FIRST LIGHT

Journal of the South Bay Astronomical Society – August 2008
on line at www.geocities.com/sbas_elcamino

Monthly General Meeting: Friday, August 1st, 7:30 PM

Guest Speaker: Lieutenant Colonel John E. Varljen

Satellite Applications for Military Space

The July 11 Meeting

President Ken Rossi began the meeting at 7:34 by welcoming newcomers Shien Chi and Pam Sable, as well as Joshua and Clarissa Hewett, the grandchildren of Ken and Dicie Sizemore. Several members reported on their recent observing experiences, and President Rossi then asked Pam Sable to describe her experiences at the Stony Ridge Observatory. This observatory is run by amateur astronomers for amateur astronomers, and is only ten miles from Mt. Wilson. The observatory contains an excellent 30-inch reflector, and has a limited number of memberships available.


Pres. Ken Rossi Thanks Matt Ota
For A Fine Presentation On
The Cassini Mission

For those who would prefer an observatory experience closer to home, the officials at Chadwick School appear very interested in our own plans to build an observatory, perhaps on their property. All efforts are very preliminary, but this is clearly a possibility worth pursuing.

After a 15-minute social break, President Rossi introduced Matthew Ota, who spoke on the subject "Ring World 2: Cassini-Huygens Mission to Saturn". The Cassini spacecraft has been orbiting Saturn for the past four years, and has now completed its primary mission. NASA has permitted the spacecraft to continue on a two-year extended mission, and may allow it to continue its studies after that if funds become available. This spacecraft is the largest interplanetary spacecraft ever built by NASA, as it is the size of a school bus and weighed 2.8 tons on Earth.

Launched in October 1997, Cassini reached Saturn on July 2004. The Huygens probe was launched from the Cassini spacecraft in December 2004, and in January 2005 the probe landed on the surface of Saturn's moon Titan. A highlight of Matthew's talk was the breathtaking videos and movies he showed on the planetarium screen. The videos included a movie of the surface of Titan imaged by the Huygens probe as it descended through Titan's atmosphere, a movie of Saturn's rings as Cassini passed from one hemisphere to the other, and movies taken by Cassini of the changing cloud formations at Saturn's north pole. Several pictures of the ring system were in false color, or were images color-coded according to temperature or composition, and were sufficiently stunning as to provide a psychedelic experience. The other moons were also studied in detail, leading to such discoveries as geysers on Enceladus and unique features on Iapetus such as its equatorial ridge, and the remarkable contrast between its brilliantly-white trailing hemisphere and its black leading hemisphere.

Many of these pictures and videos are available at http://saturn.jpl.nasa.gov/multimedia/products/CHARM.cfm if you wish to view them again. Matthew Ota answered several questions from the audience, and was presented with a plaque by President Rossi as a token of our appreciation. Matthew ended by pointing out that he would be moving soon to New Hampshire, and that he would miss us all. He was again thanked by the 45 people in attendance for his efforts, and the meeting ended at 9:40.

- Dr. Steven Morris

Death of a Supergiant

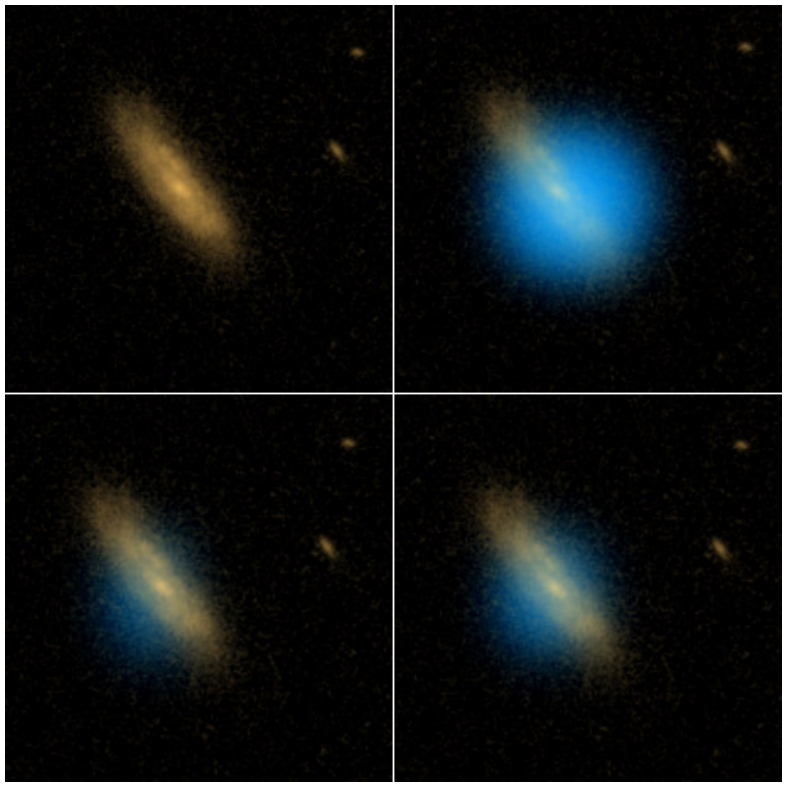
By all outward appearances, the red supergiant appeared normal. But below the surface, hidden from probing eyes, its core had already collapsed into an ultra-dense neutron star, sending a shock wave racing outward from the star's center at around 50 million kilometers per hour.

The shock wave superheated the plasma in its path to almost a million degrees Kelvin, causing the star to emit high-energy ultraviolet (UV) radiation. About six hours later, the shock wave reached the star's surface, causing it to explode in a Type IIP supernova named SNLS-04D2dc.

Long before the explosion's visible light was detected by telescopes on Earth, NASA's Galaxy Evolution Explorer (GALEX) space telescope captured the earlier pulse of UV light — scientists' first glimpse of a star entering its death throes.

"This UV light has traveled through the star at the moment of its death but before it was blown apart," explains Kevin Schawinski, the University of Oxford astrophysicist who led the observation. "So this light encodes some information about the state of the star the moment it died."

And that's exactly why astronomers are so excited. Observing the beautiful nebula left behind by a supernova doesn't reveal much about what the star was like before it exploded; most of the evidence has been obliterated. Information encoded in these UV "pre-flashes" could offer scientists an unprecedented window into the innards of stars on the verge of exploding.



Sequence of images shows supernova start to finish. The top left image shows the galaxy before the supernova. At top right, the bright UV flash called the shock breakout indicates a red supergiant has collapsed. At bottom left, moments later, the flash is mostly gone. As the debris expands, it heats up again and becomes brighter (bottom right). The supernova became 10 times the size of the original over the following few days, thus becoming visible to supernova hunters.

In this case, Schawinski and his colleagues calculated that just before its death, the star was 500 to 1000 times larger in diameter than our sun, confirming that the star was in fact a red supergiant. "We've been able to tell you the size of a star that died in a galaxy several billion light-years away," Schawinski marvels.

"GALEX has played a very important role in actually seeing this for a few reasons," Schawinski says. First, GALEX is a space telescope, so it can see far-UV light that's blocked by Earth's atmosphere.

Also, GALEX is designed to take a broad view of the sky. Its relatively small 20-inch primary mirror gives it a wide,

1.2-degree field of view, making it more likely to catch the UV flash preceding a supernova.

With these advantages, GALEX is uniquely equipped to catch a supernova before it explodes. “Just when we like to see it,” Schawinski says.

For more information, visit www.galex.caltech.edu, “Ultraviolet Gives View Inside Real ‘Death Star’.” Kids can check out how to make a mobile of glittering galaxies at spaceplace.nasa.gov/en/kids/galex_make1.shtml .

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

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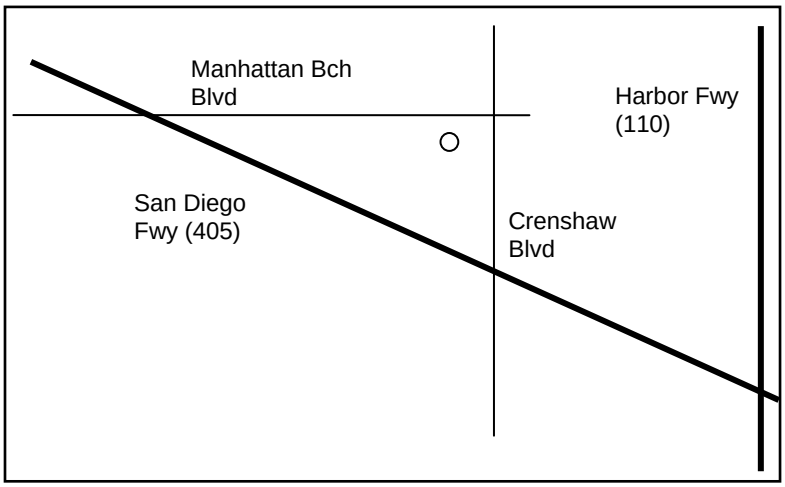
Monthly General Meetings

We normally meet on the first Friday of each month at 7:30 p.m. in the Planetarium at El Camino College (16007 Crenshaw Bl. In Torrance). If the first Friday is on or close to a holiday, we usually defer the meeting until the second Friday of the month. The Planetarium is on the south side of Manhattan Beach Blvd., one block west of Crenshaw Blvd. (near the center of the map at left).

The planetarium is the only round, domed building on campus. There is on-street parking, and we can often use campus parking: check inside to see if you need a FREE parking permit for your car.

We enjoy the planetarium facilities through the courtesy of the El Camino College Administration, and have several faculty members of the Astronomy Department as members of our Club. Our meetings always include an informal opening, when new attendees are invited to introduce themselves and let us know about their interests in astronomy. Members share their latest news and observations at this time. The rest of the evening is devoted to guest speakers, who range from amateur astronomers to professional astronomers to representatives from local aerospace companies to college professors. We are fortunate to have all these talented people in our area, willing to come and talk to us.



August general meeting

Monthly Planning Meeting

Committee members (and anyone else with an interest in Society activities) meet each month, usually on the Monday following the general meeting. Meetings are sometimes rescheduled due to travel and other circumstances. Exact date and time of each month's meeting will be announced in the schedule of events in FIRST LIGHT each month, and should also be verified with a committee member. The July 14th planning meeting location will be announced at the

Membership Dues Schedule

Month Join/Due	Member (Family) USMail	Email	Student	Expires
January	$38.50	$33.00	$22.90	12/2008
February	$35.00	$30.00	$20.85	12/2008
March	$31.50	$27.00	$18.75	12/2008
April	$28.00	$24.00	$16.70	12/2008
May	$24.50	$21.00	$14.60	12/2008
June	$21.00	$18.00	$12.50	12/2008
July	$17.50	$15.00	$10.45	12/2008
August	$14.00	$12.00	$8.40	12/2008
September	$10.50	$9.00	$6.25	12/2008
October	$49.00	$42.00	$29.20	12/2009
November	$45.50	$39.00	$27.10	12/2009
December	$42.00	$36.00	$25.00	12/2009

To simplify the dues, we suggest that all membership expire in December. Dues are $42.00/year for FirstLight via US Mail, or $36.00 via Email notification ($25.00/year for students) and expire on December 31, of the current year. New members use Month Join, and current members select your expiring Month to calculate the amount. Members that expire in October or November may wish to write one check and include next years membership. Make checks payable to the South Bay Astronomical Society. Dues may be paid at the general meeting or mailed to:

South Bay Astronomical Society

Attn: Arnie Stodolsky

P.O. Box 1937

Redondo Beach, CA 90278

SBAS Yahoo Group

Join our own YAHOO group for up-to-the-minute club news; see astro photos taken by members and be part of the growing online community of the South Bay Astronomical Society. A YAHOO userid is needed (free) then click on GROUPS and search for SBASTRO. Use the JOIN function and you will get notification from the Group's administrator that your application has been accepted. This group is limited to SBAS members. You can specify to have emails sent to your normal email address when you signup. The Executive Board is working to use this vehicle more and more this coming year to deliver information to our members. 25% of our membership has joined. Don't be left out. If you need assistance or have any questions, contact any Board member.

NexStar 8 Available to SBAS Members

All members in good standing (with at least six months of continuous membership) can borrow the club's Nexstar8 for up to 7 days. The fee of $5 for a weekend, or $10 for an entire week, is nonrefundable and will be added to the club's Accessories Fund "Wish List" for future purchases. A fully refundable deposit of $200 cash or check is required. Loss or damage is the responsibility of the borrower. A copy of the complete South Bay Astronomical Society Nexstar 8 Borrowing Rules and Agreement is available upon request. The **Accessories Fund "Wish List"** – Member contributions of any amount or donations will be appreciated, as will any suggestions for new purchases!

SBAS Membership Benefits

Contact Arnie Stodolsky for magazine subscriptions at club rates: "Sky & Telescope" $32.95 and "Astronomy" $34.00/1 year or $60.00/2 years!

Note: S&T subscribers at the club rate renew their subscriptions by mailing their renewal notice and check or calling the 800# on the renewal notice.

Only new subscribers or subscribers converting their subscription to the club rate need to contact Arnie or send a check to the PO Box. Astronomy subscriptions and renewals still go through Arnie or via the PO Box.

For Sale

A Celestron Classic 8 is up for sale. It is in excellent condition and comes with a set of eyepieces and tripod with equatorial wedge. Call 310-918-1255 for more information.

Observing Reports

Cottonwood Springs – I very nearly didn't make it out to Joshua Tree National Park for my dark sky trip due to a brush fire along the 57 freeway that brought traffic to a halt. Fortunately, the firefighters were able to control the fire and traffic was allowed through. Arriving at Cottonwood Campground, I found the place almost deserted. Except for few other astronomers, the entire place was deserted. The weather was very good all night and the seeing conditions were excellent.

As I began setting up, a family pulled in to the site next to mine. They had noticed my telescope and came and asked if it'd be okay for them to camp next to me. I just asked that they keep the fire and lights down low after 9 PM, which they readily agreed to. I invited them over for a guided tour of the universe after their supper. They had a very noticeable foreign accent which, it turned out, was because they were from Slovenia. Robert, Marietta and their three kids, Mathai, Kaia and Sala were on vacation and were traveling all over California.

Since I already had the crescent moon in my scope I invited them to take a look. I don't speak a word of Slovenian but the tone of their chatter seemed to be very appreciative. As the sun set and twilight began they came back over and invited me to join them for dinner and some wine. They had a very fine dinner consisting of a very tasty stew, corn on the cob and bread. We had a very enjoyable talk as they told me of their travels and I pointed out with my laser pointer various stars and constellations. The Moon, Regulus, Mars and Saturn made a very pretty straight line in the fading light of the western sky.

After dinner, we all went back to my scope and I proceeded to give them a grand tour of the universe, starting with our solar system, showing them Jupiter, Mars and Saturn. Then it was off to galactic deep-sky objects. M13, in the 20mm Nagler eyepiece, was extremely impressive. Apparently, they couldn't think of enough English words to describe it as they chattered excitedly about what they'd seen. They kept going back to it again and again. Finally, we moved on to an open star cluster, M11 which also amazed them. From there it was on to planetary nebulas, M57 and M27. M17 was a treat for little Sala, who was just 6 years old. When told its popular name of the Swan Nebula, she insisted that it looked more like a duck! The double-double of Epsilon Lyra and Albireo were very impressive to the older teen kids. Lastly, we ended the tour with an extra-galactic object, M51. M51 was especially spectacular as the transparency and steadiness of the sky brought out the spiral arms.

By then it was after midnight and they retired to their tent to sleep. I tried to do some photography for the remainder of the night but was plagued by numerous troubles and never got a single shot worth looking at. I finally gave it up and went back to visual observing by 3 AM. By 4 AM, Comet Boattini (2007 W1) had cleared the eastern horizon. At around 7th magnitude it wasn't visible to the naked eye in the lightening eastern sky but was clearly visible in binoculars and both my scopes as a bright, fuzzy object. No tail was discernable, though. With that, I brought my night to a close.

- Ken Munson

Lt. Col. John E. Varljen

Our guest speaker for this month has certainly had an interesting career! Among the many varied projects he has been involved in:

DMSP: The Defense Meteorological Satellite Program (DMSP) is managed by the Space and Missile Systems Center, Los Angeles Air Force Base, Calif. Command and control is provided by a joint-operational team at the National Oceanic and Atmospheric Administration, Suitland, Md.

The DMSP mission is to generate terrestrial and space weather data for operational forces worldwide. The Air Force is the Department of Defense's executive agent for this program. The data from this program is also furnished to the civilian community through the Department of Commerce.

GPS: The Global Positioning Systems Wing is a joint service effort directed by the US Air Force and managed at the Space and Missile Systems Center (SMC), Air Force Space Command, Los Angeles Air Force Base, Calif. GPS is a space-based radio-positioning system nominally consisting of a minimum of 24-satellite constellation that provides navigation and timing information to military and civilian users worldwide. GPS satellites, in one of six medium earth orbits, circle the earth every 12 hours emitting continuous navigation signals on two different L-band frequencies. In addition to the satellites, the system consists of a worldwide satellite control network and GPS receiver units that acquire the satellite's signals and translate them into precise position and timing information.

GPS provides the following:

Â· 24-hour, worldwide service
Â· Highly accurate, three-dimensional location information
Â· Precision velocity and timing services
Â· Accessibility to an unlimited number of global military, civilian, and commercial users

SBIRS: Space Based Infrared Systems (SBIRS) will contribute to the Department of Defense (DoD) mission to deter war and protect the security of the U.S. by providing timely and accurate missile warning information. SBIRS will develop, acquire, and sustain space-based infrared surveillance, tracking, and targeting capabilities for missile warning/defense and intelligence.

Currently, the SBIRS Program consists of two Geosynchronous Orbit (GEO) satellites, two Highly Elliptical Orbit (HEO) payloads (P/L) riding on classified host satellites, and associated ground elements.

Schedule of Coming Events

1 August	**Total Solar Eclipse** Visible from Greenland, Canada, Siberia and China.
1 August Friday Night 7:30 PM	**Monthly General Meeting** Guest Speaker: Lr. Col. John Varljen – Satellite Applications for Military Space
2 August Saturday Evening	**Out-of-Town Dark Sky Observing Session** Contact Greg Benecke to coordinate a location.
4 August Monday Night 7:30 PM	**Monthly Planning Meeting** See directions on Page 4.
21 August Thursday 7:30 PM	**Keeping an Eye on Earth's Changing Climate: The Ocean Surface Topography Mission** Dr. Parag Vaze, Ocean Surface Topography Mission Project Manager Following in the footsteps of the remarkable Topex/Poseidon and Jason-1 spacecrafts, the Ocean Surface Topography Mission has the responsibility of continuing one of the most important on-going chronicles of Earth's changing climate - the detailed measurements of global sea level.
23 August Saturday Evening	**In Town Dark Sky Observing Session at Ridgecrest Middle School–** 28915 NortbBay Rd. RPV, Weather Permitting**:** Please contact Greg Benecke to confirm that the gate will be opened! *Construction work at the Ridgecrest In-town Viewing Site has closed access to the campus entrance. We are forced to cancel July and August planned viewing session. With school opening in September, we anticipate regaining access. If an alternate site(s) is secured, we will use email and SBAStro to notify members.*
30 August Saturday Evening	**Out-of-Town Dark Sky Observing Session** Contact Greg Benecke to coordinate a location.
5 September Friday Evening 7:30 PM	**Monthly General Meeting** Guest Speaker: SBAS's intrepid eclipse chases Ron Rennie, Dr. Steven Morris, and Dr. Perry Hacking Reports on the total solar eclipse of August 1st,2008.
8 September Monday Evening 7:30 PM	**Monthly Planning Meeting** See directions on Page 4.

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, August 1st, at 7:30 P.M.

Lt. Col. John E. Varljen

Satellite Applications for Military Space

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South Bay Astronomical Society
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