FIRST LIGHT

Journal of the South Bay Astronomical Society - February 2005
on line at www.geocities.com/sbas_elcamino

Monthly General Meeting: Friday, February 4th, 7:30 PM

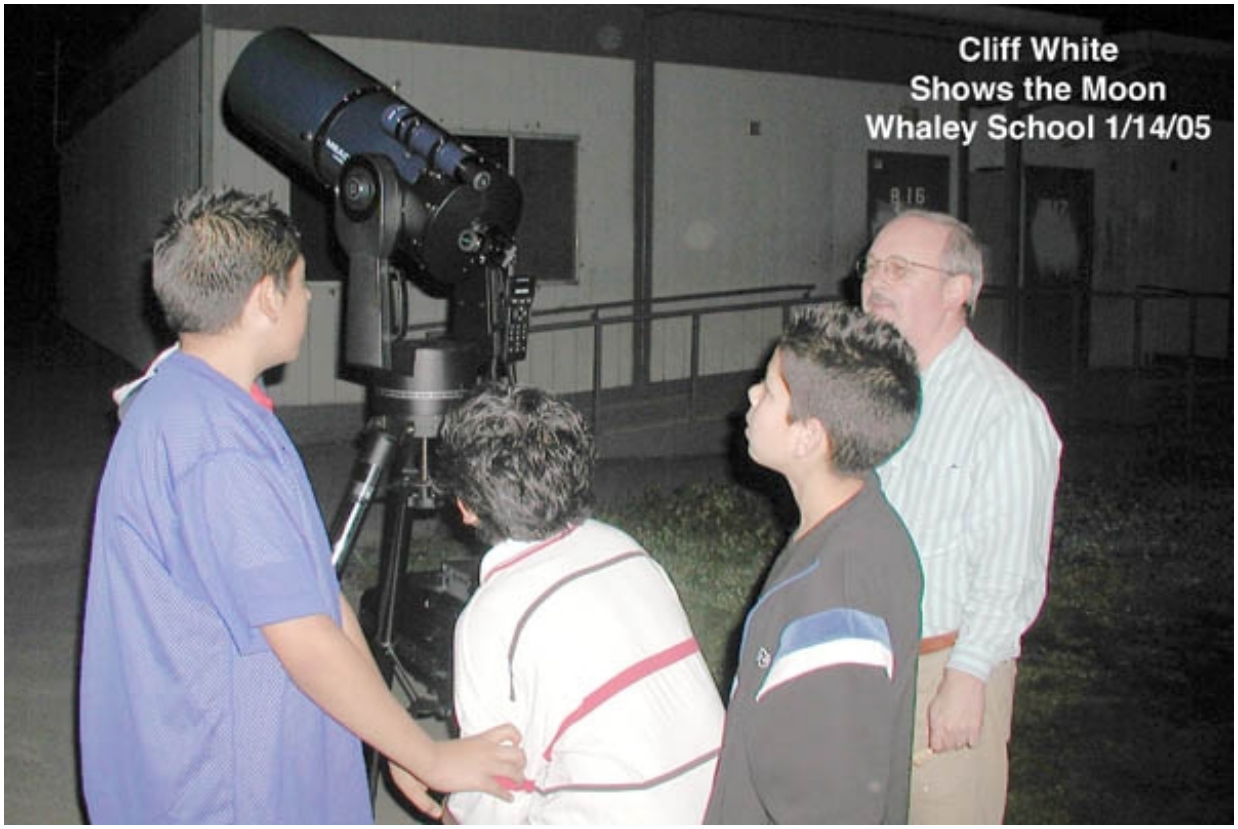
Guest Speaker : Dr. Perry Hacking (SBAS/ECC)

"Demonstration of ECC's New Planetarium Projector"

Whaley School Star Party

On **January 14th**, during school hours, Joe Fierstein put on a presentation for the students in Nancy Balter's class to prime the kids for tonight's viewing. I was the first member to arrive that evening for the third annual star party at the Whaley School in Compton. Nancy was there to greet me and asked that we set up in a fenced in area next to the lunch tables and benches. I picked an area away from the lights of the vending machines and began to set up. I was soon joined by Nora De Muth with her trusty refractor and Bill Eisele with his 13 inch Dob. About the time that Tim Moore arrived with his 14 inch LX200 the lights came on above the lunch tables. Bill and Tim were able to find a location to set up away from the lights, but I already had my C8 SCT set up and ready to go, so I stayed put. Cliff White brought his 8inch SCT and Joe Fierstein and Steve Pederson joined us later.

As they say, the third time is the charm, this time with regard to the weather. The previous two years we had fought clouds just to give the kids a glimpse of the moon. Tonight the sky was clear and the seeing well above average. I started with low and moderate power views of the Moon. "That's tight" was a frequent refrain from the students, who were accompanied by siblings and parents. The other scopes had a clear view of Saturn before I did, so after everyone had their fill of the Moon, I moved on to Comet Macholtz, the Pleiades, and the Orion Nebula. We had two Compton Police Officers present who were able to take a few moments every now and then and look at the various sights. One of the Officers told me he commuted from near Joshua Tree National Park so I told him how to find Macholtz in the dark skies at home.



I am sure at least a couple of hundred people were there at the peak. When I eventually made my way to Saturn the crowd was thinning. Saturn was a site to behold. The skies had steadied nicely and I was able to view at 300 power. The Cassini Division was clearly delineated and multiple bands could be seen on the face of the planet. Five satellites were seen. I ended the night at the same power on the Trapezium and could clearly see all six stars. All in all it was a great night.

Note: Our Dark-Sky trip scheduled for **January 8th** was canceled due to rain!

- Greg Benecke

Support the Next Montemalaga School's "Star Party"

SBAS members will be supporting the Montemalaga School's "Star Party" on Wednesday evening, **February 23rd.** They would like us to be set up by 6:00 P.M. as the Science night will be running from 6-8 P.M. We will be setting up on the lower field unlike previous years. The School will be providing two pizzas for SBAS members who are providing their support for the star party. Pizza will be served at about 5:30. There is usually a good turnout for this star party so members are encouraged to join us with their scopes. The school is on the top, back side of the hill with no street lights so viewing should be great. **Directions**: Take Hawthorne Blvd South to top of peninsula. Turn right at Grandvia Altimira (there's a 7-11 on the corner). Go 5 blocks to Via Visalia turn right. Go to bottom of small hill, 3 blocks, turn right on Via Nogales. The school is on left side of Via Nogales.

2005 Observer's Handbooks Available

Our 2005 Observer's Handbooks are in and will be available at the February meeting. They are $16.50 each. I have 5 unreserved copies in addition to the reserved copies. Please bring exact change or a check made out to SBAS, if you would like one. First come first served on the unreserved copies, of course.

Our SBAS Committee

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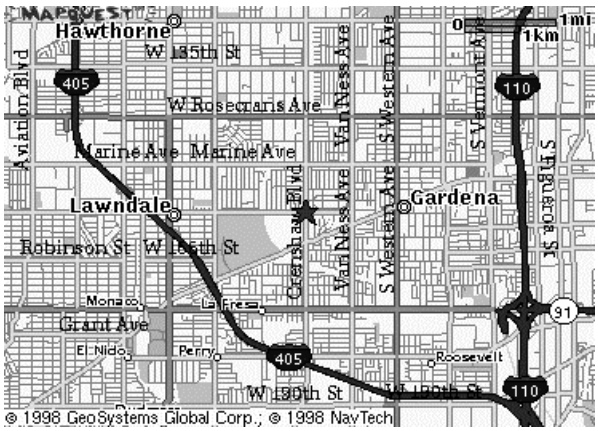
Monthly General Meetings



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, **February 7th** at 7:30 PM at the home of Greg Benecke. From Crenshaw Blvd., head West on 182nd St. Shortly after going under the 405 overpass you will see a Fire Station on the right. Turn right into the cul-de-sac just after the Fire Station. From Prairie Ave., head East on 182nd St. Go one block past the second traffic light (Yukon Ave.) and make a left into the cul-de-sac just before the Fire Station. You are making the correct turn if you see a sign saying "Park Place" on the white fence on the Northwest corner next to the Fire Station. Greg's house is the first one on the left side of the cul-de-sac 18161 Patronella Ave., Torrance.

SBAS Membership Benefits

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!

- ***For Sale:*** One 5mW Green Laser Pointer. This is one of the green laser pointers that was bought in the last group buy for the SBAS and was intended for a friend who never took delivery. $104. Contact Greg Benecke at 310-217-1512 or beneckerus@aol.com.

February - Comets & Asteroids

No visible near-earth asteroids – it looks like we're going to have a long dry spell on those! Comet Macholz continues to shine brightly and 2003 T4 is growing brighter but is a really early morning comet.

Comets Visible:

Name	**Magnitude**	**Constellation**
2003 K4	6.2 – 7.5	Pic-Cae-Hor-Eri
Macholz (2004 Q2)	4.8 – 6.2	Cas-Cep
2003 T4	8.8 – 7.6	Vul-Sge-Aql-Del

Comets at Perihelion:

Date	**Identification**	**Magnitude**
No visible comets at perihelion.		

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***

Special Note:
The Deep Impact comet mission, launched on January 12th, is headed for a **July 4th** rendezvous with Comet Tempel 1 (9P). Their web site doesn't list the approximate time of the impact on that day. I did some checking and found that Tempel 1 will be visible here in California, in the western sky between 8 PM and Midnight. It will be in the constellation Virgo, near Spica, shining at magnitude 9.7. July 4 also happens to be right near the new moon as well, so it might be a good time to be out in the desert for the best view of this once-in-a-lifetime event.

- ***Ken Munson***

Celebrate Astronomy Day in April

Astronomy Day, April 16, is being celebrated all week this year by Joe Fierstein. Join Joe for the SBAS Solar Viewing trip to the Farmers Market at the Peninsula Center on Sunday morning **April 17th** (don't forget your solar filters!). Joe is also setting up his annual Astronomy Display at the Peninsula Library for viewing **April 18-23**. Members: send in information on other Astronomy Day activities to "spread the word". Contact Laura Lucas by phone at (310) 798-7281 or email nihtsky@verizon.net!

Skirball Trip Scheduled for "Einstein"

SBAS is planning a group outing to the Skirball Cultural Center on Sunday, **May 15th**. There will be a sign-up sheet at the February General Meeting or you can contact Greg Benecke to be added to the list. The Skirball's exhibition of "Einstein" coincides with the international centennial celebration of his *annus mirabilis* – his "miracle year" of 1905 – when, at the age of 26, he proved the existence and sizes of molecules, explained light as both particles and waves, and created the special theory of relativity, part of which links matter and energy in the revolutionary equation $E=mc^2$. Examine Einstein's report card, scientific manuscripts and original correspondence, and delight in eye-opening interactive exhibits illuminating his most revolutionary theories. $12 General, $10 Group Rate, $8 Seniors and Students, Free for Members and Children under 12. Prices include admission to all other exhibitions. For more information: **www.skirball.org**. Advance tickets (866) 468-3399 or **www.ticketweb.com.**

Blazing Speed: The Fastest Stuff in the Universe

By Robert Roy Britt, Senior Science Writer

If you're light, it's fairly easy to travel at your own speed -- that is to say 186,282 miles per second or 299,800 kilometers per second. But if you are matter, then it's another matter altogether. Nothing we know of zips along more quickly than light. Einstein, nearly 100 years ago, said it's not possible. Fast forward a century. Astronomers are now measuring stuff -- material, matter, things -- that moves at so close to the speed of light you might think it'd make Einstein a bit nervous. His theory of relativity appears not to be endangered by the blazing speeds though.

Among the speed demons of the universe are Jupiter-sized blobs of hot gas embedded in streams of material ejected from hyperactive galaxies known as blazars. At a meeting of the American Astronomical Society, scientists announced they had measured blobs in blazar jets screaming through space at 99.9 percent of light-speed. "This tells us that the physical processes at the cores of these galaxies … are extremely energetic and are capable of propelling matter very close to the absolute cosmic speed limit," said Glenn Piner of Whittier College in Whittier, California. Ponder the power of the fast moving superheated gas, known as plasma: "To accelerate a bowling ball to the speed newly measured in these blazars would require all the energy produced in the world for an entire week," Piner said. "And the blobs of plasma in these jets are at least as massive as a large planet." The blazar jets are running around the universe in some fast company. Slightly faster, in fact.

In another study presented at the meeting, ultra high-energy cosmic rays thought to originate in a collision of galaxy clusters are slamming into Earth's atmosphere at more than 99.9 percent of the speed of light. Measurements put the number at 99.9 followed by 19 more nines -- about as close to light-speed as you can get without splitting hairs. The particles are not light, but actual matter. They are tiny, thought to be mostly protons, but the energy that motivates them is similarly fantastic, and the mechanisms may be intertwined. Scientists still don't know the exact mechanisms involved in accelerating matter to such high speeds, however. In the case of blazars, it appears a black hole is involved. Anchoring an active galaxy, a supermassive black hole draws gas inward. Some is swallowed, yet some is simply accelerated and then ejected in high-speed jets along the galaxy's axis of rotation. Intense, twisted magnetic fields may play a role.

Some ultra high-energy cosmic rays might originate in blazar jets, Piner told SPACE.com. But other phenomena may serve as particle accelerators in space, such as merging galaxies or colliding black holes. Piner and his colleagues observed three blazars, known from previous observations to be super speedy, using the National Science Foundation's Very Long Baseline Array radio observatory. The results confirm the previous work and pin down the speeds with greater accuracy. The phenomenal pace of the plasma blobs looks to have reached a limit. "All the results from blazar jet observations are in agreement with Einstein's Theory of Special Relativity," Piner said. "The jets are accelerated right up to the edge of the speed-of-light barrier but not beyond, even though these are some of the most efficient accelerators in the universe."

- Space.com

The Extraordinarily Earth-like World of Titan

On 14 January, ESA's Huygens probe made an historic first ever descent to the surface of Titan, 1.2 billion kilometres from Earth and the largest of Saturn's moons. Huygens travelled to Titan as part of the joint ESA/NASA/ASI Cassini-Huygens mission. Starting at about 150 kilometres altitude, six multi-function instruments on board Huygens recorded data during the descent and on the surface. The first scientific assessments of Huygens' data were presented during a press conference at ESA head office in Paris on 21 January. “We now have the key to understanding what shapes Titan's landscape," said Dr Martin Tomasko, Principal Investigator for the Descent Imager-Spectral Radiometer (DISR), adding: "Geological evidence for precipitation, erosion, mechanical abrasion and other fluvial activity says that the physical processes shaping Titan are much the same as those shaping Earth."

Spectacular images captured by the DISR reveal that Titan has extraordinarily Earth-like meteorology and geology. Images have shown a complex network of narrow drainage channels running from brighter highlands to lower, flatter, dark regions. These channels merge into river systems running into lakebeds featuring offshore ‘islands' and 'shoals' remarkably similar to those on Earth. Data provided in part by the Gas Chromatograph and Mass Spectrometer (GCMS) and Surface Science Package (SSP) support Dr Tomasko's conclusions. Huygens' data provide strong evidence for liquids flowing on Titan. However, the fluid involved is methane, a simple organic compound that can exist as a liquid or gas at Titan's sub-170°C temperatures, rather than water as on Earth. Titan's rivers and lakes appear dry at the moment, but rain may have occurred not long ago. Deceleration and penetration data provided by the SSP indicate that the material beneath the surface's crust has the consistency of loose sand, possibly the result of methane rain falling on the surface over eons, or the wicking of liquids from below towards the surface.

Heat generated by Huygens warmed the soil beneath the probe and both the GCMS and SSP detected bursts of methane gas boiled out of surface material, reinforcing methane's principal role in Titan's geology and atmospheric meteorology -- forming clouds and precipitation that erodes and abrades the surface. In addition, DISR surface images show small rounded pebbles in a dry riverbed. Spectra measurements (colour) are consistent with a composition of dirty water ice rather than silicate rocks. However, these are rock-like solid at Titan's temperatures. Titan's soil appears to consist at least in part of precipitated deposits of the organic haze that shrouds the planet. This dark material settles out of the atmosphere. When washed off high elevations by methane rain, it concentrates at the bottom of the drainage channels and riverbeds contributing to the dark areas seen in DISR images.

New, stunning evidence based on finding atmospheric argon 40 indicates that Titan has experienced volcanic activity generating not lava, as on Earth, but water ice and ammonia. Thus, while many of Earth's familiar geophysical processes occur on Titan, the chemistry involved is quite different. Instead of liquid water, Titan has liquid methane. Instead of silicate rocks, Titan has frozen water ice. Instead of dirt, Titan has hydrocarbon particles settling out of the atmosphere, and instead of lava, Titanian volcanoes spew very cold ice. Titan is an extraordinary world having Earth-like geophysical processes operating on exotic materials in very alien conditions.

“We are really extremely excited about these results. The scientists have worked tirelessly for the whole week because the data they have received from Huygens are so thrilling. This is only the beginning, these data will live for many years to come and they will keep the scientists very very busy", said Jean-Pierre Lebreton, ESA's Huygens Project Scientist and Mission manager. The Cassini-Huygens mission is a cooperation between NASA, ESA and ASI, the Italian space agency. The Jet Propulsion Laboratory (JPL), a division of the California Institute of Technology in Pasadena, is managing the mission for NASA's Office of Space Science, Washington DC. JPL designed, developed and assembled the Cassini orbiter while ESA operated the Huygens atmospheric probe.

- European Space Agency

2005 Desert Sunset Star Party

Pat and Arleen Heimann will again be hosting the Desert Sunset Star Party **May 4-8**, 2005, at the Caballo Loco RV Ranch southwest of Tucson. Caballo Loco is located east of Kitt Peak and nestled against the Sierrita Mountains. Whipple Observatory on Mt Hopkins is located to the east. Many daytime activities are available and great skies at night. There will be speakers and door prizes on Friday and Saturday evenings. Check our website for details: **http://www.chartmarker.com/sunset.htm**

Schedule of Coming Events

29 January 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…
4 February Friday 7:30 P.M.	**Monthly General Meeting:** Dr. Perry Hacking will demonstrate the ECC Astronomy Department's new GOTO projector's capabilities.
5 February Saturday Evening	**Out-of-Town Dark Sky Observing Trip** – New Moon February 8th Contact Greg Benecke to confirm site location.
7 February Monday 7:30 P.M.	**Monthly Planning Meeting** Refer to page 3 for directions.
23 February Wednesday Evening	**Montemalaga School Star Party** See page 2 for detailed instructions.
24 JPL 25 PCC February 7:00 P.M.	**Von Kármán Auditorium (Thursday) & Vosloh Forum at Pasadena City College (Friday)** Capturing the 'Lord of the Rings' Cassini-Huygens Mission to Saturn presented by Julie L. Webster, Cassini Spacecraft Operations Office Manager at JPL. Designed and funded in the pre-"better, faster, cheaper" era, Cassini was built to be the single spacecraft to Saturn for many years to come. Its complement of 12 orbiter science instruments and the Huygens probe make Cassini one of the most complex missions ever flown. Admission is free. For more information, call (818) 354-0112.
4 March Friday 7:30 P.M.	**Monthly General Meeting:** The speaker for the evening will be announced in the March newsletter.
5 March Saturday Evening	**In-Town Dark Sky Observing at Ridgecrest School** – Weather Permitting. Refer to January 29th entry for directions to the site & instructions on weather conditions.
7 March Monday 7:30 P.M.	**Monthly Planning Meeting** The location of this meeting will be announced in the March Newsletter.
12 March Saturday Evening	**Out-of-Town Dark Sky Observing** – New Moon March 10th Make your plans now for **SBAS' 5th Annual Messier Marathon**. Detailed information will be included in the March newsletter.

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, February 4th at 7:30 P.M.

Guest Speaker: Dr. Perry Hacking (SBAS/ECC)

"Demonstration of ECC's New Planetarium Projector"

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