# FIRST LIGHT

*Journal of the South Bay Astronomical Society – July 2009*
**on line at www.geocities.com/sbas_elcamino**

**Monthly General** Meeting**: Friday, July 10th, 7:30 PM**

**Guest Speaker: Michael Harrison**

**"LCROSS Mission"**

## *The June 5 Meeting*

President Ken Rossi began the meeting at 7:38 by introducing newcomers Peter, Lucy and Balaji, and then reviewed recent observing sessions (or lack thereof, due to bad weather). Greg Benecke reported on the Riverside Telescope Maker's Conference Astronomy Expo, which had clear skies for all three nights (much better than last year, when it snowed!) Only half of the usual vendors were there, and attendance was down from last year's 2000 to only 1100, probably due to the poor economy. The organizers have decided that for the next couple of years at least, the Expo will be held on a New Moon weekend to ensure darker skies rather than remaining on the Memorial Day weekend.


Pres Rossi Presents Dr Morris With
A Certificate Of Appreciation
For His Talk On The Universe

Joe Fierstein announced that the SBAS had erected an astronomy display at the Palos Verdes Public Library in honor of the International Year of Astronomy, and suggested that members might like to visit it. Another member of the audience pointed out that the Moon would occult Antares the next evening. Only the reappearance would be visible from the South Bay, at 7:46 pm PDT with the Moon very close to the horizon and in bright twilight, but it might be worth looking for. [I managed to see the Moon at 7:46 pm despite partly cloudy skies, but it was only at 8:00 pm that I was able to spot Antares, by then significantly off the limb, with the help of image-stabilized binoculars as the sky darkened.

President Rossi reviewed plans for upcoming observing sessions, and after a twelve-minute observing break, introduced Dr. Steven Morris as the evening's speaker. Dr. Morris began by noting that there are an enormous number of amateur organizations in the South Bay that need monthly speakers, and any amateur astronomer is likely to have acquaintances who will request a talk on astronomy. Most amateurs are likely to turn down such a request, if for no other reason than a lack of pretty pictures to show, and the absence of a script to follow.

The Astronomical League (to which every SBAS member belongs) recognized this as a problem long ago, and put together a slide show called “Introduction to the Universe”. For 21 dollars, anyone can buy the 33-slide set, which comes with a booklet describing each slide and a collection of helpful hints for novice speakers. Such hints include “Arrive early and check the equipment and seating arrangements” and “Make sure that you operate the slide projector. The dullest sentence in the English language is, ‘Next slide please’”. Dr. Morris added a few of his own, such as “Arrange your slides in a carousel beforehand, to avoid slides that are upside-down or out of order”.

The speaker then went through the 33 slides, describing how they could be used to entertain and educate a general audience. A slide of the Full Moon could be the basis for a description of a history of the Solar System. A heavily-processed photograph of Saturn and its rings, in false color and exaggerated contrast, might help to warn an audience not to have false hope that an amateur telescope might provide such psychedelic imagery. On the other hand, a (poor-quality) picture of a double star could lead to a discussion of the difficulties of astronomical imaging and measurement.

Dr. Morris ended with a picture of the dome of the 200-inch Palomar Observatory, making the point that our astronomical images and knowledge didn’t just happen, but are the end result of a long struggle by 20th-century astronomers to view the sky as accurately as possible, and comprehend what their data was telling them. Some of the 35 people present asked questions of the speaker, and after a round of applause and a plaque presentation, the meeting ended at 9:32.

- ***Dr. Steven Morris***


# *The Cool Chemistry of Alien Life*

Alien life on distant worlds. What would it be like? For millennia people could only wonder, but now NASA’s Spitzer Space Telescope is producing some hard data. It turns out that life around certain kinds of stars would likely be very different from life as we know it.

Using Spitzer, astronomers have discovered the organic chemical acetylene in the planet-forming discs surrounding 17 M-dwarf stars. It’s the first time any chemical has been detected around one of these small, cool stars. However, scientists are more intrigued by what was not there: a chemical called hydrogen cyanide (HCN), an important building block for life as we know it.

“The fact that we do not detect hydrogen cyanide around cool stars suggests that that prebiotic chemistry may unfold differently on planets orbiting cool stars,” says Ilaria Pascucci, lead scientist for the Spitzer observations and an astrophysicist at Johns Hopkins University in Baltimore, Maryland.

That’s because HCN is the basic component for making adenine, one of the four information-carrying chemicals in DNA. All known life on Earth is based on DNA, but without adenine available, life in a dwarf-star solar system would have to make do without it. “You cannot make adenine in another way,” Pascucci explains. “You need hydrogen cyanide.”

M-dwarf and brown dwarf stars emit far less ultraviolet light than larger, hotter stars such as our sun. Pascucci thinks this difference could explain the lack of

*Do alien planets around other stars have the right ingredients for a pre-biotic soup?*

HCN around dwarf stars. For HCN to form, molecules of nitrogen must first be split into individual nitrogen atoms. But the triple bond holding molecular nitrogen together is very strong. High-energy ultraviolet photons can break this bond, but the lower-energy photons from M-dwarf stars cannot.

"Other nitrogen-bearing molecules are going to be affected by this same chemistry," Pascucci says, possibly including the precursors to amino acids and thus proteins.

To search for HCN, Pascucci's team looked at data from Spitzer, which observes the universe at infrared wavelengths. Planet-forming discs around M-dwarf stars have very faint infrared emissions, but Spitzer is sensitive enough to detect them.

HCN's distinctive 14-micron emission band was absent in the infrared spectra of the M-dwarf stars, but Spitzer did detect HCN in the spectra of 44 hotter, sun-like stars.

Infrared astronomy will be a powerful tool for studying other prebiotic chemicals in planet-forming discs, says Pascucci, and the Spitzer Space Telescope is at the forefront of the field. Spitzer can't yet draw us a picture of alien life forms, but it's beginning to tell us what they could—and could not—be made of. "That's pretty wonderful, too," says Pascucci.

For news of other discoveries based on Spitzer data, visit www.spitzer.caltech.edu. Kids can learn Spitzer astronomy words and concepts by playing the Spitzer "Sign Here!" game at spaceplace.nasa.gov/en/kids/spitzer/signs.

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

# *Astrophotography Meeting*

Have you been wanting to get into astrophotography? Are you an experienced astrophotographer and like to talk about it and share ideas? Join fellow SBAS members in a new monthly meeting to learn and trade ideas on how to take astrophotos. Contact Craig Gates for information: ***310-779-9737. See the calendar for the location.***

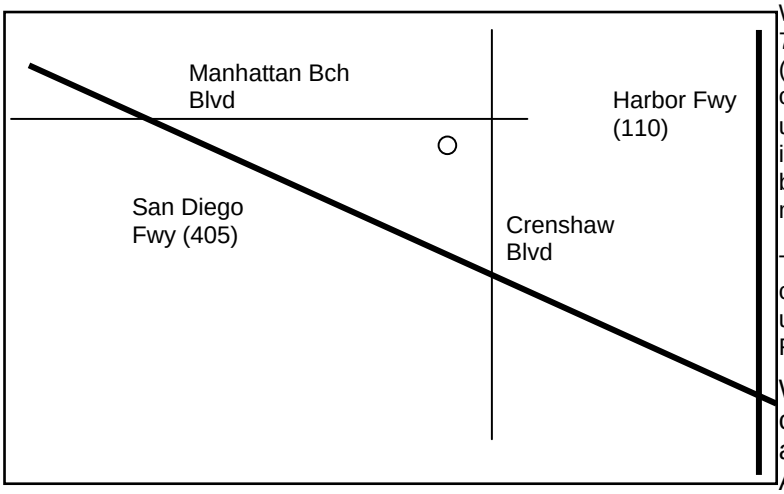
# *SBAS Executive Board*

| | | | |
|---|---|---|---|
| **President** | Ken Rossi | 515-1586 | ken_a_rossi@yahoo.com |
| **Vice-President** | Ron Rennie | 326-5589 | vidron@sbcglobal.net |
| **Secretary** | Steve Pedersen | 378-6479 | epsonstlyusc82@earthlink.net |
| **Treasurer & Astronomical League Rep.** | Arnie Stodolsky | 937-0220 | astodols@ix.netcom.com |

# *SBAS Committees*

| | | | |
|---|---|---|---|
| **Program Chairman** | Ron Rennie | 326-5589 | vidron@sbcglobal.net |
| **Astronomical League Liaison** | Bill Eisele | 542-5070 | Astronomy131@msn.com |
| **Newsletter Reproduction** | Arnie Stodolsky | 937-0220 | astodols@ix.netcom.com |
| **Publications Committee:** | | | |
| **SBAS Website Webmaster** | Alex Athas | | sbas_elcamino@yahoo.com |
| ***First Light* Editor** | Ken Munson | 782-0873 | kenmunson333@sbcglobal.net |
| **Observing Committee** | Greg Benecke | 217-1512 | BeneckeRUs@aol.com |
| | Craig Gates | 376-6387 | - - - |
| **Membership Committee** | Ray Grace | 370-1913 | rgrace3@verizon.net |
| **Publicity Committee** | Joe Fierstein | 377-9834 | joefiers@aol.com |
| | Arnie Stodolsky | 937-0220 | astodols@ix.netcom.com |
| **Property Committee** | Arnie Stodolsky | 937-0220 | astodols@ix.netcom.com |
| **Outreach Committee** | Joe Fierstein | 377-9834 | joefiers@aol.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 (16007 Crenshaw Bl. In Torrance). If the first Friday is on or close to a holiday, we usually defer the meeting until the second Friday of the month. The Planetarium is on the south side of Manhattan Beach Blvd., one block west of Crenshaw Blvd. (near the center of the map at left).

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

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

# 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 June 8th planning meeting will be held at the home of Ron and Jenn Rennie. The address is: 25911 Saddle View Road, Lomita. From the intersection of Crenshaw Blvd. and PCH take PCH South towards Long Beach. At the second traffic light Turn Right onto Pennsylvania Avenue, turn first right (Esther View Road) and follow down one block. Turn left on Saddle View Road to second house on right - No 25911.

# Membership Dues Schedule

| Month Join/Due | Member (Family) | | Student | Expires |
|---|---|---|---|---|
| | USMail | Email | | |
| January | $38.50 | $33.00 | $22.90 | 12/2009 |
| February | $35.00 | $30.00 | $20.85 | 12/2009 |
| March | $31.50 | $27.00 | $18.75 | 12/2009 |
| April | $28.00 | $24.00 | $16.70 | 12/2009 |
| May | $24.50 | $21.00 | $14.60 | 12/2009 |
| June | $21.00 | $18.00 | $12.50 | 12/2009 |
| July | $17.50 | $15.00 | $10.45 | 12/2009 |
| August | $14.00 | $12.00 | $8.40 | 12/2009 |
| September | $10.50 | $9.00 | $6.25 | 12/2009 |
| October | $49.00 | $42.00 | $29.20 | 12/2010 |
| November | $45.50 | $39.00 | $27.10 | 12/2010 |
| December | $42.00 | $36.00 | $25.00 | 12/2010 |

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

**South Bay Astronomical Society**

**Attn: Arnie Stodolsky**

**P.O. Box 1937**

**Redondo Beach, CA 90278**

# *SBAS Membership Benefits*

Contact Arnie Stodolsky for magazine subscriptions at club rates: "Sky & Telescope" $32.95 and "Astronomy" $34.00/1 year or $60.00/2 years!
Note: S&T subscribers at the club rate renew their subscriptions by mailing their renewal notice and check or calling the 800# on the renewal notice.
Only new subscribers or subscribers converting their subscription to the club rate need to contact Arnie or send a check to the PO Box. Astronomy subscriptions and renewals still go through Arnie or via the PO Box.

## *Astronomical League Observing Clubs*

All SBAS members in good standing are also members of the Astronomical League and are eligible to participate in the League's Observing Clubs. The Astronomical League provides many different observing programs (clubs). These programs are designed to provide a direction for your observations and to provide a goal. The programs have certificates and pins to recognize the observers' accomplishments and for demonstrating their observing skills with a variety of instruments and objects. For more information go to:
http://www.astroleague.org/observing.html.

# *NON-PROFIT STATUS for the SBAS*

The SBAS Planning Committee would like to solicit the support of the membership to allow the expenditure of the funds from the club treasury necessary to file for incorporation and non-profit status in the State of California.

**Pros for Incorporating as a Non-Profit**

1. Liability Protection for officers
2. Tax benefits, Federal, State, Local
3. Reduced mailing costs
4. Access to grant money from other non-profit organizations and federal funds
5. Gifts from individuals tax deductible to benefactor

**Cons for Incorporating as a Non-Profit**

1. Added record keeping
    a. Corporate Meeting Minutes
    b. Yearly Report to State
2. More rigorous book keeping requirements that may require accounting services
3. Annual informational tax returns to State and Federal
4. Effort to do the work of incorporating

**Steps to incorporation as a non-profit entity:**

1. File for incorporation in the State of California.
2. File for non-profit status with the Internal Revenue Service.

**Costs to Incorporate**

Cost for California:

- $800 each year.
- $200 filing fee the first year, $20 thereafter.

Cost to file with the IRS is minor.

Attorney fees for filing with the State and the IRS usually runs $1000.00 plus the filing fees for a total of $2000.000

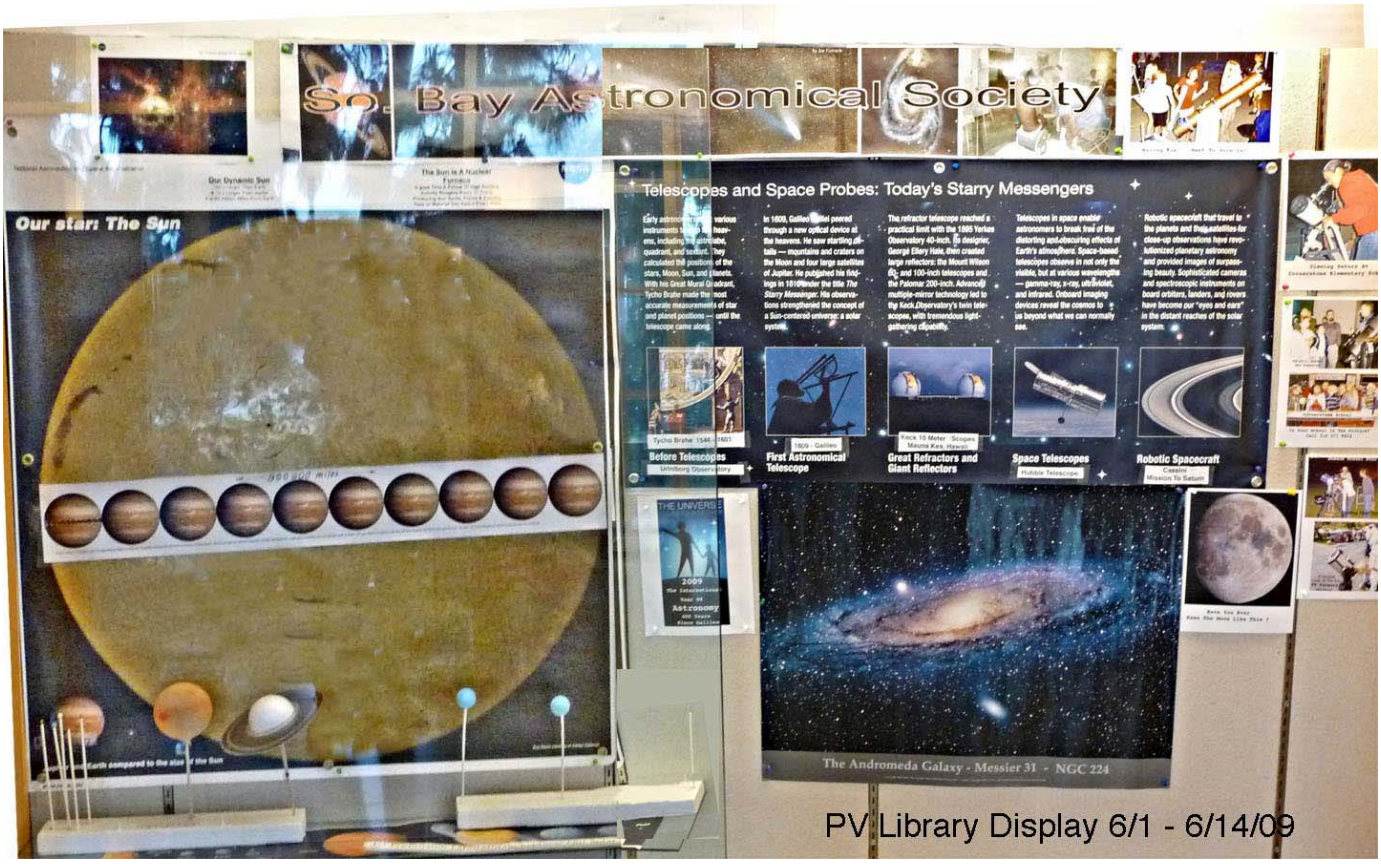
Lorraine Anderson, Attorney at Law, (spouse of President Ken Rossi) has offered to do the paperwork for $250 plus the filing fees, or slightly over $1000.00.
The club treasurer estimates that the yearly fees for incorporation could be absorbed by the club's surplus for approximately the first 3 years before an increase in membership dues would be necessary.

**Vote by Club Members**

The club officers are requesting a vote by the membership at the August General Membership Meeting.

If any member has questions about the incorporation as a non-profit organization please email your questions to Ken Rossi at ken_a_rossi@yahoo.com.

# *Outreach Events*



# *The Planet (?) Pluto*

The International Astronomical Union (the IAU) is the worldwide association of astronomers that usually operates out of the public eye, concerning itself with naming asteroids and newly-discovered planetary features, and organizing conferences that quietly bring astronomers together to provide a universal (or at least planet-wide) forum to keep the profession healthy. Unfortunately, on August 24 2006, the IAU opened Pandora's Box by devising a definition for the word 'planet' that excluded the planet Pluto.

The IAU's three criteria for planethood is that the celestial body (a) is in orbit around the Sun, (b) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape, and (c) has cleared the neighborhood around its orbit.

In some ways, their action was defensible. Hundreds of exoplanets (planets that orbit a star other than our Sun) are being discovered, so a definition sorting out the large-mass end of the planetary zoo is required to separate planets, brown dwarfs and stars. Meanwhile, any numbers of low-mass objects in the Kuiper Belt in the outer Solar System resemble Pluto in some ways, so perhaps a redefinition could be justified.

Unfortunately, lots of astronomers and members of the general public have not acquiesced to this change, leading to confusion and damaging ridicule. In response, the American Astronomical Society (the AAS) held a session on "Planetary Classification in the 21st Century" on Tuesday, June 9 at their semiannual meeting, followed by a moderated discussion. Yours Truly was in attendance.

The Chair, Steve Maran, began the session by introducing the first of seven speakers, Neil Tyson of the American Museum of Natural History. Neil Tyson reviewed the history of Pluto's discovery, naming and classification. He pointed out that the IAU's choice of "nearly round" as a criterion was unfortunate as it is difficult to define or even observe, and that expecting a planet to have "cleared the neighborhood" is also unfortunate, and perhaps should be replaced by the need to have 'dominated' the neighborhood. I agree with this. No planet is in exact hydrostatic equilibrium, and 'nearly round' is undefinable. The existence of the Trojan asteroids in Jupiter's orbit, and the existence of Kuiper Belt objects near Neptune's orbit, implies that Jupiter and Neptune aren't planets either!

The second speaker, S. Alan Stern has served as the principal investigator of the New Horizons mission to Pluto. He began by noting that the IAU had made an easy task into something hard. The definition of a planet having "cleared the neighborhood" is indeed flawed, as such a clearance depends on the star's mass and the age of the system. Indeed, if the Earth were moved to Pluto's orbit, it would no longer be a planet! He suggested astronomers stick to a definition based purely on the geophysics of the object, not on its location.

Charles A. Beichman of JPL examined the high-mass end of known planets, noting that an object with a mass greater than 70 Jupiter masses will exhibit significant nuclear fusion in its core and will be a star, an object with a mass less than 13 Jupiter masses will have no nuclear fusion whatever and will be a planet, and an object in between will exhibit deuterium burning and will be a brown dwarf. There are currently 349 exoplanets known to exist in our galaxy, and our theories of planet formation are so uncertain that we cannot define planets simply in terms of how they formed.

Renu Malhotra of the University of Arizona pointed out that recent modeling has shown that Pluto's eccentric and tilted orbit may be a recent development. Over the history of the Solar System, Neptune has migrated from 20 AU to 30 AU from the Sun due to the gravitational influence of Jupiter and Saturn. As Neptune migrated outward, it swept up Pluto (and some smaller Kuiper Belt objects) into its current 3:2 orbital-period resonance. Pluto may well have formed from the protoplanetary disk as the other planets did, and its current anomalous orbit is not evidence that it is some primal leftover.

Jean-Luc Margot from UCLA pointed out that the "nearly round" criterion is almost never observable for planetary candidates, and should in any case be dropped because not all round objects are dynamically dominant. He noted that neither mass or radius alone are successful in predicting the roundness of satellites and asteroids, but that mass squared divided by orbital period is a useful scattering parameter, measuring the extent to which a smaller body scatters larger bodies. Under this criterion, Pluto is not a planet [although I would point out once again that Earth at Pluto's position would not be a planet either, as its orbital period would be very large]. Margot ended by suggesting that all round bodies be called 'worlds', with some being planets, and others not.

Mark Sykes of the Planetary Science Institute began by pointing out that when a planet has enough mass to become “nearly round” it has enough mass to differentiate (sorting out its interior into shells, with the largest-density material near the core) and engage in geophysical processes (such as volcanism). If this is the criterion for planethood, then the asteroid Ceres is a planet. This one asteroid contains one-third of the mass of the entire asteroid belt, it appears to be differentiated into a rocky core and ice mantle, and may have a subsurface ocean that could harbor life. From a geophysical perspective, planets are best described as gravitationally-round objects.

The last of the seven panelists was David A. Weintraub of Vanderbilt University, who reviewed the history of planetary definitions. He pointed out that every definition, which seemed so fitting and complete at the time, was demolished by new discoveries. He advised humility, and suggested that we are nowhere close to having enough knowledge to define a planet.

Steve Maran then opened the discussion to the floor. For several seconds, no one responded, and it looked as if the meeting would come to an end. Well, fools rush in where angels fear to tread, so I stuck up my hand and was given the microphone. I asked the panel if it was not now too late to demote Pluto from planethood, as the list of nine planets was now part of the worldwide culture. As an example, I pointed out that the alphabet is not in alphabetical order, with the letter ‘w’ near the end of the alphabet when it should be near the beginning (behind the letter ‘d’), but that the current order was too ingrained to be rationalized. Should not Pluto be grandfathered in?

Well, this went over like a lead balloon, as the professional astronomers made it clear that it is up to the professional astronomers to decide such things, and the rest of the world must follow. The panel also brushed aside the question of how Pluto could be a ‘dwarf planet’ but not a planet. In answer to another question, one panelist casually pointed out that the Earth-Moon system is not a planet-satellite pair, but a double planet!!

My favorite comment came near the end, in response to a question from someone who had been watching on the Internet. A panelist said that he was reminded of Deputy Barney Fife of the Andy Griffith Show, who was so untrustworthy he was permitted to keep only one bullet. The IAU was Deputy Fife; it had fired its one bullet in issuing the definition three years ago, and should not be asked to get involved again. The planetary scientists and others who work in the astronomical trenches will sort this out over time, and pronouncements from on high should be avoided.

On this reasonable and realistic note, the Chair called the session to a close.

***- Dr. Steven Morris***

# *Schedule of Coming Events*

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|---|---|
| **10 July Friday Night 7:30 PM** | **Monthly General Meeting**<br><br>Guest Speaker: Michael Harrison<br><br>Topic: LCROSS Mission |
| **12 July Sunday 1:30-4:30** | **Ice Cream Social for Joe Fierstein**<br><br>Help Joe celebrate his birthday with an old fashioned Ice Cream Social at his home. His address is: 7022 Willowtree Dr. RPV RSVP to Joe 310-377-9634 |
| **13 July Monday Night 7:30 PM** | **Monthly Planning Meeting**<br>See directions on Page 4. |
| **18 Jul Thursday Night 7:00 PM** | **In Town Dark Sky Observing Session at Ridgecrest Middle School–** 28915 NortbBay Rd. RPV, Weather Permitting**:** Please contact Greg Benecke to confirm that the gate will be opened!<br><br>Alternate site: Rancho Del Mar High School - |
| **15 July Wednesday Evening** | **Boy Scout Lecture/Star Party**<br>Walteria Community Center 3855 242nd St Torrance<br>Next to Walteria branch of Torrance library |
| **25 July Saturday Evening** | **Out-of-Town Dark Sky Observing Session**<br><br>Contact Greg Benecke to coordinate a location. |
| **16 July Thursday Evening 7:00 PM** | **JPL's Von Karman Lectures: Exploring the Moon** by Dr. Leon Alkalai.<br><br>Several international space agencies are actively engaged in robotic as well as human exploration of the moon, including projects from China, Japan, India, Russia, Europe, Germany and the United Kingdom. NASA has also embarked on an active science and exploration program which includes three robotic missions planned for launch in 2009, 2011 and 2012, as well as human exploration starting in 2020. This presentation will discuss NASA's current plans for returning to the moon for science and exploration, as well as efforts to collaborate with international partners.<br><br>Location: Von Karman Auditorium at JPL 3800 Oak Grove Dr. Pasadena |
| **22 July Wednesday Evening 7:30** | **Astro Imaging Meeting**<br><br>New to astrophotography? Experienced at it? Join fellow SBAS members for a meeting to discuss astrophotography and to help each other grow and learn this fun hobby.<br><br>902 N. Prospect Ave Redondo Beach Ca. Contact Craig Gates to confirm: 310 779 9737 |

# South Bay Astronomical Society

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General Meeting ***at El Camino College Planetarium:***
***Friday, July 10th, at 7:30 P.M.***

***Guest Speaker: Michael Harrison***

***"LCROSS Mission"***

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**South Bay Astronomical Society**
**P.O. Box 1937**
**Redondo Beach, CA 90278**