THE OBSERVER

SAN BERNARDINO VALLEY AMATEUR ASTRONOMERS

Member of The Astronomical League

2009, International Year of Astronomy

http://sbvaa.org/

Volume #51, Issue 1 | Since 1958 | January 2009

Meeting:

January 17, 2009

Main Feature:

Int'l Space Station

Location:

San Bernardino County Museum, 7:00 p.m. Redlands, CA. California St. exit, I-10 Fwy.

Pre-meeting Dinner, 5:00 p.m., Hometown Buffet, Loma Linda, CA

After the meeting telescopes will be set up for viewing and members will be available to answer questions. Bring your telescope to observe with us.

No telescope is too humble, and beginners are always made welcome!

After viewing the group will head for Coco's in Redlands, Tennessee exit, I-10 Fwy.

Program

International Space Station

IMAX—Space Station

A cool movie about the ISS narrated by Tom Cruise.
See what it's like to live and work 220 miles above the earth as we follow the fascinating lives of the astronauts who inhabit the International Space Station for months at a time. Filmed on board by the actual astronauts, we observe them doing all manner of interesting jobs as well as watching them trying to live in a zero-gravity environment. Spectacular views of earth and space act as a backdrop to this unusual "home away from home." See it all in this incredible film.

Come observe with us after the meeting!

SBVAA Officers

President: *Vacant*

Vice President: John Deems 909-584-7568

Treasurer: Fidel Hernandez 909-864-0615

Secretary - Educational Outreach: Chris Clarke
909-384-8539 Work
909-875-6694 Home

Star Party Coordinator: Tom Lawson 909-8828198

SBVAA Webmaster: Steve Miller 626-859-7776

Newsletter Editor: Jim Sommer 909-792-3587

Calendar of Upcoming Events

January 17, 2009, Club Meeting at the Museum

January 24, 2009, Star Party, Loc. TBD

February 14, 2009, Club Meeting at the Museum

February 21, 2009, Star Party, Loc. TBD

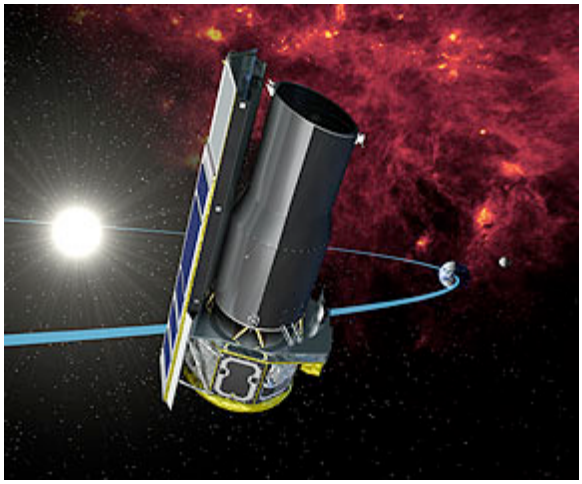
28 March 2009, *Messier Marathon [Riverside Astronomical Society's GMARS Site in Landers, CA.]*

(Watch for upcoming outreaches this winter. SBVAA is a popular guest at many of our local schools, several of which invite us back year after year.)

Editor's Message

By Jim Sommer

Now that we have begun the International Year of Astronomy I thought it might be fun to highlight some of the remarkable photos taken by the Hubble, Spitzer and other wondrous instruments now in service. For January I've picked the Spitzer Space Telescope (SST).



The Spitzer Space Telescope (formerly SIRTF, the Space Infrared Telescope Facility) was launched into space by a Delta rocket from Cape Canaveral, Florida on 25 August 2003. During its mission, Spitzer will obtain images and spectra by detecting the infrared energy, or heat, radiated by objects in space between wavelengths of 3 and 180 microns (1 micron is one-millionth of a meter). Most of this infrared radiation is blocked by the Earth's atmosphere and cannot be observed from the ground.

Consisting of a 0.85-meter telescope and three cryogenically-cooled science instruments, Spitzer is the largest infrared telescope ever launched into space. Its highly sensitive instruments give us a unique view of the Universe and allow us to peer into regions of space which are hidden from optical telescopes. Many areas of space are filled with vast, dense clouds of gas and dust which block our view. Infrared light, however can penetrate these clouds, allowing us to peer into regions of star formation, the centers of galaxies, and into newly forming planetary systems. Infrared also brings us information about the cooler objects in space, such as smaller stars which are too dim to be detected by their visible light, extrasolar planets, and giant molecular clouds. Also, many molecules in space, including organic molecules, have their unique signatures in the infrared.

Because infrared is primarily heat radiation, the telescope must be cooled to near absolute zero (-459 degrees Fahrenheit or -273 degrees Celsius) so that it can observe infrared signals from space without interference from the telescope's own heat. Also, the telescope must be protected from the heat of the Sun and the infrared radiation put out by the Earth. To do this, Spitzer carries a solar shield and was launched into an Earth-trailing solar orbit. This unique orbit places Spitzer far enough away from the Earth to allow the telescope to cool rapidly without having to carry large amounts of cryogen (coolant). This innovative approach has significantly reduced the cost of the mission.

Spitzer will be the final mission in NASA's Great Observatories Program - a family of four orbiting observatories, each observing the Universe in a different kind of light (visible, gamma rays, X-rays, and infrared). Other missions in this program include the Hubble Space Telescope (HST), Compton Gamma-Ray Observatory (CGRO), and the Chandra X-Ray Observatory(CXO). Spitzer is also a part of NASA's Astronomical Search for Origins Program, designed to provide information which will help us understand our cosmic roots, and how galaxies, stars and planets develop and form.

The tangled arms of the Pinwheel galaxy, otherwise known as Messier 101, are decked out in red in this new infrared image from NASA's Spitzer Space Telescope.

The Pinwheel galaxy is located 27 million light-years away in the constellation Ursa Major. It is what's called a flocculent spiral, which means that its spiral arms are not well defined.

For more fascinating information on the SST and for some amazing photos, go to:

www.spitzer.caltech.edu/spitzer/

(Data and photos courtesy of Spitzer Space Center/Caltech, NASA/JPL)

November Star Party Report
By Cliff Saucier

The last Saturday in November found SBVAA once again at our dark sky site in Johnson Valley. At least a few of us. Being Thanksgiving weekend, a lot of people had family obligations or were even out of town. The Clear Sky Charts had predictions of so-so conditions, and some weather sites were calling for winds. Well, they were wrong and a nice evening was had, hardly a breeze and probably the last night temperatures that will be comfortable for some time.

I showed up late and it was already dark. Paul Littlecoyote and a fellow Big Bear resident were at the site and already setup. A sliver of a crescent moon was just setting in the bright sky for the first celestial delight of the evening. My scope was set up and cooling, when we spied headlights heading up the road. If it is a pair of headlights followed by several more, that means it's Rudy Rodriguez and his students, if only the single pair, then it's most likely Martin Carey. It was Martin, fresh from driving home from Carlsbad, armed with his twelve-inch LightBridge. Paul was showing Votch (the guy accompanying Paul) the various wonders of the night sky, with skill borne of lots of experience. The requisite newbie talk about Messier and his List was nice to listen to again. Paul wanted to find NGC 2419, a globular in Lynx, about seven degrees from Castor, in Gemini. (I think of Paul as Mr. Globular, and thought he had ferreted them all out!) In a team effort, Martin found the object in my telescope with Paul's eyepiece. Very nice view, the globular being so extremely distant it appeared like a dim comet, maybe four arc minutes in diameter, in line with two stars, all three spaced like the belt stars in Orion. Harlow Shapely referred to it as the Intergalactic Tramp when he was using the various globulars to chart out the center of our galaxy. Now more often called the Intergalactic Wanderer, tramp having a more lively connotation today, it is farther out than the Magellanic Clouds. He had mistakenly thought it had escaped the gravitational hold exerted by the Milky Way. Martin is sure good at picking up those dim objects that I sweep by!

As the evening went on, Paul and friend packed up, leaving just Martin and myself. Even though the skies weren't near good enough to look for the Horsehead Nebula, B33 in Orion, Martin started the hunt. The nearby Flame Nebula, NGC 2024, was showing fairly well, and that is a must if the Dark Horse is to be spied, as I've frequently heard. Martin was picking up some of the Horsehead, but my less experienced eye left me in doubt as to just what I was seeing. I'm getting closer to claiming that view as my own, twice now glimpsing the nebulous area it is silhouetted against. It was around midnight when we packed it in. Many faint objects were teased from their hiding places in the firmament, and it had already been a long weekend. A few more friends to observe with would have been nice, but any observing nights in this time of winter storms is a welcome bonus.

New Image Shows the Power of

Visual Remix For SST

The same way a visible-light photographer can choose to shoot black and white instead of color, astronomers using NASA's Spitzer Space Telescope have their choice of what colors to use or not use in their images, as shown in an image of star-forming region RCW 49 released today.

The new picture is an alternate view of a dusty stellar nursery located 13,700 light-years away in the southern constellation Centaurus. Spitzer released its original version of the image in 2004. That image combined information from four different wavelengths of infrared light, but the new image uses only two.

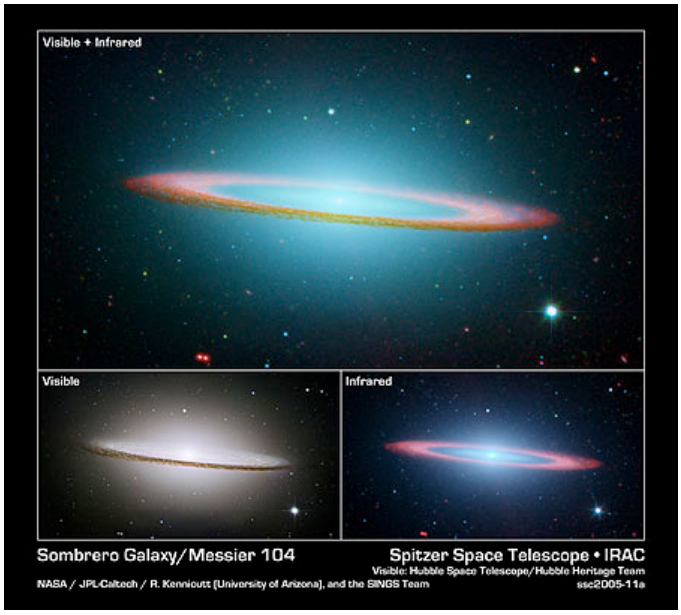
The typical human eye perceives three different colors of visible light -- red, green, and blue -- with cones on the retina. All the colors we see are made up of some combination of these three colors. Every color of light has a different wavelength, and many wavelengths fall outside the visible spectrum. Infrared light is basically wavelengths of light that vibrate at colors below the red part of the spectrum, colors we can't see.

Spitzer's two imaging cameras effectively see a total of seven different wavelengths, or channels, of infrared light. That would be the equivalent of the eye being sensitive to seven colors instead of just three. The challenge for Spitzer imaging scientists is to present all these different channels using colors that we can see. When astronomers select which channels to include in their false-color composites, each wavelength is assigned a different visible-light color. Therefore, the same observations can be used to make very different images.

Spitzer's two shortest wavelengths, 3.6 microns and 4.5 microns, were mapped as cyan and red respectively for the new image. At 4.5 microns, hot hydrogen gas glows very brightly, much like a neon light glowing in visible light. The two-channel image therefore emphasizes hot hydrogen gas, which shows up as the red regions, in addition to the more than 2,200 stars and organic molecules visible in both the two-channel and four-channel images.

As well as enabling exciting new science discoveries, two-channel images like this one are particularly interesting to scientists who wish to understand how Spitzer will perform after its liquid helium coolant runs out in 2009. At this time the telescope will become too warm to observe at longer wavelengths, but will continue to operate in these channels.

(NASA/Caltech News, 12-24-08)



Spitzer Spies Spectacular Sombrero

NASA's Spitzer and Hubble Space Telescopes joined forces to create this striking composite image of one of the most popular sights in the universe. Messier 104 is commonly known as the Sombrero galaxy because in

visible light, it resembles the broad-brimmed Mexican hat. However, in Spitzer's striking infrared view, the galaxy looks more like a "bull's eye."

In Hubble's visible light image (lower left panel), only the near rim of dust can be clearly seen in silhouette. Recent observations using Spitzer's infrared array camera (lower right panel) uncovered the bright, smooth ring of dust circling the galaxy, seen in red. Spitzer's infrared view of the starlight, piercing through the obscuring dust, is easily seen, along with the bulge of stars and an otherwise hidden disk of stars within the dust ring.

Spitzer's full view shows the disk is warped, which is often the result of a gravitational encounter with another galaxy, and clumpy areas spotted in the far edges of the ring indicate young star-forming regions.

The Sombrero galaxy is located some 28 million light-years away. Viewed from Earth, it is just six degrees south of its equatorial plane. Spitzer detected infrared emission not only from the ring, but from the center of the galaxy too, where there is a huge black hole, believed to be a billion times more massive than our Sun.

The Spitzer picture is composed of four images taken at 3.6 (blue), 4.5 (green), 5.8 (orange), and 8.0 (red) microns. The contribution from starlight (measured at 3.6 microns) has been subtracted from the 5.8 and 8-micron images to enhance the visibility of the dust features.

The Hubble Heritage Team took these observations in May-June 2003 with the space telescope's Advanced Camera for Surveys. Images were taken in three filters (red, green, and blue) to yield a natural-color image. The team took six pictures of the galaxy and then stitched them together to create the final composite image. This magnificent galaxy has a diameter that is nearly one-fifth the diameter of the full Moon.

Twenty two “party hearty” members enjoyed our club’s annual holiday dinner and gift exchange on December 13, at Roberto’s in Highland. Never let it be said that we would ever pass up good food or a dark, clear observing night.

For Sale

Intes MN56 Maksutov-Newtonian Telescope. Newer glossy wihite model with 1/8 wave optics and original Russian focuser. Currently sells at Teton Telescope for $1020. Get this one for $400.

Tom Bennett

(909) 382-6416