landmark achievement is a significant step toward being able to detect life on rocky exoplanets and comes years before astronomers had anticipated.



"This is an amazing surprise," said Spitzer project scientist Michael Werner of NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif. "We had no idea when we designed Spitzer that it would make such a dramatic step in characterizing exoplanets."

Spitzer, a space-based infrared telescope, obtained the detailed data, called spectra, for two different gas exoplanets: HD 189733b is 370 trillion miles away in the constellation Vulpecula, and HD 209458b is 904 trillion miles away in the constellation Pegasus.

Just as a prism disperses sunlight into a rainbow, Spitzer uses an instrument called a spectrograph to reveal a spectrum by splitting light from an object into different wavelengths. The process uncovers "fingerprints" of chemicals making up the object. The exoplanets Spitzer observed are known as "hot Jupiters" because they are gaseous like Jupiter but orbit much closer to their stars.

The data indicate the two planets are drier and cloudier than predicted. Theorists thought hot Jupiters would have lots of water in their atmospheres, but were surprised when none was found around HD 209458b or

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Astronomers have measured the first-ever infrared spectrum of two planets orbiting distant Sun-like stars. The planet HD 189733b, shown here in an artist's rendering, appears to be missing common molecules like water and methane. Astronomers speculate that these molecules are present but hidden behind a high layer of silicate clouds. Credit: David A. Aguilar (CfA)

HD 189733b. In addition, one of the planets, HD 209458b, showed hints of tiny sand grains, called silicates, in its atmosphere. This could mean the water is present in the planet's atmosphere but hidden under high, dusty clouds unlike anything seen around planets in our own solar system.

"The theorists' heads were spinning when they saw the data," said Jeremy Richardson of NASA's Goddard Space Flight Center, Greenbelt, Md. "It is virtually impossible for water, in the form of vapor, to be absent from the planet, so it must be hidden, probably by the dusty cloud layer we detected in our spectrum," he said. Richardson is lead author of a paper appearing in the Feb. 22 issue of *Nature* that describes a spectrum for HD 209458b.

A team led by Carl Grillmair of NASA's Spitzer Science Center at the California Institute of Technology in Pasadena, Calif., captured the spectrum of HD 189733b. A team led by Mark R. Swain of JPL focused on the same planet in the Richardson study and came up with similar results. Grillmair's results will be published in the *Astrophysical Journal Letters*. Swain's findings have been submitted to the *Astrophysical Journal Letters*.

"With these new observations, we are refining the tools that we will one day need to find life elsewhere if it exists," said Swain. "It's sort of like a dress rehearsal."

Spitzer teased out spectra from the feeble light of the two planets through the "secondary eclipse" technique. In this method, the telescope monitors a planet as it transits, or circles behind its star, temporarily disappearing from view.

By measuring the dip in infrared light that occurred when the planets disappeared, Spitzer's spectrograph was able to obtain spectra of the planets alone. The technique will work only in infrared wavelengths, where the planet is brighter than in visible wavelengths and stands out better next to the overwhelming glare of its star.

In previous observations of HD 209458b, NASA's Hubble Space Telescope measured changes in the light from the star, not the planet, as the planet passed in front. Those observations revealed individual elements, such as sodium, oxygen, carbon and hydrogen, which bounce around the very top of the planet.

"When we first set out to make these observations, they were considered high risk because not many people thought they would work," said Grillmair. "But Spitzer has turned out to be superbly designed and more than up to the task."

JPL manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate, Washington. The Spitzer Science Center at the California Institute of Technology conducts mission science operations.

Celebrating Supernova's 20th Anniversary With Hubble

Space Telescope Science Institute News Release - February 22, 2007

Twenty years ago, astronomers witnessed one of the brightest stellar explosions in more than 400 years. The titanic supernova, called SN 1987A, blazed with the power of 100 million suns for several months following its discovery on Feb. 23, 1987.

Observations of SN 1987A, made over the past 20 years by NASA's Hubble Space Telescope and many other major ground- and space-based telescopes, have significantly changed astronomers' views of how massive stars end their lives. Astronomers credit Hubble's sharp vision with yielding important clues about the massive star's demise.

"The sharp pictures from the Hubble telescope help us ask and answer new questions about Supernova 1987A," said Robert Kirshner, of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass. "In fact, without Hubble we wouldn't even know what to ask."

Kirshner is the lead investigator of an international collaboration to study the doomed star. Studying supernovae like SN 1987A is important because the exploding stars create elements, such as carbon and iron, that make up new stars, galaxies, and even humans. The iron in a person's blood, for example, was manufactured in supernova explosions. SN 1987A ejected 20,000 Earth masses of radioactive iron. The core of the shredded star glows because of radioactive titanium that was cooked up in the explosion.

The star is 163,000 light-years away in the Large Magellanic Cloud. It actually blew up about 161,000 B.C., but its light reached the Earth in 1987.

"The Hubble observations have helped us rewrite the textbooks on exploding stars. We found that the actual world is more complicated and interesting than anyone dared to imagine. There are mysterious triple rings of glowing gas and powerful blasts sent out from the explosion that are just having an impact now, 20 years later."

Before SN 1987A, astronomers had a "simplified, idealized model of a supernova," Kirshner explained. "We thought the explosions were spherical and we didn't think much about the gas a star would exhale in the thousands of years before it exploded. The actual shreds of the star in SN 1987A are elongated—more like a jellybean than a gumball, and the fastest-moving debris is slamming into the gas that was already out there from previous millennia. Who would have guessed?"

Hubble wasn't even around when astronomers first spotted the supernova in 1987. When Hubble was launched three years later, astronomers didn't waste any time in using the telescope to study the stellar blast. Its first peek was in 1990, the year the observatory launched. Since then, the telescope has taken hundreds of pictures of the doomed star.

The Hubble studies have revealed the following details about the supernova:

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* A glowing ring, about a light-year in diameter, around the supernova. The ring was there at least 20,000 years before the star exploded. X-rays from the explosion energized the gas in the ring, making it glow for two decades.

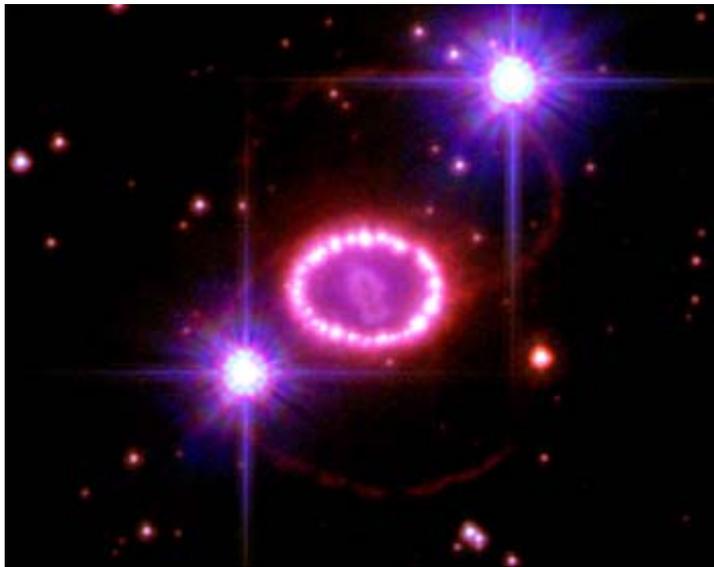
* Two outer loops of glowing gas that had not been identified in ground-based telescope images.

* A dumbbell-shaped central structure that has now grown to one-tenth of a light-year long. The structure consists of two blobs of debris in the center of the supernova racing away from each other at roughly 20 million miles an hour.

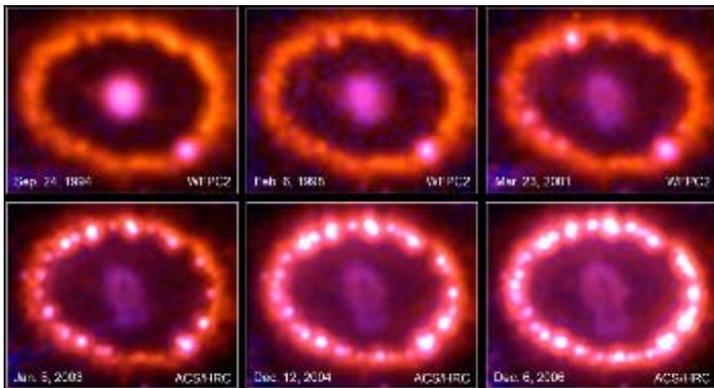
* The onrushing stellar shock wave from the stellar explosion is slamming into, heating up, and illuminating the inner regions of the narrow ring surrounding the doomed star.

Hubble continues to watch as the blast debris moves through the ring. The light show makes the glowing ring look like a pearl necklace. Astronomers think the whole ring will be illuminated in a few years.

The glowing ring is expected to become bright enough to illuminate the star's surroundings, which will provide astronomers with new information on how the star ejected material before the explosion.



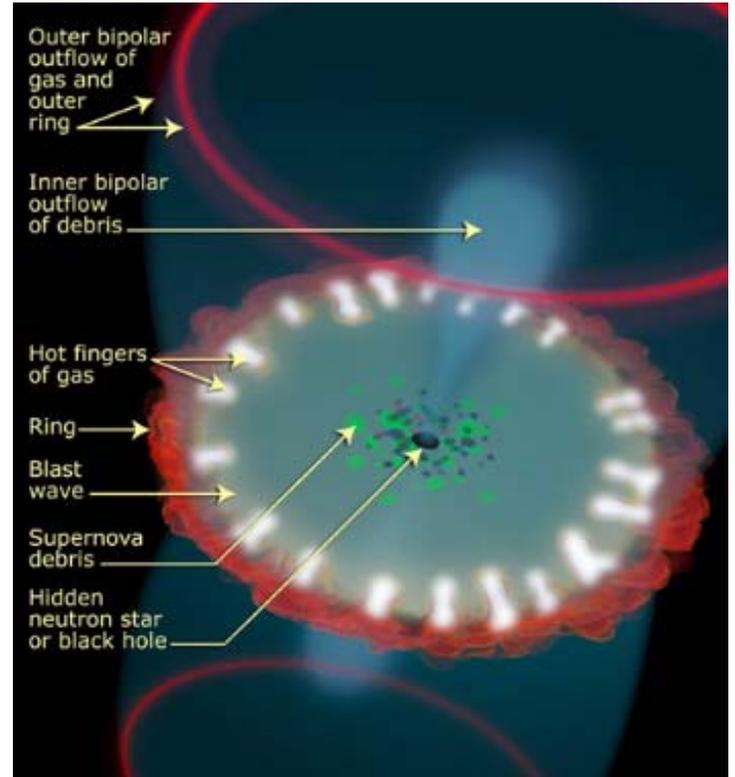
The image was taken in December 2006 with Hubble's Advanced Camera for Surveys. Credit: NASA, ESA, P. Challis and R. Kirshner (Harvard-Smithsonian Center for Astrophysics)



The images were taken between 1994 and 2006 with Hubble's Wide Field Planetary Camera 2 and Advanced Camera for Surveys. Credit: NASA, ESA, P. Challis and R. Kirshner (Harvard-Smithsonian Center for Astrophysics)

Astronomers are analyzing images by NASA's Spitzer Space Telescope to try to understand the fate of the dust that surrounds the exploded star and in the neighborhood around the blast.

"We will learn more in the future when the shock wave moves through the inner ring and slams into the outer rings and illuminates them," Kirshner said. "It could lead to clues about the last 20,000 years of the star. But



Inner Debris of the Supernova 1987A Ring. Illustration Credit: NASA, ESA, and A. Feild (STScI); Inset Image Credit: NASA, ESA, P. Challis and R. Kirshner (Harvard-Smithsonian Center for Astrophysics)

there are many things that are still a mystery. We still do not understand the evolution of the star before the explosion or how the three rings formed. We also think that the star may be part of a binary system."

Astronomers also are still looking for evidence of a black hole or a neutron star left behind by the blast. The fiery death of massive stars usually creates these energetic objects. Most astronomers think a neutron star formed 20 years ago. Kirshner said the object could be obscured by dust or it could have become a black hole.

He plans to use the infrared capabilities of the Wide Field Camera 3 - an instrument scheduled to be installed during the upcoming Hubble servicing mission - to hunt for a stellar remnant. Scientists will use another instrument scheduled for installment during the mission, the Cosmic Origins Spectrograph, to analyze the supernova's chemical composition and velocities.

The James Webb Space Telescope, scheduled for launch in 2013, will be able to see infrared light from the ring that is 10 times brighter than what astronomers see today. The debris inside the ring will begin to brighten, and astronomers will get another chance to study the interior of an exploded star.

The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency (ESA). The Space Telescope Science Institute in Baltimore conducts Hubble science operations. The Institute is operated for NASA by the Association of Universities for Research in Astronomy, Inc., Washington.

Ulysses Probe Embarks on 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."

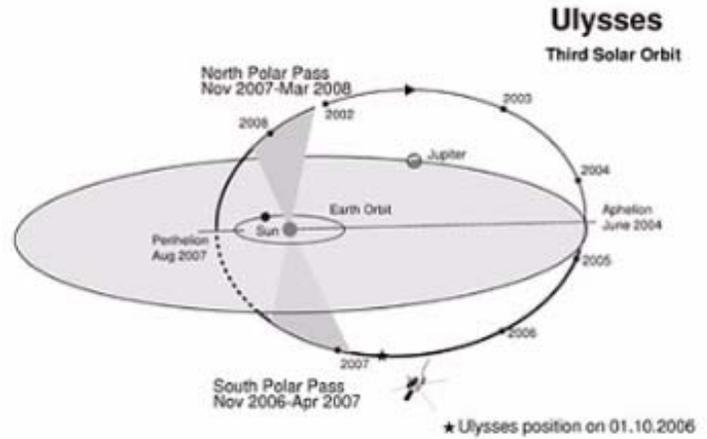
Even though the Sun will be close to its activity minimum just as it was in 1994-95, there is one fundamental difference: the Sun's magnetic field has reversed its polarity. In addition to the 11-year activity cycle, the Sun has a magnetic cycle of 22 years, known as the Hale Cycle. Ulysses, now in its 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.

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.



Sketch of Ulysses' third solar orbit. The spacecraft, launched in 1990, made its first polar passes in 1994 (south) and 1995 (north), near solar minimum. It made the second set of polar passes in 2000 and 2001, at the height of solar activity. Credits: ESA

Ulysses Finds Surprises from the Sun's South Pole

European Space Agency News Release - February 20, 2007

Although very close to the minimum of its 11-year sunspot cycle, the Sun showed that it is still capable of producing a series of remarkably energetic outbursts - ESA-NASA Ulysses mission revealed.

In keeping with the first and second south polar passes (in 1994 and 2000), the latest high-latitude excursion of the joint ESA-NASA Ulysses mission has already produced some surprises. In mid-December 2006, although very close to the minimum of its 11-year sunspot cycle, the Sun showed that it is still capable of producing a series of remarkably energetic outbursts.

The solar storms, which were confined to the equatorial regions, produced quite intense bursts of particle radiation that were clearly observed by near-Earth satellites. Surprisingly, similar increases in radiation were detected by the instruments on board Ulysses, even though it was three times as far away and almost over the south solar pole. "Particle events of this kind were seen during the second polar passes in 2000 and 2001, at solar maximum," said Richard Marsden, ESA's Ulysses Project Scientist and Mission Manager. "We certainly didn't expect to see them at high latitudes at solar minimum!"

Scientists are busy trying to understand how the charged particles made it all the way to the poles. "Charged particles have to follow magnetic field lines, and the magnetic field pattern of the Sun near solar minimum ought to make it much more difficult for the particles to move in latitude," said Marsden.

One of the puzzles remaining from the first high-latitude passes in 1994 and 1995 has to do with the temperature of the Sun's poles. When Ulysses first passed over the south and then the north solar pole near solar minimum, it measured the temperatures of the large polar coronal holes.

"Surprisingly, the temperature in the north polar coronal hole was about 7 to 8 percent lower compared with the south polar coronal hole," said Professor George Gloeckler, Principal Investigator for the Solar Wind Ion Composition Spectrometer (SWICS) on board Ulysses.

"We couldn't tell then whether this was simply due to progressive cooling of both polar coronal holes as the Sun was approaching its minimum level of activity in 1996, or whether this was an indication of a permanently cooler north pole."

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Now, as Ulysses again passes over the large polar coronal holes of the Sun at solar minimum we will finally have the answer. Recent SWICS observations show that the average temperature of the southern polar coronal hole at the current solar minimum is as low as it was 10 years ago in the northern polar coronal hole. "This implies that the asymmetry between north and south has switched with the change of the magnetic polarity of the Sun," said Gloeckler. The definitive proof will come when Ulysses measures the temperature of the north polar coronal during the next 15 months.

Georgia Astronomy in State Parks (GASP) Events

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

March 24th - Unicoi State Park

June 23rd - Tallulah Gorge 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

President: Peter Macumber 770-941-4640
president@atlantaastronomy.org

Program Chair: Keith Burns 770-427-1475
programs@atlantaastronomy.org

Observing Chair: Daniel Herron 770-330-9679
observing@atlantaastronomy.org

Corresponding Secretary: Kat Sarbell 404-352-0652
focalpoint@atlantaastronomy.org

Treasurer: Sharon Carruthers Treasurer@AtlantaAstronomy.org

Recording Secretary: Rich Jakiel
secretary@atlantaastronomy.org

Board: Tom Crowley 404-233-6886 crowleytj@hotmail.com

Board: Brad Isley - Contact Info TBA

Board: Larry Owens planetographer@comcast.com

Board: Ken Poshedly 678-516-1366 poshedly@bellsouth.net

Board: Gil Shillcutt - Contact Info TBA

Board/ALCOR: Art Zorka 404-633-8822 (H) 404-824-7106 (C)
star.myth@juno.com

Elliott Ch. Director: Larry Owens planetographer@comcast.com

Elliott Observing Supervisor: Steve Bieger - 770-457-9148
sbieger@bellsouth.net

Elliott Recording Secretary: Clevis Jones cjones@aaahawk.com

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

Webmaster Charlie Elliott: Larry Owens
planetographer@comcast.net

The Telescope Workshop: Dan Llewellyn 404-735-9661 or 404-633-7562
zoser@mindspring.com

Georgia Astronomy in State Parks: Joanne Cirincione 404-824-4751
starrynights@AtlantaAstronomy.org

Light Trespass: Marc Sandberg 404-531-4227
sandberg235@earthlink.net

AL Observing Programs Assistance: Keith Burns 770-427-1475
Keith_B@bellsouth.net

PSSG Chairman: Peter Macumber pmacumber@nightssky.org

Co-Chair: Joanne Cirincione starrynights@AtlantaAstronomy.org

Sidewalk Astronomy: Brad Isley - Contact Info TBA

Woodruff Observ. Coordinator: John Lentini 770-984-0175
johnlentini@yahoo.com

Webmaster Atlanta Astronomy: Peter Macumber 770-941-4640
pmacumber@nightssky.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)

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 6th, Tuesday: **AAC Board Meeting, 7PM at Bradford Map & Telescope, 300 Hammond Rd, Sandy Springs. - Contact Tom Crowley for details.**

March 9th, Friday: William A. Calder Spring Equinox Concert at Bradley Observatory, Agnes Scott College, 8PM.

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 22nd, Thursday: Mercury Greatest Western Elongation. Moon near M45.

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

March 25th, Sunday: Moon First Quarter.

March 28th, Wednesday: Moon near M44 (Morning). Moon near Saturn (Evening).

April 2nd, Monday: Full Moon (Grass, Egg, Easter, or Paschal Moon)

April 10th, Tuesday: Moon Last Quarter.

April 12th-15th, Thursday-Sunday: **Zombie Party at Deerlick Astronomy Village - Contact Daniel Herron for Details.**

April 13th, Friday: Open House at Bradley Observatory, Agnes Scott College, 8PM, Lecture TBA.

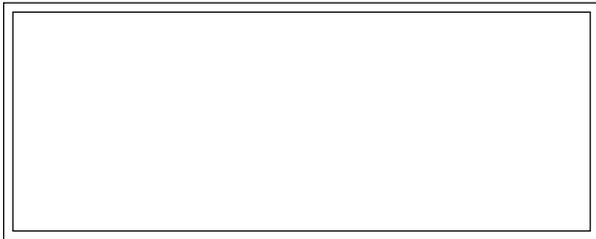
Atlanta Astronomy Club Listserve

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 April is Thursday, March 29th 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