

FIRST LIGHT



Journal of the South Bay Astronomical Society – March 2006
on line at www.geocities.com/sbas_elcamino

Monthly General Meeting: Friday, March, 3rd, 7:30 PM

Guest Speaker: Ken Munson

“History AND Astronomy”

The February 3 Meeting

President Ken Rossi opened the meeting at 7:40 with announcements of future events. Joe Fierstein then showed the audience of fifty our new Coronado hydrogen-alpha solar telescope. Our club won this in a lottery run by the Night Sky Network, which the SBAS belongs to. We earn a lottery ticket for every public-outreach program that we hold, so thanks to the volunteers at our outreach programs, we have a fancy telescope!

Ron Rennie then screened a nicely-edited eight-minute video, “Australian Astronomical Odyssey”, of his recent visit to Mt. Stromlo Observatory and to NASA’s Deep Space Network. The Observatory was extensively damaged by brush fires in January 2003, but rebuilding is going on amidst the devastation. The Deep Space Network currently has four active radio telescopes, collecting data from the spacecraft that has given us so much knowledge of our Solar System.

Our main speaker for the evening was Ron Obert, who retired from Hughes Space and Communications, then took astronomy courses at El Camino College and UCLA. He began his lecture, “Cosmology: From its Fundamentals to its Heart in an Hour” by pointing out that our intellectual path began with the ancient Greeks, who developed geometry, the first star catalogs and a geocentric model of the Universe. In the 16th to 18th centuries, Copernicus, Galileo, Kepler and Newton greatly improved our understanding of the skies.

After introducing some mathematics (including differential and integral calculus, and a derivation of Kepler’s third law of planetary motion!), Ron brought us to the modern era with a one-second-of-arc-wide picture of the center of the Milky Way Galaxy. Over the past decade, the orbits of several stars near the center of our galaxy have been determined, and from Kepler’s third law, the mass of the central object can be calculated as 3.8 million times the mass of the Sun. The only object that can fit into so small a space, and not radiate enormous amounts of energy, is a black hole.

So black holes exist, but what theory could possibly explain such exotic behavior? Fortunately, Albert Einstein published his Special Theory of Relativity in 1905, demonstrating that space and time are more complicated than our intuitive notions suppose, and followed this in 1915 with his General Theory of Relativity. The distortions of space and time modeled by the General Theory not only accurately describe black holes, but can also be used to describe the evolution of the Universe.

Starting with Edwin Hubble in 1929 and continuing to the present, astronomers have been able to show that the Universe is approximately 14 billion years old, and is expanding. Although this cannot be understood intuitively, the Friedmann Equation (derived from Einstein’s General Theory) not only permits this as a mathematical solution, it predicts what will happen to the Universe in the future. Modern studies of distant supernovae suggest that the Universe will continue to expand forever, at an accelerated rate.

Any theory that might be proposed as a substitute must do as good a job at matching the observational data, and this would be a formidable challenge. Modern cosmological theory correctly explains the expansion of the universe, the prevalence of hydrogen and helium in the Universe, and the cosmic microwave background radiation. Ken Rossi ended by noting that apparently only 4% of the mass of the Universe is in the form of ordinary matter; the rest is in the form of dark matter and dark energy, unless our theories need further modification. On this startling note, the meeting ended at 10:00.

- Steven Morris

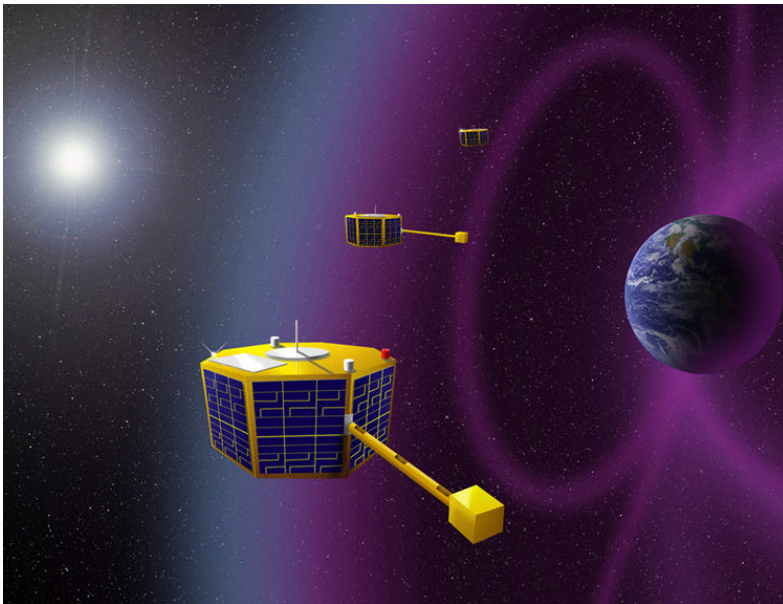
NASA Space Place

Micro-sats with Macro-potential

By Patrick L. Barry

Future space telescopes might not consist of a single satellite such as Hubble, but a constellation of dozens or even hundreds of small satellites, or “micro-sats,” operating in unison.

Such a swarm of little satellites could act as one enormous telescope with a mirror as large as the entire constellation, just as arrays of Earth-bound radio telescopes do. It could also last for a long time, because damage to one micro-sat wouldn't ruin the whole space telescope; the rest of the swarm could continue as if nothing had happened.



And that's just one example of the cool things that micro-sats could do. Plus, micro-sats are simply smaller and lighter than normal satellites, so they're much cheaper to launch into space.

In February, NASA plans to launch its first experimental micro-sat mission, called Space Technology 5. As part of the New Millennium Program, ST5 will test out the crucial technologies needed for micro-sats—such as miniature thrust and guidance systems—so that future missions can use those technologies dependably.

Measuring only 53 centimeters (20 inches) across and weighing a mere 25 kilograms (55 pounds), each of the three micro-sats for ST5 resembles a small

television in size and weight. Normal satellites can be as large and heavy as a school bus.

“ST5 will also gather scientific data, helping scientists explore Earth's magnetic field and space weather,” says James Slavin, Project Scientist for ST5. Slavin suggests some other potential uses for micro-sats:

A cluster of micro-sats between the Earth and the Sun—spread out in space like little sensor buoys floating in the ocean—could sample incoming waves of high-speed particles from an erupting solar flare, thus giving scientists hours of warning of the threat posed to city power grids and communications satellites.

Or perhaps a string of micro-sats, flying single file in low-Earth orbit, could take a series of snapshots of violent thunderstorms as each micro-sat in the “train” passes over the storm. This technology would combine the continuous large-scale storm monitoring of geosynchronous weather satellites—which orbit far from the Earth at about 36,000 kilometers' altitude—with the up-close, highly detailed view of satellites only 400 kilometers overhead.

If ST5 is successful, these little satellites could end up playing a big role in future exploration.

The ST5 Web site at nmp.jpl.nasa.gov/st5 has the details. Kids can have fun with ST5 at spaceplace.nasa.gov, by just typing ST5 in the site's Find It field.

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

Astronomy Resources for Teachers

College of the Atlantic, Bar Harbor, ME

Each summer CoA offers two two-week, 4-graduate credit, residential astronomy-related programs for teachers. Tuition, room and board are included in the fee. Courses are taught in the former billiard room of a restored mansion, whose French doors open onto Frenchman Bay, the Town of Bar Harbor and wonderful views. There are field trips to nearby Acadia National Park for nighttime observing.

July 9-22: Introduction to Astronomy for Teachers provides standards-based astronomy pedagogy and content, much of which is presented as hands-on activities that teachers can take straight to their classrooms.

July 23-August 5: The Portable Planetarium for Earth, Space, and Natural Sciences offers content and instruction in the use of a portable planetarium, activities for planetarium use across the curriculum, and information on grant writing.

Contact: Ms Jean Boddy, Associate Dir. of Summer Programs
Phone: 1 800-597-9500 or jdb@coa.edu
<http://www.coa.edu/html/coursesk12teachers.htm>

NASA MESSENGER Fellowship

Take part in the current golden age of Solar System explorations by becoming a MESSENGER Educator Fellow! As an integral part of NASA's MESSENGER mission to Mercury the Fellows will help bring the excitement of this daring mission to classrooms across the nation.

MESSENGER (Mercury Surface, Space Environment, Geochemistry, and Ranging) mission will be only the second spacecraft to ever visit and the first to orbit this enigmatic planet. After being launched in 2004 and a flyby of earth in 2005, the spacecraft is now headed for two Venus flybys in 2006 and 2007 and Mercury in 2008 and 2009 before settling into orbit around Mercury in 2011.

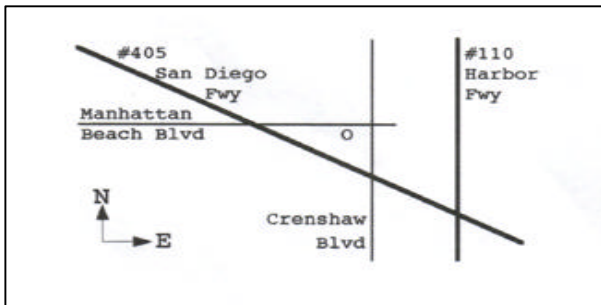
An essential part of the MESSENGER education and public outreach program is a nationwide teacher training initiative whereby a cadre of thirty Fellows master science educators conduct teacher training workshops nationally. Taking part in the MESSENGER Educator Fellowship Program is a great opportunity for educators to make a broad, yet profound impact in science education in the pre-K – 12 community. The Fellowship includes an all-expense paid five-day training workshop in Washington, D.C. in June 2006. Applications are due March 31, 2006. Check out the full announcement on the MESSENGER website at:

<http://btc.montana.edu/messenger/teachers/fellows.php>

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).

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.

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 **February 3rd** planning meeting will be held at 7:30 PM at the home of Joe & Miriam Fierstein. Take Hawthorne Blvd. south past Pacific Coast Hwy. up the hill passing Silver Spur Rd. and Highridge until you get to the light at Eddinghill Dr., then turn right and go downhill to the 'T' intersection at Golden Meadow where you turn left up 2 blocks and turn left on Willow Tree Dr. to 3rd house on the right side from the corner – 7022 Willow Dr., Rancho Palos Verdes.

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 John Collins for magazine subscriptions at club rates: "Sky & Telescope" \$32.95 and "Astronomy" \$34.00! 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

March – Comets & Asteroids

Comets Visible in February

Name	Magnitude	Constellation
2005 E2(McNaught)	9.1 – 9.4	Psc-Ari

Asteroids: Occultation Event Summary for Los Angeles

Date m d y	Local Time Hr	M	Durn secs	Star mag	Mag drop	Star No.	Asteroid No	Alt Name
3/2/2006	1	40.8	17.6	10.5	3.8	TYC 7265-00444-1u	568	Cheruskia
3/12/2006	3	58.8	5.1	7.8	6.5	HIP 90871	602	Marianna
3/20/2006	1	16.5	6.7	10.9	3.5	TYC 2437-00912-1u	598	Octavia
3/22/2006	20	16.8	5	10.5	3.7	TYC 1883-00159-1u	33	Polyhymnia
3/22/2006	23	20.8	3.7	10.7	5	TYC 2461-01077-1u	1572	Posnania
3/27/2006	21	43.5	3	9.3	5.5	HIP 22970	586	Thekla

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

Sun-Earth Week

The week of March 6- March13 has been designated "Sun – Earth Week". SBAS will celebrate by hosting a Sun Party at the Farmers Market in the Peninsula Shopping Center on Sun March 5th. Every one is invited. If you have a scope with a sun filter please bring it. We will have the club's new Solar Scope set up. Perhaps we will see some prominences or CMEs.

Whalley School Star Party

On Friday, March 10, the SBAS will be supporting a star party at Whalley School. Joe Fierstein will be leading a daytime presentation and solar observing session with the club's new solar telescope. Anyone with solar filters for their scopes are urged to help with both the daytime presentation and the nighttime star party.

Directions: Take the 91 eastbound. Switch to the 710 north. Exit Rosecrans and turn LEFT (west). The next block is Gibson; Turn LEFT (south) onto Gibson. The school is there at the southwest corner of Gibson and Rosecrans. Turn right into the parking lot; You can drive to to the back of the parking lot and continue left around to the back of the school where the expansive PE fields are located; We'll set up the star party there. The school's address is: 14401 S. Gibson, Compton.

Art Exhibition

SBAS received a post card announcing an art exhibition titled 'Off-Planet' from the Pierce College Art Gallery, 6201 Winnetka Avenue, pmb 297, Woodland Hills, Ca 91371. "The wonders of outer space have always intrigued us. Through the use of powerful telescopes, such as the Hubble, we are now able to see the cosmos as never before. The artists in this exhibit use different media to give us their interpretation of these wonders."

Gallery Phone: 818.719.6498

February 13 - March 9, 2006

Reception: Saturday February 25, 1-3 p.m.

Gallery hours: Mon - Thurs 12 - 5 p.m.

Deep-Sky Software

The Deepsky program is a user friendly software tool used to configure observing plans from its extensive database of over 700,000 DSOs. The observing plan can then be used to control an ASCOM compliant telescope. One can then document what one observed using its logbook feature. It comes with dozens of observing plans (e.g. Messier by month, Caldwell), some of which can be used to achieve Astronomical League certification. A What's Up Wizard tells you what's visible at any time or location. For sky charts it is integrated with Cartes du Ciel and Dean Williams skychart program. Included is 4 hours of video training to help get you started.

SBAS has one copy remaining of the CD version for sale for \$33.00. There is also a beginner's version (full function but with a smaller database) that can be downloaded from the Deepsky website. For SBAS members who don't have broadband capability, we have two copies that can be borrowed. For more information visit the Deepsky website (www.deepskysoftware.net). To purchase the remaining CD version or to borrow the Beginner's version, see Arnie Stodolsky at the next General Meeting.

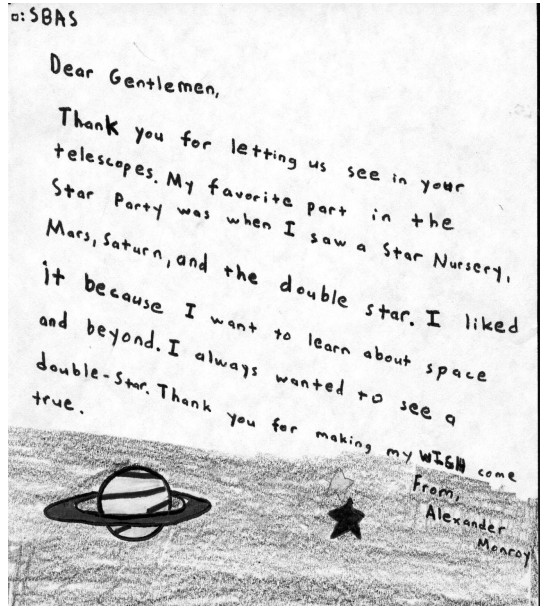
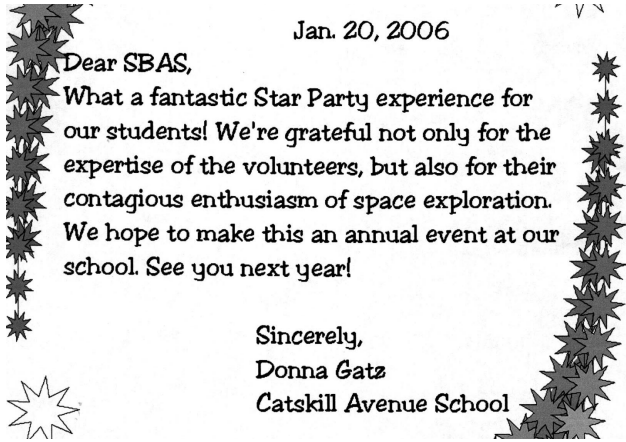
Thank You Notes from Catskill Elementary School

Jan. 20, 2006

Dear SBAS,

What a fantastic Star Party experience for our students! We're grateful not only for the expertise of the volunteers, but also for their contagious enthusiasm of space exploration. We hope to make this an annual event at our school. See you next year!

Sincerely,
Donna Gatz
Catskill Avenue School



Dear Gentlemen,
Thank you for coming to our school and Star Party. I never got to see the sunspots before. Also, I like what you taught about the solar system.
From: Andiea Re

Dear Gentlemen,
I would like to thank you for bringing your equipment to Catskill because you guys did a lot of work just to come to my school and bring your telescopes.
It was really cool to look at the sunspots on the sun and that was my favorite part to look at was the sunspots.
I really really thank you and I hope other schools that you visit thank you to for doing such a wonderful thing.
Love,
Diana Gonzalez

Schedule of Coming Events

3 March Friday Evening 7:30 PM	Monthly General Meeting Guest Speaker: Ken Munson Topic: History AND Astronomy
6 March Monday Evening 7:30	Monthly Planning Meeting See directions on Page 4.
10 March Friday Evening	Whaley School Star Party See directions on page 5.
16 March Thursday Evening 7:00 PM	Von Kármán Auditorium (Thursday) & Vosloh Forum at Pasadena City College (Friday) “Wide in the Middle, Hot at the Top: The Direct Measurement of the Shapes of Stars” by Dr. Gerard Van Belle. Using the highest resolution telescopes in the world, the sizes and shapes of rapidly spinning stars have been determined for the first time. These "Tasmanian Devils" of the sky rotate more than 50 times as fast as our sun, almost stretching themselves apart at the equator, and leaving behind hot polar caps.
18 March Saturday Evening	In Town Dark Sky Observing Session – Weather Permitting: Please contact Greg Benecke to confirm that the gate will be opened! 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 <u>not</u> drip anything you can park with your equipment. <i>Drive with care</i> to avoid steel pillars supporting basketball nets. Note: If you a visitor, not bringing a scope, it is requested that you park in the small parking lot on Northbay Rd.
25 March Saturday Evening	Out-of-Town Dark Sky Observing Session Contact Greg Benecke for directions.
7 April Friday Evening 7:30 PM	Monthly General Meeting Guest Speaker: TBA Topic: TBA
10 March Monday Evening 7:30 PM	Monthly Planning Meeting Location TBD.

South Bay Astronomical Society

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*General Meeting at El Camino College Planetarium:
Friday, February 3rd at 7:30 P.M.*

Guest Speaker: TBD

“TBD”

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**South Bay Astronomical Society
P.O. Box 1937
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