The Focal Point

The Atlanta Astronomy Club
Established 1947
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Editor: Tom Faber

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April General Meeting at Georgia Tech

Join us for the April meeting of the Atlanta Astronomy Club. The meeting takes place on Friday April 15th at 8PM. The location is in Lecture Room 5 in the Howey Physics Building at 837 State Street on the Georgia Tech Campus (at the corner of State and Ferst Streets). Dr. Sowell informs us that there is a visitor's parking lot beside the Physics Building and that even though it is a Friday evening, drivers need to put a couple of dollars in the self-serve Kiosk in the parking lot.

There will be a talk by a guest speaker, then after the talk there will be announcements of upcoming club events. The meeting will run for about 2 hours. If you have any announcements you want to make during the meeting, please contact our President Mark Banks, so that he can schedule the time for you during the meeting. His contact information is on page 7.

The Program:

The talk will be by Postdoctoral Fellow Dr. Andreas Tepe and is titled "HAWC - A High Energy Gamma-Ray Observatory". HAWC is a detector searching for cosmic gamma-rays. It will be built in the Sierra Negra in Mexico at an altitude of 4100m above sea level. HAWC consists of 300 large water Cherenkov detectors (WCDs) which operate as particle detectors. High energy gamma-rays hitting the atmosphere induce particle showers which can be measured with these WCDs. The initial gamma-ray properties can be reconstructed by the detection pattern. The Energies and directions of the primary gamma-rays will be calculated. This will extend the window for astronomy towards very short wave lengths and offers a new set of observations which are crucial to answer some currently unsolved astrophysical problems.

For more information about HAWC see http://hawc.umd.edu/

Speaker Bio:

Dr. Tepe has been working for the Georgia Tech Center of Relativistic Astrophysics since Sept. 2009. His primary field of work is connected to the HAWC detector which will be installed in the Sierra Negra, Mexico, at an altitude above 4000m. The main task for the HAWC group at Georgia Tech is to set up a scaler system which will run in parallel to the main DAQ (Data AcQuisition) system of HAWC. The scaler DAQ will deliver complimentary data to the main DAQ as well as monitoring information. His work includes the testing and installation of the scaler hardware, the development of the DAQ software and analysis of taken data. The research for his Ph.D. covered the synchronization of the AMANDA and the IceCube neutrino telescopes as well as the simulation and filtering of supersymmetric particle signatures with IceCube. Because of this background, he will also participate in group activities regarding the IceCube experiment.

Dr. Tepe has a Ph.D. from Bergische Universität Wuppertal, Germany, and an undergraduate degree from Westfälische Wilhelms-Universität Münster, Germany.

Upcoming AAC Meetings:

May 20th (**Club Elections**), and June 17th - Lecture topics TBA.

March was Membership Renewal Month

MEMBERSHIP RENEWALS: The AAC has moved to a "one-date-for-all" membership renewal. ALL CLUB MEMBERS, with some exceptions, should submit their $30 ($42 if you wish to receive the *Focal Point* by mail) dues for 2011 by March 20th. If you haven't renewed your membership yet please do so as soon as possible. (There will be an R1 in the upper right corner of your *Focal Point* mailing label if you receive it in the mail. If you receive the *Focal Point* online you will receive an email - be sure we have your current email address). If you see either an RF or an xxx on your mailing label that means that your membership is about to expire or has expired. Please send your renewal right away. Please note that as of January 1, 2011 the dues for receiving the mailed *Focal Point* have increased to $42 per year. This increase is to cover the cost of printing and postage. Dues for members receiving the online version of the *Focal Point* will remain at $30 per year. If you have questions, need to update your contact information, or wish to switch to receiving the *Focal Point* online (and save $12 per year) please contact the AAC Treasurer Sharon Carruthers. Sharon's contact information is on p. 7.

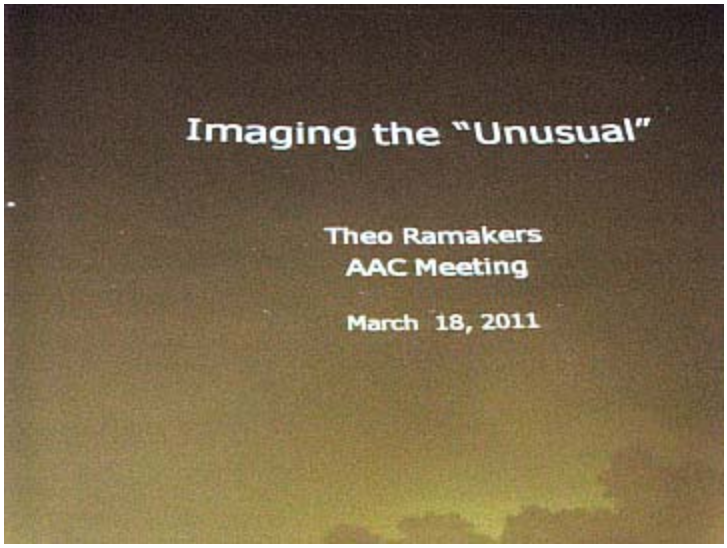
March Meeting Minutes

by Kat Sarbell filling in for Julie Moore, AAC Recording Secretary.

Photos by Tom Faber

The Atlanta Astronomy Club held its March meeting on Friday, March 18 at Emory University's White Hall. The meeting was started at 8:00 PM by club President Mark Banks. There were about 40 members and guests in attendance.

Our speaker for the evening was Theo Ramakers (photo right), Director of the Charlie Elliott Chapter of the Atlanta Astronomy Club. He presented a great talk and PowerPoint show entitled "Imaging the Unusual" which featured his astrophotography of unusual astronomical events, including the International Space Station transiting the sun, moon, and passing very near Venus, eclipses and occultations of Jupiter's moons, comet outbursts, satellite passes, and rocket fuel dumps (photo below).



After the talk, Daniel Herron's PowerPoint slides displayed important upcoming events. Mark Banks invited officers of the club and other members to make announcements. Rich Jakiel, Program Chair, said the next meeting on April 15 would be at Georgia Tech and the lecture there would be about Gamma-Ray observations. In May, Phil Sacco will be our speaker and he will talk about celestial mythology.

Then Daniel Herron, Observing Chair, reminded the club that May 7th is International Astronomy Day, so volunteers are needed at Tellus Museum in Cartersville from 10 in the morning until 11 at night. Fernbank Science Center will need volunteers too in the daytime. Daniel also reported on other upcoming observing events which will be at which are listed in the calendar on the back page. These include upcoming Dark Sky Observing (DSO's) events at Woodruff Boy Scout Camp on April 30 and Mentone, Alabama on May 28.

Art Zorka, the AAC Astronomical League Liaison, reminded everyone that the membership list would be updated near the end of the month, so dues need to be paid! The money needs to be given to Sharon.

Peter Macumber, Peach State Star Gaze Chair, spoke briefly concerning the yearly star party which will commence this year on September 25. He said the PSSG needs more volunteers and we need speakers for the event.

Mark Banks then announced that the club needs people to run for the elections at the meeting in May. The AAC is in need of officers, especially for the Board and the Light Trespass advocate.

To finish off the meeting, door prizes were awarded to a few club members who answered astronomy trivia questions. Mark closed the meeting and most of the masses headed to Athens Pizza for dinner and conversation.

The Astronomical League

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

* You will receive *The Reflector*, the AL's quarterly newsletter.

* You can use the Book Service, through which you can buy astronomy-related books at a 10% discount.

* You can participate in the Astronomical League's Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others.

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

Bradley Observatory Open Houses

2010-2011 Open House Lecture Series

Astronomy Since Galileo (1610 – 2010)

The 400 years since the first astronomical use of the telescope have brought enormous progress to the science of astronomy. Technologies and new areas of science have been brought to bear on outstanding astronomical questions. The development of photography, spectroscopy, quantum mechanics, to name just a few have had profound impacts on our understanding of the universe. This year's lectures will explore the development of astronomy since Galileo. Lectures/Concerts begin at 8 PM. There will be observing with the Beck Telescope afterwards weather permitting.

April 15, 2011 - "Jupiter's Galilean Satellites", Melissa McGrath (NASA Marshall Space Flight Center)

May 13, 2011 - "An Evening at the Edge of the Universe", James Webb (Florida International University)

March Charlie Elliott Chapter Minutes

by Marie Lott, CE Chapter Recording Secretary

The March meeting of the Charlie Elliott Chapter of the Atlanta Astronomy Club was held on Saturday, March 5th in the CE Visitor center at 4 PM. Twenty four adults and 6 children attended. This meeting was our quarterly potluck "Dinner and a Movie".

Chapter director Theo announced that the chapter sponsored nine community astronomy events in February, reaching over 850 children. At least six public outreach events will be held in March. See the CE chapter calendar at http://ceastronomy.org for details. Contact Theo if able to help.

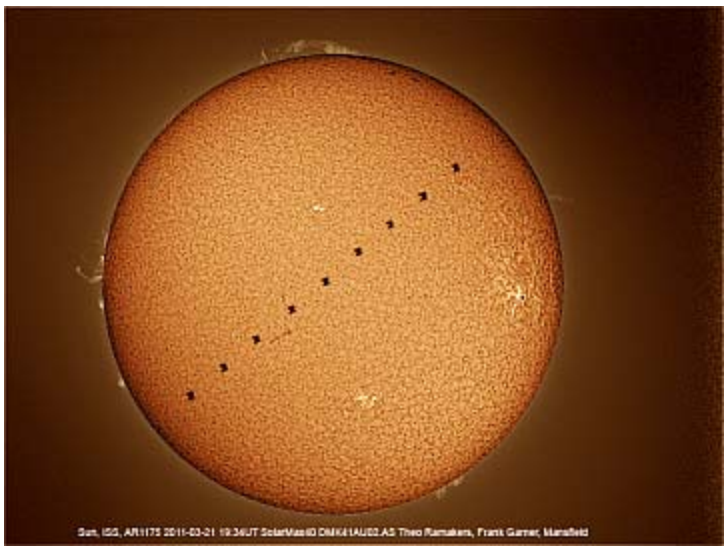
The feature presentation for the evening was the National Geographic movie, "Journey to the Edge of the Universe".

Steven Philips, Observing Supervisor, presented "Observing 101", a highlight of current sun, moon and planet rise & set times, observing targets and challenges. In March Mercury & Jupiter set shortly after sunset. Saturn rises around 9 PM and will be best after midnight; Pluto rises about 3 AM in Sagittarius; Venus rises about 5 AM. On April 1st there will be a nice pairing of Venus near the crescent moon at dawn.

Small Telescope/Binocular Target List for January: Galaxies M81 (Bode's Galaxy), M82 (Cigar Galaxy) & NGC 2403; Supernova Remnant M1 (the Crab Nebula); Diffuse Nebula M42 (Orion Nebula); Open Clusters M34, M35, M36, M37, M38, M45 (the Pleiades); and Planetary Nebula NGC 2392 (Eskimo Nebula).

Featured object: Emissions/Reflection Nebula NGC 1931 in Auriga near M36, often referred to as a miniature version of the Orion Nebula or a false comet. Approximate distance=7,000 light years; apparent magnitude=10; size = 3'.

There was no observing after the meeting due to rain. The next meeting of the chapter will be Saturday, April 2, 2011 at 5 PM in the Charlie Elliott Visitor Center. Jim Soboleski will present a talk about supernovae.



The ISS Transits the Sun

Charlie Elliott Chapter Director Theo Ramakers and member Frank Garner captured this transit of the sun by the International Space Station on March 21 at 19:34UT from near Mansfield GA using a SolarMax 40 and a DMK41AU02.AS. In addition to the ISS this image shows Active Region 1175 and a number of prominences along the limb of the sun.

CE Chapter Outreach Programs

by Theo Ramakers, CE Chapter Director

The Chapter did three outreach events since the last meeting. Three additional events were postponed. This month was the Astronomy Night at Summerour Middle School in Norcross. Participants of the Chapter and the AAC were present to show the students the night sky and Theo Ramakers gave two presentations about NASA missions in the school for interested parents and students. A follow up event at Puckett's Mill Elementary's Science Night brought chapter members Annette, Pierre, Frank and Theo out to the school. We participated in three sessions for the in the school rotation and showed the night sky to all interested. Frank and Theo also held a night event for 16 year old kids of the Solid Rock Baptist church in Covington. Thanks to everyone who gave their time to make these events happen.

The Next AAC Board Meeting

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

2012 - DOOM or DUMB?

By Sharon Carruthers, AAC Treasurer

Part 2 - Immanuel Velikovsky

Immanuel Velikovsky (1895-1979) was born in Russia, obtained a medical degree, played a role in the founding of the Hebrew University of Jerusalem in Israel and was a respected psychiatrist and psychoanalyst. He wrote *Worlds in Collision*, in 1950, followed by the sequels *Earth in Upheaval* and *Ages in Chaos*. His writings were an attempt to reconcile the Biblical history of the Jews, primarily the Exodus, with their surrounding Middle Eastern cultures (Egypt, India, China, Greece, Rome, Assyria, and Sumer). Egyptian records have no account of the Jewish being held in captivity, the plagues, or the Exodus, except one papyrus recording turmoil that occurred 500 years after the Exodus. By revising the early chronology of the histories and myths of Middle Eastern civilizations, Velikovsky attempted to make them match the dates in Jewish history. He sought to explain the Exodus as the result of natural catastrophes, caused by close encounters between Earth and other bodies in the solar system (Saturn, Jupiter, Venus, and Mars).

His bare bones thesis was that, between 5-10,000 years ago, Saturn went "nova" and ejected much of its mass into space, causing the Noachian Flood. Then, 3500 years ago, Jupiter ejected an Earth-size comet (and leaving the Great Red Spot as a "scar") that passed Earth several times, stopping and starting Earth's rotation, and tilting it on its axis. This caused the plagues of Egypt, the parting of the Red Sea and the sun to stand still for Joshua, and dropped organic molecules that became the "manna from heaven" and oil reserves, before settling into an almost circular orbit as the planet Venus. He claimed that the Greek myth of Athena springing, full grown, from Zeus's forehead was a "mythologized" description of this event (transferring the names to their Roman counterparts, Jupiter and Venus. However, Aphrodite is the Greek counterpart to Venus, not Athena; and she was born of sea foam.)

In the 8th and 7th centuries BCE, Mars went on a romp that caused other disasters on Earth.

Because the projected motions of the planets in this scenario is not possible under the standard theories of gravity and celestial mechanics, Velikovsky proposed that electromagnetic forces are the primary motive forces in the solar system, i.e. planets orbit due to magnetic attraction and repulsion of the sun, not through gravity and inertia.

Velikovksy published his "electromagnetic hypothesis" in 1946 in a pamphlet (*Cosmos Without Gravitation: Attraction, Repulsion and electromagnetic circumduction in the Solar System*, 1946, *Scripta Academica Hierosolymitana*) that was privately distributed, including a copy to Harvard astronomer Harlow Shapley. When Shapley heard that Macmillian was planning to publish *Worlds in Collision* in 1950, he threatened to stop using them as his publisher for debasing its academic reputation by publishing pseudoscience. Shapley did not wish to censure Velikovksy; only to prevent his work from being published by an academic publisher that would give it an air of scientific credibility.

Macmillian passed *Worlds in Collision* off to Doubleday, where it became a bestseller at first printing. Velikovksy and his works were lionized by the New York literati while fiercely criticized by the scientific community, including Carl Sagan.

Velikovksy's "theories" were criticized on multiple levels. Firstly, he selectively accepted ancient myths from different cultures as factual accounts of real events, even though the myths contradicted each other as to time and events. He simply ignored the parts that fail to mesh. Also, he did not require any evidence that the myths actually referred to real events, he assumed they did.

Seven Signs of Bogus Science

1. The discoverer pitches the claim directly to the media.
2. The discoverer says that a powerful establishment is trying to suppress his or her work.
3. The scientific effect involved is always at the very limit of detection.
4. Evidence for a discovery is anecdotal.
5. The discoverer says a belief is credible because it has endured for centuries.
6. The discoverer has worked in isolation.
7. The discoverer must propose new laws of nature to explain an observation.

Voodoo Science: The Road from Foolishness to Fraud

Robert L. Park, Ph.D, Oxford University Press, 2002

http://www.quackwatch.com/01QuackeryRelatedTopics/signs.html

For example, he thought that the close approach of Venus caused the sun to stand still for Joshua. Why ancient texts would notice the Sun standing still "for one day" but not a blazing Venus passing in the sky, he attributed to "collective amnesia over traumatic events".

When his "theories" also failed to mesh with modern geology, cosmology, physics and biology, then these sciences were rejected, too, and he created "new theories", without any reference to reality or evidence, to make it all work.

A fundamental flaw of Velikovsky's theory was that the motions of Venus and Mars were irreconcilable with Newtonian celestial mechanics, requiring planetary orbits which did not conform to the laws of conservation of energy and conservation of angular momentum. (If Venus had an orbit so elliptical that it could swing by the Earth twice within 60 years, it would have been flung out of our Solar System, not settled into a nearly circular orbit.)

Velikovsky's solution was to propose a theory of "electromagnetic forces" to replace gravity as the prime locomotive force of the Solar System, again without any evidence that they existed as he described.

He ascribes the "Egyptian plagues" of the Exodus to vermin coming from Venus, which he thought would be hot, due to its close approach to the Sun as it swung through the Solar System. While life has been found thriving near oceanic volcanic vents that heat the waters to 400°F, the frogs, locusts & flies described in Exodus cannot survive in these temperatures, and certainly not in Venus' current temperatures of 750°F. In fact, the high temperature of Venus is due to a "greenhouse effect" caused by its dense cloud cover; and its atmosphere is mostly sulfuric acid which is not conductive to life as we know it.

A nova is a cataclysmic nuclear explosion on the surface of a white dwarf star. Saturn is a "gas giant" planet, much too small for nuclear fission at its core and not capable of "going nova".

"Bad Astronomer" Philip Plait points out that the Jews have been using a lunar calendar for nearly 5,800 years, based on the Moon's nearly circular orbit. Had Venus been close enough to Earth to exchange atmosphere (& vermin) with it, the Moon would have been flung off into space - or "at the very least, its orbit would have been profoundly changed, made tremendously elliptical".

Velikovsky's catastrophes have left no evidence in Greenland ice cores, bristlecone pine rings, Swedish clay varves, and ocean sediments.

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In conclusion, how many of The Seven Signs of Bogus Science does Velikovsky violate?

1) The discoverer pitches the claim directly to the media. All his theories were published by the popular press and not presented for review through scientific journals.

2) The discoverer says that a powerful establishment is trying to suppress his or her work. Such as Sagan, Shapley, Payne-Gaposchkin & Plaitt, to name just a handful of his many critics.

4) Evidence for a discovery is anecdotal or in Velikovsky's case, mythological.

5) The discoverer says a belief is credible because it has endured for centuries in ancient mythologies.

6) The discoverer has worked in isolation. While Velikovsky's work attracted many followers (and still does), he is its sole creator and author.

7) The discoverer must propose new laws of nature to explain an observation, such as his "electromagnetic hypothesis".

Sadly, Immanuel Velikovsky only misses a full house by one card. But he does create the blueprint for many of those who will follow him.

Next Month: Zecharia Sitchin adds some aliens into the mix.

(Opinions expressed in this series are those of the author; not of the Atlanta Astronomy Club, its Board, its membership, nor the editors of the *Focal Point*.) *Editor's Note: But they do happen to be my opinion.*

When is an Asteroid Not an Asteroid?

NASA/JPL Press Release - March 29, 2011

On March 29, 1807, German astronomer Heinrich Wilhelm Olbers spotted Vesta as a pinprick of light in the sky. Two hundred and four years later, as NASA's Dawn spacecraft prepares to begin orbiting this intriguing world, scientists now know how special this world is, even if there has been some debate on how to classify it.

Vesta is most commonly called an asteroid because it lies in the orbiting rubble patch known as the main asteroid belt between Mars and Jupiter. But the vast majority of objects in the main belt are lightweights, 100-kilometers-wide (about 60-miles wide) or smaller, compared with Vesta, which is about 530 kilometers (330 miles) across on average. In fact, numerous bits of Vesta ejected by collisions with other objects have been identified in the main belt.

"I don't think Vesta should be called an asteroid," said Tom McCord, a Dawn co-investigator based at the Bear Fight Institute, Winthrop, Wash. "Not only is Vesta so much larger, but it's an evolved object, unlike most things we call asteroids."

The layered structure of Vesta (core, mantle and crust) is the key trait that makes Vesta more like planets such as Earth, Venus, and Mars than the other asteroids, McCord said. Like the planets, Vesta had sufficient radioactive material inside when it coalesced, releasing heat that melted rock and enabled lighter layers to float to the outside. Scientists call this process differentiation. McCord and colleagues were the first to discover that Vesta was likely differentiated when special detectors on their telescopes in 1972 picked up the signature of basalt. That meant that the body had to have melted at one time.

Officially, Vesta is a "minor planet" – a body that orbits the sun but is not a proper planet or comet. But there are more than 540,000 minor planets in our solar system, so the label doesn't give Vesta much distinction. Dwarf planets – which include Dawn's second destination, Ceres – are another category, but Vesta doesn't qualify as one of those. For one thing, Vesta isn't quite large enough.

Dawn scientists prefer to think of Vesta as a protoplanet because it is a dense, layered body that orbits the sun and began in the same fashion as Mercury, Venus, Earth and Mars, but somehow never fully developed. In the swinging early history of the solar system, objects became planets by merging with other Vesta-sized objects. But Vesta never found a partner during the big dance, and the critical time passed. It may have had to do with the nearby presence of Jupiter, the neighborhood's gravitational superpower, disturbing the orbits of objects and hogging the dance partners.

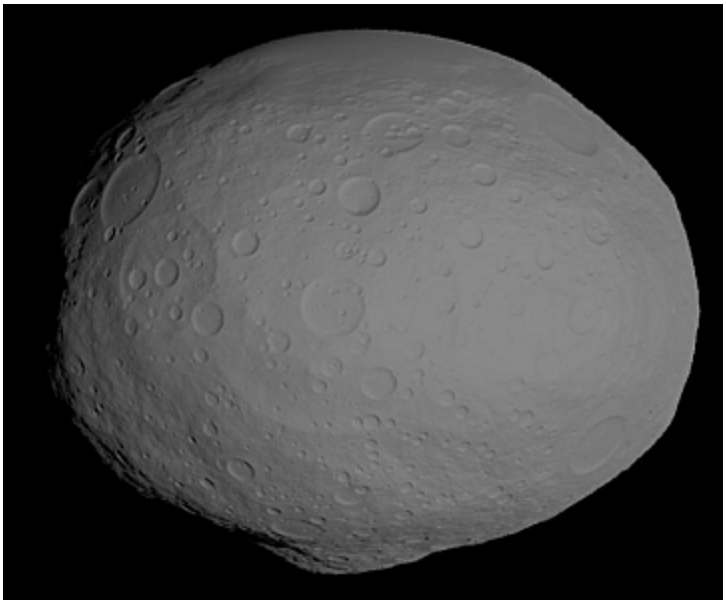
Other space rocks have collided with Vesta and knocked off bits of it. Those became debris in the asteroid belt known as Vestoids, and even hundreds of meteorites that have ended up on Earth. But Vesta never collided with something of sufficient size to disrupt it, and it remained intact. As a result, Vesta is a time capsule from that earlier era.

"This gritty little protoplanet has survived bombardment in the asteroid belt for over 4.5 billion years, making its surface possibly the oldest planetary surface in the solar system," said Christopher Russell, Dawn's principal investigator, based at UCLA. "Studying Vesta will enable us to write a much better history of the solar system's turbulent youth."

Dawn's scientists and engineers have designed a master plan to investigate these special features of Vesta. When Dawn arrives at Vesta in July, the south pole will be in full sunlight, giving scientists a clear view of a huge crater at the south pole. That crater may reveal the layer cake of materials inside Vesta that will tell us how the body evolved after formation. The orbit design allows Dawn to map new terrain as the seasons progress over its 12-month visit. The spacecraft will make many measurements, including high-resolution data on surface composition, topography and texture. The spacecraft will also measure the tug of Vesta's gravity to learn more about its internal structure.

"Dawn's ion thrusters are gently carrying us toward Vesta, and the spacecraft is getting ready for its big year of exploration," said Marc Rayman, Dawn's chief engineer at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "We have designed our mission to get the most out of this opportunity to reveal the exciting secrets of this uncharted, exotic world."

The Dawn mission to Vesta and Ceres is managed by the Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, for NASA's Science Mission Directorate, Washington. For more information about the Dawn mission, visit http://dawn.jpl.nasa.gov



This image shows a model of the protoplanet Vesta, using scientists' best guess to date of what the surface of the protoplanet might look like. Image credit: NASA/JPL-Caltech/UCLA/PSI

Moon in High Dynamic Range

by Dan Llewellyn

I took the lunar image above with a C-14 with a Lumicon 6.3 reducer and a Nikon D-3100 DSLR from my backyard in Decatur, GA. I processed the shot with my "home brew" high dynamic range processing. A few highlights got blown out, but the depth and color came through, a worthy tradeoff IMHO.

Hubble Study Rules Out One Alternate to Dark Energy

NASA/Space Telescope Science Institute News Release - March 14, 2011

Astronomers using NASA's Hubble Space Telescope have ruled out an alternate theory on the nature of dark energy after recalculating the expansion rate of the universe to unprecedented accuracy.

The universe appears to be expanding at an increasing rate. Some believe that is because the universe is filled with a dark energy that works in the opposite way of gravity. One alternative to that hypothesis is that an enormous bubble of relatively empty space eight billion light-years across surrounds our galactic neighborhood. If we lived near the center of this void, observations of galaxies being pushed away from each other at accelerating speeds would be an illusion.

This hypothesis has been invalidated because astronomers have refined their understanding of the universe's present expansion rate. Adam Riess of the Space Telescope Science Institute (STScI) and Johns Hopkins University in Baltimore, Md., led the research. The Hubble observations were conducted by the SHOES (Supernova H0 for the Equation of State) team that works to refine the accuracy of the Hubble constant to a precision that allows for a better characterization of dark energy's behavior. The observations helped determine a figure for the universe's current expansion rate to an uncertainty of just 3.3 percent. The new measurement reduces the error margin by 30 percent over Hubble's previous best measurement in 2009. Riess's results appear in the April 1 issue of The Astrophysical Journal.

"We are using the new camera on Hubble like a policeman's radar gun to catch the universe speeding," Riess said. "It looks more like it's dark energy that's pressing the gas pedal."

Riess' team first had to determine accurate distances to galaxies near and far from Earth. The team compared those distances with the speed at which the galaxies are apparently receding because of the expansion of space. They used those two values to calculate the Hubble constant, the number that relates the speed at which a galaxy appears to recede to its distance from the Milky Way. Because astronomers cannot physically measure the distances to galaxies, researchers had to find stars or other objects that serve as reliable cosmic yardsticks. These are objects with an intrinsic brightness, brightness that hasn't been dimmed by distance, an atmosphere, or stellar dust, that is known. Their distances, therefore, can

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This illustration shows the location of Cepheid variables found in the spiral galaxy NGC 5584. Ultraviolet, visible, and infrared data taken with Hubble's Wide Field Camera 3 in 2010 reveal Cepheids of varying periods. Those stars with periods of less than 30 days and between 30 and 60 days are marked with green and blue circles, respectively. A small number of Cepheids, with periods larger than 60 days, are marked in red.

Illustration Credit: NASA, ESA, and L. Frattare (STScI)

Science Credit: NASA, ESA, A. Riess (STScI/JHU), and L. Macri (Texas A&M University)

be inferred by comparing their true brightness with their apparent brightness as seen from Earth.

To calculate longer distances, Riess' team chose a special class of exploding stars called Type 1a supernovae. These stellar explosions all flare with similar luminosity and are brilliant enough to be seen far across the universe. By comparing the apparent brightness of Type 1a supernovae and pulsating Cepheid stars, the astronomers could measure accurately their intrinsic brightness and therefore calculate distances to Type Ia supernovae in far-flung galaxies.

Using the sharpness of the new Wide Field Camera 3 (WFC3) to study more stars in visible and near-infrared light, scientists eliminated systematic errors introduced by comparing measurements from different telescopes.

"WFC3 is the best camera ever flown on Hubble for making these measurements, improving the precision of prior measurements in a small fraction of the time it previously took," said Lucas Macri, a collaborator on the SHOES Team from Texas A&M in College Station.

Knowing the precise value of the universe's expansion rate further restricts the range of dark energy's strength and helps astronomers tighten up their estimates of other cosmic properties, including the universe's shape and its roster of neutrinos, or ghostly particles, that filled the early universe.

"Thomas Edison once said 'every wrong attempt discarded is a step forward,' and this principle still governs how scientists approach the mysteries of the cosmos," said Jon Morse, astrophysics division director at NASA Headquarters in Washington. "By falsifying the bubble hypothesis of the accelerating expansion, NASA missions like Hubble bring us closer to the ultimate goal of understanding this remarkable property of our universe."

For images and more information about this study, visit: http://hubblesite.org/news/2011/08

Atlanta Astronomy Club Online

While this newsletter is the official information source for the Atlanta Astronomy Club, it is only up to date the day it is printed. So if you want more up to date information, go to our club's website. The website contains pictures, directions, membership applications, events updates and other information. http://www.atlantaastronomy.org You can also follow the AAC on Facebook by joining the AAC group, and on Twitter at http://twitter.com/atlastro.

The **Atlanta Astronomy Club, Inc**., the South's largest and oldest astronomical society, meets at **8:00 P.M.** on the Friday closest to full moon of each month at Emory University's White Hall or occasionally at other locations or times. Membership fees are **$30 ($42)** for a family or single person membership. College Students membership fee is **$15 ($27)**. These fees are for a one year membership ($12 per year extra charge to receive a printed *Focal Point* by mail).

Magazine subscriptions to ***Sky & Telescope*** or ***Astronomy*** can be purchased through the club for a reduced rate. The fees are **$33** for Sky & Telescope and **$34** for Astronomy. Renewal forms will be sent to you by the magazines. Send the renewal form along with your check to the Atlanta Astronomy Club treasurer.

The Club address: Atlanta Astronomy Club, Inc., P.O. Box 76155, Atlanta, GA 30358-1155.

AAC Web Page: **http://www.AtlantaAstronomy.Org.** Send suggestions, comments, or ideas about the website to webmaster@AtlantaAstronomy.org. Also send information on upcoming observing events, meetings, and other events to the webmaster.

AAC Officers and Contacts

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PSSG Co-Chair: Joanne Cirincione starrynights@AtlantaAstronomy.org

Sidewalk Astronomy: Brad Isley sidewalkastronomy@AtlantaAstronomy.org

Light Tresspass: Open - Contact Mark Banks if you would like to volunteer for this position

Woodruff Observ. Coordinator: Sharon Carruthers Treasurer@AtlantaAstronomy.org

AAC Webmaster: Daniel Herron observing@AtlantaAstronomy.org

Directions to White Hall at Emory

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

The Focal Point

Newsletter of The Atlanta Astronomy Club, Inc.

FROM:
Tom Faber
2206 Treeridge Parkway
Alpharetta, GA 30022

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

Atlanta Astronomy Club
P.O. Box 76155
Atlanta, GA 30358-1155
www.atlantaastronomy.org
On Twitter at http://twitter.com/atlastro

www.beetagg.com

FIRST CLASS

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

AAC Events are listed in BOLD

Apr 3rd, Sunday: New Moon. Saturn at Opposition.
Apr 11th, Monday: Moon First Quarter.
Apr 15th, Friday: **AAC Meeting at Georgia Tech Physics Building, 8PM.**
Apr 17th, Sunday: **AAC BoD Mtg at Emory Math & Science Building 3PM.** Full Moon.
Apr 19th, Tuesday: Mercury near Mars in morning.
Apr 22nd, Friday: **May *Focal Point* Deadline.** Lyrid Meteors.
Apr 23, Saturday: **DSO at Woodruff Boyscout Camp** - Contact Daniel Herron (**New Date**).
Apr 24th, Sunday: Moon Last Quarter.
Apr 29-May 1st: Morning grouping of the Moon, Mercury, Venus, Mars, and Jupiter.
May 3rd, Tuesday: New Moon.
May 4th, Wednesday: Thin crescent moon near the Pleiades after sunset.
May 6th, Friday: Eta Aquarids Meteors.
May 7th, Saturday: **Charlie Elliott Chapter Meeting.** Mercury at Greatest Elongation West.
May 7th - May 23: Grouping of Mercury, Venus, Mars, and Jupiter in the morning sky.
May 10th, Tuesday: Moon First Quarter.
May 11th, Wednesday: Mercury, Venus, and Jupiter in a near straight line.
May 17th, Tuesday: Full Moon.
May 20th, Friday: **AAC Meeting/Elections at White Hall, Emory Univ, 8PM.**
May 24th, Tuesday: Moon Last Quarter.
May 27th, Friday: **June *Focal Point* Deadline.**
May 29th, Sunday: Open House and Potluck dinner at DAV.
June 1st, Wednesday: New Moon.
June 4th, Saturday: **Charlie Elliott Chapter Meeting - 5PM.**
June 8th, Wednesday: Moon First Quarter.
June 17th, Friday: **AAC Meeting at White Hall, Emory Univ, 8PM.**

Atlanta Astronomy Club Listserv

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

Focal Point Deadline and Submission Information

Please send articles, pictures, and drawings in electronic format on anything astronomy, space, or sky related to Tom Faber at focalpoint@atlantaastronomy.org. Please send images separate from articles, not embedded in them. Articles are preferred as plain text files but Word documents or PDFs are okay. You can submit articles anytime up to the deadline. **The deadline for May is Friday, Apr 22nd at 6:00 PM. Submissions will not be accepted after the deadline.**