FIRST LIGHT

Journal of the South Bay Astronomical Society - November 2004
on line at www.geocities.com/sbas_elcamino

Monthly General Meeting: Friday, November 5th, 7:30 PM

Guest Speaker : Dennis Kidder

"Amateur Radio Astronomy"

Lomita Math and Science Magnet School Star Party

Unfortunately the weather did not cooperate for the Star Party at the Lomita Math and Science Magnet School on **Sept. 25th**. A high, hazy cloud layer covered the sky. The Moon was visible through it as well as a few of the brightest stars, so the moon became the primary target for the night. At least the students and their families could see the moon at a variety of magnifications. There were by my estimate over 150 people there. We had a good turnout of scopes, with several 8 inch SCTs brought by Jacques Linder, Al Fader, Sergio Fernandez, Bea Collu, and myself. In addition, Ken Munson brought his Nexstar 11, Mike Rivas brought his 12 inch LX200 GPS and Bill Eislie brought his 13 inch Dob. For a period there was a distinct ring around the Moon. At one point the cloud cover started to dissipate a bit. As M57 was nearly overhead I thought I would see if it could be made out. I was just barely able to discern it through the murky sky. So low was the contrast that it was difficult for a fairly experienced observer like myself to detect it, I knew it would be impossible for the general public and I went back to the Moon. I am aware that Mike Rivas was able to pull in a globular cluster for awhile, thus giving some variety. Others down the line may have also been able to glimpse something besides the Moon. Despite the limited sights, everyone seemed to enjoy the evening and as usual the kids were well behaved.

- Greg Benecke

Observing Reports

@Ridgecrest School – **October 9th** There was a lot of moisture in the air, but the sky was clear as sunset approached. As we waited for the sky to get dark after the sun had set some clouds moved in, stayed a while and moved back out. This would be the story of the night. There was a good turnout of scopes and people. Dr. Palmer had invited his class from El Camino up for some extra credit and a number of students were there. The students took notes as they looked through the various scopes. At times the seeing was pretty good and at other times pretty poor. The SCT owners had to have their dew heaters on high, if they had them, and some of those who did not borrowed my battery operated heat gun to clear their optics. Everything was getting really wet as the clouds were staying and rolling out less. By the time we gave up for the night, both the secondary and primary mirrors on my Dob were dewed up and the shroud material was practically dripping. We packed up relatively early.

@Redrock-Inyokern Road – Our **October 13th** outing was cancelled due to adverse weather conditions.

- ***Greg Benecke***

Group Purchase Opportunity

Do we want to do a group order of the ***2005 Year In Space*** desk calendar? The group rate of $9.95 each applies for a purchase of 2-9 copies. We are a bit late in ordering them, but probably not too late. If you want to take a look go to **www.yearinspace.com**.

- Greg Benecke

Keck Interferometer Team to Make Stars 'Disappear'

The technological magicians at NASA's Jet Propulsion Laboratory and the W.M. Keck Observatory are a step closer to performing a vanishing act on a cosmic scale. With an instrument recently installed as part of the Keck Interferometer, they can make stars disappear almost completely from a telescope's view and reveal the close-in regions where planets may have formed. This fall, astronomers will continue integration and test of the instrument, called the "Nuller," which will contribute to NASA's search for planets around other stars.

"We have successfully combined infrared light from both 10-meter (33-foot) Keck telescopes using the new Nuller instrument," said Dr. Jim Fanson, Keck Interferometer project manager at JPL. "This permits a so-called 'visibility' measurement, where we can measure the size of objects with exquisite precision. "Later this year, when we complete our functional tests of the Nuller, we'll be ready to attempt our first null measurement," Fanson said. The Keck Interferometer is a NASA project that combines light from the world's largest optical telescopes to create a new type of telescope with unprecedented power. An interferometer is a device that gathers light waves from multiple telescopes, and then combines the waves in such a way that they interact, or "interfere" with each other. Depending on how the light waves are combined, they can combine constructively, creating higher intensity, or they can combine destructively, creating lower intensity. The resulting light pattern, called an "interference fringe," can be decoded by astronomers to make high precision measurements, such as a star's diameter or the size of an accretion disk around a black hole.

The Nulling instrument is designed to combine the starlight waves destructively, so they cancel each other out. With the starlight glare suppressed, the faint light from dust orbiting around the star can be detected. "You're getting rid of this great big searchlight that the star is, and you're seeing the faint stuff orbiting nearby that you normally can't see because of the glare," said Dr. Andrew Booth of JPL, software engineering lead for the Keck Interferometer. The "faint stuff" that astronomers hope to glimpse with the Keck Interferometer Nuller is the exozodiacal dust (dust in the plane of other solar systems) that may surround many stars. It is the leftover material from which planets are believed to have formed. Large amounts of exozodiacal dust could obscure the signature of a planet. "This dust, if it's thick enough, could defeat our attempts to image planets around other stars from space telescopes now in the planning stages," Fanson said. "We need to find out how bright this dust is."

Nulling interferometry is considered an essential technology in NASA's quest for new planets. Although more than 100 planets have been detected around other stars in recent years, so far, none have been observed directly. This is because the relatively faint light of the planets is swamped in the brilliant glare of the stars they orbit. Future planet-finding missions, such a Terrestrial Planet Finder, will use nulling interferometry to directly observe and characterize planets around nearby stars. Before shipment, the Keck Interferometer Nuller was tested extensively in a laboratory at JPL using a configuration similar to how it will be used on the sky. In these tests it was able to cancel 99.9 percent of the light from its test star, according to Dr. Mark Colavita, the project's instrument manager. After years of development, seeing the instrument work for the first time produced feelings of both "relief and excitement," recalled Nulling Scientist Dr. Gene Serabyn, "It's a very challenging problem to make light of all wavelengths subtract away, so it took a while to find the proper technique. We had to come up with some newer and better ideas along the way to simplify the process," Serabyn said.

The development of the Keck Interferometer is managed by JPL for NASA's Science Mission Directorate, Washington. It is part of NASA's Origins program, a series of missions and studies designed to answer the questions: Where did we come from? Are we alone? The W.M. Keck Observatory is funded by Caltech, the University of California, and NASA, and is managed by the California Association for Research in Astronomy, Kamuela, Hawaii.

- JPL News Release

Our SBAS Committee

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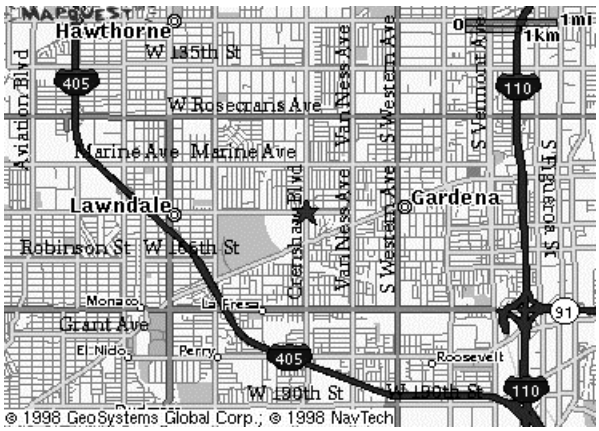
Monthly General Meetings



We normally meet on the first Friday of each month at 7:30 p.m. in the Planetarium at El Camino College. 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). Click on the map to get a display that can be zoomed out for a regional view. The zoom display appears in a separate browser window, which can be closed to return to this page.

The domed roof of the planetarium is visible from the street. 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. Park in northeast corner lot, temporarily, due to the construction project.

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.

Monthly Planning Meetings

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 by any member or visitor wishing to attend. All are welcome!

We will meet on Monday, November 8th at 7:30 PM at the offices of Microcosm, 401 Coral Circle in El Segundo. Taking the 405 Fwy. north from Torrance, exit at El Segundo Blvd. and turn left. Take El Segundo Blvd. to Douglas and turn left. Take Douglas to Coral Circle and turn right. Follow Coral Circle around the bend to the left and then straight ahead. Microcosm occupies the crook of the next curve to the left and the company name is on the upper part of the building.

SBAS Membership Benefits

"Welcome" – Brian Krieger, Bill Samuels, Donald Foster, Steven Pedersen and Gerald T. Nixon!

Contact John Collins for magazine subscriptions at club rates: "Sky & Telescope" $32.95 and "Astronomy" $29.00! Make your check payable to SBAS and mail the payment and your subscription / renewal form directly to South Bay Astronomical Society, P.O. Box 1999, Redondo Beach, CA 90278.

Part of your SBAS membership dues goes toward membership in the Astronomical League. All paid members should be receiving the "Reflector", the league's newsletter, four times a year. As a member organization, we can participate in a number of award programs they offer. These are based on completing various observing challenges. Check out the Astronomical League website at **www.astroleague.org**

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!

November - Comets & Asteroids

Comets Visible:

Name	Magnitude	Constellation
2001 Q4	10.5	Dra
78P/Gehrels 2	10.7	Ari
Macholz (2004 Q2)	7.9 – 6.1	Col-Cae-Eri

Comets at Perihelion:

Date	Identification	Magnitude
No visible comets at perihelion.		

Asteroid Occultations:

Date/Time	Asteroid	Star	Con	Ra	Dec
Nov 23 11:00 PM	Ursina	HIP11395	Tri	2h 26.807m	35° 36.855'
Nov 28 9:30 PM	Christophe	HIP 113674	Aqu	23h 1.394m	-7° 3.670'

Near-Earth Asteroid Flybys:

Date	Identification	Magnitude	Distance
No visible near-earth asteroids.			

Check the JPL Ephemeris Generator page for coordinates of the objects at:
http://ssd.jpl.nasa.gov/cgi-bin/eph

- ***Ken Munson***

Annual Membership Renewal

Renew your SBAS membership – Keep this amazing newsletter coming plus meetings and observing trips!
Now would be a great time to renew your membership in the group that brings you great monthly programs, the company of fellow observers, and many chances throughout the year to share the excitement of the night sky with students and new friends.

If you just joined us this year, then you can renew your membership on a pro-rated basis to adjust your membership term to the standard calendar-year schedule. What a deal: you renew for less than full price. The renewal cost, as a function of when your membership expires, is as follows:

Membership	**Renewal Fee Due Now**	
Expiration	**Individual/Family**	**Student**
Dec. '05 or later	$ 0.00	$ 0.00
Nov. '05	$ 2.50	$ 2.08
Oct. '05	$ 5.00	$ 4.17
Sept. '05	$ 7.50	$ 6.25
Aug. '05	$10.00	$ 8.33
July. '05	$12.50	$10.42
June '05	$15.00	$12.50
May '05	$17.50	$14.58
Apr. '05	$20.00	$16.67
Mar. '05	$22.50	$18.75
Feb. '05	$25.00	$20.83
Jan. '05	$27.50	$22.92
Dec. '04 or before	$30.00	$25.00

To renew, check your membership expiration date in the upper right corner of the mailing label on the back page of this newsletter. This is what our records show for your membership expiration date. Please renew, according to the schedule above, by check to: South Bay Astronomical Society, P.O. Box 1999, Redondo Beach, CA 90278. (Payments will also be accepted at our general meetings!)

Last Request - SBAS Members' Preference for Newsletter Delivery

In the past, SBAS was very fortunate that our newsletter reproduction services have been provided at "no charge". Circumstances have changed however, and we will now be paying for the monthly hardcopy newsletter reproduction costs to an outside service provider. This is an opportunity to expand the newsletter delivery process into more efficient and economical methods, thereby cutting down on the hardcopy production effort and costs.

Therefore, the SBAS Planning Committee is asking <u>all</u> members to declare their preferred newsletter delivery method from the following choices:

- ❖ I prefer to access the newsletter from the SBAS website.

  Option: Please send me an email notification when the newsletter is available on-line.
  My email address is:

  _____

- ❖ I need to continue receiving a hardcopy through the U.S. Postal Service.

You may email your preferred method to Greg Benecke, return this form at the November 5th General Meeting or the November 6th observing session at Ridgecrest School, or mail to SBAS, P.O. Box 1999, Redondo Beach, CA 90278.

First Close Encounter of Saturn's Hazy Moon Titan

Long hidden behind a thick veil of haze, Titan, the only known moon with an atmosphere, is ready for its close-up on Oct. 26, 2004. This visit by the Cassini spacecraft may settle intense speculation about whether this moon of Saturn harbors oceans of liquid methane and ethane beneath its coat of clouds. Cassini will fly by Titan at a distance of 1,200 kilometers (745 miles), with closest approach at 9:44 a.m. Pacific Time. This flyby will be nearly 300 times closer than the first Cassini flyby of Titan, on July 3rd.

This is one of 45 planned flybys of Titan during the four-year tour. Subsequent flybys will bring the spacecraft even closer. Scientists believe Titan's atmosphere is similar to that of early Earth. "Cassini will see Titan as it has never been seen before. We expect the onboard instruments will pierce the moon's dense atmosphere and reveal a whole new world," said Dr. Charles Elachi, director of NASA's Jet Propulsion Laboratory, Pasadena, Calif., and team leader for the Cassini radar instrument. One important goal of this flyby is to confirm scientists' model of Titan's atmosphere to prepare for the Huygens probe descent. The probe, built and managed by the European Space Agency, will be cut loose from its mother ship on Christmas Eve and will coast through the atmosphere of Titan. On the way down, the probe will sample the atmosphere with a sophisticated set of scientific instruments.

"Titan has been lying still, waiting. Cassini may finally show us if what we thought of this moon is true, and whether the Huygens probe touchdown will be a splash," said Dr. Jean-Pierre Lebreton, Huygens project manager and project scientist for the European Space Research and Technology Center, Noordwijk, Netherlands. Eleven of Cassini's 12 instruments will be aimed at Titan during this encounter. Scientists hope to learn more about Titan's interior structure, surface, atmosphere and interaction with Saturn's magnetosphere. This first in-place sampling of Titan's atmosphere will help in understanding the atmosphere's density and composition, which, in turn, will help aid management of the Huygens probe. This flyby will mark the first time Cassini's imaging radar is used to observe Titan, and is expected to provide topographical maps and show whether there is a liquid or solid surface.

"We know our instrument will see through the haze to Titan's surface," said Dr. Robert H. Brown, team leader for the visual and infrared mapping spectrometer, University of Arizona, Tucson. "This encounter is about digging down below the atmosphere and getting our first glimpse of Titan geology." Cassini's ion and neutral mass spectrometer will taste mysterious, subtle flavors in Titan's atmosphere. "Our instrument will scoop up a breath of Titan's puffy atmosphere during the flyby," said Roger Yelle, instrument team member, also with the University of Arizona. The experiment will measure how many molecules of different masses it gathers in the gulp of Titan's mostly nitrogen, methane-laced atmosphere.

Titan is Saturn's largest moon. It is larger than Mercury or Pluto and is the second largest moon in the solar system, after Jupiter's moon Ganymede. Titan is a cold place thought to be inhospitable to life at 95 degrees Kelvin (minus 289 degrees Fahrenheit). Cassini has performed flawlessly since entering orbit around Saturn on June 30. The team believes that on Tuesday night, all will proceed as planned. "This is not the same white-knuckle situation we had during Saturn orbit insertion, but there are some things we can't control," said Earl Maize, deputy project manager for the Cassini-Huygens mission at JPL.

"If a spacecraft anomaly should occur, or if the weather at the tracking stations does not cooperate, the science return may be limited or lost. Although this is an unlikely scenario, the possibility still exists." Cassini will have only one opportunity to send the data back to Earth before the data are overwritten on the recorders by data from the next set of observations. The first downlink of data by NASA's Deep Space Network occurs at 6:30 p.m. PDT. More information on the Cassini-Huygens mission is available at **http://saturn.jpl.nasa.gov** and **http://www.nasa.gov/cassini**.

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, D.C.

- JPL News Release

Schedule of Coming Events

5 November Friday 7:30 P.M.	**Monthly General Meeting:** The speaker for this evening is Dennis Kidder on the topic “Amateur Radio Astronomy”.
6 November Saturday Evening	**In-Town Dark Sky Observing at Ridgecrest School** – Weather Permitting: If the weather conditions are marginal, contact Greg Benecke to confirm that he will be opening the gate! Take Hawthorne Blvd. south across Pacific Coast Hwy.; continue up the hill past Silver Spur and turn left at Highridge. Go one mile and turn left on Whitley Collins, up one block and turn left on Northbay Rd., the new parking lot is at the end on the left. Enter parking lot and turn left, the gate is at the east end (it should be open about 15 minutes before sunset) and a paved road leading into the playground where we have traditionally set up. If at all possible, drop your equipment off and park your car in the new parking lot (less than 200 feet away). If you are absolutely certain that your vehicle does not drip anything you can park with your equipment. *Drive with care* to avoid steel pillars supporting basketball nets…
8 November Monday 7:30 P.M.	**Monthly Planning Meeting** Refer to page 3 for directions.
13 November Friday Evening	**Out-of-Town Dark Sky Observing Trip** – New Moon November 12th Contact Greg Benecke to confirm site location.
16 November Tuesday Night	**Leonids Meteor Shower** There are no predictions for anything particularly spectacular, but surprises are always possible and the moon will be favorable for viewing. The predicted peak is on Nov. 17 at 8:25 U.T (12:25 A.M. local). There are no plans for a club event.
18 JPL 19 PCC November 7:00 P.M.	**Von Karman Auditorium Lecture Series** – FREE "To See or Not to See... Tools for Early Detection, Diagnosis and Prevention of Eye Disorders in Space and on Earth", presented by Dr. Wolfgang Fink, JPL Senior Research Scientist & Assistant Professor of Ophthalmology, University of Southern California. The human eye and vision system can be likened to a camera consisting of an optical lens system (cornea and eye lens), film (retina), and an image-processing unit (retina and visual cortex). The malfunctioning of only one of these components will impair vision. For more information call: (818) 354-0112. Current and archived webcasts can be viewed at **http://www.jpl.nasa.gov**
3 December Friday 7:30 P.M.	**Monthly General Meeting:** The speaker for the evening will be announced in the December newsletter.
4 December Saturday Evening	**In-Town Dark Sky Observing at Ridgecrest School** – Weather Permitting. Refer to November 6th entry for directions to the site & instructions on weather conditions.
6 December Monday 7:30 P.M.	**Monthly Planning Meeting** The location of this meeting will be announced in the December Newsletter.
12 December Saturday Evening	**Out-of-Town Dark Sky Observing** – New Moon Contact Greg Benecke to confirm site location.

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, November 5th at 7:30 P.M.

Guest Speaker: Dennis Kidder

"Amateur Radio Astronomy"

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South Bay Astronomical Society
P.O. Box 1999
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❖ ***Attention All Members - Follow instructions on page 5!***