

Southwest Florida Astronomical Society

SWFAS



The Eyepiece December 2008

Club Contacts

President:

Bob Francis

r.r.francis@comcast.net
(239-985-0137)

Vice President:

Mike Harden

mike@cosmosapparel.com
(239-369-0150)

Secretary:

Karen Nichols

(239-466-2627)

Treasurer:

Ramona Huddleston

ramonaseraph@juno.com

Program Coordinator:

Chuck Pavlick

cpav@swfla.rr.com
(239-560-1516)

Viewing Coords./Fakahatchee:

Tony Heiner

verahei@aol.com
(941-629-8849)

Chuck Pavlick

cpav@swfla.rr.com
(239-560-1516)

Viewing Coord./Caloosahatchee

Jon Martin

Jmartin590@comcast.net
(239-561-3571)

Librarian:

Jamie Knaub

silver_galaxy13@hotmail.com
(239-332-2565)

Club Historian:

Danny Secary

asecary@gmail.com
(239-470-4764)

Equipment Coordinator:

Sanders Lewallen

sanderslewallen@msn.com
(239-275-3435)

Website Coordinator:

Dan Fitzgerald

bigdan2204@comcast.net
(239-282-2292)

A MESSAGE FROM THE PRESIDENT

December is right around the corner and I hope all of you had a safe and happy Thanksgiving. December means that we have to vote on the four officers for the coming year. Currently, I will run again for 2009 if I am nominated and the membership approves. Ramona Huddleston will not run again for Treasurer. I would like to express my appreciation and thanks to her for the fine job she has done as Treasurer for the last two years. I am not sure whether Karen Nichols, our Secretary, will be able to run again. Karen has done a great job the last few years and I hope she will be able to continue. I am not sure if Mike Harden will run again for Vice President. Carole Holmberg will run again for the News Editor position. Carole is doing an outstanding job with her newsletter each month, and I am glad that she will continue to write it for us. Carole also runs the planetarium out at the Calusa Nature Center and has always been a valuable resource for the club. In addition to the above, we also have a number of positions that have to be addressed in case anyone currently holding them decides not to continue. The agenda will list all the positions and the names of individuals currently holding them.

According to the latest information on the Southern Cross Astronomical Society web site (<http://www.scas.org/>), the 2009 Winter Star Party is sold out. However, they have stated that anyone who mailed in for tickets with a postmark no later than November 21st has been accepted and will receive their tickets shortly. We should be well represented at the star party again as a number of our members are planning on going. We had a great time this year and set up with a many of our friends from the Everglades Astronomical Society in Naples.

Planets in the evening sky for December consist of Venus (in the southwest), Jupiter (in the southwest), Mercury (in the southwest), and Uranus (in the south). Saturn (in the east) can be viewed around Midnight, and then in the morning sky (in the south). We can look for Comet 85P/Boethin, shining around 7th magnitude, in the background stars of Aquarius and Pisces. The Geminid meteor shower which peaks on December 13th will be washed out this year by the moon. The Ursid shower, which normally is not very good, will peak before dawn on December 22nd and will not be bothered by the moon.

Please remember to pay your dues for 2009.

December Meeting

Our December meeting will be at the Calusa Nature Center Planetarium at 7:30 pm on Thursday, December 4th. Our speaker will be Denise Sabatini. She will be giving a talk on Archeoastronomy.

We will again be setting up telescopes in the back of the Planetarium for some observing, weather permitting. We will have observing both before the meeting (starting at about 6:30 pm) and after. Any member who would like to bring a telescope to help out with the observing would be appreciated.

January Meeting

The first Thursday of January 2009 falls on New Year's Day: January 1. We will most probably meet on January 8th instead. Please pay careful attention to next month's newsletter and agenda for the correct date, time, and place for this meeting.

How to Refurbish a Telescope, or, "Never Volunteer!"

By Stewart Rorer

Back in June at the SWFAS meeting, Carole Holmberg of Calusa Planetarium fame requested volunteers from the SWFAS to refurbish a telescope that the Nature Center had received as a gift. The 'scope, on a fork mount out in back of the Planetarium, had a tube full of cobwebs, optics badly in need of cleaning, and a focuser that was difficult to use. Palpable silence met Carole's request.

It seemed to me a shame to leave a 'scope of sizeable aperture in such a state of decrepitude. Figuring that "refurbishing" would consist of removing the mirrors, brushing out the cobwebs, cleaning the optics, replacing them, collimating the 'scope, and disassembling the focuser to lubricate it, I fired off an e-mail to Carole volunteering for what I thought was a minor project. Our energetic club president, Bob Francis, decided to participate. The more the merrier, I thought. Bob and I agreed to meet at the planetarium one day a week at 10 a.m. to work on the 'scope.

Nature Center Executive Director Sanders Lewallen, with the assistance of his staff, brought the tube into the Planetarium workshop. Bob and I inspected the tube, its rotating tube hardware, the mirrors and the focuser. We realized that unless we filled all the unused holes that had been drilled into the tube over the years, insect infestation and its concomitant webs and detritus would be unavoidable – not desirable in an optical system.

Bob and I removed the optics for cleaning. The mirror is 12.5" in diameter. The secondary's minor axis is 2.5" giving a 20% linear obstruction. Inspection of the mirrors revealed that the coatings were OK. We determined this by looking at the sun through the back of the mirror. The sun's image appears as a faint bluish disk which, if the coating is in good shape, should be the same brightness no matter which part of it you're looking through. There were a few pinholes, but these have negligible effect on total reflectivity. Tilting the main mirror sidewise revealed the yellowish-brown cast of a quartz overcoating. In all, the coatings are in good shape for a mirror manufactured in the early eighties, assuming no recoating since the original was applied.

The fiberglass tube is just over sixteen inches in diameter and nearly seven feet long. Bob and I decided that the tube needed painting. Caulk and paint specifically for fiberglass are available for boats and are costly. Moreover, a coat of primer has to be applied before the finishing coat. I obtained the paint, three cans in all - one of white primer, one of white paint, and one of flat black paint. We carefully filled the unused holes with caulk. That took one whole session because we had to wait overnight for it to harden. We next cleaned off the outside of the tube with tile cleaner and sanded down any rough spots. Applying a coat of primer took up another session. Since I'm taller than Bob, he did the bottom of the tube. I did the top. That's a sensible division of labor. In each of the next two sessions we applied another finishing coat to the outside of the tube.

We then cleaned and painted the inside of the tube. Painting was accomplished using a narrow roller attached to the end of a long pole, normally used to paint high, out-of-reach places. This didn't take very long at all, which was a pleasant surprise.

Bob, mechanically inclined fellow that he is, took the focuser home, disassembled it, replaced the single gear knob with easy-to-grip knobs, lubricated the assembly and reassembled it.

Amazingly, there were no parts left over . . .

What turned out to be a major time consumer? Replacement of worn or rusted hardware! We must have made half a dozen trips to hardware stores to get nylon collars, stainless steel screws and bolts.

The tube is mounted in rings that allow it to rotate. Bob and I took a look at the ring assembly and concluded that it was (British technical term) bugged. We decided to replace the nylon inserts on which the tube rotated. Also, we had to rethread the bolts and nuts holding them in because corrosion, several layers of old paint, and improper handling had made the threads, both male and female, unturnable. This all took quite a while to straighten out. Bob and I were exhausted after finally getting this done.

Cleaning the optics was a piece of cake after wrestling with the mechanical stuff. Bob brought in three tubs. One we filled with distilled water and added a little detergent. The next tub we filled with plain distilled water for rinsing. The last tub we left empty to allow the ninety percent isopropyl alcohol run off after we had poured it onto the mirror for a final "rinse." Removing some of the soiled spots on the mirror required some persuasion with lint-free cotton swabs. We managed to clean both mirrors without scratching the coatings.

After cleaning, we put the secondary back into its holder and the primary back into its cell. We used new nylon spacers to center the mirror cell in the tube, which was an inch or so larger in diameter than the mirror cell.

Collimation took me about half an hour using Bob's laser collimator. The 'scope is now properly collimated.

Bob had to remove the two coats of paint he had applied to the inside of the tube's end caps.

What with primer plus two coats on the tube, the painted end caps would no longer fit over the ends of the tube! He used a drill with a wire brush attachment to remove the unneeded coats of paint. Since the end caps are aluminum, there is no worry about corrosion.

Working as we did, one Tuesday a week starting in the morning, the project stretched out over 5 months from June 24th November 4th. A total of ninety-nine man hours were devoted to this project.

My advice? NEVER volunteer!

International Year of Astronomy

Introducing 12 easy ways to share the excitement of the International Year of Astronomy (IYA) during 2009. Monthly IYA Discovery Guides are internationally accessible and complete with articles, activities, instructional videos, and finder charts.

The Night Sky Network, Astronomical Society of the Pacific, National Science Foundation, NASA, and the IYA US committee have teamed up to provide these great resources that support NASA's monthly themes and featured celestial objects. Join skygazers worldwide in a renewed appreciation of the universe. Download your free IYA Discovery Guides at:

www.astro.society.org/iya/guides.html

These guides are part of a fully searchable online database filled with easy-to-use activities, loved by amateur astronomers and other educators nationwide and proven to engage and inspire. Explain the universe, from eclipses to black holes with simple models, presentations, and hands-on demonstrations. See for yourself at **<http://nightsky.jpl.nasa.gov/download-search.cfm>**

You can learn more about the Astronomical Society of the Pacific's IYA activities and programs online at **<http://www.astro.society.org/iya/>** and the US IYA initiatives at

<http://astronomy2009.us/>

- Marni Berendsen, Vivian White, and Kenneth Frank, *Astron. Society of the Pacific*

Dawn Glides Into New Year

JPL's Dawn spacecraft is now gliding toward a Mars flyby in February of next year.

"Dawn has completed the thrusting it needs to use Mars for a gravity assist to help get us to Vesta," said Marc Rayman, Dawn's chief engineer. "Dawn will now coast in its orbit around the sun for the next half a year before we again fire up the ion propulsion system to continue our journey to the asteroid belt."

Dawn's ion engines may get a short workout next January to provide any final orbital adjustments prior to its encounter with the Red Planet. Ions are also scheduled to fly out of the propulsion system during some systems testing in spring. But mostly, Dawn's three ion engines will remain silent until June, when they will again speed Dawn toward its first appointment, with asteroid Vesta.

Dawn's ion engines are vital to the success of the mission's 8-year, 3-billion-mile journey to asteroid Vesta and dwarf planet Ceres. One of these extremely frugal powerhouses can generate more than 24 hours of thrusting while consuming about 9 ounces of the spacecraft's xenon fuel supply -- less than the contents of a can of soda. Over their lifetime, Dawn's three ion propulsion engines will fire cumulatively for about 50,000 hours (over five years) -- a record for spacecraft.

Dawn will begin its exploration of asteroid Vesta in 2011 and the dwarf planet Ceres in 2015. These two icons of the asteroid belt have been witness to so much of our solar system's history. By utilizing the same set of instruments at two separate destinations, scientists can more accurately formulate comparisons and contrasts. Dawn's science instrument suite will measure shape, surface topography, tectonic history, elemental and mineral composition, and will seek out water-bearing minerals. In addition, the Dawn spacecraft itself and how it orbits both Vesta and Ceres will be used to measure the celestial bodies' masses and gravity fields.

Additional information about Dawn is online at <http://www.nasa.gov/dawn> and <http://dawn.jpl.nasa.gov>.

- from *NASA News*, Nov. 20, 2008

NASA Invites Students to Name New Mars Rover

NASA is looking for the right stuff, or in this case, the right name for the next Mars rover. NASA, in cooperation with Walt Disney Studios Motion Pictures' movie WALL-E from Pixar Animation Studios, will conduct a naming contest for its car-sized Mars Science Laboratory rover that is scheduled for launch in 2009.

The contest is open to students 5 to 18 years old who attend a U.S. school and are enrolled in the current academic year. To enter the contest, students will submit essays explaining why their suggested name for the rover should be chosen. Essays must be received by Jan. 25, 2009. In March 2009, the public will have an opportunity to rank nine finalist names via the Internet as additional input for judges to consider during the selection process. NASA will announce the winning rover name in April 2009.

Disney will provide prizes to students submitting winning essays, including a trip to NASA's Jet Propulsion Laboratory in Pasadena, Calif., where the rover is under construction. The grand prize winner will have an opportunity to place a signature on the spacecraft and take part in the history of space exploration.

"Mars exploration has always captured the public imagination," said Mark Dahl, program executive for the Mars Science Laboratory. "This contest will expand our ability to inspire students' interest in science and give the public a chance to participate in NASA's next expedition to Mars."

The contest coincides with Walt Disney Studios Home Entertainment's release of WALL-E on DVD and Blu-ray. The naming contest partnership is part of a Space Act Agreement between NASA and Disney designed to use the appeal of WALL-E in educational and public outreach efforts.

The Mars Science Laboratory rover will be larger and more capable than any craft previously sent to land there. It will check whether the environment in a carefully selected landing region ever has been favorable for supporting microbial life. The rover will search for minerals that formed in the presence of water and look for several chemical building blocks of life.

"We are now in a phase when we're building and testing the rover before its journey to Mars," said John Klein, deputy project manager for the Mars Science Laboratory. "As the rover comes together and begins to take shape, the whole team can't wait to call it by name."

Additional assignments include imaging its surroundings in high definition, analyzing rocks with a high-powered laser beam, inspecting rocks and soil with a six-foot robotic arm, and cooking and sniffing rock powder delivered from a hammering drill to investigate what minerals are in Martian rocks.

Information about the contest is available at <http://marsrovername.jpl.nasa.gov> . More information on Mars Science Laboratory is at <http://marsprogram.jpl.nasa.gov/msl/> .

- from NASA News, November 18, 2008

New Request from NASA For Lunar Imaging

A new online discussion group has been set up to facilitate amateur participation in NASA's LCROSS Observation Campaign. This group is designed to facilitate amateur participation in the LCROSS mission, posting and sharing images that will be of scientific value before launch, during flight, and during impact.

You can join the group by visiting http://groups.google.com/group/lcross_observation.

Observations by amateur astronomers will help refine new protocols for observing the moon and increase our knowledge of the moon.

During the months leading up to the launch, amateur astronomers are encouraged to image the north and south poles of the moon. The goal is to obtain images that determine the scale of recognizable features observed in the wider field of view on amateur telescopes when compared the higher spatial resolution near-infrared IRTF images. A secondary goal is to compare the dynamic range of images that allow the verification of detection of subtle variations in topography and albedo. This exercise also may help amateurs to prepare for obtaining images of the impact plumes. The impact plumes will occur in shadowed regions, but these shadowed regions likely will be adjacent to lit regions of the moon.

NASA's LCROSS mission is scheduled to fly in 2009. It is co-manifested with LRO; both missions will launch together aboard an Atlas V out of Cape Canaveral, Fla. LCROSS will use the Centaur upper stage of the launch vehicle as a kinetic impactor directed at 2.5 km/s into one of the permanently-shadowed craters at the Moon's pole. The LCROSS spacecraft will fly directly through the resulting plume of debris, analyzing it for signs of water ice that may have accumulated within the crater. The debris plume will also be studied by space-based assets (such as LRO, and HST), ground-based observatories, and amateur telescopes. Researchers believe that the LCROSS impact plume may well be observable in amateur telescopes, and that amateurs may be able to take on a valuable role in this exciting mission.

- from Brian H. Day, AETT Technical Lead, LCROSS E/PO Lead, Brian.H.Day@nasa.gov

Second Group of Mercury Craters Named

The International Astronomical Union (IAU) recently approved a proposal from the MESSENGER Science Team to name 15 craters on Mercury. All of the newly named craters were imaged during the mission's first flyby of the solar system's innermost planet in January 2008.

The IAU has been the arbiter of planetary and satellite nomenclature since its inception in 1919. In keeping with the established naming theme for craters on Mercury, all of the craters are named after famous deceased artists, musicians, or authors.

"We're pleased that the IAU has again acted promptly to approve this new set of names for prominent craters on Mercury," says MESSENGER Principal Investigator Sean Solomon. "These latest names honor a diverse suite of some of the most accomplished contributors to mankind's

higher aspirations. They also make it much easier for planetary scientists to refer to major features on Mercury in talks and publications.”

The newly named craters include:

- Amaral, after Tarsila do Amaral of Brazil, one of the leading Latin American modernist artists.
- Dalí, after Salvador Dalí, a Spanish painter and leader of the Surrealist Movement.
- Enwonwu, after sculptor and painter Benedict Chukwukadibia Enwonwu, the most renowned Nigerian artist of the 20th century.
- Glinka, after Mikhail Glinka, a Russian composer, the “father” of genuinely Russian music.
- Hovnatanian, after Hakop Hovnatanian, an Armenian painter known for his portraits.
- Beckett, after Clarice Beckett, one of Australia's most important modernist artists.
- Moody, after Ronald Moody, a self-taught, Jamaica-born sculptor and painter who found success in mid-20th-century London and Paris.
- Munch, after Edvard Munch, a Norwegian Symbolist painter, printmaker, and draftsman, known for his painting *The Scream*.
- Navoi, after Alisher Navoi, a 15th century Uzbek poet, the founder of early Turkic literature.
- Nawahi, after Joseph Nawahi, a self-taught artist, lawyer, educator, publisher, member of the Hawaiian legislature for many years, and principal adviser to Hawaii's Queen Lili'uokalani.
- Oskison, after John Milton Oskison, a Cherokee author who served as editor and editorial writer for the *New York Evening Post*.
- Poe, after Edgar Allan Poe, American poet, critic, editor, and author. Best known for his tales of mystery and the macabre.
- Qi Baishi, after Qi Baishi, a Chinese painter known for his whimsical water colors.
- Raden Saleh, after Raden Saleh, a 19th century Javanese naturalist painter, first modern artist from what is now Indonesia.
- Sher-Gil, after Amrita Sher-Gil, an eminent Indian painter, an important female painter of 20th-century India.

An image of Mercury showing the locations of the newly named features is available online at http://messenger.jhuapl.edu/gallery/sciencePhotos/image.php?gallery_id=2&image_id=276. The addition of these craters, along with the 12 features named in April, brings the total to 27 newly named surface features for Mercury in 2008. In September 2009 MESSENGER will complete a third and final flyby of Mercury before becoming the first spacecraft to orbit the planet, beginning in March 2011.

- **MESSENGER Mission News**, November 26, 2008, <http://messenger.jhuapl.edu>

ISS Toolbag

A backpack-sized tool bag inadvertently dropped from the International Space Station last week is orbiting Earth and has been sighted from the ground. The tool bag is surprisingly bright, about 6th or 7th magnitude, which makes it an easy target for binoculars or a small telescope. <http://spaceweather.com> offers observing tips, sighting reports and a movie of the bag in orbit.

- *Space Weather News for Nov. 25th*, <http://spaceweather.com>

Venus and Jupiter Converge

Venus and Jupiter are converging for a spectacular three-way conjunction with the crescent Moon on December 1, a rare gathering some astronomers are calling 'the sky show of the year.' The full story can be found at

http://science.nasa.gov/headlines/y2008/24nov_skyshow.htm?list221872

- *NASA Science News for November 24, 2008*

NASA Prepares for New Juno Mission to Jupiter

NASA is officially moving forward on a mission to conduct an unprecedented, in-depth study of Jupiter.

Called Juno, the mission will be the first in which a spacecraft is placed in a highly elliptical polar orbit around the giant planet to understand its formation, evolution and structure. Underneath its dense cloud cover, Jupiter safeguards secrets to the fundamental processes and conditions that governed our early solar system.

The spacecraft is scheduled to launch aboard an Atlas rocket from Cape Canaveral, Fla., in August 2011, reaching Jupiter in 2016. The spacecraft will orbit Jupiter 32 times, skimming about 3,000 miles over the planet's cloud tops for approximately one year. The mission will be the first solar powered spacecraft designed to operate despite the great distance from the sun.

The spacecraft will use a camera and nine science instruments to study the hidden world beneath Jupiter's colorful clouds. The suite of science instruments will investigate the existence of an ice-rock core, Jupiter's intense magnetic field, water and ammonia clouds in the deep atmosphere, and explore the planet's aurora borealis.

"In Greek and Roman mythology, Jupiter's wife Juno peered through Jupiter's veil of clouds to watch over her husband's mischief," said Professor Toby Owen, co-investigator. "Our Juno looks through Jupiter's clouds to see what the planet is up to, not seeking signs of misbehavior, but searching for whispers of water, the ultimate essence of life."

Understanding the formation of Jupiter is essential to understanding the processes that led to the development of the rest of our solar system and what the conditions were that led to Earth and humankind. Similar to the sun, Jupiter is composed mostly of hydrogen and helium. A small percentage of the planet is composed of heavier elements. However, Jupiter has a larger percentage of these heavier elements than the sun.

"Juno's extraordinarily accurate determination of the gravity and magnetic fields of Jupiter will enable us to understand what is going on deep down in the planet," said Professor Dave Stevenson, co-investigator. "These and other measurements will inform us about how Jupiter's constituents are distributed, how Jupiter formed and how it evolved, which is a central part of our growing understanding of the nature of our solar system."

Deep in Jupiter's atmosphere, under great pressure, hydrogen gas is squeezed into a fluid known as metallic hydrogen. At these great depths, the hydrogen acts like an electrically conducting metal which is believed to be the source of the planet's intense magnetic field.

Jupiter also may have a rocky solid core at the center.

The Juno mission is the second spacecraft designed under NASA's New Frontiers Program. The first was the Pluto New Horizons mission, launched in January 2006 and scheduled to reach Pluto's moon Charon in 2015. The program provides opportunities to carry out several medium-class missions identified as top priority objectives in the Decadal Solar System Exploration Survey, conducted by the Space Studies Board of the National Research Council.

For more information about the Juno mission, visit: <http://juno.nasa.gov>

- *NASA News release*

NASA Tests First Deep-Space Internet

NASA has successfully tested the first deep space communications network modeled on the Internet.

Working as part of a NASA-wide team, engineers from NASA's Jet Propulsion Laboratory used software called Disruption-Tolerant Networking, or DTN, to transmit dozens of space images to and from a NASA science spacecraft located about more than 20 million miles from Earth.

"This is the first step in creating a totally new space communications capability, an interplanetary Internet," said Adrian Hooke, team lead.

NASA and Vint Cerf, a vice president at Google, Inc., in Mountain View, Calif., partnered 10 years ago to develop this software protocol. The DTN sends information using a method that

differs from the normal Internet's Transmission-Control Protocol/Internet Protocol, or TCP/IP communication suite, which Cerf co-designed.

The Interplanetary Internet must be robust enough to withstand delays, disruptions and disconnections in space. Glitches can happen when a spacecraft moves behind a planet, or when solar storms and long communication delays occur. The delay in sending or receiving data from Mars takes between three-and-a-half to 20 minutes at the speed of light.

Unlike TCP/IP on Earth, the DTN does not assume a continuous end-to-end connection. In its design, if a destination path can't be found, the data packets are not discarded. Instead, each network node keeps custody of the information as long as necessary until it can safely communicate with another node. This store-and-forward method, similar to basketball players safely passing the ball to the player nearest the basket, means that information does not get lost when no immediate path to the destination exists. Eventually, the information is delivered to the end user.

"In space today, an operations team has to manually schedule each link and generate all the commands to specify which data to send, when to send it, and where to send it," said Leigh Torgerson, manager of the DTN Experiment Operations Center. "With standardized DTN, this can all be done automatically."

Engineers began a month-long series of DTN demonstrations in October. Data were transmitted using NASA's Deep Space Network in demonstrations occurring twice a week. Engineers use NASA's Epoxi spacecraft as a Mars data-relay orbiter. Epoxi is on a mission to encounter Comet Hartley 2 in two years.

"There are 10 nodes on this early interplanetary network," said Scott Burleigh of JPL, lead software-engineer. "One is the Epoxi spacecraft itself and the other nine, which are on the ground at JPL, simulate Mars landers, orbiters and ground mission-operations centers."

This month-long experiment is the first in a series of planned demonstrations to qualify the technology for use on a variety of upcoming space missions. In the next round of testing, a NASA-wide demonstration using new DTN software loaded on board the International Space Station is scheduled to begin next summer.

In the next few years, the Interplanetary Internet could enable many new types of space missions. Complex missions involving multiple landed, mobile and orbiting spacecraft will be far easier to support through the use of the Interplanetary Internet. It could also ensure reliable communications for astronauts on the surface of the moon.

- *NASA News Release*

First Visible-Light Photos of Planets Circling Other Stars

The Hubble Space Telescope has taken a photo of a planet about three times the mass of Jupiter, orbiting the bright southern star Fomalhaut. The planet, called Fomalhaut b, orbits the bright southern star Fomalhaut located 25 light-years from Earth.

And the Gemini North telescope at the Keck Observatory has imaged three planets, a "planetary family", around a young, massive star called HR 8799.

For more information:

- Hubble Directly Observes a Planet Orbiting Another Star
http://science.nasa.gov/headlines/y2008/13nov_fomalhaut.htm?list221872 (NASA Science News)
- Hubble Directly Observes a Planet Orbiting Another Star
<http://hubblesite.org/newscenter/archive/releases/2008/39/text/> (Hubble press release)
- Gemini Releases Historic Discovery Image of Planetary First Family
<http://www.gemini.edu/threeplanetspr> (Gemini press release)
- Exoplanets Photographed <http://alicesastroinfo.wordpress.com/2008/11/13/exoplanets-photographed/> - (Astro Info blog from Alice Enevoldsen at the Pacific Science Center)

- Hubble Takes First Light Image of Extrasolar Planet
<http://www.universetoday.com/2008/11/13/hubble-take-first-visible-light-image-of-extrasolar-planet/> (Universe Today)
- First Image of Another Multi-Planet Solar System
<http://www.universetoday.com/2008/11/13/first-image-of-another-multi-planet-solar-system/> (Universe Today)
- Hubblecast 22: Hubble directly observes planet orbiting Fomalhaut
<http://www.spacetelescope.org/videos/html/heic0821a.html> (video about the Hubble discovery)

NASA Education Spacesuits and Spacewalks Web site

With the upcoming space shuttle missions continuing construction on the International Space Station and to provide maintenance to the Hubble Space Telescope, the importance of spacewalks and the reliance on spacesuits are taking center stage. To help educators share these topics with their students, NASA Education has unveiled a new Web site.

The NASA Education Spacesuits and Spacewalks Web site brings a wealth of educational resources together in one place.

Visitors to the Web site can check out the Clickable Spacesuit and learn about the different parts of a spacesuit, take a look at videos about the spacesuits of the future, watch Brain Bites videos and learn about hard-to-do moves in a spacesuit, take a step back in time and visit the Spacesuit History Gallery, explore the Educational Activities, read about spacesuit designers and engineers who create and test spacesuits, and discover other NASA Web sites with information about spacesuits and spacewalks. www.nasa.gov/education/spacesuits

- *NASA Education EXPRESS mailing list*



The Space Place

What Happened to Comet Holmes?

by Dr. Tony Phillips

One year after Comet 17P/Holmes shocked onlookers by exploding in the night sky, researchers are beginning to understand what happened.

"We believe that a cavern full of ice, located as much as 100 meters beneath the crust of the comet's nucleus, underwent a change of phase," says Bill Reach of NASA's Spitzer Science Center. "Amorphous ice turned into crystalline ice" and, in the transition, released enough heat to cause Holmes to blow its top.

Anyone watching the sky in October 2007 will remember how the comet brightened a million-fold to naked-eye visibility. It looked more like a planet than a comet—strangely spherical and utterly lacking a tail. By November 2007, the expanding dust cloud was larger than Jupiter itself, and people were noticing it from brightly-lit cities.

Knowing that infrared telescopes are particularly sensitive to the warm glow of comet dust, Reach and colleague Jeremie Vaubaillon applied for observing time on the Spitzer Space Telescope—and they got it. "We used Spitzer to observe Comet Holmes in November and again in February and March 2008," says Reach.

The infrared glow of the expanding dust cloud told the investigators how much mass was involved and how fast the material was moving. "The energy of the blast was about 10¹⁴ joules

and the total mass was of order 10¹⁰ kg." In other words, Holmes exploded like 24 kilotons of TNT and ejected 10 million metric tons of dust and gas into space.

These astonishing numbers are best explained by a subterranean cavern of phase-changing ice, Reach believes. "The mass and energy are in the right ballpark," he says, and it also explains why Comet Holmes is a "repeat exploder."

Another explosion was observed in 1892. It was a lesser blast than the 2007 event, but enough to attract the attention of American astronomer Edwin Holmes, who discovered the comet when it suddenly brightened. Two explosions (1892, 2007) would require two caverns. That's no problem because comets are notoriously porous and lumpy. In fact, there are probably more than two caverns, which would mean Comet Holmes is poised to explode again.

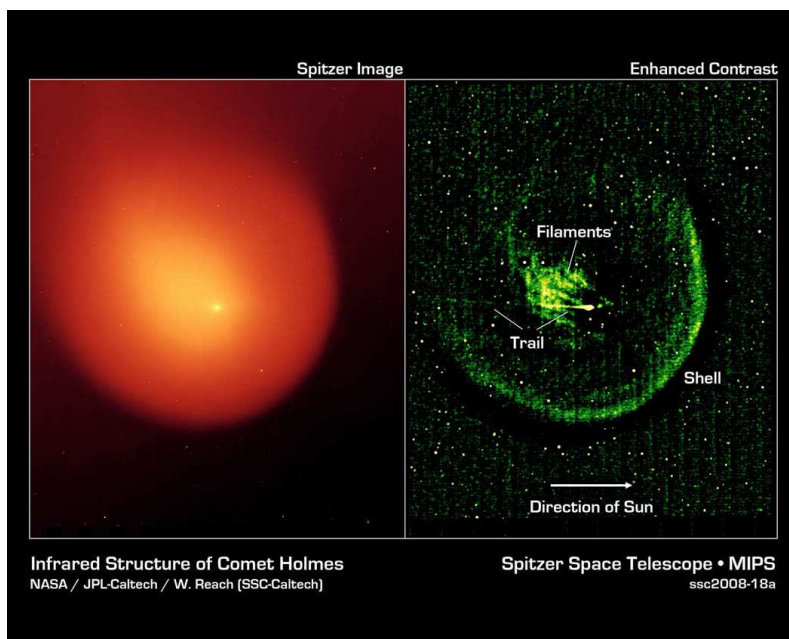
When?

"The astronomer who can answer that question will be famous!" laughs Vaubaillon.

"No one knows what triggered the phase change," says Reach. He speculates that maybe a comet-quake sent seismic waves echoing through the comet's caverns, compressing the ice and changing its form. Or a meteoroid might have penetrated the comet's crust and set events in motion that way. "It's still a mystery."

But not as much as it used to be.

See more Spitzer images of comets and other heavenly objects at www.spitzer.caltech.edu. Kids and grownups can challenge their spatial reasoning powers by solving Spitzer infrared "Slider" puzzles at <http://spaceplace.nasa.gov/en/kids/spitzer/slider>.



Caption:

Comet Holmes as imaged by the multiband imaging photometer (MIPS) on the Spitzer Space Telescope. The enhanced contrast image at the right shows the comet's outer shell and mysterious filaments of dust.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Monthly IYA Discovery Guides

Join amateur astronomers worldwide and plan your 2009 events to include the featured observing object and activity. Download your free IYA Discovery Guides here: <http://www.astrosociety.org/iya/guides.html>

A fully searchable online database of Night Sky Network activities

Go to Night Sky Network and click on "Access NSN Activities" or go here: <http://nightsky.jpl.nasa.gov/download-search.cfm>

And those are just the publicly accessible resources. Log into the NSN and

access more by selecting "Download Astronomy Outreach Resources."

Free NASA handouts for Active NSN clubs

Club Coordinators of Active NSN clubs may request free handouts directly from NASA and others. Log into NSN and select "Request Outreach Handouts/Giveaways." To ensure your items arrive in time, place your request at least six to eight weeks before your event.

How to get your club involved

Download the official IYA 5-minute video and show it to your club members. IYA Introduction video: http://nightsky.jpl.nasa.gov/download-view.cfm?Doc_ID=316
Play this special IYA song by AstroCappella about Galileo and telescopes. Shoulders of Giants: http://nightsky.jpl.nasa.gov/download-view.cfm?Doc_ID=314

Monthly telecons for NSN members

Thursday, December 11th, 6 pm Pacific:

"IYA 2009 Night Sky Network Kick-off" with Dr. Stephen Pompea, Project Director for the US IYA Committee and Dr. Andrea Schweitzer, Project Manager of the USA IYA Committee.

Join amateur astronomers around the globe as together we connect millions with the universe. One Earth. One Sky. Share the discovery!

- *Marni Berendsen, Kenneth Frank and Vivian White, Night Sky Network Administrators*

SWFAS Minutes – November 6, 2008

7:30 – Bob Francis – President: Bob called meeting to order.

Welcome to new members and visitors. Bob sees some new faces and some old faces! Welcome back members from the North! To all new faces, an introduction to the club and how to become a member. Bob also commented to join the club, one does not need to own a telescope.

Caloosahatchee Regional Park – John Martin has taken over this position for Steve Nelson. Viewing dates have been set for November 22nd and December 20th. John will email members as a reminder. If you don't have a computer, call John or Bob Francis that afternoon.

Christa McAuliffe Elementary in Cape Coral is requesting the club hold a Star Party on January 30th. Cape Coral Rotary Club is also requesting SWFAS to hold a Star Party on March 6th. SWFAS held a Star Party for them last year. It was enjoyable and a success.

Eva Barra, Regional Manager of the Lehigh Acres Library and NASA will be putting up an exhibit "Visions of the Universe." 40 libraries throughout the United States will be getting this exhibit. Eva requested a letter from SWFAS to go to NASA requesting to have the exhibit. On October 28th, the library was selected as one of the 40 libraries! SWFAS will be supporting this event. Dates and details are being finalized.

Mike Harden – Vice President: Not present

Karen Nichols – Secretary: Minutes of the meeting is in the Newsletter.

Ramona Huddleston – Treasurer: Not present. The treasurer's report will be read at the December meeting.

Carole Holmberg – Newsletter Editor: 2009 is the 400th Anniversary of the telescope! The goal is to have every single person look through a telescope in 2009. One can purchase a Galileo telescope for under \$50. Carole would like to club to rise up and shine for this event. We can do our part for everyone in Southwest Florida to look through a telescope!

Charlie Paul & Chuck Pavlick– FAK: Both Chuck & Charlie went to the FAK and reported the skies were good for one hour, then was clouded over. This summer was one of the worst weather conditions to observe. Observing at the FAK happens the 2 weekends of the new moon.

Caloosahatchee Regional Park – On October 25th, a group went out. Tuesday night was clear and a great night to observe. Bikers were present, but left. This park is also a good alternative to FAK. It has more light pollution, but is a lot closer than the FAK.

Jamie Knaub – Librarian: Not present.

Danny Secary – Historian: Not present.

Sanders Lewallen – Present. He is out back setting up the telescopes to observe tonight.

Dan Fitzgerald – Webmaster: Not present. If anyone has photos they would like to put on the website, contact or send them to Dan.

Bob Francis: Membership- We are accepting SWFAS memberships for 2009. To join is \$20.00 which is from January 01,2009 to December 31, 2009. With the membership you will receive the club's newsletter, Reflector magazine, be a member of the Astronomical League. Membership fees will be collected by the Treasurer.

Elections: December SWFAS has elections for the officers. The Officer positions are President, Vice President, Secretary and Treasurer. Presently, Bob Francis is willing to remain president if he is nominated. The Vice President position is open. The Secretary position is open. The Treasurer's position is open, but has an interested candidate to fill it. A financial audit needs to be done. Newsletter Editor: Carole will continue hold this position.

Bob Francis showed the club the 2008 Star Party photos from Key West.

Meeting adjourned at 8:10

Observation of the skies through the telescopes was conducted behind the Planetarium.

Calendar of Events

Thursday, December 4th, 7:30 pm, **Meeting at the Calusa Nature Center Planetarium**

Saturday, December 20th, dusk, **Observing at Caloosahatchee Regional Park**

Thursday, January 1st, **NO MEETING. We will be holding our meeting later in the month.**

Friday, January 30th, 6-10 pm, **Observing at Christa McAuliff Elementary in Cape Coral**

Friday, March 6th, **Observing at Cape Coral Rotary Club**

Southwest Florida Astronomical Society, Inc.

P.O. Box 100127

Cape Coral, FL 33910

www.theeyepiece.org