FIRST LIGHT

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

Monthly General Meeting: Friday, May 6th, 7:30 PM

Guest Speaker : Mr. Lou Herman

"Global Coordinates and Time"

SBAS Celebrates Astronomy Day At P.V. Farmers Market


Astronomy Day At The PV Farmers Market 4/18/05
Ken Munson Explains Sun Spots

Bill Eisele & Club Sun Display


Viewing The Sun Spot Astronomy Day 4/18/05
Ken Supervises

Observing Reports

@Ridgecrest School - April 2nd When I arrived there were already some people waiting for me to open the gate. We were going to have both a Brownie Troop and a Cub Scout Pack joining us for the night's observing session. There were some clouds that were making way for clear skies with fairly good seeing predicted for the night. As twilight faded I took a look a Saturn and immediately confirmed that seeing was indeed good. We showed the kids the view of Saturn at several different powers. At just over 300 power the image was holding up well. During moments of increased clarity the Cassini Division was crisp and the Enke Minimum could be detected. There were several bands clearly seen on Saturn's face. I turned toward Comet Macholtz, hoping to show the kids a comet. Unfortunately the sky glow to the North washed it out to the point where it was hard to detect and would not have made a good subject for the kids. The Orion Nebula was viewable, though not very high, and thus not as clear as Saturn, which was just about directly overhead. I could make out the two dim stars in the Trapezium, though they would come and go. The kids were impressed by the nebula. Most of the Brownies and Cubs were not well prepared for the chill of the night so they did not stay very late. I looked at some doubles and some of the brighter galaxies while waiting for Jupiter and some globular clusters to get high enough to be in steady skies. As Jupiter got higher it was clear that it could take more power, so using a mix of my own and borrowed eyepieces and a Barlow I tried various powers between 300 and 540. At 540 the image was bit soft but still remarkably good for that kind of power. At about 400 the view was quite nice. Great detail could be seen. Festoons and white ovals where clear during the moments of best seeing. This was by far the best planetary viewing I have yet had through my 15 inch Dob. As the night wore on you could feel a change in the atmosphere as the marine layer approached. You could see it coming toward us from the West. As we packed up about 1:00 A.M. it started to roll over us.

@Mt. Wilson Observatory - **April 9th**, the weather was uncooperative again. We will discuss our options in rescheduling the next best date available at the May General Meeting. **- Greg Benecke**

Night Sky Network Meeting Report

On **March 31st**, I attended a meeting with the Night Sky Network at the Jet Propulsion Laboratory. That was a really fun and enjoyable day at JPL! There were representatives from astronomy clubs from around the area. Mark and Lisa Rooney came from Burbank, the home of the Backyard Astronomers Organization. Bonnie Walters and Marge Bartholomew came from Ventura to represent the Ventura County Astronomers. Kassie Cook, from Santa Barbara, runs the planetarium at the Santa Barbara Museum of Natural History. We also had some people from the JPL Outreach program, William Greene and others whose names I did not get.

Marni Berendsen of the Astronomical Society of the Pacific did a series of presentations to demonstrate what the new kit will be about and some of the models/tools it will contain. This kit will be all about telescopes and how they work. We would then critique it and point out what was good or bad. We all had a lot of suggestions on how to present the material and ideas from alternative materials/tools. It was a lot of fun to be involved in such a process! A couple of items were so neat, in fact, that we suggested they should make them marketable items so that astronomy clubs could buy them and have them available for star parties. Two of the best were a color chart to demonstrate why we don't see color in deep sky objects like the photographs. It's just a color bar that looks like it is shades of gray in very dim light, an excellent way to make it clear that the human eye cannot detect color without a lot of light. The other neat one was a card with a series of circles showing the field of view of various telescopes. This would be really handy to be able to make it clear to people just how small a slice of sky most amateur telescopes can see. What was really amazing was to see how small a piece of sky the Hubble sees! We suggested that these could be made into little 3x5 laminated cards on a key ring to make them handy to carry around with your telescope. Alternatively, the color bar would be a nice thing to be able to just stick to a leg of your tripod and be able to point to it at star parties.

One of the interesting things I heard at the meeting was the idea of a telescope clinic. The Ventura County Astronomers hold a telescope clinic where they invite members of the public (who may have bought a scope for their kids or may just be new to astronomy) to meet and bring their telescopes. They hold it during daytime so they can work with these people and demonstrate how to setup and use their scopes. I thought that was a great idea. I've seen several times where people have shown up at the Ridgecrest School site with their scopes and don't have a clue how to use them. If experienced amateurs could show these folks how to use their scopes, maybe they'd have a lot less frustration and would stay with it a lot longer. It's amazing how many scopes are sold every year only to end up gathering dust under a bed or in a closet. ***- Ken Munson***

Our SBAS Committee

President	Greg Benecke	217-1512	BeneckeRUs@aol.com
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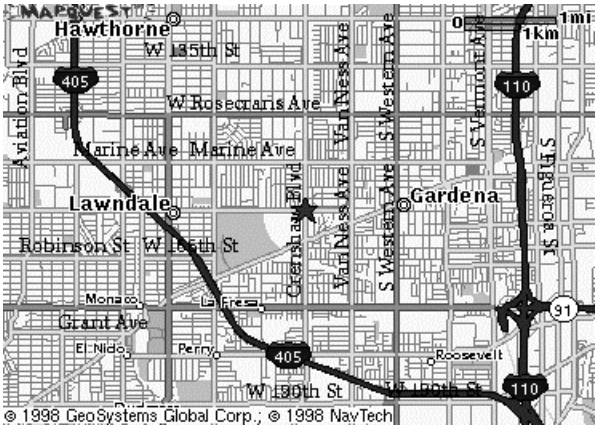
	Mike Mayerchak	831-9188	Mmayerchak@aol.com
	Mark Braden	540-2810	Bradenm@fnic.com

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, **May 9th** at 7:30 PM at the home of Laura Lucas, 2005 Mathews Ave. #A, in Redondo Beach. Take Artesia Blvd., west from Hawthorne Blvd. and turn right on Aviation Way. Turn right at the stop sign onto Mathews Ave. and go down the hill. Park on the street just past Green and Laura's house is on the left side in the back past the gates.

A review of the SBAS Constitution and By-Laws by the members is requested by the Planning Committee!

SOUTH BAY ASTRONOMICAL SOCIETY
CONSTITUTION AND BY-LAWS
REVISION A OF NOVEMBER 12, 2001

ARTICLE I

Name

Section I The name of this organization is the South Bay Astronomical Society (SBAS).

ARTICLE II

Purpose

Section I The purpose of this organization is to promote, through education, a knowledge and appreciation of astronomy. To accomplish this purpose, the members of the SBAS:

1. Coordinate their activities in astronomical observation, research, and craftsmanship.
2. Correlate these activities with the activities of other astronomical organizations, both amateur and professional.
3. Undertake projects to encourage an awareness of astronomy in the general public, with particular emphasis on education and developing a sustaining interest in astronomy among youths.

ARTICLE III

Offices

Section I The principal office for the transaction of business of this organization is located in the County of Los Angeles.

ARTICLE IV

Membership

Section I Membership in the SBAS is open to all persons who have an interest in astronomy.
Section II The SBAS has individual, family, and student memberships. Family membership includes all immediate members of a family living at a single address. Persons with a valid secondary school or college ID are eligible for student membership.
Section III There shall be one vote per paid membership.

ARTICLE V

Dues

Section I Dues for memberships are in amounts recommended by the Executive Board and approved by a two-thirds majority vote of a quorum. A notice of the meeting at which a vote on dues will be taken is to be given to the members at least one month before the meeting.
Section II Review of the dues structure and consideration of changes will normally occur at each annual meeting of the SBAS.

ARTICLE VI

Officers

Section I The elected officers of the SBAS are the President, Vice-President, Secretary, Treasurer, and Member-at-Large. The officers are elected from the membership for a one year term by a majority of a quorum at the annual meeting of the SBAS and take office at the regular January meeting following elections. The five elected officers constitute the Executive Board.
Section II Vacancy in the office of the President will be filled for the unexpired term by the Vice-President.
Section III Vacancy in the office of Vice-President, Secretary, Treasurer, or Member-at-Large, will be filled for the unexpired term by appointment by the Executive Board upon approval of a majority vote of members present at a regular meeting of the SBAS.
Section IV No officer receives compensation from the SBAS.
Section V An officer who consistently fails to perform normal duties and does not respond to ordinary communications from the SBAS shall be assumed to have resigned the office.

ARTICLE VII

Duties of Officers

Section I The President supervises the affairs of the SBAS and presides at its meetings. Will be chairman ex officio of the Executive Board. Assumes temporary responsibility for the duties of another officer in the event of the other officer's absence or resignation. Appoints a nominating committee to select officer candidates.
Section II The Vice-President presides in the absence of the President. The Vice-President also serves as program chairman unless the President appoints a different program chairman.
Section III The Secretary records the attendance and the minutes of the Executive Board. Handles the records and correspondence as directed by the President. The records are to be accessible to the Executive Board or to the membership upon reasonable notice. Will have custody of the agreements to which the SBAS is party. Reviews these documents periodically to insure continued compliance with their provisions when his term expires.

Section IV The Treasurer has custody of all funds and securities of the SBAS, and receives and disburses funds under the direction of the Executive Board. Keeps records of the financial condition of the SBAS. Makes a full report at the annual meeting and presents a summary at regular meetings. The records are to be accessible to the Executive Board or the membership upon reasonable notice.
Section V The Member(s)-at-Large will perform duties as assigned. May be a person or persons of stature, a professional astronomer or civic leader who can help further the purpose of the SBAS, whether or not he or she is a member of the SBAS.

ARTICLE VIII

Duties of the Executive Board

Section I The Executive Board controls the property of the SBAS and has general power to conduct the business of the SBAS. The Executive Board meets, as necessary, upon the call of the President, or of any two other members of the Board. Reasonable notice must be given of any meeting. The minimum quorum for meetings of the Executive Board is three members.
Section II The Executive Board is not to expend during a month more than twenty percent of the SBAS' financial assets as determined on the first day of that month without specific authorization by a majority vote of Executive Board members present.
Section III The Executive Board is not to commit the SBAS to debt.

ARTICLE IX

Meetings

Section I The annual meeting of the SBAS is held in November each year at a date determined by the Executive Board. A notice of the annual meeting is to be mailed to the membership at least one month prior to the meeting. Such notice shall include candidates for office.
Section II Regular meetings of the SBAS are held monthly or otherwise at the option of the President.
Section III The minimum quorum to transact business for regular meetings is ten members, or is fifty percent of the membership if there are fewer than twenty in the membership.
Section IV A simple majority vote of members present prevails in any vote except in a vote on amount of dues, an amendment of this constitution, or on dissolution of the SBAS.

ARTICLE X

Dissolution

Section I The South Bay Astronomical Society can be dissolved only by a two-thirds majority of those members who respond to ballots sent by certified mail to their last known address. The ballots are to be sent by the Secretary upon the direction of the President. In the event of dissolution, any debt of the SBAS after sale of assets shall be paid by assessment of the members.
Section II Upon the dissolution or winding up of the organization, all assets remaining after payment, or provision for payment, of all debts and liabilities of this organization shall be distributed to public educational institutions in the South Bay of Los Angeles County and or a nonprofit fund, foundation or corporation which is organized and operated exclusively for charitable purposes and which has established its tax exempt status under Section 501(c)(3) of the Internal Revenue Code.

ARTICLE XI

Amendments

Section I This constitution may be amended by a two-thirds majority vote of members present. An Amendment is proposed by submitting to the Secretary a written statement of the proposed amendment signed by three members. A notice of the proposed amendment and of the meeting at which the proposed amendment will be considered is to be given to the membership. This notice is to be mailed by the Secretary at least one month prior to the meeting.

ARTICLE XII

Political Limitation

Section I No substantial part of the activities of this organization shall consist of attempting to influence elections, and the organization shall not participate or intervene in any political campaign, except as described in Section II of this article.
Sections II The SBAS shall be a strong advocate for dark skies and sensible lighting laws that enhance the practice of astronomy.

ARTICLE XIII

Dedication Clause

Section I The property of this organization is irrevocably dedicated to charitable purposes and no part of the net income or assets of this organization shall ever inure to the benefit of any director, officer or member thereof or to the benefit of any private persons.

ARTICLE XIV

Permanent Committees

Section I The permanent committees of the SBAS are:

1. Program Committee - Lead by Program Chairman. Plans general meetings and special events.
2. Observing Committee - Lead by Observing Chairman. Plans in town and dark sky observing sessions.
3. Publications Committee - Lead by Editor. Publishes the organization's monthly new letter, promotional material and web communications.
4. Membership Committee - Lead by Membership Chairman. Promotes new membership.
5. Property Committee - Lead by Quartermaster - Maintains and loans out SBAS owned observing equipment.

SBAS Membership Benefits

"Welcome" to our newest SBAS member: Max Miller. 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!

Backyard Observing

March 30th - After nearly 4 months, I've finally managed to get some observing time in. I was finally able to get a new hand controller for my telescope (which was what probably caused that last rain shower) and had some time in the evening with a clear sky. I set the scope up in the backyard and let it cool down for a couple of hours then went out to see how the new controller worked (it's a Nexstar 8i controller) with the Nexstar 11. After some settings adjustments, it worked pretty good, placing object near the center of the FOV every time. I swung up to take a look at Saturn and was disappointed at how watery the image was. Although the image improved a little bit an hour later, it never did get as crisp as I've seen Saturn in the past. However, I was able to make out the moons: Iapetus, Titan, Rhea, Tethys and Dione. When I focused my eye on Tethys, a small, faint point of light would sometimes appear just of the edge of the rings near Dione. Starry Night says that's where Enceladus should be. Not sure that I really saw it since the sky conditions weren't optimal but it's nice to think that I might have.

To put the scope through some paces, I did some quick runs through several of the Messier objects and then settled on going through my double star list to check just how bad the sky conditions were. Over much of the sky it was hard to easily separate any doubles with less than 6.5" of separation. I wasn't able to separate the third star in the Beta Monoceros triad. Using my 10mm Radian eyepiece, I was able to just barely separate a double with 3.5" of separation but it was very fuzzy. I finished up the evening with a look at Jupiter. Still low in the sky and in line with a distant oil refinery, it was not surprising to see it even more watery than Saturn looked. Still, occasionally it would briefly snap into sharp focus, and at one point, I noticed a dark spot in the north equatorial belt. A quick check in Starry Night showed that it was, as I suspected, a shadow from a moon transit. Europa was casting its shadow on the face of Jupiter. Nice thing to just happen to see, since I didn't do any advance planning! The Great Red Spot was supposed to be coming into view but I couldn't make it out. I finally had to put the scope away and get to bed since I had to drop the kids off at school and then head up to JPL in the morning for the Nightsky Network meeting.

April 15th - I'm so glad I finally got my telescope back in operation! After two days of high clouds, I was pleasantly surprised to see the sky miraculously clear. Although the half-moon was high in the sky and Jupiter's GRS wouldn't be visible until 2 or 3 AM, I set up the scope in the backyard to do some visual observing and photographic experimentation. After seeing how well Al Fader's Kendrick Kwik-Focus worked, I went and got one of my own and was very pleased at how sharply I could bring objects to focus. Early on the telescope and sky both had some thermal distortions but by 11 PM the seeing was amazing. I experimented with using the Kwik-Focus with different eyepieces and different filters and compared how well I could focus visually versus using the Kwik-Focus. Focusing in the early part of the evening was difficult in either case due to the thermal distortions going on, but later the Kwik-Focus was definitely providing a much sharper focus than visual focusing. The seeing and focus was so good that, with my green filter, I could see pale white ovals in the dark temperate cloud bands of Jupiter. Using it with my camera did work, although as usual, trying to see through the viewfinder required some painful contortions. The plus side was that I finally got some of the best eyepiece projection lunar photos I've ever achieved. I need to do something a little different when using the camera. That'll require a little more thought.

- Ken Munson

May - Comets & Asteroids

Comets Visible:

Name	Magnitude	Constellation
9P/Tempel 1	9.75 – 9.36	Vir
Denning-Fujikawa	11.2 – 9.8	Aqr-Cet-Psc
2004 Q2/Macholz	9.1 – 10.3	UMa- CVn

Comets at Perihelion:

Date	Identification	Magnitude

No visible comets at perihelion

Near-Earth Asteroid Flybys:

Date	Identification	Magnitude	Distance

No near Earth asteroids visible

Asteroid Occultations:

Date y m d	LocTm h m secs	Durn	Star mag	Mag drop	Star No.	Planet No.	Name	Dist
2005 May 07	11 01.2	6.9	11.6	2.1	TYC 1405-01193-1u	171	Ophelia	0.3
RA = 9h 22m 21.7s		Dec = +17° 50' 15.9"						
2005 May 16	12 25.1	4.2	10.8	7.2	TYC 5715-00773-1u	4835	1989 BQ	0.3
RA = 19h 7m 5.5s		Dec = -12° 29' 40"						
2005 May 17	1 39.4	86.3	8.4	2.7	TYC 7902-01828-1	54	Alexandra	0.4
RA = 18h 33m 39.5s		Dec = -38° 39' 7.2"						
2005 Jun 04	9 30.3	5.8	10.1	3.4	TYC 0434-00031-1u	483	Seppina	0.2
RA = 18h 01m 59.3s		Dec = +2° 50' 37.8"						

Star Charts Available on the SBAS Website:

The asteroid occultations are derived from the IOTA software that I downloaded. For the occultations I've listed, I've verified that they should be visible from the LA area. Alex Athas, our webmaster, has uploaded some star charts showing a wide angle and then a narrow angle view of the target star. The charts are in normal, local orientation and have not been flipped in any way since I wasn't sure that everyone's telescope would see the same way. I think they do but I am not totally certain. Interested members can get the charts from the web site to print them as they need them. I'm looking forward to improving my observing skills with occultations.

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

- Ken Munson

NASA's Return to Flight Mission

When the **STS-114** crew members of the Space Shuttle Discovery lift off this May from NASA's Kennedy Space Center, Fla., they'll be supported by two years of hard work by tens of thousands of people determined to make the Space Shuttle safer. NASA has upgraded flight hardware, as well as visual tracking and inspection equipment, to ensure the Return to Flight mission is successful.

NASA engineers made dozens of changes to the tank design, including one to a key mechanism that joins the External Tank with the orbiter. Jutting from the upper third of the tank, the "bipod fitting" is susceptible to icing due to the ultra-cold fuel that tank contains. The fitting attaches to an orbiter's forward struts and anchors the vehicle to the tank during launch. Until the Columbia accident, the part was protected from ice buildup using thick sheets of foam. The improved bipod design now excludes using foam and instead relies on electric heaters to keep the area clear. The new fitting design is currently being retrofitted to the 11 existing tanks -- including the one chosen for Discovery's flight -- and will be included on those produced in the future.

Another major safety improvement to the Space Shuttle fleet is the expanded use of enhanced imaging equipment to record the launch of Discovery as it roars into the sky and glides through space. At Kennedy Space Center, NASA has upgraded the short-, medium-, and long-range tracking camera system around the Center's launch pads 39A and 39B, along with those lining the nearby Atlantic coastline. The addition of nine more camera sites will provide unprecedented views of Discovery's launch, allowing engineers to clearly observe the flight high into the sky.

Discovery itself also received new imaging equipment with the installation of a digital External Tank camera and new "Canadarm" inspection boom. Making the most of current consumer photography equipment, the orbiter's External Tank camera has been switched from film to a digital model. Located in the rear underbelly of the orbiter, the camera is similar to a standard 35 mm model and snaps a series of photos as the tank separates from the orbiter. With the previous film camera, flight engineers had to wait until Discovery landed to retrieve the negatives and develop photos. With the simplicity and increased speed of a digital system, the image files will be easily transmitted back to Earth shortly after Discovery reaches space.

Once in orbit, the visual inspection of Discovery will continue with the help of a new piece of robotic technology. The Canadarm, used for such tasks as hoisting modules for the International Space Station and providing a work platform for spacewalks, found inside Discovery's payload bay now includes the Canadian-built Orbiter Boom Sensor System. The boom extension houses a camera and laser-powered measuring device that astronauts will use to scan the orbiter's exterior. The boom attaches to the end of the existing robotic arm and doubles its length to 100 feet long. The extra length will allow the arm to reach around the spacecraft for the best possible views. With the new boom, astronauts will take a good look at features like the orbiter's leading wing edges, which are now closely watched by an advanced monitoring system.

Each of Discovery's leading wing edges are outfitted with 22 temperature sensors to measure how heat is distributed across their spans. Both wings also have 66 accelerometers apiece to detect impacts and gauge their strength and location. The sensors are highly sensitive and take 20,000 readings per second. This new network of sensors running along the wings provides an electronic nervous system that gives engineers a valuable way to monitor their condition. The sensors were installed inside the orbiter's wings by technicians at NASA's Kennedy Space Center.

Inspection of the wings will continue once Discovery returns to Earth. Technicians will use a proven method called flash thermography, employed to examine the Reinforced Carbon-Carbon panels that make up the wing's leading edges. The technique starts by applying an intensely hot and bright burst of light to the panels. Technicians then survey the panels with a heat-sensitive infrared camera to see if any flaws appear under stress from the extreme heat. Flash thermography will reveal even small imperfections and offer technicians a powerful tool for keeping an orbiter's wings in shipshape.

On launch day, when the Shuttle's boosters erupt with fiery thrust and shake the Florida sands, the moment will signal the culmination of more than two years of thoughtful planning and hard work to send America's flagship spacecraft streaking back into space on a mission to the world's most unique research platform, the International Space Station. It's a mission that promises to begin with a safe and exciting reach for the sky and end with an even happier landing.

- NASA's John F. Kennedy Space Center

Schedule of Coming Events

30 April 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…
6 May Friday 7:30 P.M.	**Monthly General Meeting:** Our speaker will be Mr. Lou Herman on the topic "Global Coordinates and Time".
7 May Saturday Evening	**Out-of-Town Dark Sky Observing** – New Moon May 8th Contact Greg Benecke to confirm the site location.
9 May Monday 7:30 P.M.	**Monthly Planning Meeting** Refer to page 3 for directions.
15 May Sunday Morning	**"Einstein" at The Skirball Center** Group rates are no longer available – so everyone is on their own - to attend on any date/time!
19 JPL 20 PCC May 7:00 P.M.	**Von Kármán Auditorium (Thursday) & Vosloh Forum at Pasadena City College (Friday)** "Spirit and Opportunity: Field Geology on Mars", presented by Dr. Joy Crisp, JPL Mars Exploration Rover Project Scientist. This lecture summarizes the most important science findings resulting from numerous exciting discoveries and the tantalizing clues about past geologic activity on Mars. Admission is free. For more information, call (818) 354-0112.
May 28 Saturday Evening	**In-Town Dark Sky Observing at Ridgecrest School** – Weather Permitting. Refer to April 30th entry for directions to the site & instructions on weather conditions.
27-29 May Fri.-Sun.	**2005 RTMC Astronomy Expo** For details on registration & the Astroimaging Contest: **www.rtmcastronomyexpo.org**
3 June Friday 7:30 P.M.	**Monthly General Meeting:** SBAS member Dr. Steven Morris will present "Einstein's Theories of Relativity 2".
4 June Saturday Evening	**Out-of-Town Dark Sky Observing** – New Moon June 6th Please contact Greg Benecke to confirm the location.
6 June Monday 7:30 P.M.	**Monthly Planning Meeting** The location of this meeting will be announced in the next Newsletter.
2 July Saturday Evening	**In-Town Dark Sky Observing at Ridgecrest School** – Weather Permitting. Refer to April 30th entry for directions to the site & instructions on weather conditions.

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, May 6th at 7:30 P.M.

Guest Speaker: Mr. Lou Herman

"Global Coordinates and Time"

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South Bay Astronomical Society
P.O. Box 1999
Redondo Beach, CA 90278

**** * * Attention All Members * * ****

See pages 4-5 to review SBAS' Constitution and By-Laws!