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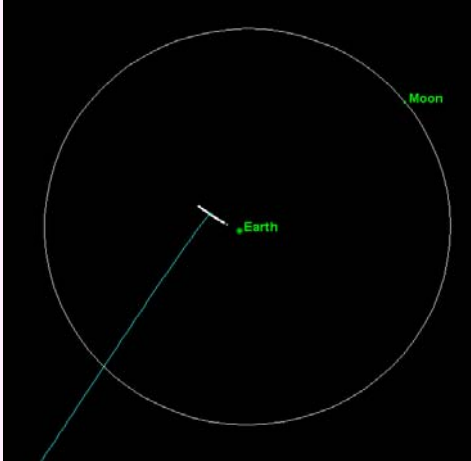
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Near-Earth Asteroid 2004 MN4 Reaches Highest Score To Date On Hazard Scale

Don Yeomans, Steve Chesley and Paul Chodas
NASA's Near Earth Object Program Office



December 23, 2004

A recently rediscovered 400-meter Near-Earth Asteroid (NEA) is predicted to pass near the Earth on 13 April 2029. The flyby distance is uncertain and an Earth impact cannot yet be ruled out. The odds of impact, presently around 1 in 300, are unusual enough to merit special monitoring by astronomers, but should not be of public concern. These odds are likely to change on a day-to-day basis as new data are received. In all likelihood, the possibility of impact will eventually be eliminated as the asteroid continues to be tracked by astronomers around the world.

As this issue was being finalized, further refinement of the asteroid's orbit has ruled out any possibility of collision in 2029. Above: Updated set of possible positions of 2004 MN4 on April 13, 2029 provided by Paul Chodas.

This object is the first to reach a level 2 (out of 10) on the Torino Scale. According to the Torino Scale, a rating of 2 indicates "a discovery, which may become routine with expanded searches, of an object making a somewhat close but not highly unusual pass near the Earth. While meriting attention by astronomers, there is no cause for public attention or public concern as an actual collision is very unlikely. New telescopic observations very likely will lead to re-assignment to Level 0 [no hazard]." This asteroid should be easily observable throughout the coming months.

The brightness of 2004 MN4 suggests that its diameter is roughly 400 meters (1300 feet) and our current, but very uncertain, best estimate of the flyby distance in 2029 is about twice the distance of the moon, or about 780,000 km (480,000 miles). On average, an asteroid of this size would be expected to pass within 2 lunar distances of Earth every 5 years or so.

December 24 Update

2004 MN4 is now being tracked very carefully by many astronomers around the world, and we continue to update our risk analysis for this object. Today's impact monitoring results indicate that the impact probability for April 13, 2029 has risen to about 1.6%, which for an object of this size corresponds to a rating of 4 on the ten-point Torino Scale (http://neo.jpl.nasa.gov/torino_scale1.html). Nevertheless, the odds against impact are still high, about 60 to 1, meaning that there is a better than 98% chance that new data in the coming days, weeks, and months will rule out any possibility of impact in 2029.

The Meteor Crater in the state of Arizona was the first crater to be identified as an impact crater. Between 20,000 to 50,000 years ago, a small asteroid about 80 feet in diameter impacted the Earth and formed the crater. The crater is the best preserved crater on Earth and measures 1.2 km in diameter.

Image from the Smithsonian Scientific Series (1938), public domain.



1882 U.S. Naval Observatory Expedition Commemorated

In 1882, the U.S. Naval Observatory sent Asaph Hall, discoverer of Mar's moons, to Fort Sam Houston to observe the transit of Venus. One hundred and twenty-two years later, a plaque was erected at their observing site commemorating that expedition. The historical marker was the brain child of JSCAS' Expedition Leader, Dr. Paul Maley. It was through Paul's hard work and unrelenting efforts that money was raised and permission was granted to erect the marker. Thank you Paul!



On December 3, 2004, a small delegation of JSCAS members traveled from Houston to San Antonio to attend the dedication ceremonies. The JSCAS delegation included president, Bob Taylor, and members Don Halter, Hernan Contreras, Triple Nickel, Ron Rosenwald, and Carl Reynolds.

Thoughts on the Transit of Venus Historical Marker

Paul D. Maley

I spent most of the first 18 years of my life living in San Antonio. One night in 1959, after sunset, I



Col Gary Atkins (L) and Paul Maley (R) unveil the historical marker.

was walking down my street and noticed somebody peering through a telescope at the moon. He offered me a look and perhaps this was the moment that my interest in astronomy was ignited. Shortly after that, in 1960, the first artificial earth satellite, Echo I, that could easily be seen with the naked eye was launched. Viewing predictions were provided in the San Antonio Express. I went outside one night and watched Echo moving through what was then a dark urban sky at magnitude 0, and then mysteriously disappear. I later learned that this was due to the satellite passing into the earth's shadow. Not long after, I was

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able to attend a local astronomical society meeting and found out about a class at the Witte Museum on introductory astronomy. This class was taught by Mrs. Aline B. Carter, who later became a sort of mentor. This lady was self taught and lived in a large house in the center of San Antonio that still stands today. Her observatory, which in 1960 housed a 4-inch refractor that she had purchased in New York, sits on top.

This was the sum and substance of the circumstances surrounding my entry into amateur astronomy. There were no historical events or even large observatories or meteorite craters anywhere near where I lived. In early 2003, as I was gathering research material to prepare for our JSCAS expedition to Mauritius to observe the transit of Venus in June 2004, one of my cats ran across a pile of *Sky&Telescope* magazines lying on the floor. It revealed an article about an adventurous astronomer named Jean Houzeau. The account described, among other things, his travels to San Antonio to observe the transit of Venus of December 6, 1882. This article led me to still another one by David Evans and Donald Olson on the U.S. Naval Observatory expedition to San Antonio at the same time. After reading this article in the *Southwest Historical Quarterly* (published in 1990), I was inspired to do something to create a historical marker commemorating these two events, that had occurred without much notice, in my home town.



Left to right, Triple Nickel, Bob Taylor, Ron Rosenwald, Don Halter, Hernan Contreras, Carl Reynolds, and Paul Maley.

Over the past year, I have worked to try to convince the administration at Ft. Sam Houston to consider the possibility of marking the site where the USNO observations occurred. There was some dispute as to the exact location. I made a total of 5 trips there, finally pinning down the location of the equatorial telescope and the transit instrument using modern GPS technology and with some coordinate transformation assistance from a colleague at NOAA.

The key was a set of notes by the USNO expedition leader, Asaph Hall, where he described the latitude and longitude of some key markers including the Quadrangle Tower, built in 1876, which remains today. I resurveyed these same points and confirmed the coordinates of the two 1882 observing points as being just outside a chain link fence next to an officer's quarters and an asphalt driveway.

After lobbying with the Ft. Sam Houston Museum, they took the case to the commanding General, Daniel Perugini, who last May authorized the creation and funding to erect the marker which was inaugurated on Dec. 3 of this year. Unfortunately the marker doesn't mention JSCAS, but I am proud to say that our society played the pivotal role in its development.

NEXT PHASE

Also this year, I worked very hard to build a good case for establishing a different monument to the Belgian astronomer Houzeau, whose observing site was 500m west of the USNO location. In November, the Texas historical commission in Austin sent me an email indicating that the applica-

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tion for the marker was approved! More work lies ahead, but the effort to raise funds to buy the marker (required by the state) was reached within two months and the entire cost of \$1250 is now covered.

The next and perhaps final step for me, was to locate the house in Washington DC where Asaph Hall lived and to see if it might also be worthy of a historical marker. Why? Well, Asaph Hall did not just observe the transit; he was the sole discoverer of the moons of Mars - Deimos and Phobos. On December 3rd, immediately after the ceremony in San Antonio, I flew to DC. The next day I found the correlation between the physical address listed for Hall during the period 1877-1882. But this address had changed with the replatting of the city of Georgetown. Luckily there are modern references to the street changes that remain and even maps which I was able to find in the Kiplinger library.

This house is now a church and I met with one of the deacons, Albert Holley, to negotiate the possibility of establishing a marker there to commemorate the residence of this remarkable American astronomer. These discussions are still ongoing. The cost of a small plaque is around \$400. I hope to raise funds for this if I can get a) approval to establish the plaque by the church elders, and b) can find a way to get through the possible red tape. More on this as it develops.

There is more to astronomy than building telescopes and observing the universe. This experience has brought that home to me.

Transit of Venus Expedition Dedication Trip Report

Triple Nickel

The trip was great! It was a proud day for JSCAS and we all should understand that Paul worked harder to make this happen than anyone could have guessed. Just amazing the stuff he does. His speech was fantastic and the commander of the Fort Sam Garrison also gave a great talk with lots of humor thrown in.

Bob "Our Leader" Taylor, loaded six of us (total counting Bob) in his van at 0445 Friday morning and off we went. Bob, Hernan, Ron, Don Halter, Carl Reynolds, and me, Triple. We made fantastic time up and back.



The Fort Sam folks were well prepared for the dedication. They had the local historical society all involved and they even had their 5 piece brass band to play before and after the dedication. There were several cameras of different types recording the event. Lots of history and it was amazing hearing how this group back in 1882 went about making this Venus observation while they were surrounded by hardships.



The ceremony was in the middle of the base housing area. They had chairs set up in the street, just in front of the marker, and three doors down from where Lt. Dwight D. Eisenhower lived. We could see where Geronamo was held, and we were

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told of many historical events about the fort. Funny to think of this Venus event being done while Fort McKavett was occupied as a fort! How did these guys do this stuff?

We headed out after the ceremony and had great BBQ at the Texas Pride BBQ, and managed to get back home around 4pm. A fun trip, a historical trip, and a proud JSCAS trip. Paul Maley is to be commended for his amazing dedication to this effort and his intense research to make this happen. AMAZING!

Wish more could have been there, but JSCAS was certainly represented and it was noticed by all! "We done good!"



Backyard Observatory

Al Kelly



At left is a picture of the completed backyard observatory deck and enclosure for my 17.5" Newtonian. This has been a long time coming. I ended up doing something quite different than my earlier designs, but it looks like it is going to work just fine. The enclosure is called a geodesic "bubble dome" and is often used as a yurt-style tent on long-term expeditions and as a permanent greenhouse in colder climates. It is very rigid, durable, and lightweight, allowing me to easily lift the whole structure off and back onto my scope for observatory operation. The material is a pre-stressed, rip-proof, laminated plastic which is UV-resistant. For extra UV protection, I will wipe it down every couple months with a 100% UV-protection compound called "303". See <http://www.shelter-systems.com/bubble-domes.html> for more info on the structure.



I have been monitoring the inside temperature with a radio-transmitting thermometer and find that the scope, which is blanketed with aluminized Mylar, reaches about 110 degrees on these hot, sunny summer days. This is acceptable, since I keep the optics in the house, installing them in the scope in the evening, just before using it. The tube assembly and mount cool down fairly rapidly.

After a few months of operation, there's not much I would do differently, except if I could find stainless flush-mount ring handles (for enclosure tie-down) I would replace the galvanized ones which are rusting.

Christmas Eve brought snow to the Houston Area. The bubble dome's design held up well in the snow.

What Dr. Arp Missed

Dick Miller

This shot of Arp 180 was made at my observatory in West Point, Texas. It is a stack of 8 two-minute sub-exposures, from a total of 30 that were taken. You should be able to see six trails – the one to the right of the galaxy is very faint. Two trails were split between sub-exposures. The timing of the events was such that if I had been taking 10 minute or longer exposures, I would have had trails on every one.

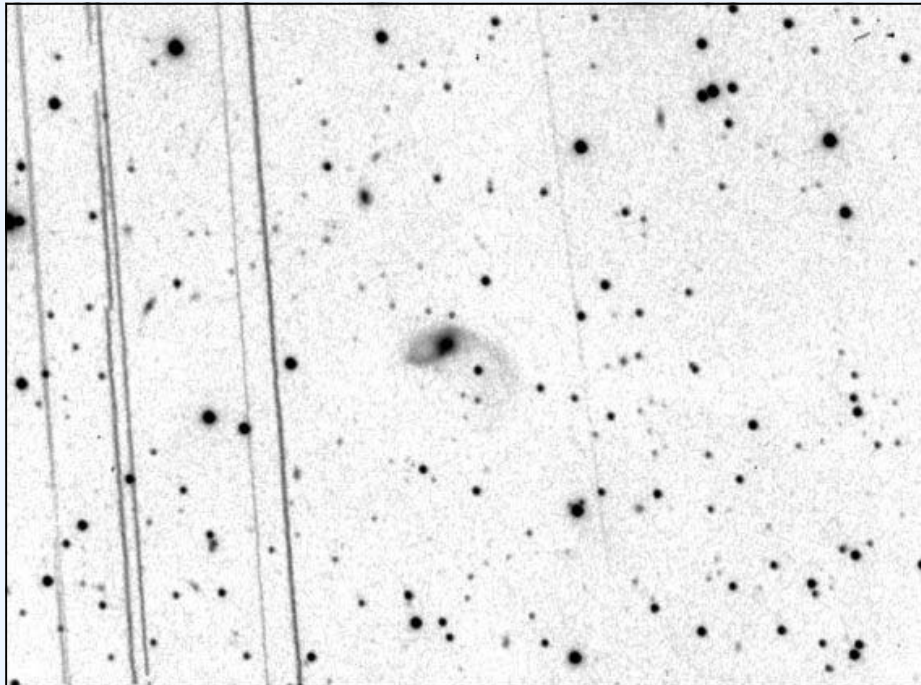
I haven't seen any similar trails in Dr. Arp's photographs, so the question becomes "What are they and why didn't he record any". His exposures were much longer, and time on the 200-inch is hard to get, so I'm sure he didn't discard any images because they included a trail.

Two possibilities come to mind. Note the discontinuity in the second trail from the left (South, in this orientation). It is an important element in the analysis.

The trails were made by satellites in very similar orbits, and also close together in space. Some of the fainter trails are probably boosters or other debris still orbiting close to the satellites themselves. There were far fewer satellites when Dr. Arp was photographing so the odds of him picking one up was very low. The discontinuity was the result of one of the trails crossing the field of my guiding chip. It briefly became the brightest object in the field and the guider locked on to it, sending tracking commands which caused the scope to move abruptly. But it quickly left the field and tracking settled back to normal.

A fleet of Klingon battle cruisers made the trails. As we all know, they were operating in the SMC when Dr. Arp was building his catalog, so he would not have observed them. The discontinuity occurred when one cruiser made a jump to warp speed.

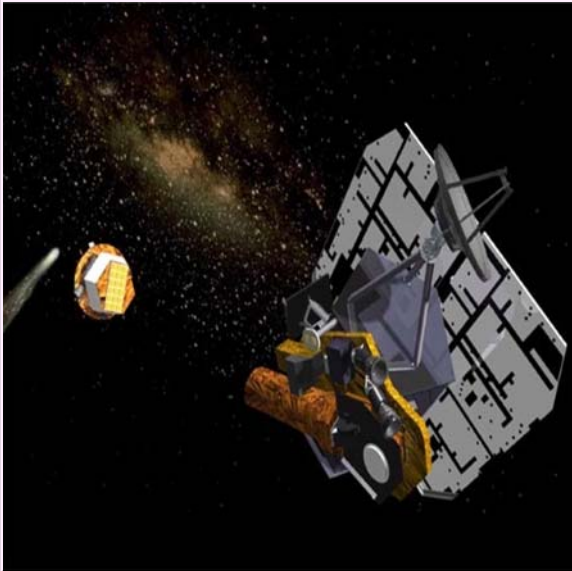
Now, how do we decide between these two scenarios? Well, according to Occam's Razor, the simplest of the competing hypotheses is almost always correct. Since hypothesis 1 is clearly more complicated, it appears that hypothesis 2 is the most reasonable. Any thoughts?



NASA Set to Launch First Comet Impact Probe

Dec. 14, 2004
RELEASE: 04-392

Launch and flight teams are in final preparations for the planned Jan. 12, 2005, liftoff from Cape Canaveral Air Force Station, Fla., of NASA's Deep Impact spacecraft. The mission is designed for a six-month, one-way, 431 million kilometer (268 million mile) voyage. Deep Impact will deploy a probe that essentially will be "run over" by the nucleus of comet Tempel 1 at approximately 37,000 kph (23,000 mph).



This is an artist's rendition of the flyby spacecraft releasing the impactor, 24 hours before the impact event. Pictured from left to right are comet Tempel 1, the impactor, and the flyby spacecraft. The impactor is a 370-kilogram mass with an onboard guidance system. The flyby spacecraft includes a solar panel (right), a high-gain antenna (top), a debris shield (left, background), and science instruments for high and medium resolution imaging, infrared spectroscopy, and optical navigation (yellow box and cylinder, lower left). The fly spacecraft is about 3.2 meters long, 1.7 meters wide, and 2.3 meters high. The launch payload has a mass of 1020 kilograms.

Credit: NASA/JPL

"From central Florida to the surface of a comet in six months is almost instant gratification from a deep space mission viewpoint," said Rick Grammier, Deep Impact project manager at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif. "It is going to be an exciting mission, and we can all witness its culmination together as Deep Impact provides the planet with its first man-made celestial fireworks on our nation's birthday, July 4th," he said.

The fireworks will be courtesy of a 1-by-1-meter (39-by-39 inches) copper-fortified probe. It is designed to obliterate itself, as it excavates a crater possibly large enough to swallow the Roman Coliseum. Before, during and after the demise of this 372-kilogram (820-pound) impactor, a nearby spacecraft will be watching the 6-kilometer (3.7-mile) wide comet nucleus, collecting pictures and data of the event.

"We will be capturing the whole thing on the most powerful camera to fly in deep space," said University of Maryland astronomy professor Dr. Michael A'Hearn, Deep Impact's principal investigator. "We know so little about the structure of cometary nuclei that we need exceptional equipment to ensure that we capture the event, whatever the details of the impact turn out to be," he explained.

Imagery and other data from the Deep Impact cameras will be sent back to Earth through the antennas of the Deep Space Network. But they will

not be the only eyes on the prize. NASA's Chandra, Hubble and Spitzer space telescopes will be observing from near-Earth space. Hundreds of miles below, professional and amateur astronomers on Earth will also be able to observe the material flying from the comet's newly formed crater.

Deep Impact will provide a glimpse beneath the surface of a comet, where material and debris from the solar system's formation remain relatively unchanged. Mission scientists are confident the project will answer basic questions about the formation of the solar system, by offering a better look at the nature and composition of the celestial travelers we call comets.

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"Understanding conditions that lead to the formation of planets is a goal of NASA's mission of exploration," said Andy Dantzler, acting director of the Solar System division at NASA Headquarters, Washington. "Deep Impact is a bold, innovative and exciting mission which will attempt something never done before to try to uncover clues about our own origins."

With a closing speed of about 37,000 kph (23,000 mph), what of the washing machine-sized impactor and its mountain-sized quarry?

"In the world of science, this is the astronomical equivalent of a 767 airliner running into a mosquito," said Don Yeomans, a Deep Impact mission scientist at JPL. "It simply will not appreciably modify the comet's orbital path. Comet Tempel 1 poses no threat to the Earth now or in the foreseeable future," he added.

Ball Aerospace & Technologies in Boulder, Colo., built NASA's Deep Impact spacecraft. It was shipped to Florida Oct. 17 to begin final preparations for launch. Liftoff is scheduled for Jan. 8 at 1:39:50 p.m. EST, with another opportunity 40 minutes later.

Principal Investigator A'Hearn leads the mission from the University of Maryland, College Park. JPL manages the Deep Impact project for the Science Mission Directorate at NASA Headquarters. Deep Impact is a mission in NASA's Discovery Program of moderately priced solar system exploration missions. For more information: <http://www.nasa.gov/deepimpact>

Comet Missions

Credit: NASA

Comets have been studied by several spacecraft, not all of which were originally designed for that purpose. Several new missions to comets are being developed for launch in coming years. Past cometary missions include:

- In 1985, NASA modified the orbit of the International Sun-Earth Explorer spacecraft to execute a flyby of Comet 21P/Giacobini-Zinner. At that point, the spacecraft was renamed International Comet Explorer. It successfully flew through the tail of comet Giacobini-Zinner in 1985 and flew past comet 1P/Halley in 1986.
- An international armada of robotic spacecraft flew out to greet Halley's Comet during its return in 1986. The fleet included the European Space Agency's Giotto, the Soviet Union's Vega 1 and Vega 2, and Japan's Sakigake and Suisei spacecraft.
- Comet Shoemaker-Levy 9's spectacular collision with Jupiter in 1994 was observed by NASA's Hubble Space Telescope, the Jupiter-bound Galileo spacecraft and the Sun-orbiting Ulysses spacecraft.
- Deep Space 1 launched from Cape Canaveral on October 24, 1998. During a highly successful primary mission, it tested 12 advanced, high-risk technologies in space. In an extremely successful extended mission, it encountered comet 19P/Borrelly and returned the best images and other scientific data taken from a comet up to that time.

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■ The Comet Nucleus Tour, or Contour, mission launched from Cape Canaveral on July 3, 2002. Six weeks later, on August 15, contact with the spacecraft was lost after a planned maneuver that was intended to propel it out of Earth orbit and into its comet-chasing solar orbit.

Other active cometary missions are:

■ NASA's Stardust mission flew within 236 kilometers (about 147 miles) of the nucleus of comet 81P/Wild 2 on Jan. 2, 2004. Its flight path took it through the comet's inner coma, the glowing cloud that surrounds the comet nucleus. The flyby yielded the most detailed, high-resolution comet images ever, revealing a rigid surface dotted with towering pinnacles, plunging craters, steep cliffs, and dozens of jets spewing material into space. Launched in 1999, the Stardust spacecraft is headed back to Earth with its payload of thousands of captured particles. The spacecraft's sample return capsule is scheduled to make a soft landing in the Utah desert in January 2006.

■ A European Space Agency mission, Rosetta, was launched March 2, 2004 to orbit comet 67P/Churyumov-Gerasimenko and deliver a scientific package to its surface via a lander in 2014. NASA provided scientific instruments for the cometary orbiter.

Cassini-Huygens Update

The Huygens probe will usher in 2005 with its landmark mission at Titan. After a seven-year journey strapped to the side of the Cassini Orbiter, Huygens will be set free on Dec. 25, 2004. The Probe will coast for 21 days en route to Titan.

Prior to the probe's separation from the orbiter, the "coast" timer will be loaded with the precise time necessary to turn on the probe systems (15 minutes before the initial encounter with Titan's atmosphere). Then the probe will separate from the orbiter and coast to Titan for 21 days with no systems active except for its wake-up timer.

Huygens will separate from Cassini at 30 centimeters (about 12 inches) per second and a spin rate of seven revolutions per minute to ensure stability during the coast and entry phase. Five days following the release of the probe, Cassini will perform a deflection maneuver. This will place the orbiter in the proper geometry to collect the data during the probe mission. The probe will continue in this mode until it reaches the top of Titan's atmosphere.

Titan's nitrogen-rich atmosphere extends 10 times further into space than Earth's atmosphere. This means the outer fringes of Titan's atmosphere reach almost 600 kilometers (373 miles) into space. When the probe detects this region of Titan's atmosphere, the sleep timer will go off, awakening the probe's science instruments.

Huygens is equipped with six science instruments designed to study the content and dynamics of Titan's atmosphere and collect data and images on the surface.

Huygens will make a parachute-assisted descent through Titan's atmosphere, collecting data as the parachutes slow the probe from super sonic speeds. Five batteries onboard the probe are sized for a Huygens mission duration of 153 minutes, corresponding to a maximum descent time of 2.5 hours plus at least 3 additional minutes (and possibly a half hour or more) on Titan's surface. These batteries are capable of generating 1800 Watt-hours of electricity.

The probe's radio link will be activated early in the descent phase, and the orbiter will "listen" to the

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probe for the next three hours, which includes the descent plus 30 minutes after impact. Not long after the end of this three-hour communication window, Cassini's high-gain antenna (HGA) will be turned away from Titan and toward Earth.

The peak heat-flux is expected in the altitude range below 350 kilometers (217 miles) down to 220 kilometers (137 miles), where Huygens rapidly decelerates from about 21,600 kilometers (13,424 miles) per hour to 1,440 kilometers (895 miles) per hour in less than two minutes.

At this speed, the parachute deployment sequence initiates, starting with a mortar pulling out a Pilot Parachute which, in turn, pulls away the aft cover and deploys the Main Parachute. After inflation of the 8.3 meters (27.2 feet) diameter main parachute, the front shield is released to fall from the Descent Module. Then, after a 30 second delay built into the sequence to ensure that the shield is sufficiently far away to avoid instrument contamination, the Gas Chromatograph Mass Spectrometer (GCMS) and Aerosol Collector and Pyrolyser (ACP) inlet ports open and the Huygens Atmospheric Structure Instrument (HASI) boom deploy. The Descent Imager/Spectral Radiometer (DISR) cover is ejected two minutes later.

The main parachute is sized to pull the Descent Module safely out of the front shield. It is jettisoned after 15 minutes to avoid a protracted descent and a smaller 3-meter (10-foot) diameter parachute is deployed. The descent will last between two and two and half hours.

During its descent, Huygens' camera will capture more than 1,100 images, while the Probe's other five instruments will sample Titan's atmosphere and determine its composition.

Data from Huygens will be relayed to the Cassini Orbiter passing overhead. The data will be stored onboard Cassini's Solid State recorders (SSR) for playback to Earth. Huygens is managed by the European Space Agency.

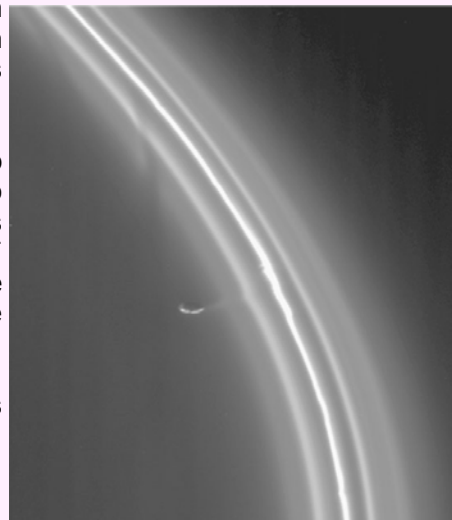
Thieving Moon

December 3, 2004

As it completed its first orbit of Saturn, Cassini zoomed in on the rings to catch this wondrous view of the shepherd moon Prometheus (102 kilometers, or 63 miles across) working its influence on the multi-stranded and kinked F ring.

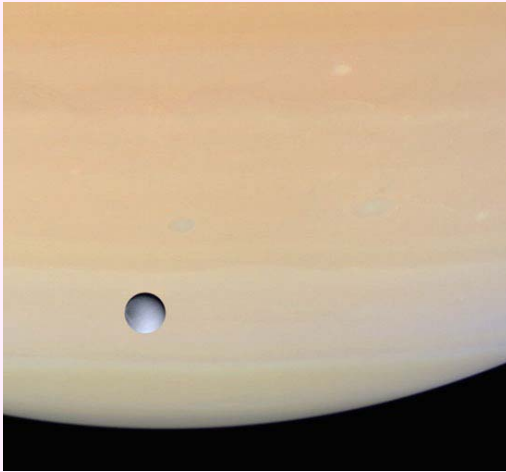
The F ring resolves into five separate strands in this closeup view. Potato-shaped Prometheus is seen here, connected to the ringlets by a faint strand of material. Imaging scientists are not sure exactly how Prometheus is interacting with the F ring here, but they have speculated that the moon might be gravitationally pulling material away from the ring. The ringlets are disturbed in several other places. In some, discontinuities or "kinks" in the ringlets are seen; in others, gaps in the diffuse inner strands are seen. All these features appear to be due to the influence of Prometheus.

The image was taken in visible light with the narrow angle camera on Oct. 29, 2004, at a distance of about 782,000 kilometers (486,000 miles) from Prometheus and at a Sun-Prometheus-spacecraft, or phase, angle of 147 degrees. The image scale is 4.7 kilometers (2.9 miles) per pixel. The image has been magnified by a factor of two, and contrast was enhanced, to aid visibility.



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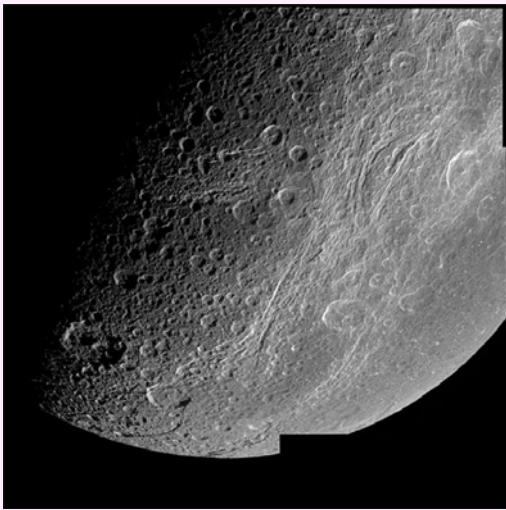
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Dione and Saturn December 16, 2004

Cassini captured Dione against the globe of Saturn as it approached the icy moon for its close rendezvous on Dec. 14, 2004. This natural color view shows the moon has strong variations in brightness across its surface, but a remarkable lack of color, compared to the warm hues of Saturn's atmosphere. Several oval-shaped storms are present in the planet's atmosphere, along with ripples and waves in the cloud bands.

The images used to create this view were obtained with the Cassini spacecraft wide-angle camera at a distance of approximately 603,000 kilometers (375,000 miles) from Dione through a filter sensitive to wavelengths of ultraviolet light centered at 338 nanometers. The Sun-Dione-spacecraft, or phase, angle is 34 degrees. The image scale is about 32 kilometers (20 miles) per pixel.



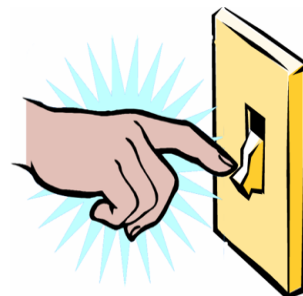
Highest Resolution View of Dione December 16, 2004

This very detailed image taken during the Cassini spacecraft's closest approach to Saturn's moon Dione on Dec. 14, 2004 is centered on the wispy terrain of the moon. To the surprise of Cassini imaging scientists, the wispy terrain does not consist of thick ice deposits, but rather the bright ice cliffs created by tectonic fractures.

Help turn off the lights...

Join the
International Dark-Sky Association (IDA)
<http://www.darksky.org>

"To preserve and protect the nighttime environment and our heritage of dark skies through quality outdoor lighting."



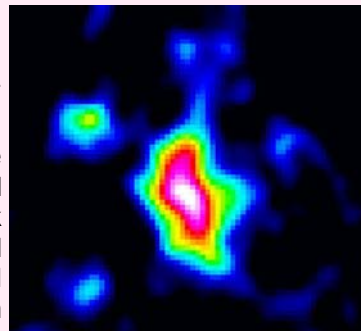
VLA Study Offers Clue to Galaxy Formation

National Radio Astronomy Observatory / Associated Universities, Inc. / National Science Foundation

Astronomers using the National Science Foundation's Very Large Array (VLA) radio telescope to study the most distant known quasar have found a tantalizing clue that may answer a longstanding cosmic chicken-and-egg question: which came first, super massive black holes or giant galaxies?

VLA Image of Quasar J1148+5251

Credit: Walter et al., NRAO/AUI/NSF



For years, astronomers have noted a direct relationship between the mass of a galaxy's central, super massive black hole and the total mass of the "bulge" of stars at its core. The more massive the black hole, the more massive the bulge. Scientists have speculated extensively about whether the black hole or the stellar bulge formed first. Recently, some theories have suggested that the two may form simultaneously.

However, the new VLA observations of a quasar and its host galaxy seen as they were when the Universe was less than a billion years old indicate that the young galaxy has a super massive black hole but no massive bulge of stars.

"We found a large amount of gas in this young galaxy, and, when we add the mass of this gas to that of the black hole, they add up to nearly the total mass of the entire system. The dynamics of the galaxy imply that there isn't much mass left to make up the size of stellar bulge predicted by current models," said Chris Carilli, of the National Radio Astronomy Observatory (NRAO), in Socorro, NM.

The scientists studied a quasar dubbed J1148+5251, that, at more than 12.8 billion light-years, is the most distant quasar yet found. Discovered in 2003 by the Sloan Digital Sky Survey, J1148+5251 is a young galaxy with a bright quasar core seen as it was when the Universe was only 870 million years old. The Universe now is 13.7 billion years old.

Aiming the VLA at J1148+4241 for about 60 hours, the researchers were able to determine the amount of molecular gas in the system. In addition, they were able to measure the motions of that gas, and thus estimate the total mass of the galactic system. Earlier studies of the system had produced estimates that the black hole was 1 to 5 billion times the mass of our Sun.

The new VLA observations indicate that there are about 10 billion solar masses of molecular gas in the system, and that the system's total mass is 40-50 billion solar masses. The gas and black hole combined thus account for 11-15 billion solar masses out of that total.

"The accepted ratio indicates that a black hole of this mass should be surrounded by a stellar bulge of several trillion solar masses. Our dynamical measurement shows there's not much mass left over, excluding the black hole and the gas, to form a stellar bulge. This provides evidence that the black hole forms before the stellar bulge," said Fabian Walter, of the Max Planck Institute for Radio-astronomy in Heidelberg, Germany, who was a Jansky Postdoctoral Fellow at NRAO in Socorro when the observations were made.

"One example certainly doesn't make the case, but in this object we we apparently have an example of a black hole without much of a stellar bulge. Now we need to make detailed studies of more such objects in the far-distant, early Universe," Carilli said. "With the vastly improved sensitivity of the

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Expanded VLA and the Atacama Large Millimeter Array (ALMA), which will come on line in a few years, we will have the tools we need to resolve this question definitively," Carilli added.

"Studies like this are the key to understanding how galaxies first formed," Walter said.

Walter and Carilli worked with Frank Bertoldi and Karl Menten of the Max Planck Institute in Bonn; Pierre Cox of the Institute of Space Astrophysics of the University of Paris-South; Fred K.Y. Lo of the NRAO in Charlottesville, VA; Xiahui Fan of the University of Arizona's Steward Observatory; and Michael Strauss of Princeton University, on the project. Their research results are being published in the Astrophysical Journal Letters.

The National Radio Astronomy Observatory is a facility of the National Science Foundation, operated under cooperative agreement by Associated Universities, Inc.

JSCAS Featured in the Friendswood Reporter News

JSCAS recently received some very welcome publicity when Kim Strube, a staff writer for the Friendswood Reporter News, wrote a two part article about our club. The first part was published on Wednesday, November 24th. Part two was published a week later on December 1st. Kim Strube and her editor have graciously given us permission to reprint her articles.

©Astronomy club helps people reach for the stars

By Kim Strube

This is part one of a two-part series.

Interstellar travel may be in its primordial stages for humans, but anyone longing to visit the rings of Saturn or galaxies light years away can still experience the awesome spectacles in person.

If you have ever dreamed of what's beyond our existence on this planet, a group of local amateur astronomers would like to help you on your journey through the cosmos.

With the use of telescopes, members of the Johnson Space Center Astronomical Society (JSCAS) bring the realms of outer space to the inhabitants of Earth - especially those located in southeast Texas.

Composed of space enthusiasts mentioned.

from all over the Houston area, including Friendswood and Pearland, JSCAS dedicates much of its time to inspiring children and adults to get to know their universe better.

"It's a very giving group - that's the important thing about it," said Al Kelly, a 30-year JSCAS member and Friendswood resident. "It's an organization that gives a lot to the community."

Volunteers regularly visit elementary schools to give presentations about the solar system and get young people interested in astronomy.

"If kids get interested in it at about 10 to 12 years old, they tend to get caught in it and make it a lifetime hobby," Kelly

JSCAS also hosts "star parties," events held at night for stargazing, at the Ronald McDonald House and Hope Village in Galveston for children.

Astronomy club members have participated in the Texas Science Olympiad, a state level academic competition for students in grades 6-12, and administered tests for Texas A&M University.

To satisfy the curiosity and quest for knowledge of adults, public star parties are hosted at various locations on the Gulf Coast, as well.

Though the members try to host at least one public star party each month, last month, the

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group hosted four, including one at the Haak Winery in Santa Fe.

"We do a lot of star parties and other activities," said Bob Taylor, current JSCAS president.

According to Taylor, the events give people an opportunity to view some of the most prominent objects in the night sky, including nebulae, planets, and star clusters.

"It's amazing how many people there are who have never had a good look through a telescope and don't have basic knowledge of the solar system," Kelly mentioned.

Due to the vast and mysterious nature of the universe, astronomy may seem a little intimidating to some people who have never been exposed to it.

The implications that intimate

knowledge of mathematics and physics are necessary can cloud some enthusiasm.

However, Kelly assures that astronomy can be enjoyed by anyone and the main attribute someone must possess is patience.

Amateur astronomers learn their skills gradually and enjoy gaining new knowledge and abilities at their own pace.

©Astronomy club members have stars in their eyes

By Kim Strube

When Bob Hammond, of Friendswood, joined the Johnson Space Center Astronomical Society (JSCAS) about 10 years ago, he was like many people.

"I had been interested in astronomy since (I was) a small child," he said, "but I never had the opportunity to really pursue it."

For Hammond, and many others, looking to the stars seems to help satisfy that universal longing for the meaning of life.

"Humans are genuinely inquisitive of why we're here and what's out there," he said. "I guess we're all looking for those answers."

Seeing the rings of Saturn, the vivid colors of the Orion Nebula and far away galaxies tends to put our existence in a much more realistic perspective.

Despite the grandiose views that are only a mirror and an eyepiece away, barely a handful

of earthlings have peered through a telescope - and even fewer have pursued astronomy as a hobby.

JSCAS would like to change all that.

Despite its name and aura, the JSCAS is not open to only NASA engineers and people with a background in science.

"We get a lot of members with no experience," said Bob Taylor, current JSCAS president.

Special Interest Groups (SIGs) within the organization guide members along their journey of self-discovery -- and space-discovery.

SIGs exist to teach the fundamentals of astronomy, how to observe objects, make telescopes and photograph celestial bodies. There is also a SIG to award members for viewing specific sights.

"We can start with binoculars or a small telescope until they are

comfortable," Taylor stated.

According to Taylor, members learn at their own pace and enjoy each new challenge without pressure.

In addition to monthly meetings, tutorial sessions and local star parties, activities and group observing opportunities are hosted in various locations outside the Houston area for members.

"For our own gratification, we go to Ft. McKavett twice a year," Taylor mentioned.

Due to its remote location and dark sky, the old Buffalo soldier cavalry fort, located about 40 miles northwest of Junction, Texas, is ideal for stargazing.

Since community outreach programs are an important part of the organization, members promote astronomy to the public while at Ft. McKavett in October and March.

Each year, they also participate in the Texas Star Party which is

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held in the Ft. Davis Mountains in the spring.

Over 1,000 amateur astronomers gather there at, what Taylor claims is, "the darkest spot on the continental U.S."

"You can almost smell the geek," said Taylor, trying to be serious. "Really, you can."

JSCAS members have viewed astronomical objects and events from various parts of the world, including Mauritius Island, Panama, Africa and more, as well.

As amateur astronomers become more knowledgeable, they tend to become interested in a unique aspect of astronomy, Hammond said.

While others specialize in CCD (charge-coupled device) photography, studying star clusters, planets or galaxies, etc., Hammond prefers to concentrate on the problems of light pollution.

Hammond said he moved to Friendswood years ago because it was a good place to observe the cosmos.

"The skies were quite dark," he said. "(Now), they're not dark at all."

Excessive light, he said, wastes a lot of money and is ineffective - in addition to destroying opportunities for sky viewing.

"Our eyes are very capable of adapting to very low light," Hammond mentioned.

He has addressed the City of Friendswood and community

associations regarding the issue.

"It's a tough sell," Hammond said.

It's a problem that has been affecting the entire area.

JSCAS has had to move its viewing locations numerous times due to the invasion of artificial lighting.

The JSCAS began as the Manned Space Flight Astronomy Club 37 years ago in Clear Lake.

"That's when people had plaid pants and bad hair," Taylor said.

Originally created, during the time when all efforts were directed toward putting a man on the moon, by a few NASA scientists for their own enjoyment, the organization's focus shifted to public education and individual development.

"In time, the club grew and grew," Taylor mentioned.

At one time, he added, there were over 200 members.

Since the group went to an electronic newsletter, Taylor said, "It has been harder to keep track of membership."

The term "membership" is used loosely, however.

Since its inception, JSCAS has remained strictly a gathering of enthusiasts.

There is no charter. There are no bylaws or dues.

"We don't really exist and that makes elections really simple," Taylor said.

"It's really easy to become a member - just show up," Hammond said. "We may even elect you as president."

According to Taylor, there has been no need to officially organize and it has eliminated many problems.

Currently, 30 to 40 people attend the monthly meetings - held on each second Friday.

With guest speakers, mind challenges and discussions, members learn something new each time.

"The club provides a resource for opening up new areas that I haven't thought of in astronomy," Hammond said. "It makes it a unique learning experience if you open yourself up to it."

Aside from learning about astronomy, he added, "I've met and made good friends."

If you're interested in learning more about astronomy or just looking at the amazing celestial objects within our sights, Hammond suggests attending one of the JSCAS hosted star parties.

Usually, there are 10 to 15 telescopes, ranging in sizes from 8 inches in diameter to 22 inches, available to use for observing.

"Hopefully, that will really peak your interest," Hammond said.

Everyone is welcome to attend the monthly meetings, as well.

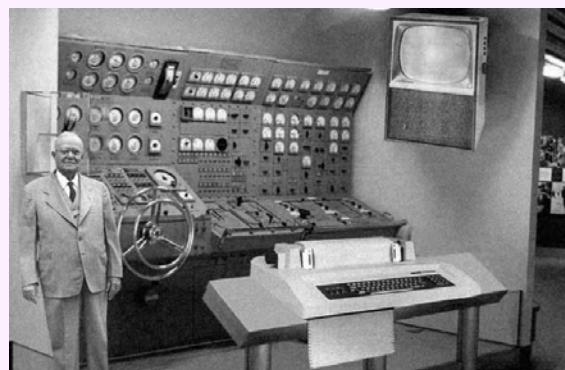
For more information, visit www.ghg.net/cbr/jscas/.

Sky & Telescope and now Astronomy Magazine Subscriptions – Don't Forget about the Club Discount!

Sky & Telescope offers a "Club Discount" on subscriptions. You can subscribe to Sky and Telescope for \$10 off the normal price (\$32.95 with the club discount). Astronomy magazine is also offering a club discount. JSCAS members can subscribe to Astronomy for \$29 a year. We need to have a minimum of five subscribers to take advantage of the discount. I need **four** more people to sign up. If you are a current subscriber, *please* contact me so I can put you on the list for the club discount when your subscription is due for renewal!

Contact me by the email listed on the JSCAS web site, catch me at a meeting, or send your check and renewal form to my home address: 2407 Elkton Ct., Pearland, TX, 77584. I'll put your renewal in the mail within 48 hours after I receive it.

David Haviland
Vice-president and Secretary



Scientists from the RAND Corporation have created this model to illustrate how a "home computer" could look like in the year 2004. However the needed technology will not be economically feasible for the average home. Also the scientists readily admit that the computer will require not yet invented technology to actually work, but 30 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language, the computer will be easy to use.



Personal Computers

Remember this image, reported in last month's Starscan to be a 1954 prediction of what a home computer would look like in 2004? The image was actually an entry submitted to an image modification competition. The basis for the doctored image was a photo of a submarine maneuvering room console. The color picture was taken at the Smithsonian Institution exhibit "Fast Attacks and Boomers: Submarines in the Cold War" and depicts: *A full-scale display of a typical nuclear-powered submarine's maneuvering room in which the ship's engineers control the power plant and electrical and steam systems.*

It's amazing how easily images can be doctored these days. Our "'50s" image developed quite a bit of fun conversation on the list server.

Thanks to all those who recognized the image for what it really was. For more information on this fake visit: <http://www.snopes.com/inboxer/hoaxes/computer.asp#photo2>

Upcoming Events

The deadline for submitting your registration/reservation for the 2005 Texas Star Party is January 17th. A random drawing will be held in late January to allocate TSP attendance and Prude Ranch housing. TSP will be held May 1st thru 8th.

2004 JSCAS Winter Solstice Party

Ken Lester



Ken Lester

The JSCAS Winter Solstice Party marked the close of club activities for 2004. It was a very successful year, with JSCAS participating in star parties at Moody Gardens, Challenger 7 Park, the Haak Winery, Space Center Houston's *Lift Off 2004 Conference*, LPI's Lunar Eclipse Party, Texas Tech's (Junction) Outdoor Learner Center, the first annual *Bicycle Tour de Forts*, Armand Bayou Nature Center and Fort McKavett.

We also had strong participation in the "all-clubs" meeting, Astronomy Day at the George and LPI's Family Space Days.



Ken Lester

Dr. Paul Maley, led an expedition to Mauritius to view the transit of Venus, leaving behind a NASA/JSCAS time capsule.

Paul also spear-headed a drive to place a historical marker at Fort Sam Houston in San Antonio, commemorating the Venus Transit Expedition of 1882.

Our President, Bob Taylor, has done an outstanding job this year. He has managed to have a great group of featured speakers at our club meetings, as well as keeping the meetings pretty much on-time. We even started a social gathering at Double Dave's Pizza after the meetings.



Ken Lester

This year's Solstice Party brought back some old faces which we haven't seen lately. We also saw many new faces which will keep our club revitalized.

Besides the wide selection of food and beverages served at the party, Bob treated us to a slide show of 2004 activities. We also watched a video of



Matt



Matt Hommel



Matt Hommel

(Continued from page 19)

the Fort Sam Houston historical plaque dedication of the Venus transit expedition. Bob also presented LPI's Stephanie Shipp and Mike Madera with JSCAS shirts, making them shirt wearing members of our elite society, and potential presidential material.



Then there were the door prizes. Santa's helper, President Bob, made sure that everyone won something. This year's door prizes ranged from astronomer food, to books, and an observing table.

It was a great celebration and we look forward to 2005.



Astronomy 101: Selecting an Eyepiece Case

Geared for the Novice Astronomer

Ken Lester

I recently obtained the prized eyepieces of a long time and dedicated observer from another state. In his own club, he was considered a “club elder”. Sadly, illness had prevented this seasoned observer from getting his scope out under the stars for over a decade.

The oculars came packed in a carrying case, which showed a lifetime of night time adventures. The case was sturdy enough to keep the oculars safe and dry. However, the foam lining on the interior, carefully cut to provide each eyepiece with its own secure resting place, failed to provide the protection desired by the owner. The foam had badly deteriorated, losing both its shape and its ability to protect the eyepieces. Small flecks of foam covered the exposed glass and metal barrels of the eyepieces. When I opened the case for the first time, several of the eyepieces were found to be resting against each other. Luckily, they sustained no scratches or dents during shipping.

When buying or building cases for your eyepieces, it is important that you select a foam specifically manufactured for cameras or telescopes. Avoid using Styrofoam, the foam sold for stuffing cushions, and similar materials. These materials will flake off and cover your eyepieces. They are also a source of chemical out-gassing which could etch your expensive glass.

If you are storing your eyepieces for a long period of time, it is a good idea to periodically inspect your case for foam deterioration. Better yet, if you must store your eyepieces for long periods, remove them from the case and store them in the original containers supplied by the manufacturer.

While we are all wanting to save money, and some of us are forever doomed with the “build a better mousetrap” syndrome, optics cases sold specifically for cameras and telescopes are the safest way to go. Cases from Orion or similar distributors of astronomy equipment provide a safe, long term solution to storing your eyepieces.



While providing a strong, moisture resistant external shell, the wrong choice of interior foam defeated the intended purpose of providing security for the eyepieces.



The wrong kind of foam can deteriorate over time, covering your eyepieces with flakes of foam. Out-gassing of the chemicals used to manufacture the foam can damage optics.

For Sale

SPC-80 Refractor: I have an SPC-80 Celestron 80 mm refracting telescope for sale including RA and DEC drives, wooden tripod, equatorial mount, and a 9 mm eye piece. I also have a solar filter that fits over the objective lens for looking at the sun. I'm a retired aerospace worker from JSC and I live in CLC, 281-488-2540. The scope is in pretty good shape. Thanks, Jerry Winkler, jwink38223@aol.com



Member Recognition



Becky Ramotowski's image of the Moon occulting Jupiter appeared on Space.com's Image of the Day on December 7th. The image also appeared on SpaceWeather.com. "It was 26 degrees when I took this, and the wind was blowing just enough to make hand holding the camera a chore. The visual experience was warming, though!"

http://www.space.com/imageoftheday/image_of_day_041207.html

http://www.spaceweather.com/occultations/gallery_07dec04.htm

Randy Brewer's images of the occultation also appeared on [SpaceWeather.com](http://www.SpaceWeather.com). His images were shot at Ft. Davis.

HOUSTON AREA ASTRONOMY CLUBS

Brazosport Astronomy Club

Meets the Third Tuesday of the month, 7:45 p.m.

At the Planetarium

400 College Drive

Clute, Texas

For more information, contact Judi James at the Planetarium
979-265-3376

Fort Bend Astronomy Club <http://www.fbac.org/>

Meets the third Friday of the month, 7:00 p.m.

First Colony Conference Center

3232 Austin Pkwy

Sugar Land, Texas

Houston Astronomical Society <http://spacibm.rice.edu/~has/>

Meets the first Friday of the month, 8:00 p.m.

University of Houston, University Park

Science and Research Building, room 117

North Houston Astronomy Club <http://www.astronomyclub.org/>

Meets the fourth Friday of the month, 7:30 p.m.

In the Teaching Theater at Kingwood College

20000 Kingwood Drive

Kingwood, Texas

MEMBER'S GALLERY



M-74

©Randy Brewer

Taken on 12-11-04 from Ft. Davis with a FCT-150 @ F/5. LRGB = 125:25:25:25 minutes. Note all of the background galaxies in the shot!

Orion Nebula

©Randy Brewer

A single 5 minute shot of the Orion Nebula and the Running Man taken with a Canon 10D on a Takahashi Sky 90. The trapezium area was layered with a shorter shot to show the details. Processing is simply subtracting 1 dark frame and a levels adjustment. Taken on 12/10/2004.





©Randy Brewer

From Left to right, top to bottom:
Comet Machholz; the Pleiades;
the McDonald Observatory's 107" and
82" Domes; the Andromeda Galaxy.

All images were taken in December,
2004 from Ft. Davis, Texas.



Visual Observing

Chris Randall

January 2005

★SSO: (Solar System Objects) Summary for the 15 January 2005

Object	Const	Mag	% III	Rise Time	Transit	Set Time
Sun	Sqr	-26.7	100	07:16	12:29	17:43
Moon	Psc	----	37	11:05	17:19	23:37
Mercury	Sqr	-0.3	88	06:11	11:16	16:20
Venus	Sqr	-3.9	95	06:08	11:14	16:20
Mars	Oph	1.5	95	04:26	09:33	14:41
Jupiter	Vir	-2.1	99	00:02	05:50	11:38
Saturn	Gem	0.4	100	17:26	00:23	07:16
Uranus	Aqr	5.9	100	09:28	15:05	20:47
Neptune	Cap	8.0	100	08:23	13:46	19:13
Pluto	Ser	14.0	99	04:45	10:12	15:38
2004 Q2 Machholz	Per	4.2	85	11:59	20:00	03:56

Highlighted times denote daylight events.

★BSO: (Bright Sky Objects) along the way

M45– Open Cluster in Taurus, Magnitude 1.2, Size 110', Stars 100.

NGC 1342 – Open Cluster in Perseus, Magnitude 6.7, Size 14', Stars 40.

NGC 1039 (M34, Cr 31) – Open Cluster in Perseus, Magnitude 5.2, Size 35', Stars 60.

Cr 39 (Mel 20) – Open Cluster in Perseus, Magnitude 2.3, Size 184', Stars 50.

IC 1848 (Cr 32) – Open Cluster in Cassiopeia, Magnitude 6.5, Size 12', Stars 10.

★DSO: (Dark Sky Objects) along the way

NGC 1272 – Galaxy in Perseus, Magnitude 11.7, Size 1.8' x 1.8'.

NGC 1193 (Cr 35) – Open Cluster in Perseus, Magnitude 12.6, Size 1.5' Stars 40.

NGC 1245 (Cr 38, Mel 18) – Open Cluster in Perseus, Magnitude 8.4, Size 10', Stars 200.

NGC 1220 (Cr 37) – Open Cluster in Perseus, Magnitude 11.8, Size 1.6', Stars 15.

Cr 34 – Open Cluster in Cassiopeia, Magnitude 6.8, Size 24'.

★CDMP: (Chris' Don't Miss Pick)

Comet Machholz C/2004 Q2 (RA: 03h 17.532m Dec: +40° 00.00') — Bright Comet Cluster moving from Taurus through Perseus, estimated to be Magnitude 4.2

While looking for information on the discovery of this comet I ran in to luck with the first link my web search engine hit. It was an article from the discoverer himself, Don Machholz, in the newsletter of the San Jose Astronomical Association. Go to the SJAA website and read the entire article <http://ephemeris.sjaa.net/0410/b.html>. It will be worth your time.

It is a very good detailed description of his discovery and the process involved in finding comets.

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In fact, in the story he states he was not even using his observatory. He was just sitting on his back deck in his backyard using a small scope that any amateur could own. The discovery occurred Friday, August 27, 2004 using a Criterion Dynascope (6-inch, f/8 reflector) he received for Christmas in 1968.

Now for observing this Comet, it takes no more than binoculars. Perhaps in a good dark sky site it might even be visible to the unaided eye.

I have placed a MEGASTAR chart on the next page showing the track the comet will make during January. One place of interest is on January 7th the comet will pass within 3 degrees of the M45, the Pleiades. It will be real easy to find it that night.

From <http://cfa-www.harvard.edu/iau/Ephemerides/Comets/2004Q2.html>

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
2005 01 01		03 51.38	+08 53.3	0.354	1.261	135.9	32.9	4.3
2005 01 02		03 49.00	+10 57.2	0.351	1.257	135.2	33.5	4.2
2005 01 03		03 46.63	+13 02.9	0.349	1.253	134.3	34.1	4.2
2005 01 04		03 44.26	+15 10.1	0.348	1.249	133.5	34.9	4.2
2005 01 05		03 41.91	+17 18.3	0.347	1.245	132.5	35.6	4.2
2005 01 06		03 39.57	+19 27.0	0.347	1.241	131.5	36.4	4.1
2005 01 07		03 37.25	+21 35.8	0.348	1.237	130.4	37.3	4.1
2005 01 08		03 34.95	+23 44.2	0.348	1.234	129.2	38.1	4.1
2005 01 09		03 32.68	+25 51.7	0.350	1.230	128.1	39.0	4.1
2005 01 10		03 30.43	+27 58.0	0.352	1.227	126.9	39.9	4.1
2005 01 11		03 28.21	+30 02.7	0.355	1.225	125.6	40.7	4.1
2005 01 12		03 26.03	+32 05.4	0.358	1.222	124.4	41.6	4.1
2005 01 13		03 23.89	+34 05.8	0.361	1.219	123.2	42.5	4.2
2005 01 14		03 21.78	+36 03.6	0.365	1.217	121.9	43.3	4.2
2005 01 15		03 19.72	+37 58.6	0.370	1.215	120.7	44.1	4.2
2005 01 16		03 17.70	+39 50.7	0.375	1.213	119.5	44.9	4.2
2005 01 17		03 15.73	+41 39.7	0.380	1.211	118.3	45.6	4.2
2005 01 18		03 13.81	+43 25.5	0.386	1.210	117.2	46.3	4.3
2005 01 19		03 11.94	+45 08.1	0.392	1.209	116.0	47.0	4.3
2005 01 20		03 10.12	+46 47.3	0.399	1.207	114.9	47.6	4.3
2005 01 21		03 08.37	+48 23.3	0.405	1.207	113.9	48.2	4.4
2005 01 22		03 06.67	+49 56.0	0.413	1.206	112.9	48.8	4.4
2005 01 23		03 05.04	+51 25.5	0.420	1.205	111.9	49.3	4.4
2005 01 24		03 03.48	+52 51.9	0.428	1.205	110.9	49.7	4.5
2005 01 25		03 01.98	+54 15.2	0.435	1.205	110.0	50.1	4.5
2005 01 26		03 00.56	+55 35.5	0.444	1.205	109.1	50.5	4.5
2005 01 27		02 59.22	+56 52.9	0.452	1.205	108.3	50.9	4.6
2005 01 28		02 57.95	+58 07.5	0.460	1.206	107.5	51.2	4.6
2005 01 29		02 56.77	+59 19.5	0.469	1.207	106.7	51.4	4.7
2005 01 30		02 55.68	+60 28.9	0.478	1.208	106.0	51.6	4.7

WARNING!

This comet gets close to the sun during the period covered in the ephemeris below. Observers are warned to be wary of observing comets near the sun. **NEVER** point any kind of optical instrument at the sun--instant blindness will be the probable result.

Library Corner

Ken Lester



Our library keeps growing! At our Solstice Party, David and Connie Haviland donated the HBO Mini-series *From The Earth To The Moon*. The set consists of 6 VHS tapes. In addition, Carl Reynolds donated a VHS tape of the Venus Transit of 1882 Memorial Dedication held at Fort Sam Houston.

JSCAS members have been very generous in 2004, donating a total of 43 items. This brings the total number of items in our library to 180. Of these 180 items, only 19 are currently checked out. This means a whole lot of books, tapes, software, and articles are going un-used.

For your convenience, a list of all items in the library is on our library web page. I have recently added a *Date Borrowed* field to the list so you can tell at a glance if the item you want to check out is available. Give our librarian, Lisa Lester, a call or drop her an e-mail, if you want something from the list. Lisa can be reached at 281-479-1102 or lesteln@swbell.net. You can check out an item for an indefinite period of time, as long as no one else wants it. However, in January, we plan to send out reminders to those people who have had items checked out for over a year. Sometimes people forget that they have borrowed an item, and it gets stuck on a shelf somewhere and forgotten.

<http://www.riverofstars.net/JSCAS/Library/Library.htm>

Star Party News

2005 is now upon us. Star party chairperson, Lisa Lester, is in the process of contacting our various star party partners to finalize our star party schedule. The only dates that have been set thus far are for Fort McKavett. The spring Fort McKavett dates are from March 3rd thru March 6th. Unfortunately, the fort's Living History weekend was scheduled during New Moon. As a result, our event will be held the week before, during a waning Moon. The October Fort McKavett star party will be held on September 29th thru October 2nd (New Moon is October 3rd).



Keep tuned to the list server or our star party web page for further updates.

<http://www.riverofstars.net/JSCAS/StarParties/starparty.htm>



LPI Family Space Day

Matt Hommel

This month the family space day theme was Volcanoes, impact craters and other planetary surface features such as water erosion.

Attendance was good, and the children got to build clay volcanoes with baking soda lava that erupted down the sides. Next, the good folks at the Lunar Planetary Imaging Center, had sand boxes set up so kids could make their own impact craters. Two colors of sand were used to simulate different layers revealed in the ejecta. Everyone got to make their own river flow and study the effect of water erosion.

After all that, the kids got to build their own decoration for the Holiday Tree. I think everyone took their decoration home however. That's OK though, because we needed another couple of glittery snowmen around here.

Till next month...



Making Tracks for a Cure--Astronomer Style

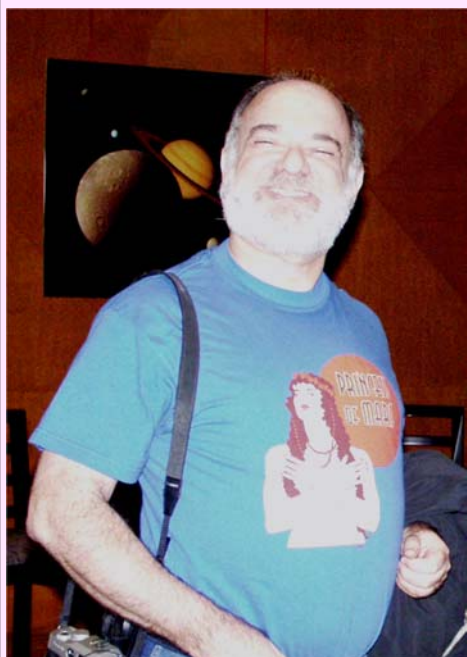
Kelley Knight

When long time JSCAS member and past president, Eleta Malewitz, was diagnosed with breast cancer that spread to her liver and bones this summer, I and a few others wondered what we could do from Austin and Albuquerque to show her support.

With the encouragement of Becky Ramotowski, I decided that entering a team in the Race for the Cure would be a great idea. Our team, The Princess of Mars Ground Crew (PoMGC), was open to anyone with an interest in astronomy or that just wanted to join a team with a hip name. "We are a group of astronomers from Clear Lake to Albuquerque" was often seen somewhere in the e-mails soliciting donations.

Our team members included Eleta Malewitz (the Princess), Anne Adkins, Linda Cartwright, Linda Davis, Emma Isleib, Becky and myself. Linda's friend Shirley joined the crew the day of the race. Shirley will join us again next year.

We were shocked by all the support, so we kept setting our team goal higher and higher. Our small team managed to raise \$2230 for the Austin chapter of the Susan G. Komen Foundation. We found out a few days before Christmas that we were among the top 50 teams (out of 583) and a few of our members were in the top 100 individual fundraisers (out of 22,000). To those that sponsored the PoMGC, **we thank you!**



Ed Malewitz shows off his Princess of Mars t-shirt at the Winter Solstice Party

The largest team sponsorship came from the just retired Goddard employee and astronomy author, Dr. Steve Maran. If you are looking for a beginner book, pick up a copy of his "Astronomy for Dummies". A royalty check is a great way to say thanks.

On race day, our four walkers raised a lot of eyebrows because of the naked woman (the Princess) portrayed on the front of the team shirts. Although the team didn't win the T-shirt design contest, we thought we did a good job designing this shirt. However, as with any great work of art, it takes a while for it to be understood. We liked it because the naked Princess, covering her breasts with her arms, was like the Princess was saying, "no more cancer".

A JPL image of the Mars Spirit Rover, making tracks, was featured on the back. The slogan on the back read "Princess of Mars Ground Crew making tracks for the cure." Another run of shirts is being contemplated. Contact Kelley or Eleta if you'd like one of these awesome shirts.

The team took off in the middle of the pack of 22,000 and finished within the hour. Seeing all the survivors and the names on the memorials, made me realize that enduring inflamed fascia in my feet was worth it. Someday there will be more pink shirts than memorials, and eventually no race at all, because there will be a cure. You'll have to ask Anne, Linda or Shirley about their take on the race.

The PoMGC wants to see more astronomers walking with them next year. They need more crew members to unfurl the red carpet for the Princess as she struts down the streets of Austin in her pink survivor shirt and cap. Thanks again to everyone who sponsored us!

Johnson Space Center Astronomical Society

An association of amateur astronomers dedicated to the study and enjoyment of astronomy. Membership is open to anyone wishing to learn about astronomy.

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January Meeting Agenda

January 14th. Center for Advanced Space Studies/Lunar Planetary Institute, 3600 Bay Area Blvd. (at Middlebrook Drive).

- 7:30 Meeting start and welcome
- 7:40 Presentation — David Haviland
- 8:30 Break
- 8:45 Calendar review, presentations, and awards
- 9:00 Star Party Announcements, Lisa Lester
- 9:20 Deep Sky Observing, Chris Randall
- 9:45 Door Prizes

Starscan Submission Procedures

Original articles of astronomical interest will be accepted up to **6 P.M. January 25th**.

The most convenient way to submit articles or a Calendar of Events is by electronic mail, however computer diskettes or CDs will also be accepted. All articles should include author's name and phone number. Also include any picture credits. The recommended format is Microsoft Word. Text files will also be accepted.

Submitter bears all responsibility for the publishing of any e-mail addresses in the article on the World Wide Web.

Editor's electronic address is: lesteke@swbell.net. Be sure to include the word Starscan in the subject line for proper routing of your message.

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Cover Image Randy Brewer©

Braving the cold, Randy Brewer spent a week imaging under dark, December skies, in the Davis Mountains, Texas. On the last night, just before tearing down his equipment for the long drive back to Baytown, he took time to pose with his telescope against a beautiful back drop of winter constellations. Images from Randy's trip are featured in this month's Member's Gallery.