STARSCAN

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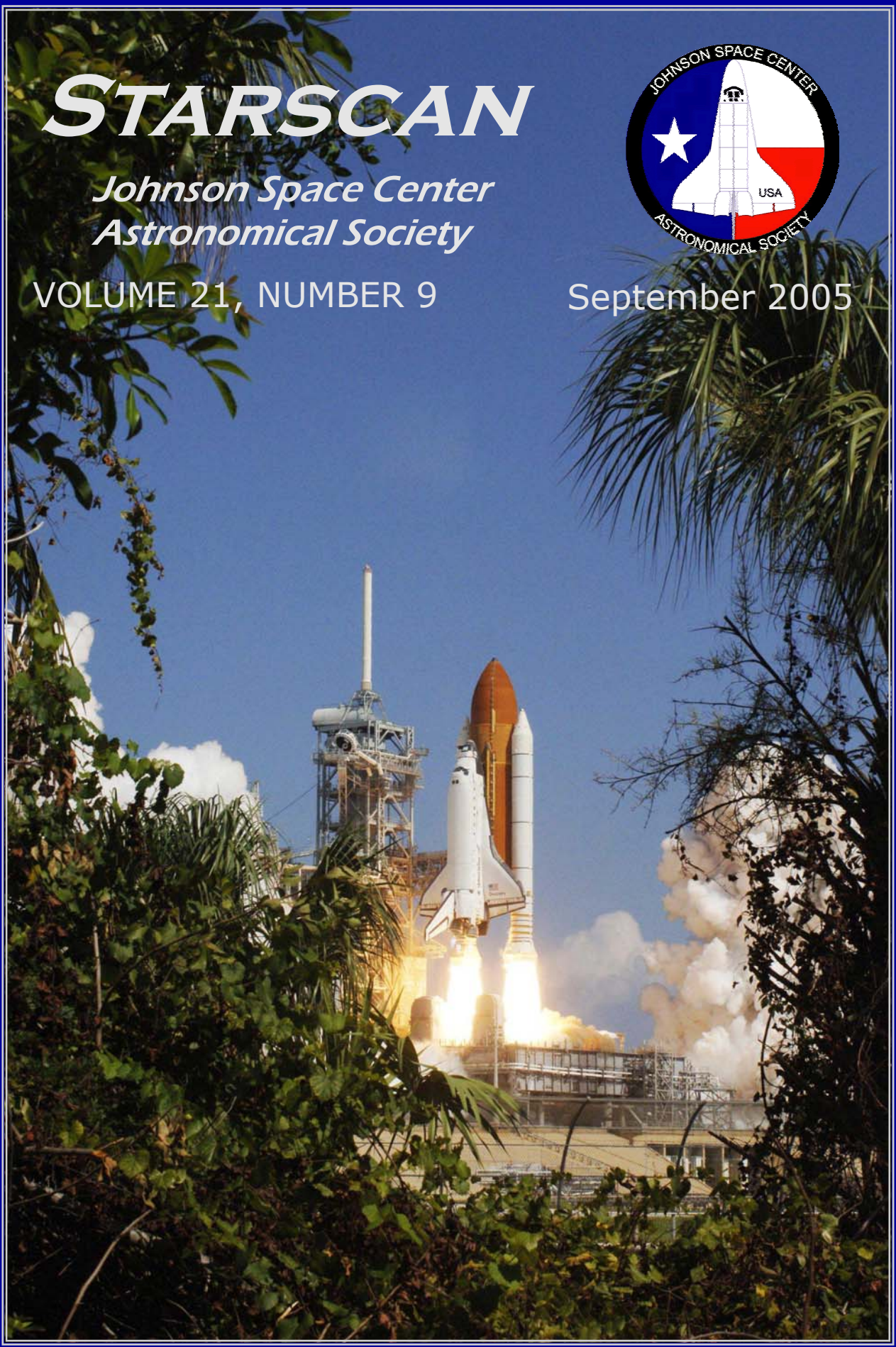

IN THIS ISSUE

Fort McKavett Star Party

Ken Lester

It's once again time to pack up your telescope equipment for our semi-annual trip to Fort McKavett. This fall's star party promises to be one of our best. With the shuttle safely home, some of its mission support staff will now be able to take time off and enjoy the dark skies of West Texas.

Observing Field/Parade Grounds

This year's fall star party occurs earlier than usual. For the first time, the star party will begin in September, on Thursday the 29th. When the star party was scheduled, there was a choice between October's new Moon (October 3rd) or November's new Moon (November 2nd). It was felt that the weekend closest to October's new Moon would have milder temperatures.

Located about 30 miles northwest of Junction, Fort McKavett is a beautiful, mostly restored, 1850's frontier fort. It is a State Historical Site run by Texas Parks and Wildlife. The remarkable condition of the fort is due in part to the local town people moving into the buildings when the Army pulled out. The fort was occupied by the towns people until the mid 1960s. This year's star party is being held in conjunction with the second Fort McKavett Town Reunion. This will be an excellent opportunity to meet some of the people who grew up at the fort and to learn about the fort's history. Who knows, you may even get to hear first hand some of the fabled ghost stories.

Although the fort officially has no overnight accommodations, star party participants will be using the barracks, headquarters, and other selected buildings to campout and store their gear. There are a few full hook up RV slots. There is unlimited tent camping and plenty of room in the barracks. Family quarters are limited. The family accommodations at the headquarters building have already been filled; however, Officers Quarters #2 is being opened for additional family housing. All participants should contact Lisa Lester with their housing requests (contact information is at the end of this article). The sooner you get in your requests, the better. The park has showers with plenty of hot water.

The parade ground will be transformed into our observing field, with a wide range of telescope types and sizes. There should be quite a few large aperture telescopes available to look through. If you have one, be sure to bring your OIII filter. The Veil Nebula with the OIII filter is absolutely spectacular under the dark skies at the fort. For information about the Veil Nebula see *Chris' Don't Miss Pick* on page 19.

The star party is a 3 day event starting on Thursday. Thursday is a day to settle in with observing that night.

Friday afternoon, a group of JSCAS members will be traveling to San Angelo to Lamar Elementary to make presentations. If you would like to come along to support the presentations or make a presentation contact Lisa Lester.

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Getting Prepared for Friday Night's Lunartic Luau?

A very special Friday evening has been planned by Lopaka, aka Bob Taylor. There will be a Lunartic Luau instead of our traditional "grill your own" cookout. Bob has donated a large pig which will be stuffed with apples, oranges and pineapple, then personally hand rubbed with honey and brown sugar. The pig will be slow roasted to perfection. Since the theme is Hawaiian, it's highly recommended (but not required) that you come dressed in Hawaiian attire. Those who aren't dressed appropriately may be forced to wear a grass skirt and dance the hula (just kidding). To complete the meal you are asked to bring a side dish to share. A fire pit will be available for those who have planned on grilling something else.

On Saturday at noon, there will be a BBQ at the old school house. Park Superintendent, Buddy Garza, and the Friends of Fort McKavett will be cooking and serving the meal. No one comes away hungry from this one. A $10 donation to help cover the cost of the meal is suggested and can be made at the door. The Friends of the Fort will hold their annual meeting following the meal. Feel free to stay after lunch and learn more about the Friends group.

This year we will have an Astro-Art contest which will be judged by all participants of the star party, Friends of the Fort members, and former/current town residents attending the BBQ lunch on Saturday. See the *JSCAS Astro Art Contest at Fort McKavett* article for more information.

There will also be a silent auction to help raise funds for the fort. The auction will have a wide variety of "treasures", so bring your checkbook! Contact Lisa Lester if you want to donate an item for the auction.

Saturday evening there will be a public star party. This event attracts local ranchers, town folk, and school kids. Some of the visitors travel great distances to see the stars through our scopes. Unlike our local star parties, the skies are dark enough to show the public lots of deep sky objects. Just before the public star party, the Friends of the Fort will be serving BBQ sandwiches near the Park Headquarters (Post Hospital Building). Saturday's star party guests are usually gone by 11pm allowing you to get a few hours of observing in before bed.

Real Presidio de San Saba Image by Ken Lester

There is lots to do and see at the fort and the surrounding communities. The Caverns of Sonora are about an hours drive southwest. To the west in Eldorado there is a wool museum. Menard, to the east has the Menardville museum. The Real Presidio de San Saba archeological site is just outside of Menard. Further to the east are Brady and Mason which have antique shops.

To get to Fort McKavett, head west on Interstate 10 past San Antonio through Junction. About 14 miles past Junction, take the highway 1674 exit to Fort McKavett. Highway 1674 dead ends at the

(Continued on page 5)

What To Bring…

The best way of preparing for your trip to Fort McKavett is to create a check list of essential items. When you are packing for a three day star party it is very easy to leave behind some very important items. To get you started, here is a brief list of possible items:

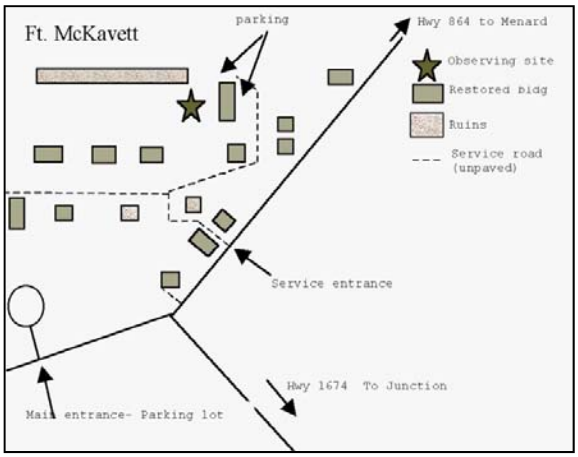
√	Item
	Telescope (OTA, Mount)
	Eye Pieces
	Telrad (extra batteries)
	Star Charts, Planispheres
	Red Light Flashlight
	Accessories (Filters, Power Supply, Extension Cords)
	Ladder (for bigger scopes)
	Observing Table
	Observing Stool/Camp Chairs
	Log Book/pencils/pens
	Bug spray is seldom needed but nice to have just in case.
	Bedding (Air Mattress, Blankets, Pillows, etc) . Cots are available at the fort if needed.
	Towels, Toiletry Items
	Medicine
	Side dish for Friday's Luau
	Clothes (temperatures can vary from very hot during the day to cold at night.)
	Suntan Lotion

This list is just to get you started thinking about what you are going to bring. When you sit down to make your own list, you will be adding many more items which will make your stay at the fort more enjoyable.

(Continued from page 4)

Fort. Turn right onto 864. Take the service entrance which is the second left. The first left is to the small Episcopal church. The service entrance runs between the Park superintendent's house on the right and the maintenance building and some RVs on the left. See map below.

For more information or to register your request for housing contact Lisa Lester at 281-479-1102 or lesteln@swbell.net.



JSCAS Astro Art Contest at Fort McKavett

This fall's Fort McKavett Star Party will feature an astronomical art contest. Any photo, sketch, painting, fabric, or other medium used to create original art with astronomical objects featured is allowed. The art will be judged on Saturday, October 1 at the Fort McKavett lunch and Town Reunion. The only category is "people's choice." This means the people who attend the event will vote on what they like.

All children who enter the contest will receive special recognition and a prize for their efforts. The grand prize has not been determined yet. However, if there isn't one, being the best of JSCAS-Friends of the Fort should be the best prize of all.

We would like those that enter the contest to also allow their wonderful work of art to be auctioned off at the silent auction, although that isn't a requirement. Remember. All proceeds from the silent auction benefit the Friends of Fort McKavett.

Make sure all art is at the Fort by Friday, September 30th whether you are there or not. E-mail Kelley Knight at kelleyknight@yahoo.com with questions.

Family Space Days

Ken Lester

On the third Saturday of every month, from 10:00 to 2:00 pm, the Lunar and Planetary Institute hosts their *Family Space Days*. Children between the ages of 5 and 8 are invited to bring their families to explore space science.

There were about 40 attendees to the August event. The theme was the Space Shuttle. When I arrived, the children were busy building and decorating their own paper space shuttles. They then took their shuttles for a test flight through a hula-hoop target, landing on a long "runway" down the hall. The children in the Great room at LPI were folding paper airplanes and seeing how long their creations could stay aloft.

As usual, there was lots of glue and glitter! My hat is off to Dr. Shipp and Mike Madera and the rest of the LPI education staff for making this event memorable for the kids.

Upcoming Themes:

September – Is there life out there?/Astrobiology
October – Tour stop 1 – What's a planet/Mercury
November – Tour stop 2 – Venus and its volcanoes
December – no family space day
January – Tour stop 3 – Mars
February – Tour stop 4 – The Moon
March – Sun Earth Day/Eclipse

FYI…

For those interested in atmospheric phenomena, like Sun pillars, halos, rays, shadows, etc. check out this web site by Les Cowley: http://www.sundog.clara.co.uk/atoptics/phenom.htm.

More Star Party News

Ken Lester

Our fall public star party season opened at Moody Gardens on August 13th. Moody Gardens recently added playground equipment between our observing field and the parking lot; creating a much darker area.

There was a good public turnout, which I estimated to be well over 100. Our Moody Gardens contact, Johanna Goforth, was very pleased with the response. We had at least 10 scopes and a pair of binoculars showing the crowd the Moon, Jupiter, Venus, Albireo, M57 and more.

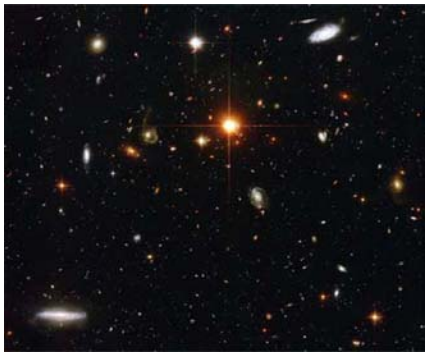
I remember one particular person that kept coming back to my scope. This lady was in her 80s and spoke little or no English. Her grown daughter told me her mother had never seen such a sight before. She just couldn't get enough of the view. The target that thrilled her the most was the Moon at about 50X.

Our next public star party will be at Challenger 7 Park on September 10th. With luck, we will have a good public turnout. Following that will be the Fall Fort McKavett trip featured on page 3.

We hope to see you at the Challenger 7 star party and at the fort.

Event	Date	Sun Set	Moon			Jupiter		Saturn		Mars		Venus	
			Illum.	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
2005													
Challenger 7	Sep 10	19:50	45	13:56	23:57	09:51	21:25	04:08	17:47	22:56	12:14	10:34	21:44
Fort McKavett	Sep 29 to Oct 2	19:25	11	04:01	17:47	08:55	20:21	03:03	16:38	21:50	11:14	11:04	21:32
Haak Winery	Nov 5	19:18	7	09:41	20:33	08:37	20:01	02:41	16:16	21:25	10:51	11:14	21:30
Moody Gardens	Nov 12	17:48	89	15:19	02:56	04:48	16:47	23:29	11:53	17:14	05:40	09:33	21:05

Hubble Spies a Zoo of Galaxies



Gazing deep into the universe, NASA's Hubble Space Telescope has spied a menagerie of galaxies. Located within the same tiny region of space, these numerous galaxies display an assortment of unique characteristics. Some are big; some are small. A few are relatively nearby, but most are far away. Hundreds of these faint galaxies have never been seen before until their light was captured by Hubble.

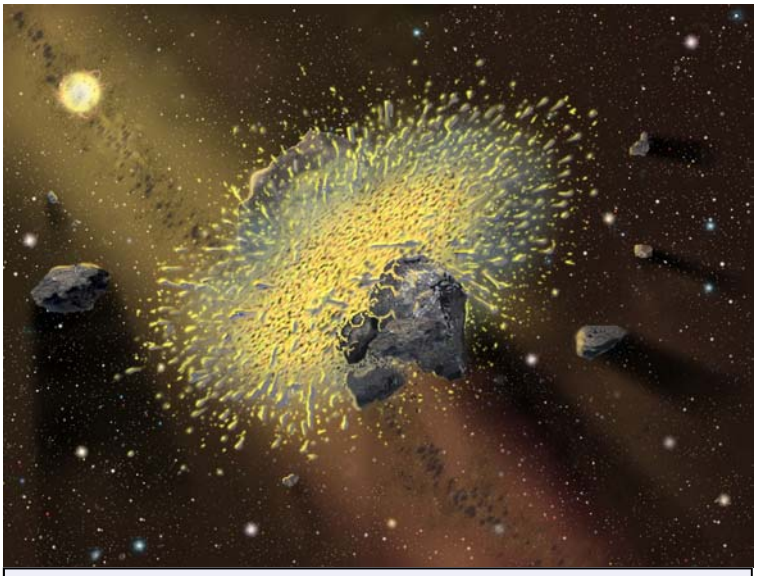
This image is a composite of multiple exposures of a single field taken by the Advanced Camera for Surveys. The image, taken in September 2003, was a bonus picture, taken when one of the other Hubble cameras was snapping photos for a science program. This image took nearly 40 hours to complete and is one of the longest exposures ever taken by Hubble.

Image Credit: NASA, ESA, and The Hubble Heritage Team (STScI/AURA) Acknowledgment: J. Blakeslee (JHU) and R. Thompson (University of Arizona)

Cosmic Catastrophe

Date: July 20, 2005 UCLA Press Release

Astronomers report tremendous quantities of warm dusty debris surrounding a star with luminosity and mass similar to the sun's, but located 300 light-years from Earth. The extraordinary nature of the dust indicates a violent history of cosmic collisions between asteroids and comets, or perhaps even between planets. The discovery is published July 21 in Nature.



An artist's rendering of cosmic collisions surrounding BD+20 307, a star similar to the sun. The colliding objects could range in size anywhere from the largest asteroids to planets the size of Earth and Mars.

"What is so amazing is that the amount of dust around this star is approximately 1 million times greater than the dust around the sun," said Eric Becklin, a UCLA professor of physics and astronomy, member of NASA's Astrobiology Institute, and co-author of the Nature paper. "It's likely there was a cosmic catastrophe, and a time of heavy bombardment, where large asteroids collided in the last few thousand years or less. It's incredible what must be going on."

Unlike hundreds of other stars with dust, where the dust is far from the star — equivalent to beyond the orbit of Pluto — this dust is orbiting in close to the star, where Earth-like planets are most likely to be, said Inseok Song, a former UCLA research scientist who is now an astronomer with the Gemini Observatory in Hawaii, and lead author of the paper.

Was Song surprised to see so much dust so near to the star, which is known as BD+20 307, and is in the constellation Aries?

"Definitely," he said. "I expected to find a much weaker excess because dust close to the star can't survive long."

"The amount of warm dust near BD+20 307 is so unprecedented I wouldn't be surprised if it was the result of a massive collision between planet-size objects, for example, a collision like the one which many scientists believe formed Earth's moon," said Benjamin Zuckerman, UCLA professor of physics and astronomy, member of NASA's Astrobiology Institute, and a co-author of the paper. "According to this model, the early Earth was struck by a Mars-size object that generated an immense fountain of hot magma, some of which condensed to form the moon. But if even a small percentage of this magma escaped into orbit around the sun, it could have led to a condition such as we now witness at BD+20 307."

"This looks similar to our own solar system, and may well lead to a greater understanding of how our solar system formed," said Becklin, who is chief scientist for NASA's Stratospheric Observatory for Infrared Astronomy project. "It is very likely there are planets orbiting this star."

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The team of astronomers used the 10-meter Keck I and the Gemini North telescopes on Mauna Kea in Hawaii to measure the heat radiation coming from the dust.

Very young stars, 10 million years old or younger, may have this much dust around them, but the evidence presented in Nature points to an age of at least a few hundred million years for BD+20 307. For stars that are hundreds of million years old, "this is the dustiest star, far and away," Zuckerman said. Typically, small dust particles get pushed away by radiation or wind, and larger dust particles often get destroyed in collisions or clump together to form larger objects.

"For 98 percent of the stars that have dust around them that have been found, the dust is far beyond the terrestrial planet region and wouldn't tell us anything about Earth," Zuckerman said. "Not more than 1 percent of stars of this age exhibit this kind of warm dust close to the star; the dust is radiating at about room temperature."

"The dust we see is similar in composition to dust in the solar system, but has been pulverized into tiny particles," said Alycia Weinberger, a former UCLA postdoctoral scholar who is now with the Carnegie Institution of Washington. "The Earth may have received lots of similar material in its first 600 million years, during a time when the inner solar system was bombarded by asteroids, comets and other debris."

"There are very few systems like this one that any astronomer has seen, just a tiny handful; you can count the examples on one hand," Zuckerman said. "My interpretation is that our solar system may be quite unusual. I expect this star to be studied over and over again. Many stars closer to Earth with an age comparable to that of our solar system during the era of heavy bombardment have been studied carefully and do not show this pattern."

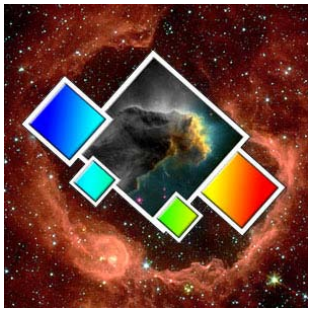
"Since the early '80s," Song said, "many astronomers have eagerly searched for an analogy to our solar system's asteroid belt at other stars. Our finding is a bona fide example of dust at the exo-asteroid zone and it is chilling to see dust at the Earth-Sun separation around a young solar analog — like seeing our own sun back in time."

The research is funded by the NASA Astrobiology Institute.

-UCLA- LSSW343

Astronomers Release New Imaging Tool
FITS Liberator 2.0 debuts August 8, 2005

Spitzer Space Telescope Press Release August 8, 2005



Since its launch nearly two years ago, NASA's Spitzer Space Telescope has taken the public on a journey to the darkest and dustiest places of the cosmos. Its stunning infrared images continue to dazzle us with new views of hidden nebulas and whirling galaxies. Some people might think those images magically arrive from space, while astronomers have a better understanding of the complex process involved in creating Spitzer pictures.

Now, a new tool developed in collaboration with the Spitzer Science

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Center is allowing anybody with Adobe® Photoshop® to try a hand at this technical wizardry. The second version of this tool makes its grand debut today (August 8). "With the FITS Liberator, making images from a half-billion dollar telescope is about as easy as working with photos from a high-end digital camera," said Robert Hurt of the Spitzer Science Center, a member of the software's development team.

Created by the European Space Agency, the European Southern Observatory, and NASA, the "plug-in" converts standard astronomical files, called FITS files, into Photoshop-friendly files. It can be used to make pictures from a variety of telescopes, including NASA's Hubble Space Telescope, the European Southern Observatory's Very Large Telescope, and Spitzer.

Since the release of the first version in July 2004, the FITS Liberator has become the industry standard for astronomical image processing at NASA, the European Southern Observatory, the European Space Agency, and many other facilities throughout the world. Version 2 of this release adds powerful new tools for enhancing faint details in images and for retaining important technical and descriptive information within the final image.

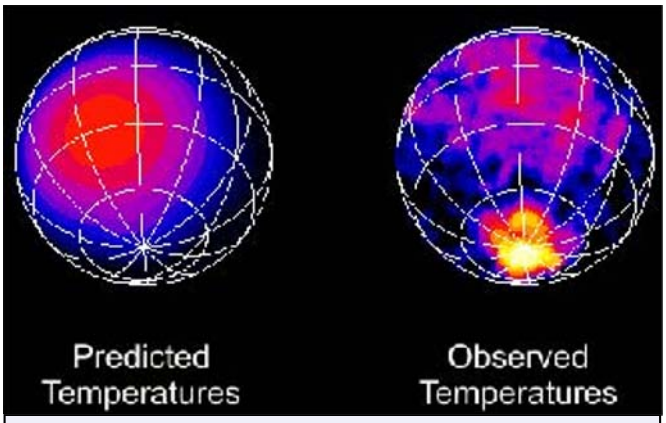
The FITS Liberator 2.0 plug-in for Photoshop is freely available for download at:
http://www.spacetelescope.org/projects/fits_liberator/

Data archives for the Spitzer Space Telescope can be found at:
http://ssc.spitzer.caltech.edu/archanaly/ or http://ssc.spitzer.caltech.edu/legacy/

Cassini Finds an Active, Watery World at Saturn's Enceladus

NASA News Release: 2005-124 July 29, 2005

Saturn's tiny icy moon Enceladus, which ought to be cold and dead, instead displays evidence for active ice volcanism.



Map showing predicted temperatures at Enceladus (left) and observed temperatures
Credit: NASA/JPL/GSFC

NASA's Cassini spacecraft has found a huge cloud of water vapor over the moon's south pole, and warm fractures where evaporating ice probably supplies the vapor cloud. Cassini has also confirmed Enceladus is the major source of Saturn's largest ring, the E-ring.

"Enceladus is the smallest body so far found that seems to have active volcanism," said Dr. Torrence Johnson, Cassini imaging-team member at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "Enceladus' localized water vapor atmosphere is reminiscent of comets. 'Warm spots' in its icy and cracked surface are probably the result of heat from tidal energy like the volcanoes on Jupiter's moon Io. And its geologically young surface of water ice, softened by heat from below, resembles areas on Jupiter's moons, Europa and Ganymede."

Cassini flew within 175 kilometers (109 miles) of Enceladus on July 14. Data collected during that

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flyby confirm an extended and dynamic atmosphere. This atmosphere was first detected by the magnetometer during a distant flyby earlier this year.

The ion and neutral mass spectrometer and the ultraviolet imaging spectrograph found the atmosphere contains water vapor. The mass spectrometer found the water vapor comprises about 65 percent of the atmosphere, with molecular hydrogen at about 20 percent. The rest is mostly carbon dioxide and some combination of molecular nitrogen and carbon monoxide. The variation of water vapor density with altitude suggests the water vapor may come from a localized source comparable to a geothermal hot spot. The ultraviolet results strongly suggest a local vapor cloud.

The fact that the atmosphere persists on this low-gravity world, instead of instantly escaping into space, suggests the moon is geologically active enough to replenish the water vapor at a slow, continuous rate.

“For the first time we have a major clue not only to the role of water at the icy moons themselves, but also to its role in the evolution and dynamics of the Saturn system as a whole," said Dr. Ralph L. McNutt, ion and neutral mass spectrometer-team member, Johns Hopkins University Applied Physics Laboratory, Laurel, Md.

Images show the south pole has an even younger and more fractured appearance than the rest of Enceladus, complete with icy boulders the size of large houses and long, bluish cracks or faults dubbed "tiger stripes."

Another Cassini instrument, the composite infrared spectrometer, shows the south pole is warmer than anticipated. Temperatures near the equator were found to reach a frigid 80 degrees Kelvin (minus 316 Fahrenheit), as expected. The poles should be even colder because the Sun shines so obliquely there. However, south polar average temperatures reached 85 Kelvin (minus 307 Fahrenheit), much warmer than expected. Small areas of the pole, concentrated near the "tiger stripe" fractures, are even warmer: well over 110 Kelvin (minus 261 Fahrenheit) in some places.

"This is as astonishing as if we'd flown past Earth and found that Antarctica was warmer than the Sahara," said Dr. John Spencer, team member of the composite infrared spectrometer, Southwest Research Institute, Boulder, Colo.

Scientists find the temperatures difficult to explain if sunlight is the only heat source. More likely, a portion of the polar region, including the "tiger stripe" fractures, is warmed by heat escaping from the interior. Evaporation of this warm ice at several locations within the region could explain the density of the water vapor cloud detected by other instruments. How a 500-kilometer (310-mile) diameter moon can generate this much internal heat and why it is concentrated at the south pole is still a mystery.

Cassini's cosmic dust analyzer detected a large increase in the number of particles near Enceladus. This observation confirms Enceladus is a source of Saturn's E-ring. Scientists think micrometeoroids blast the particles off, forming a steady, icy, dust cloud around Enceladus. Other particles escape, forming the bulk of the E ring.

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

NASA Telescope Reveals Nearby Galaxy's Invisible Arms

News Release: 2005-120 July 25, 2005

Whitney Clavin, Jet Propulsion Laboratory, Pasadena, Calif.

A new image from NASA's Galaxy Evolution Explorer shows that a galaxy once thought to be rather plain and old is actually endowed with a gorgeous set of young spiral arms.

This image highlights the hidden spiral arms (blue) that were discovered around the nearby galaxy NGC 4625 by the ultraviolet eyes of NASA's Galaxy Evolution Explorer.

The image is composed of ultraviolet and visible-light data, from the Galaxy Evolution Explorer and the California Institute of Technology's Digitized Sky Survey, respectively. Near-ultraviolet light is colored green; far-ultraviolet light is colored blue; and optical light is colored red.

As the image demonstrates, the lengthy spiral arms are nearly invisible when viewed in optical light while bright in ultraviolet. This is because they are bustling with hot, newborn stars that radiate primarily ultraviolet light.

The youthful arms are also very long, stretching out to a distance four times the size of the galaxy's core. They are part of the largest ultraviolet galactic disk discovered so far.

Located 31 million light-years away in the constellation Canes Venatici, NGC 4625 is the closest galaxy ever seen with such a young halo of arms. It is slightly smaller than our Milky Way, both in size and mass. However, the fact that this galaxy's disk is forming stars very actively suggests that it might evolve into a more massive and mature galaxy resembling our own.

The armless companion galaxy seen below NGC 4625 is called NGC 4618. Astronomers do not know why it lacks arms but speculate that it may have triggered the development of arms in NGC 4625.

Image Credit: NASA/JPL-Caltech/Carnegie Observatories/DSS

The unusual galaxy, called NGC 4625, is a remarkable find because it is relatively nearby. Until now, astronomers had thought that this kind of youthful glow in galaxies was a thing of the past.

"This galaxy is an amazing surprise," said Dr. Armando Gil de Paz of the Carnegie Observatories, Pasadena, Calif., lead author of a paper appearing in the July issue of Astrophysical Journal Letters. "We are practically up-close and personal with a galaxy undergoing an evolutionary stage that was thought to occur only at the dawn of the universe, in very young and faraway galaxies."

The image offers astronomers their best look yet at what our Milky Way galaxy might have looked like in earlier times.

"We do not fully understand how stars were created in our galaxy," said Dr. Barry Madore of the Carnegie Observatories, co-author of the new paper. "This nearby galaxy represents one of our possible histories, in which stars developed first in the galaxy core and then later in the arms."

Previous visible-light images of NGC 4625 showed only an oval-shaped ball of light, with very faint hints of a halo of spiral arms. These arms were finally revealed to the ultraviolet eyes of the Galaxy Evolution Explorer. Their intense brightness indicates that the arms are teeming with hot, newborn stars, which shine primarily with ultraviolet light.

"The stars in the arms are about one billion years old, while the stars in the body are about ten times older," said Gil de Paz.

NGC 4625's spiral arms are very lengthy, extending four times beyond the size of the core of the galaxy. They represent the largest ultraviolet galactic disk discovered so far.

Also of interest in the new Galaxy Evolution Explorer image is a nearby companion galaxy, which looks

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very similar to NGC 4625, yet has no arms. How could this galactic duo have turned out so differently? Astronomers do not know, but some theories hold that the presence of the armless galaxy was required for NGC 4625 to grow a set.

"We know that interactions between galaxies can spur the creation of stars, but it is not clear why only one galaxy ended up with arms," said Dr. Chris Martin of the California Institute of Technology in Pasadena, Calif, principal investigator for the Galaxy Evolution Explorer.

Previous studies of the gas distribution around the two galaxies indicate that NGC 4625 might have developed in a more dynamically stable environment, while the armless galaxy grew up in a more chaotic and turbulent setting.

Other authors of this paper include: Dr. S. Boissier, Carnegie Observatories; Dr. R. Swaters, University of Maryland, College Park; Dr. R. J. Tuffs, Max Planck Institut fur Kernphysik, Germany; Dr. K. Sheth, Caltech; Dr. R.C. Kennicutt, University of Arizona, Tucson; Drs. L. Bianchi and D. Thilker, Johns Hopkins University, Baltimore, Md.

Caltech leads the Galaxy Evolution Explorer mission and is responsible for science operations and data analysis. NASA's Jet Propulsion Laboratory, Pasadena, Calif., manages the mission and built the science instrument. The mission was developed under NASA's Explorers Program managed by the Goddard Space Flight Center, Greenbelt, Md. South Korea and France are the international partners in the mission.

NASA-Funded Scientists Discover Tenth Planet

NASA New Release: 2005-126 July 29, 2005

Jane Platt, Jet Propulsion Laboratory, Pasadena, Calif.
Dolores Beasley, Headquarters, Washington
Robert Tindol , California Institute of Technology, Pasadena, Calif.

A planet larger than Pluto has been discovered in the outlying regions of the solar system.

The planet was discovered using the Samuel Oschin Telescope at Palomar Observatory near San Diego, Calif. The discovery was announced today by planetary scientist Dr. Mike Brown of the California Institute of Technology in Pasadena, Calif., whose research is partly funded by NASA.

The planet is a typical member of the Kuiper belt, but its sheer size in relation to the nine known planets means that it can only be classified as a planet, Brown said. Currently about 97 times further from the sun than the Earth, the planet is the farthest-known object in the solar system, and the third brightest of the Kuiper belt objects.

"It will be visible with a telescope over the next six months and is currently almost directly overhead in the early-morning eastern sky, in the constellation Cetus," said Brown, who made the discovery with colleagues Chad Trujillo, of the Gemini Observatory in Mauna Kea, Hawaii, and David Rabinowitz, of Yale University, New Haven, Conn., on January 8.

Brown, Trujillo and Rabinowitz first photographed the new planet with the 48-inch Samuel Oschin Telescope on October 31, 2003. However, the object was so far away that its motion was not detected until they reanalyzed the data in January of this year. In the last seven months, the scientists have been studying the planet to better estimate its size and its motions.

(Continued on page 14)

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This artist's concept shows the planet catalogued as 2003UB313 at the lonely outer fringes of our solar system. Our Sun can be seen in the distance. The new planet, which is yet to be formally named, is at least as big as Pluto and about three times farther away from the Sun than Pluto. It is very cold and dark. The planet was discovered by the Samuel Oschin Telescope at the Palomar Observatory near San Diego, Calif., on Jan. 8, 2005. Image credit: NASA/JPL-Caltech

"It's definitely bigger than Pluto," said Brown, who is a professor of planetary astronomy.

Scientists can infer the size of a solar system object by its brightness, just as one can infer the size of a faraway light bulb if one knows its wattage. The reflectance of the planet is not yet known. Scientists can not yet tell how much light from the sun is reflected away, but the amount of light the planet reflects puts a lower limit on its size.

"Even if it reflected 100 percent of the light reaching it, it would still be as big as Pluto," says Brown. "I'd say it's probably one and a half times the size of Pluto, but we're not sure yet of the final size.

"We are 100 percent confident that this is the first object bigger than Pluto ever found in the outer solar system," Brown added.

The size of the planet is limited by observations using NASA's Spitzer Space Telescope, which has already proved its mettle in studying the heat of dim, faint, faraway objects such as the Kuiper-belt bodies. Because Spitzer is unable to detect the new planet, the overall diameter must be less than 2,000 miles, said Brown.

A name for the new planet has been proposed by the discoverers to the International Astronomical Union, and they are awaiting the decision of this body before announcing the name.

The Jet Propulsion Laboratory manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate, Washington. Science operations are conducted at the Spitzer Science Center at Caltech. Caltech manages JPL for NASA.

Spitzer Finds Life Components in Young Universe

News Release: 2005-123 July 28, 2005

Gay Yee Hill, Jet Propulsion Laboratory, Pasadena, Calif.

NASA's Spitzer Space Telescope has found the ingredients for life all the way back to a time when the universe was a mere youngster.

Using Spitzer, scientists have detected organic molecules in galaxies when our universe was one-fourth of its current age of about 14 billion years. These large molecules, known as polycyclic aromatic hydrocarbons, are comprised of carbon and hydrogen. The molecules are considered to be among the building blocks of life.

These complex molecules are very common on Earth. They form any time carbon-based materials are not burned completely. They can be found in sooty exhaust from cars and airplanes, and in charcoal broiled hamburgers and burnt toast.

(Continued on page 15)

(Continued from page 14)
The molecules, pervasive in galaxies like our own Milky Way, play a significant role in star and planet formation. Spitzer is the first telescope to see these molecules so far back in time.

“This is 10 billion years further back in time than we’ve seen them before,” said Dr. Lin Yan of the Spitzer Science Center at the California Institute of Technology in Pasadena, Calif. Yan is lead author of a study to be published in the August 10 issue of the Astrophysical Journal. Previous missions -- the Infrared Astronomical Satellite and the Infrared Space Observatory -- detected these types of galaxies and molecules much closer to our own Milky Way galaxy. Spitzer's sensitivity is 100 times greater than these previous infrared telescope missions, enabling direct detection of organics so far away.

Since Earth is approximately four-and-a-half billion years old, these organic materials existed in the universe well before our planet and solar system were formed and may have even been the seeds of our solar system.

Spitzer found the organic compounds in galaxies where intense star formation had taken place over a short period of time. These “flash in the pan” starburst galaxies are nearly invisible in optical images because they are very far away and contain large quantities of light-absorbing dust. But the same dust glows brightly in infrared light and is easily spotted by Spitzer.

Spitzer's infrared spectrometer split the galaxies’ infrared light into distinct features that revealed the presence of organic components. These organic features gave scientists a milepost to gauge the distance of these galaxies. This is the first time scientists have been able to measure a distance as great as 10-billion light years away using the spectral fingerprints of polycyclic aromatic hydrocarbons.

"These complex compounds tell us that by the time we see these galaxies, several generations of stars have already been formed," said Dr. George Helou of the Spitzer Science Center, a co-author of the study. “Planets and life had very early opportunities to emerge in the universe.”

Other co-authors include Ranga-Ram Chary, Lee Armus, Harry Tepliz, David Frayer, Dario Fadda, Jason Surace, and Philip Choi, all of the Spitzer Science Center.

The Jet Propulsion Laboratory manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate, Washington. Science operations are conducted at the Spitzer Science Center at Caltech. Caltech manages JPL for NASA. Spitzer's infrared spectrograph was built by Cornell University, Ithaca, N.Y. Its development was led by Dr. Jim Houck of Cornell.

The Infrared Astronomical Satellite was a joint scientific project sponsored by the United States, the Netherlands, and the United Kingdom. The Infrared Space Observatory was a European Space Agency mission with Japan’s Institute of Space and Astronautical Science and NASA.

NASA’s Spitzer Finds Hidden, Hungry Black Holes

News Release: 2005-128 August 3, 2005

Whitney Clavin, JPL; Dolores Beasley, NASA Headquarters

Most of the biggest black holes in the universe have been eating cosmic meals behind closed doors – until now.

With its sharp infrared eyes, NASA's Spitzer Space Telescope peered through walls of galactic dust

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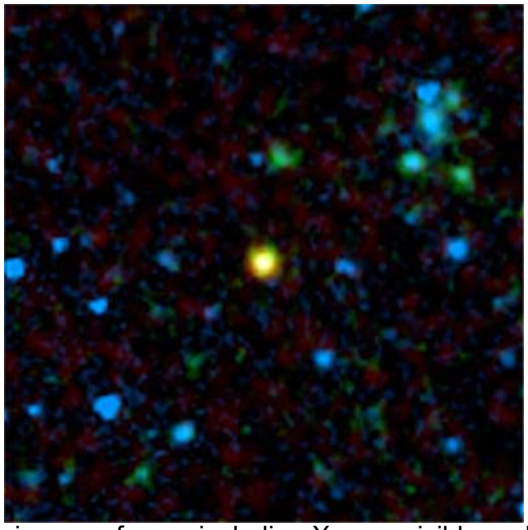
to uncover what may be the long-sought missing population of hungry black holes known as quasars.



"From past studies using X-rays, we expected there were a lot of hidden quasars, but we couldn't find them," said Alejo Martínez-Sansigre of the University of Oxford, England. He is lead author of a paper about the research in this week's Nature. "We had to wait for Spitzer to find an entire population of these dust-obscured objects."

Quasars are super-massive black holes that are circled by a giant ring of gas and dust. They live at the heart of distant galaxies and can consume up to the equivalent mass of one thousand stars in a single year. As their black holes suck in material from their dusty rings, the material lights up brilliantly, making quasars the brightest objects in the universe. This bright light comes in many forms, including X-rays, visible and infrared light.

have puzzled for years over the question of how many of these cosmic behemoths are out there. One standard method for estimating the number is to measure the cosmic X-ray background. Quasars outshine everything else in the universe in X-rays. By counting the background buzz of X-rays, it is possible to predict the approximate total number of quasars.

But this estimate has not matched previous X-ray and visible-light observations of actual quasars, which number far fewer than expected. Astronomers thought this might be because most quasars are blocked from our view by gas and dust. They proposed that some quasars are positioned in such a way that their dusty rings hide their light, while others are buried in dust-drenched galaxies.

Spitzer appears to have found both types of missing quasars by looking in infrared light. Unlike X-rays and visible light, infrared light can travel through gas and dust.

Researchers found 21 examples of these quasars in a small patch of sky. All the objects were confirmed as quasars by the National Radio Astronomy Observatory's Very Large Array radio telescope in New Mexico and by the Particle Physics and Astronomy Research Council's William Herschel Telescope in Spain.

"If you extrapolate our 21 quasars out to the rest of the sky, you get a whole lot of quasars," said Dr. Mark Lacy of the Spitzer Science Center, California Institute of Technology, Pasadena, Calif., a co-author of the Nature paper. "This means that, as suspected, most super-massive black hole growth is hidden by dust."

The discovery will allow astronomers to put together a more complete picture of how and where quasars form in our universe. Of the 21 quasars uncovered by Spitzer, 10 are believed to be inside fairly mature, giant, elliptical galaxies. The rest are thought to be encased in thick, dusty galaxies that are still forming stars.

A team of researchers based at the University of Arizona, Tucson, found similar quasars using Spitzer. Their research is described at http://uanews.org/science.

Upcoming Events

ArkLaTex Star Party: The Red River Astronomy Club (RRAC) will host the first ArkLaTex Star Party from September 1st through Labor Day, September 5th, near Nashville, Arkansas. In a message from Roy Clingan of RRAC, he stated: "Armed with new technology, amateurs are contributing vast amounts of data and research to the scientific community. Hear what you can do in the fields of spectroscopy, cataclysmic variables, NEO and super nova searches. There are also presentations on collimation, imaging and a history of amateur contributions."

The ArkLaTex Star Party will supply dark skies, plenty of camping space, a vendor (Rex's Astro Stuff), presentations by professional and amateur astronomers, meals, T-shirts, swap meet, showers, electricity, door prizes, movies on a 72 inch screen and broad band internet access on the field via wireless connection. There are also many interesting, beautiful and historic sites surrounding Nashville, including a diamond mine, an Indian village and canoeing.

For more information, please visit: http://www.rrac.org.

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On Saturday, September 24th, the **Houston Astronomical Society** will celebrate their 50th anniversary during their annual picnic at their Columbus Observatory. JSCAS members are invited to join HAS for the picnic and an evening of observing. HAS will supply the food for the picnic, including meats and sides, just bring what you want to drink. If you are planning to attend, **you must RSVP by September 10th** to Bob Taylor.

****

The 14th JSCAS **Fort McKavett Star Party** will be held from September 29th through October 1st. The electrical problems at the fort have been solved, so this should be a great time to visit the fort. For more information visit http://www.riverofstars.net/JSCAS/StarParties/starparty.htm.

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The 22nd annual **Okie-Tex Star Party** will be held at Camp Billy Joe from October 1st - October 9th. Camp Billy Joe is located in the Oklahoma Panhandle near the town of Kenton. For more information visit http://www.okie-tex.com/index.htm.

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Astronomy Day 2005 will kick off with the 5th Annual Houston/Beaumont Regional Astronomy Meeting on Friday, October 21, 2005 from 8:00 to 10:30 pm at the Houston Community College. This will be followed by Astronomy Day, Saturday, October 22, 2005 from 3:00 to 11:00 pm at the George Observatory at Brazos Bend State Park. All events are open to the public. Event details can be found on http://www.astronomyday.org as soon as they are available.

JSCAS is an active participant in these two events and volunteers will be needed to make them successful. Barbara Wilson, George Observatory Manager/Director, estimates that there were at least 1200 people that attended last year's Astronomy Day. This is the largest event of its kind in the Houston area and our best chance to spread the "astronomy bug".

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The 3rd annual **Eldorado Star Party** will be held November 2nd — 5th at the X-bar Ranch near

Eldorado Texas. The ranch is located 46 miles west of Fort McKavett and 8 miles north of I-10. For more information visit their web site at: http://www.eldoradostarparty.org.

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Join "The Great Princess of Mars Ground Crew" in the Austin **Race for the Cure**, November 6th. The 5K walk/run is for the Susan G. Komen Foundation — Austin Affiliate. The money raised goes towards curing breast cancer and providing support and education to underserved populations in five Central Texas counties.

The Ground Crew formed in 2004 to honor our friend Eleta Malewitz, the Princess of Mars. This great lady of astronomy lost her battle with breast cancer 12 hours shy of her 56th birthday. She is among 40,000 that will loose their lives this year to this horrible disease.

This year's team goal is to raise 1/10,000th of the miles of a round-trip between Earth and Mars — $9,800. Go to http://www.komenaustin.org to sign up or sponsor us. Look for "Great Princess of Mars" in the team section.

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 Recognition

Becky Ramotowski captured an image of a unique rainbow with 'shadowy rays' going through it. This unusual image can be seen on SpaceWeather.com's August 16th and 17th archive pages.

The October issue of *Sky & Telescope* has an article, *Planetary Masters*, by Sean Walker (page 115) giving tips for planetary imaging. The article includes tips and images from JSCAS' planetary imaging master, **Ed Grafton**.

The Universe Today (http://www.universetoday.com/) article *What's Up This Week - August 15 - August 21, 2005* features **Randy Brewer's** image of Albireo.

Visual Observing — September 2005

Chris Randall

★**SSO**: (Solar System Objects) Summary for 15 September 05

Object	Const	Mag	% Ill	Rise Time	Transit	Set Time
Sun	Leo	-26.7	100	07:05	13:15	19:24
Moon	Cap	--	94	18:12	23:29	04:06
Mercury	Leo	-1.7	100	07:00	13:12	19:29
Venus	Vir	-4.1	69	10:22	15:50	21:23
Mars	Ari	-1.3	90	22:23	05:02	11:40
Jupiter	Vir	-1.7	100	09:17	15:02	20:51
Saturn	Cnc	0.8	100	03:35	10:21	17:08
Uranus	Aqr	5.7	100	18:39	00:24	06:04
Neptune	Cap	7.9	100	17:27	22:54	04:18
Pluto	Ser	13.9	99	13:41	19:11	00:37

Highlighted times denote daylight events.

Lunar phases for September 05

New 3th 13:45	First 11th 06:37	Full 17th 21:01	Third 25th 01:41

Lunar Phase times are Central Daylight time

★ **BSO**: (Bright Sky Objects)

NGC 6885/2 – Open Cluster in Vulpecula, Magnitude 8.1, Size 18', ~30 Stars.
NGC 7078 (M-15) – Globular Cluster in Pegasus, Magnitude 6.3, Size 18'.
NGC 7089 (M-2) - Globular Cluster in Aquarius, Magnitude 6.6, Size 16'.
NGC 7099 (M-30) - Globular Cluster in Capricornus, Magnitude 6.9, Size 12'.

★**DSO**: (Dark Sky Objects)

NGC 7009 (C-55,) Saturn Nebula –Planetary Nebula in Aquarius, Magnitude 8.3(P), Size 70", Central Star Magnitude 12.7.
NGC 7000 North American Nebula – Bright Nebula in Cygnus, Size 120'.
NGC 6888 Crescent Nebula – Bright Nebula in Cygnus, Size 18' x 8'.
NGC 7023 (C-4) – Bright Nebula in Cepheus, Size 14'.

★**CDMP:** (Chris' Don't Miss Pick)

Veil Nebula, Cygnus SNR, Cygnus Loop – (NGC 6960, 6979, 6992, 6995)

These objects are a supernova remnant located in Cygnus with a magnitude of 5.0 (P). It is about 2600 ly away. The supernova which created them exploded about 15,000 years ago.

Despite their overall brightness of about magnitude 5, they are only visible to the naked eye under exceptionally good viewing conditions, because their light is distributed over a large area.

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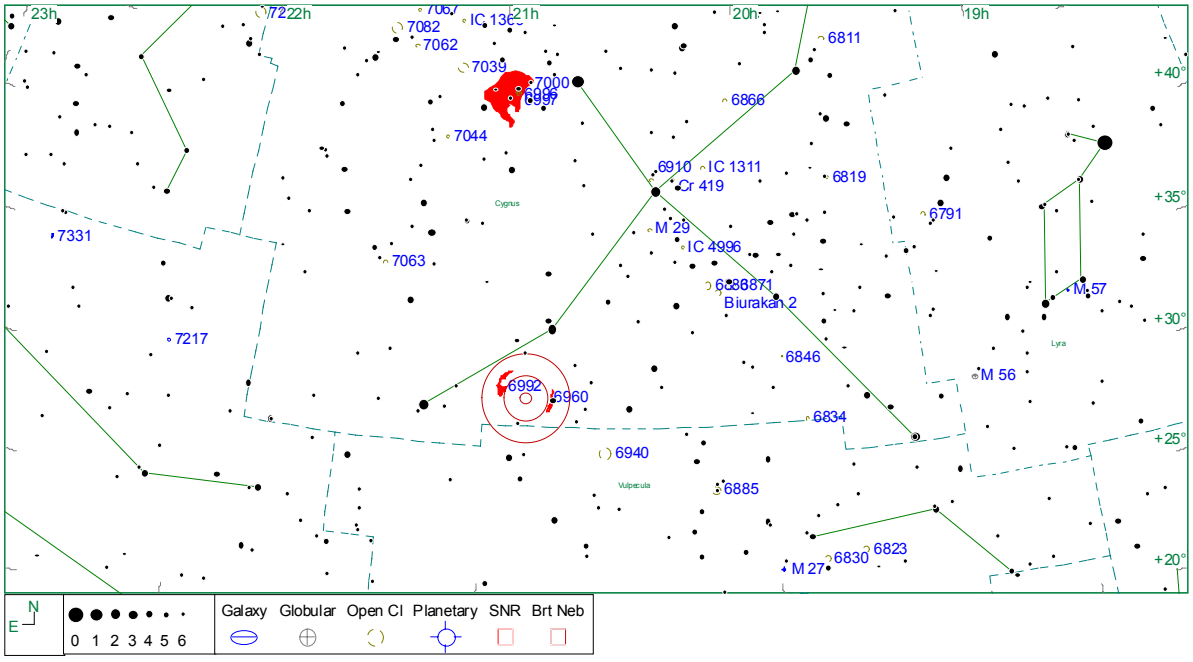
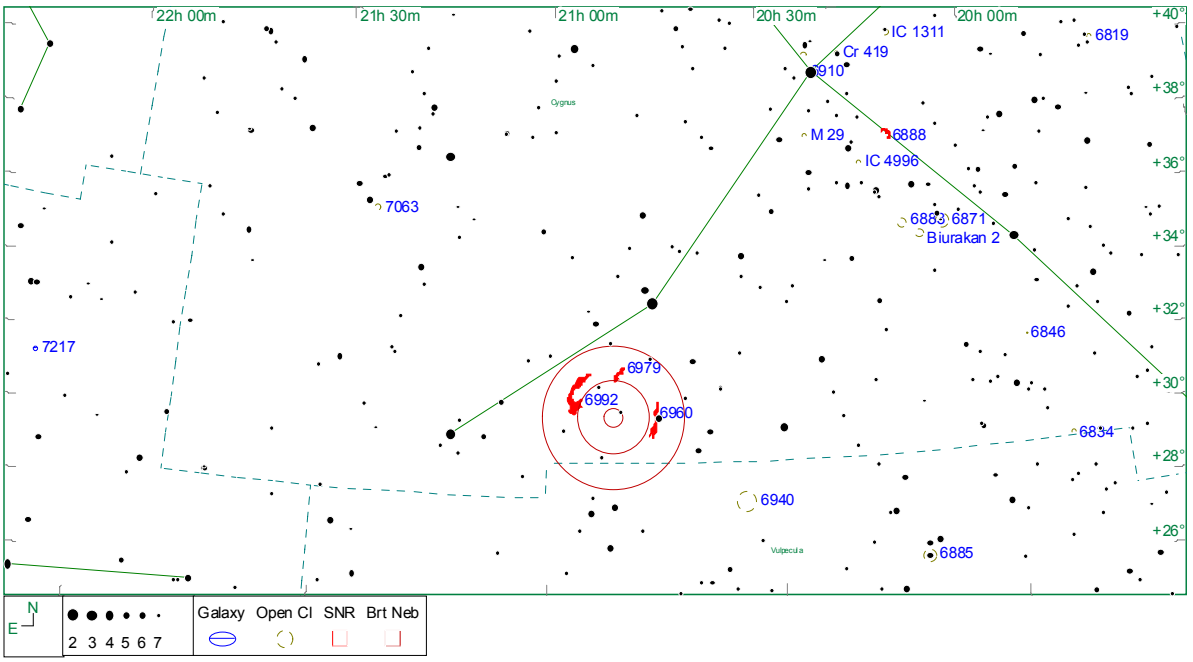
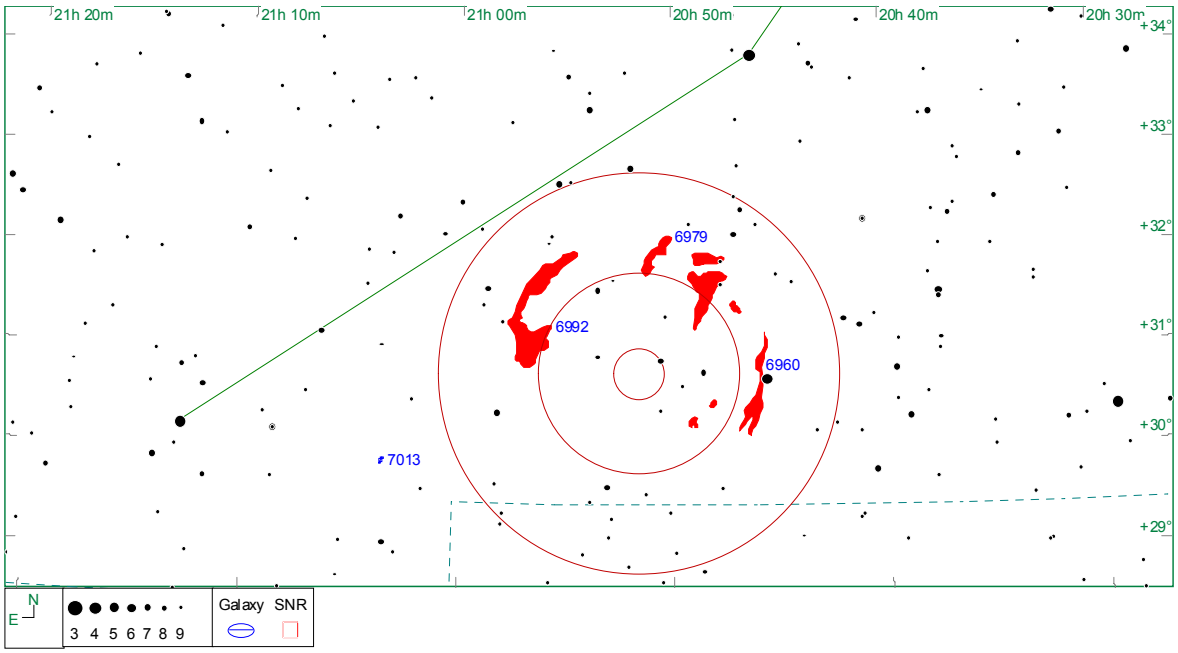
This supernova remnant is so large (six times the diameter of the full Moon) that to earlier observers the brighter parts appeared as a number of distinct diffuse nebulae, and were assigned separate NGC numbers: NGC 6960, NGC 6979, NGC 6992, and NGC 6995. Its fainter extensions have additional catalog identities. An extension of the northern part of NGC 6979 got the designation NGC 6974. In addition, an the southwestern extension of NGC 6995 was cataloged as IC 1340. William Herschel also catalogued them as separate objects: H 2.206 = NGC 6979, H 5.14 = NGC 6992/95, H 5.15 = NGC 6960. Faint luminous material which was not cataloged in NGC or IC catalogues, can be found throughout the object's boundaries.






21h 20m
21h 10m
21h 00m
20h 50m
20h 40m
20h 30m
+34°
+33°
+32°
+31°
+30°
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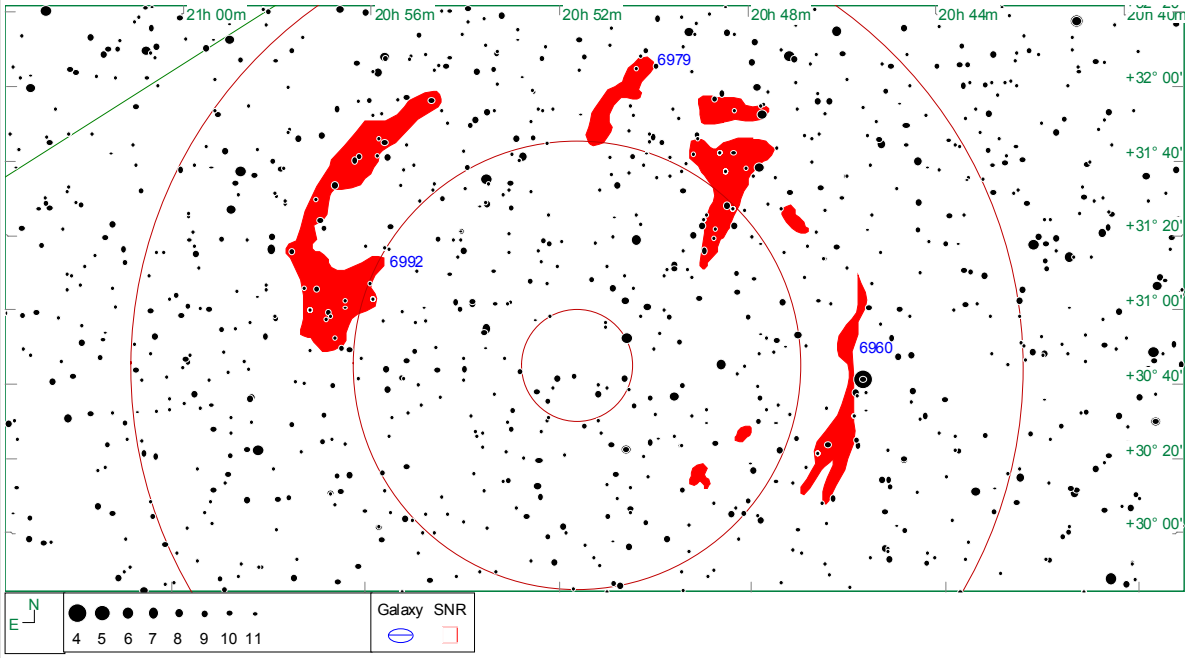
6979
6992
6960
7013
N
E
3 4 5 6 7 8 9
Galaxy SNR


21h 00m
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6979
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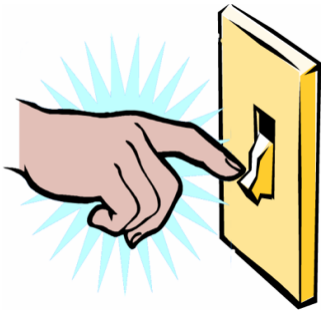
Galaxy SNR

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."

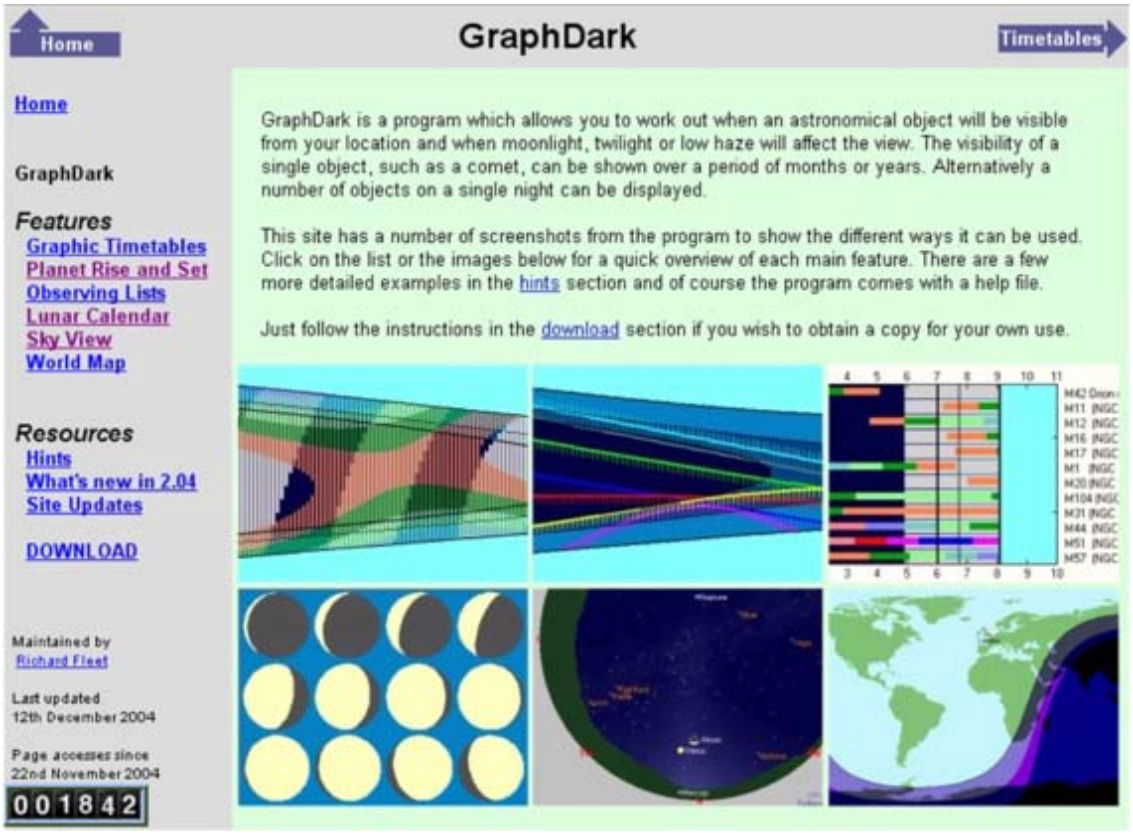
Visit the homepage of the Texas IDA affiliate of the International Dark-Sky Association. Their web site is at: http://www.texasida.org/.

A new outdoor lighting ordinance was passed by the city of Helotes, Texas with a 5-0 vote on Thursday, August 25th. Everybody in the city has 5 years to conform to the ordinance. Helotes is on the western edge of San Antonio.

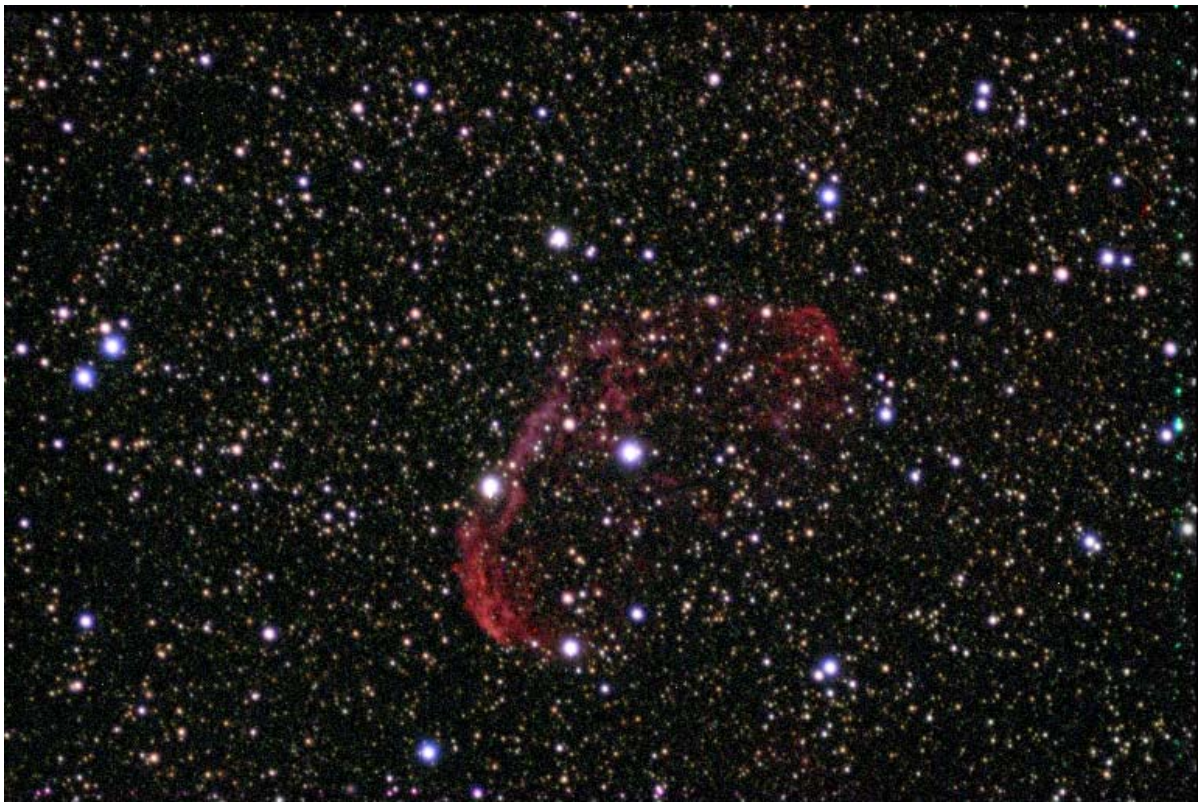
Last month we presented Outdoor Lighting Associates, Inc as a source for shielded light fixtures. This month, we were contacted by Anthony Arrigo, the president of Starry Night Lights, a lighting retailer. According to Anthony, their goal is to provide the widest selection of attractive, high quality, night sky friendly lighting available anywhere. If you are looking for light fixtures that are dark sky friendly, you may want to check out this new company. Their web site is at http://www.StarryNightLights.com. This information is presented as received by Outdoor Lighting Associates and is not to be considered as an endorsement by JSCAS, its officers or the Starscan staff.

Downloads From The Internet

There is a free program called Graph Dark on the Internet. The image below is from their home page http://www.rfleet.clara.net/graphdark/gdkindex.html. You may find it of interest.



MEMBER'S GALLERY



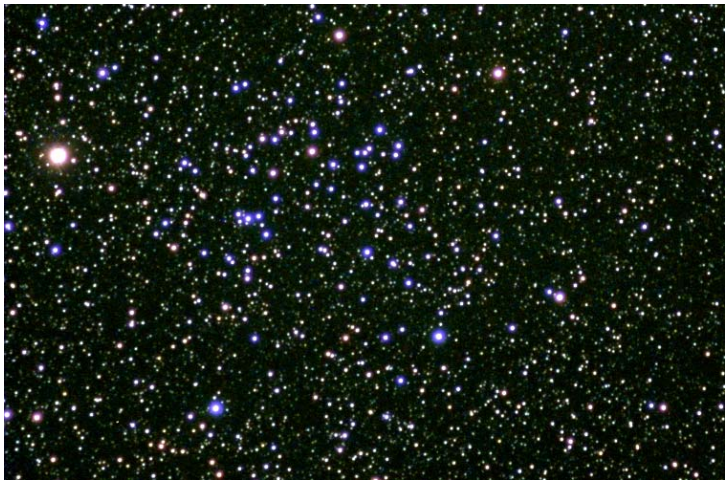
NGC 6888, Crescent Nebula ▲
©Chris Wells

Taken August 8, 2005 from Ft Davis, Texas using a Televue Genesis 101mm aperture f5.4 on PM1 Equatorial Mount. L/RGB processing from 8 clear, 5 red, 3 green and 6 blue images. All images were 40 seconds in duration.

◄ M 92
©Al Kelly

L/RGB image of globular cluster M92 in Hercules, made from images taken with a Starlight Express MX916 and an 8" SCT on August 20, 2005 from Friends-wood, Texas, using Schuler RGcBc filters. Ten 240-second unfiltered exposures, four 240-second sub-exposures in red, three 240-second sub-exposures in green, and five 240-second sub-exposures in blue were self-guided in Astroart and processed in AIP4WIN and Photoshop.

MEMBER'S GALLERY



◄ NGC 7209
©Chris Wells

Taken August 8, 2005 from Ft Davis, Texas using a Televue Genesis 101mm aperture f5.4 on PM1 Equatorial Mount. L/RGB processing from 10 unfiltered ,7 red, 5 green and 10 blue images. All images were 30 seconds in duration.

▼ M 17
©Al Kelly

It was "clear" last night, but not very transparent at all. In fact, my magnitude 4 - 4.5 backyard was about magnitude 3. Nevertheless, the sky was usable, so I took LRGB images of M17 with the C8 at f7.5. Due to sky conditions, this is not a deep shot, even though I went 40 minutes unfiltered, 30 in blue, 20 in green, and 20 in red. It has been processed to show only the higher S/N aspects of the dynamic range. Bringing the background up really gets ugly!

For Sale

Meade 178ED 7" APO refractor

Meade 178ED 7" APO refractor with LXD 750 mount, accessories, custom cases, Kendrick battery, etc. Starting price is $7,000, delivered in Texas. For more information contact Ed Malewitz at emalewitz@sprynet.com.

Own A Piece of Paradise: Country Home on 17½ Acres

3 bedroom, 2 bath, 18X80 single wide 1999 Fleetwood mobile home with approximately 1200 square feet of living space. This is the largest single wide mobile home on the market. The mobile home sits on 17.5 acres of beautiful oak-wooded property.

This tract of land is excellent for astronomy, with dark skies and 360 degrees of cleared area around the house specifically for stargazing. The property is located just 4½ miles from the H.A.S. observatory site near Columbus in Oakridge Ranch.

The living room area is large enough for 2 recliners, a sofa, a coffee table and 2 end tables. The kitchen is ample (our dining table seats 8 comfortably) with plenty of cabinet space which we have never been able to fill. There is plenty of closet space in the bedrooms. The master bedroom has a walk-in closet accessible from both the bedroom and the master bath which provides a garden tub and his and hers sinks.

The front has a 13' X 10' (approximately) decked area, great for lying out at night with binoculars to watch for meteors. The front door of the home is oriented to the SE, looking out toward the back of the property and shielding the multiple windows from the worst of our Texas sun. This also allows views of both the eastern and western skies. There is partial shade on at least one side of the house most of the day.

Due to extenuating circumstances (my significant other bought a new house in Houston and is not interested in astronomy), this much coveted piece of paradise may soon be yours.

The land is ecologically friendly, I've never put any noxious chemicals in the ground. The property has its own water well. Electricity comes from the local coop.

If you are a birder we have numerous species of birds year round and are in a flyway for the spring and fall migrations. We have seen wild turkeys, road runners, robins, wrens, orioles, blue and painted buntings, vireos, blue birds, several species of hawks, tanagers, wood peckers, year round. An old great horned owl makes his home in an oak tree on one of the adjoining tracks. Barred owls frequently hold nightly conventions. We even have had sightings of at least one pair of bald eagles on the Colorado River.

Researching native grasses? Searching for that elusive wild flower? We probably have it. Interested in kayaking or canoeing? You are only a short ride to the Colorado River.

There are several purchase options: the note on the mobile home is assumable, or you can finance it along with the property.

Interested persons may email me, Marilyn, at birdsongs2k@hotmail.com .

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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SIGS

Observing Awards
Triple Nickel
CCD Imaging
Al Kelly
Binocular Observing
Leslie Eaton
Telescope Making
Bob Taylor
Deep Sky Observing
Chris Randall

September Meeting Agenda

September 9th, 7:30 p.m., Center for Advanced Space Studies/Lunar Planetary Institute, 3600 Bay Area Blvd. (at Middlebrook Drive).

- Welcome!!!
- Guest Speaker: Walter Kiefer — "A Brief Geologic History of the Moon"
- Break
- SIG reports, Star Party News
- Astronomical Oddities — Hernan Contreras
- Last Words, Door Prizes

Any unfinished discussions can be continued over food and beverages at a location to be announced at the end of the meeting.

Starscan Submission Procedures

Original articles of astronomical interest will be accepted up to 6 P.M. September 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.

Starscan Staff

Editor	Ken Lester
Associate Editors	Sheila Steele
	Ken Steele

Cover Image
STS-114: Liftoff
Credit: NASA/KSC

Framed by Florida greenery, Space Shuttle Discovery lifts off Launch Pad 39B at 10:39 a.m. EDT on the historic Return to Flight mission STS-114.