

★ ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 56, No. 10 – October 2008

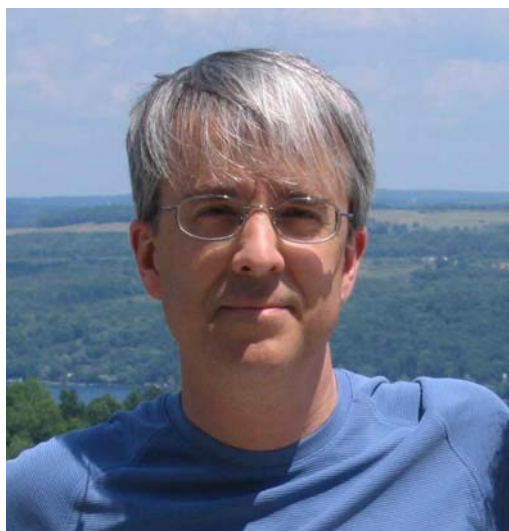
Wednesday, October 15, 2008 – General Meeting

Randall Museum . 199 Museum Way . San Francisco

7:00 pm Doors Open . 7:30 pm Announcements . 8:00 pm Speaker

"The X-ray Universe"

Christopher Mauche, Lawrence Livermore National Laboratory



Although physicists and physicians have utilized X-rays since their discovery by the German physicist Wilhelm Röntgen in 1895, that window of the electromagnetic spectrum was closed to astronomers until they had access to space, first with sounding rockets, starting in the 1940s, and then with satellites, starting in the 1970s. Progress in the field of X-ray astronomy has since been rapid: in 1949, Herbert Friedman discovered the first extra-terrestrial X-ray source (the Sun); in 1962, Riccardo Giacconi discovered the first cosmic X-ray source (Sco X-1); in 1999, the German Röntgen Satellite ("ROSAT") catalog contained nearly 19,000 cosmic X-ray sources. We currently live in a golden age of X-ray astronomy, with sophisticated X-ray observatories orbiting Earth operated by the US (Chandra), Europe (XMM-Newton), and Japan (Suzaku). The speaker will give a general overview of the many different --- but (almost) always extremely hot, violent,

and variable --- sources that populate the X-ray sky: our Sun and other stars, X-ray binaries, supernova remnants, galaxies, clusters of galaxies, and million- to billion-solar-mass black holes. His talk, which includes numerous color images and illustrations, a few "movies," and one equation, stresses how different the Universe appears in X-rays, compared to what we know about it from the optical.

Currently a Staff physicist at Lawrence Livermore National Laboratory, Dr. Christopher Mauche previously served as a Postdoctoral Fellow at Lawrence Livermore National Laboratory and a Postdoctoral Fellow at Los Alamos National Laboratory. He received his Ph.D. from Harvard University, Department of Physics.

Dr. Mauche is a member of the American Physical Society, American Astronomical Society International Astronomical Union, Astronomical Society of the Pacific, American Association of Variable Star Observers Guest Investigator on the International Ultraviolet Explorer, Hubble Space Telescope, GALEX, ORFEUS, FUSE, Extreme Ultraviolet Explorer, ROSAT, ASCA, Chandra X-ray Observatory, XMM-Newton X-ray Observatory.

Research interests include ultraviolet through X-ray spectroscopy of cosmic plasmas; accretion processes in cataclysmic variables, X-ray binaries, and AGN; the winds of cataclysmic variables and early-type stars; the interstellar medium; and SS Cygni.

2008 CLUB OFFICERS & CONTACTS

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CLUB TELESCOPES

The SFAA owns eight very fine, easy to use, loaner telescopes well-suited for deep sky, planets, and star parties. All scopes are available to any SFAA member. The loaner custodians for the majority of our fleet are Pete & Sarah Goldie. Please contact them at telescopes@sfaa-astronomy.org for details if you are interested in borrowing a scope or if you have items you can donate for the loaner program (eyepieces, star maps/books, red flashlights, collimator, etc.). Please contact the appropriate member indicated below if you are interested in borrowing one of the telescopes.



- 1) 6" f/10.3 Dobsonian/Ken Frank/ ken@sfaa-astronomy.org
- 2) 8" f/7 Dobsonian/Pete Goldie
- 3) 8.5" f/6 Dobsonian/Pete Goldie
- 4) 10" f/8 Dobsonian/Pete Goldie
- 5) 114mm f/4 Newtonian StarBlast/Pete Goldie
- 6) 8" f/10 Celestron SCT/Annette Gabrielli/ annette@sfaa-astronomy.org
- 7) 8" f/10 Meade SCT/Stefanie Ulrey/treasurer@sfaa-astronomy.org
- 8) 9.5" f/5.6 Celestron Newtonian/Ken Frank/ ken@sfaa-astronomy.org

CLUB ASTRONOMY VIDEOS

The SFAA owns a series of astronomy videotapes featuring Alex Filippenko, a world-renowned professor of astronomy at UC Berkeley. The videotapes provide an introduction to astronomy and cover topics such as the Solar System, the lifecycles of stars, the nature of galaxies, and the birth of the Universe. The SFAA loans the tapes free to all members. If you are interested in viewing these tapes, you may check them out at any of the SFAA General Meetings. These tapes were kindly donated to the SFAA by Bert Katzung. For information on the course tapes themselves:



<http://www.teach12.com/ttc/assets/coursedescriptions/180.asp>

MEMBERSHIP DUES

Membership is billed for each upcoming year on June 30. Members may receive no more than one bulletin after the expiration of membership.

SFAA Website and Online Services



The SFAA web site at sfaa-astronomy.org is provided to our members and the general public for the sharing of club information and services. The web site contains links for club [star parties](#), [events](#), [newsletters](#), [lectures](#) and [meetings](#). If you wish to interact with other people who are interested in astronomy, the SFAA web site offers public and members only [bulletin board forums](#). If you wish to remain up-to-date on club activities, then we encourage you to subscribe to one or both of our public [mailing lists](#), which will allow you to receive our newsletter and/or club announcements via email. Other useful and interesting information and services are available on the site such as [observing location reviews](#), member [astronomy photos](#), and [members only telescope loans](#). Information about SFAA's membership, organization and by-laws are available at the club's online public document [archive](#). If you need to contact a representative of the SFAA, then please visit our [contacts](#) page to help in finding the right person to answer your questions.

Above the Fog is the official bulletin of the San Francisco Amateur Astronomers. It is the forum in which club members may share their experiences, ideas, and observations. We encourage you to participate by submitting your articles, announcements, letters, photos and drawings. We would also like to hear from our new members. Tell us about yourself – what you have done in the past and what other clubs you have joined. **The deadline for the next issue is the 20th day of the month.** Send your articles to Editor@sfaa-astronomy.org

IMPORTANT DATES

SFAA GENERAL MEETINGS & LECTURES

Wednesdays
October 15
November 19
December 17

7:00 p.m. Doors open. 7:30 p.m. Announcements. 8:00 p.m. Speaker
Randall Museum, 199 Museum Way (Near 14th Street and Roosevelt)

BOARD MEETINGS

Tuesdays
October 14
November 11
December 9
7:00-8:30 p.m.

Randall Museum, 199 Museum Way
(Near 14th Street and Roosevelt)

MT TAM STAR PARTIES – SPECIAL USE PERMIT – MEMBERS ONLY

Special Use Permit observing nights on Mount Tamalpais are private and open *only* to SFAA members. Please arrive by sunset (times listed below). A permit is required for each car. We must vacate the mountain by 2:00 a.m. except on specially approved nights (such as Messier Marathon).

SATURDAYS - GATEKEEPERS NEEDED

September 27 ANNUAL STAR-B-QUE (Bootjack Picnic area) at 4:00 p.m. followed by SUP event (Rock Springs Parking Area) at 6:58 p.m.
October 25 – 6:18 p.m.
November 29 – 4:51 p.m.
December 27 – 4:58 p.m.

CITY STAR PARTIES - TELESCOPE CLINIC ONE HOUR BEFORE SUNSET

Saturdays

October 18 – 6:27 p.m. at Land's End (Point Lobos)
November 8 – 5:04 p.m. at Land's End (Point Lobos)
December 20 – 4:51 p.m. at Randall Museum, 199 Museum Way (Near 14th Street and Roosevelt)

Weather may cancel the City Star Party

Please note that while City Star Parties WILL ALWAYS be held on Saturdays, some will be closer to the last quarter phase of the moon, while others will be close to first quarter. This is so we can work around dates for Mt. Tam public star parties as well as our members-only events on Mt. Tam.

Map and directions – Land's End (Pt. Lobos) <http://www.sfaa-astronomy.org/clubarchive/directions-pointlobos.php>

MT TAM PUBLIC STAR PARTIES

VOLUNTEER GATEKEEPERS ARE ALWAYS NEEDED

Public nights on Mount Tamalpais start with a lecture in the Mountain Theatre, followed by public viewing in the Rock Springs parking lot. SFAA members may view privately after crowd departs, approx. 11 pm-2 am. For more information go here: <http://www.sfaa-astronomy.org/starparties/>

October 4 – 6:47 p.m.

Dr. Joel Primack & Nancy Abrams, UC Santa Cruz

"The View From the Center of the Universe: Discovering Our Extraordinary Place in the Cosmos"



NEW SFAA MEMBERS

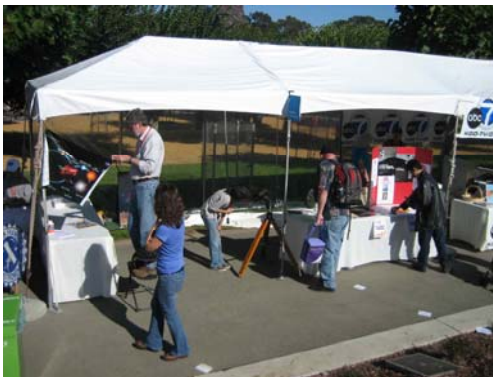
Scope City is offering to new members a \$25 credit toward the purchase of telescopes and binoculars. Obtain a receipt for dues payment from Vivian White, Treasurer, treasurer@sfaa-astronomy.org. Contact Sam Sweiss at Scope City to arrange for your discount.

PRESIDENT'S COLUMN

The SFAA had a terrific presence at the Academy of Sciences Opening Weekend. 17,000 visitors managed to get into the museum on Saturday alone plus thousands more who all enjoyed a great variety of education and entertainment outside on Music Concourse. This is where the SFAA booth was located next to the KGO-TV booth and across from the museum.



Long lines in front of the museum entrance



Saturday morning setup: John Dillon puts up the supernova chart and newest member Yolanda Peraza gets the solar scope ready



A big crowd at the SFAA booth: Michael Portuesi and Jim Mace engage people in astronomy talk while John Dillon operates the PST



Can you believe how far away this galaxy is from us? I am demonstrating the scale of the universe

More than 20 volunteers manned the solar scopes, showed how to grind a telescope mirror, conducted interactive supernova and galaxy scale demonstrations from the Night Sky Network program, handed out hundreds of SFAA brochures, and provided information about the club. I want to thank all volunteers who spent countless hours planning and organizing the event and being on site. This was definitely our biggest outreach event for the year and what a success!

In this month's newsletter, Jim Cottle publishes his second article in the "40 Years Back to the Moon" series that follows in the footsteps of the Apollo program 40 years ago. This time it is about Apollo 7, the first manned flight after the Apollo 1 tragedy – and only nine months before the actual Moon landing. Jim brings a great combination of inspiration, rarely seen photos, and his personal experience to this fascinating topic.

The end of this year is already in sight. And we should put together our agenda for 2009, the International Year of Astronomy designated by the UN and the International Astronomical Union. Let us make the universe tremble! Let us go back to the Moon! Let us put San Francisco onto the astronomical map! Bring in your astronomical passion, vision, and creativity! Organize a star party. Give a talk. Create a podcast. Take us to Mount Wilson Observatory. Join the Board. Email me at president@sfaa-astronomy.org with your ideas.

DIRK LAMMERTS
PRESIDENT

2008 SAN FRANCISCO AMATEUR ASTRONOMERS LECTURE SERIES

7:30pm. . Free & Open to the Public . sfaa-astronomy.org
Randall Museum - Randall Museum Theater, 199 Museum Way, San Francisco .
randallmuseum.org

November 19th - Jeff Cuzzi, NASA Ames - "What Have We Learned from the Cassini/Huygens Mission to Saturn"

In this talk, Jeff Cuzzi will review the key science highlights so far on the giant planet Saturn, its spectacular rings, its small but very diverse icy moons, and its planet-sized moon, Titan.

December 17th - Member's Night

Our December meeting features presentations from our SFAA members, plus the annual contests from our members of entries of astronomy art, astrophotography and astronomy literary works. Elections of our volunteers for Officers and Board Members are held on this festive evening. See details in this newsletter.

MEMBERSHIP DUES



July, was time to renew your membership to the San Francisco Amateur Astronomers. Did you know that you are a member of the club the SF Weekly paper voted 2008's "Best Local Nerds"?! It's been a great year so far and there are many upcoming events you can attend. To make sure you don't miss out on all the fun to be had, please mail your payment to the following address, or bring it with you to a general meeting. If your address, email, or phone has changed, please include a note letting us know. Thanks!

\$10 - Youth (under 18) / Student Membership \$25 - Individual Membership
\$30 - Family or Foreign Membership \$40 - Institutional Membership
\$75 - Supporting Membership

Mail to: San Francisco Amateur Astronomers, P.O. Box 15097, San Francisco, CA 94115

For Astronomy magazine subscriptions that need to be renewed, please include an additional \$34 (or \$68 for 2 years) and a note with your membership renewal. Sky and Telescope can now be renewed directly at the same price when the notice comes to you, without going through SFAA, or at: <http://www.skyandtelescope.com/>

Vivian, SFAA Treasurer

Opening Weekend at the California Academy of Sciences

On the weekend of September 27-28, the California Academy of Sciences reopened its doors to the public with family-friendly activities, delicious food, and entertainment all day long. Festivities on Saturday featured Architect Renzo Piano, Executive Director Greg Farrington, Mayor Gavin Newsom and other officials commemorating the completion of the new Academy with an opening ceremony.

SFAA supported the opening hosting its own booth featuring solar observing, telescope demonstrations, planet and galaxy distance demonstration, and general astronomy information. The opening was attended by over 17,000 people on Saturday and thousands more on Sunday. It was SFAA's biggest and most prominent event of the year at which to promote itself. It provided an excellent opportunity to reconnect with the Academy and show our support.



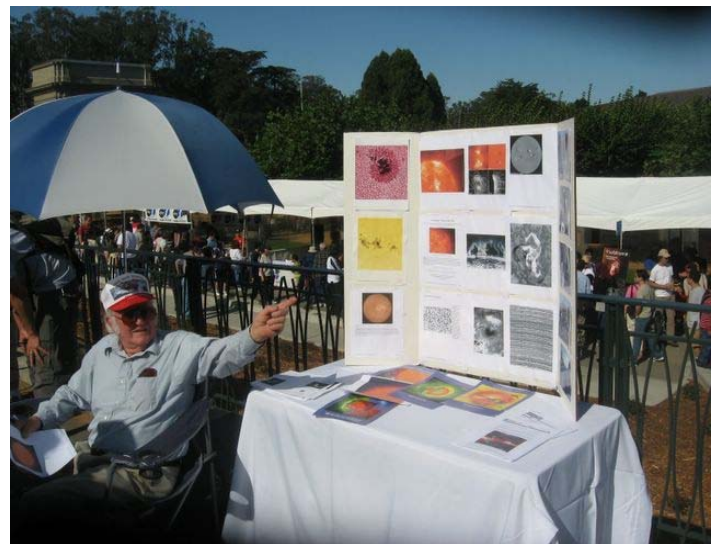
John Dillon capturing curiosities and a view of the sun with the solar scope



Ken capturing curiosities and a view of the sun



Chelle adjusts the shade



Ever-faithful Art Owens pointing out Astronomy Day



Getting ready for a Supernova!



Yolanda and Dirk



Michael and James engaging the public



Rita and Al Stern ready the telescope



Look - The Sun!



40 Years Back Toward the Moon – Apollo 7

Jim Cottle



This month marks the first of the 40th Anniversaries of the manned flights of NASA's Apollo Lunar Landing Program. On October 11, 1968, Apollo 7, launched from Complex 34 at Cape Kennedy marked NASA's "return to flight" for the manned space program following the sacrifice of three astronauts in a pad fire on January 27, 1967. Over the subsequent 21 months, more than 1300 modifications had been made to hardware following the hard lessons learned from the Apollo 1 tragedy. Testing these and the reliability of the capsule/service module combination were the main objectives to the mission of Apollo 7. The 11-day duration resulted in the longest first flight ever for a spacecraft. Even as the retrorockets were preparing to fire aboard Apollo 7, NASA management was making arguably one of the riskiest and controversial decisions of the Apollo program. Although no men had yet flown on a Saturn V, incredibly, in less than nine months after the splashdown of Apollo 7, two men would be walking on the surface of the Moon.



AS-205 on the Pad. The Saturn 1B's masterful case of re-use engineering with elongated Redstone tanks and swept-back tail fins created a beautifully aesthetic rocket.

Apollo 7 was a combination of upgraded hardware, including Apollo Saturn 1B AS-205, the 5th in the upgraded Saturn booster series. The Saturn 1B booster had four previous successful flights and was a masterful case of re-use engineering. The Von Braun team at Huntsville utilized eight elongated Redstone tanks surrounding a central Jupiter tank making up the first stage. These tanks fueled eight Rocketdyne H-1 engines providing a total 1.6 million pounds of thrust at liftoff (enough for placing 40,000 pounds into low earth orbit). The engine

combination was affectionately known as "Cluster's Last Stand" and the Saturn 1 was the first serious testing of the clustering concept. The Rocketdyne F-1 engine, with its 1.5 million pounds of thrust, had to be clustered in a group of 5 for the Saturn V (C-5 resulting in 7.5 million pounds thrust for Earth-moon orbit rendezvous) or a cluster of eight for the Nova class rocket (C-8 for direct Earth Moon ascent resulting in 12 million pounds of thrust). In the later of these cases, it is likely, according to one spaceport engineer, that *"we would have sunk Merritt Island!"*

Coaxing a bunch of rocket engines to play nicely with one another and with repeatable predictability was not a trivial matter. And up until the Saturn 1 was tested, the reliability of clustering rocket engines together for a larger total combined thrust was not known. Dynamic instabilities were particularly troublesome, not easily simulated with the limitations of the computer modeling of the time, and persisted even during the remaining duration of the Apollo program. Getting eight engines, with their high temperatures, pressures and vibrations to perform in unison was one of the major goals of the early Saturn program. With the successful development of the Saturn 1, eight would be the maximum number of liquid fueled engines ever to be used simultaneously, thus the moniker of "Cluster's Last Stand"¹. The Saturn 1B would carry on its second stage the same SIV-B used throughout the program for trans-lunar injection and would be re-utilized in NASA's Skylab program.



Center director Kurt Debus and Launch Director Rocco Petrone in the LC-34 Blockhouse during the Apollo 7 launch.

Launch Complex 34 was also a proving ground for the myriad of ground support equipment to support the larger Saturn V launch complex. Many of these systems were tried at LC-34 and modified in the upgrade to launch complex 39 for the much more

powerful Saturn V moon rocket including telemetry over high speed data lines that had to travel miles, rather than feet to the launch control center. The designs of communication systems, Q-ball cover, hold down arms, liftoff switches and umbilicals were all re-used where appropriate and upgraded when necessary for the Saturn V, LC-39 complex.

The liftoff of Apollo 7 took place at 11am on October 11, 1968 from Complex 34. Two pictures of the liftoff are shown below, one from the perspective of the blockhouse to illustrate how closely the bee-hived styled blockhouse was to the pad and the second taken from a EC-135 chase plane. This second shot is particularly interesting from the perspective of the chase plane at 40,000 feet, looking down on the launch with the VAB of Launch Complex 39 in the background. The picture effectively compresses the distance between the two launch complexes and offers a unique and unusual view of Apollo 7's launch.

¹ If you think eight is enough to contend with, contrast this clustering with the Soviet's attempt to cluster **30** engines in the first stage of their N-1 moon rocket. On July 3rd, 1969, the second N-1 lost thrust at an altitude of 600 feet (only twice its length) resulting in catastrophe for the Soviet Moon Program.



Apollo 7 launch from LC-34 (left) and as seen by a EC-135 chase plane at 40,000 feet (right).

The Command Service Module CSM-101 was the first in the series of “Block II” designs and the culmination of many modifications and innovations resulting from the ultimate sacrifice of the lives of three astronauts. Its advances thus incorporated a multitude of safety features for the crew including a service hatch that could be opened within 7 seconds by the crew and 10 seconds by ground support personnel. A 60/40 mix of Oxygen Nitrogen in the cabin with only the Astronauts themselves breathing pure oxygen through their suits (to avoid the “bends” associated with a quick abort), judicious use of non-metallic materials and upgraded armored sheathing on cable lines lessened the likelihood of cabin fire. This was truly the result of “learning the hard way”. It placed a hyper-emphasis on crew safety during the Apollo 7 mission alongside its already packed flight plan. This also resulted in some cantankerous crew-autonomy issues and the first ever break between the wishes of mission control and the actions of the crew.



The Apollo 7 crew of Don Eisele, Wally Schirra and Walt Cunningham.

Chosen for Apollo 7 were Wally Schirra, Don Eisele and Walter Cunningham. They carried with them the entire psychic weight of the Astronaut Corps, the awesome responsibility of protecting the future of the program from the Astronaut’s perspective following the tragic events of January 1967. Plans for the flight were extensive tests of the command service module, the first in

the Block II design, the service propulsion system and the ability of the astronauts to rendezvous with the SIV-B (which would be the third stage of a Saturn V stack, carrying the Lunar Module). The three had head colds and, against the instructions of Mission Control, elected to not wear protective headgear during their re-entry. This allowed them to clear the pressure in their ears building up during reentry due to congestion by holding their nose and equalize any damaging effect on their eardrums. The damaging effect was effectively transferred to their relationship with Mission Control, as this type of “mutiny” was not very common, nor rewarded by the likes of Christopher Kraft, the flight director. Particularly responsible for the crankiness of his crew, Wally Schirra bore the brunt of the blame as mission commander and never again flew in a space mission. He became a familiar face alongside Walter Cronkite as a technical contributor to the CBS coverage of the Apollo program.

In spite of the challenges and responsibilities in Apollo 7's return to flight for the program, the mission flew to a near perfect conclusion. The crankiness of the crew notwithstanding, the SIV-B was dumped of excess propellant and used for rendezvous practice, the Service Propulsion System motor was fired and re-lighted repeat ably during the mission. But most of all, the 11-day duration of the flight was a real-world time duration test of the environment of the Command and Service Module's capability to house a three-man crew during the entire length of a lunar mission.



The SIV-B stage was purged of excess propellants and, afterwards, used for rendezvous practice by the Apollo 7 crew.

Had the fire of Apollo 1 not taken place and resulted in the modifications of the Block II command module, it is often argued that the goal of reaching the moon in 1969 could not have been reached and that the disaster would have completely jeopardized the program. Even before the Apollo 7 SPS engine fired to bring the command module into a re-entry corridor, NASA management had made one of the most risky and rewarding decisions of the Apollo program. The Lunar Module was still not ready to be flight-tested and the Saturn V was ready to fly. Apollo 8 would be the first Saturn V flight to carry men aboard and, incredibly, it would leave the earth's gravity and orbit the moon.



SFAA Proudly Announces STAR REWARDS!

Volunteers make SFAA activities possible – This program is for you!

All SFAA activities and events are planned and organized by volunteers. We instituted this program to recognize your contributions and to encourage broader participation in conducting future SFAA activities.

How do I earn STAR REWARDS points?

You earn STAR REWARDS points by volunteering for SFAA activities. Qualifying activities will be published in the “Above the Fog” newsletter or via email announcement. The program will start on September 1, 2008. The initial list of qualifying activities is printed below. This list will be updated from time to time. We will announce at a later date how STAR REWARDS points will be handed out and administered.

SFAA STAR REWARDS Qualifying Activities (updated: 08/17/08)		
Event	Qualifying activity	Points
Academy of Sciences Opening	SFAA booth per 2 or 2.5 hour time slot	1
Annual Star-B-Q	Volunteer (officially signed up)	1
Mt. Tam public star party	Gatekeeper (officially signed up)	1
Mt. Tam SUP star party	Gatekeeper (officially signed up)	1
CSP	Speaker at quarterly CSP at Randall	1
General meeting	Providing refreshments	1

What can I use STAR REWARDS points for?

SFAA will conduct a raffle drawing at the December General Meeting with, for example, astronomy or telescope gadgets, books, etc. as prizes. Your STAR REWARDS points can be exchanged for raffle tickets. The more points you enter, the more tickets you will receive, and the higher your chance of taking one of these prizes home. In addition, we might offer members to redeem STAR REWARDS points to secure a spot at special SFAA sponsored or subsidized events.

STAR REWARDS points earned through June 30, 2009 will expire December 31, 2009. STAR REWARDS points can be earned or redeemed by SFAA members in good standing only. STAR REWARDS points are transferable between SFAA members. Additional terms and conditions might apply. Terms and conditions for the SFAA STAR REWARDS program subject to change upon notice.

ANNUAL AWARDS

THE TIME IS NEARING

ASTROPHOTOGRAPHY AND LITERARY SUBMISSIONS RECEIVED ON OR BEFORE
NOVEMBER 25 WILL BE POSTED IN THE DECEMBER NEWSLETTER

Astrophotography



Members are encouraged to submit astrophotographs (up to three entries per member) for judging. All entries will be accepted and exhibited at the December meeting and voted upon by the general membership. Entries must have been taken this year (2008) and be of an astronomical theme. Size should be reasonable (11' x 14' or less), mounted or unmounted.

Astronomical Arts



This contest is open to all members and will be judged by the membership at the December General Meeting. Any art related to astronomy is welcome. Your drawings of astronomical objects are worth sharing with other club members, as well as craftwork, sculpture, jewelry, and paintings -- there are almost no restrictions here. Size is a consideration since we have to fit all entries, and club members, in the museum, alongside the Astrophotography Award entries. Also, no living critters, please. The museum may frown upon any living, breathing things that are not part of official exhibits. Live acts are restricted to the human kind. Please bring your entries to the December meeting. Any questions can be directed to club officers listed on page two in this bulletin.

Literary



Submissions may be fact or fiction, humor or opinion. You may have a favorite story about an observing experience, a trip, or about people who have crossed your astronomical path in one memorable way or another. Share the stories of your astronomy observing and/or travel experiences, maybe an article you have written, and enable us to appreciate them with you.

Members will cast votes at the upcoming Members' Night meeting on December 17.

Prizes for first, second and third place winners will be awarded.

BENJAMIN DEAN LECTURE SERIES

Jewish Community Center of San Francisco, 3200 California Street (at Presidio Avenue)

The Fall Benjamin Dean Lecture Series in Astronomy features exciting information about some of the newest telescopes and spacecraft exploring space. While the California Academy of Sciences is reopening to the public on September 27, the fall Dean Series will still be held at the Jewish Community Center at 3200 California Street in San Francisco. Tickets are \$5 each, and are available [online](http://www.calacademy.org/events/index.php) at <http://www.calacademy.org/events/index.php> or at the door. Parking is available across the street in the UCSF Laurel Heights campus parking lot or in the JCCSF garage. The #1 California, #3 Jackson, #4 Sutter, and #43 Masonic MUNI lines stop directly in front of the building. The #38 Geary and #24 Divisadero stop four to five blocks away.

The lectures will return to Golden Gate Park to take up their permanent home in the new Morrison Planetarium in January with the first lecture of the 20th Anniversary Benjamin Dean Lecture Series. Speakers will be Fellows of the California Academy of Sciences, and will include cosmologist Alex Filippenko, planet hunter Geoff Marcy, SETI Director Jill Tarter, and astrobiologists David Morrison and David Des Marais.

Monday, October 27, 7:30 p.m.

Peter Smith, University of Arizona

“The Phoenix Mars Lander”

Peter Smith is the Principal Investigator for the Phoenix Mars Mission, and will be sharing the latest images from Phoenix’s Surface Stereo Imager and Robotic Arm Camera as well as various geological findings from the Lander’s “summer on Mars.”

Monday, November 3, 7:30 p.m.

Dr. Rachel Street, Las Cumbres Observatory affiliated with UC Santa Barbara

“Discovering New Worlds”

Humans have wondered about the existence of other planets since ancient times. We live in an exciting era when we are discovering planets in other star systems. These systems are turning out to be far more diverse and extraordinary than we ever expected. This talk will follow the timeline of discovery, tracking the search for extra-solar planets from the early false starts to the outstanding successes of recent years. How can these elusive objects be found, what have we learned about them so far and what may forthcoming space missions tell us?

Monday, December 15, 7:30 p.m.

Dr. Robert Gold, Applied Physics Laboratory, Johns Hopkins University

“The MESSENGER Mission to Mercury”

The MESSENGER spacecraft is on its way to orbit Mercury, a planet of extremes. Mercury has the greatest temperature variation, the highest density, and the most Earth-like magnetosphere of any planet. Despite Mercury often being the closest planet to Earth, very little was known about it because it is very difficult to observe and study. It has taken 30 years to mount an orbital mission to this terrestrial planet. MESSENGER has already flown by the planet twice. It has revealed exciting new information about Mercury’s structure and the geological processes that have shaped it. This lecture will cover the challenges of developing a spacecraft to deal with the extreme environment at Mercury and show some of the amazing scientific results from the MESSENGER flybys.

Silicon Valley Astronomy Lectures
Wednesday, October 1, 7:00 p.m.
Smithwick Theater, Foothill College
El Monte Road and Freeway 280, Los Altos Hills, California.

PHYSICIST LEONARD SUSSKIND, Stanford University
THE BLACK HOLE WARS: MY BATTLE WITH STEPHEN HAWKING

Physicist Leonard Susskind of Stanford University will give a non-technical, illustrated talk on "The Black Hole Wars: My Battle with Stephen Hawking" as part of the Silicon Valley Astronomy Lectures. in the

Free and open to the public. Parking on campus costs \$2. Call the series hot-line at 650-949-7888 for more information and driving directions. No background in science will be required for this talk. Seating is first come, first served.

Black holes, the collapsed remnants of the largest stars, provide a remarkable laboratory where the frontier concepts of our understanding of nature are tested at their extreme limits. For more than two decades, Professor Susskind and a Dutch colleague have had a running battle with Stephen Hawking of Cambridge University about the implications of black hole theory for our understanding of reality -- a battle that he has described in his well-reviewed book *The Black Hole Wars*.

In this popular talk, without mathematics, Dr. Susskind tells the story of these wars, explains the ideas that underlie the conflict, and recounts how he got Hawking to retract some of his claims. What's at stake is nothing less than our understanding of space, time, matter and information!

Leonard Susskind is Felix Bloch Professor of theoretical physics at Stanford University and the author of two popular books and many articles on recent developments in science and their meaning. He teaches a popular "continuing studies" course at Stanford on modern physics and has won the American Institute of Physics science writing prize for an article explaining black holes. His research focuses on particle physics, quantum theory, and the nature of gravity. He has a rare knack for explaining the most advanced scientific ideas in everyday terms.

The lecture is co-sponsored by:

- * NASA Ames Research Center
- * The Foothill College Astronomy Program
- * The SETI Institute
- * The Astronomical Society of the Pacific

This talk kicks off the 2008-2009 series of Silicon Valley Astronomy Lectures. A unit of credit (Astronomy 36.01) is available from Foothill College for those who attend all six Wednesday evening lectures and write a short paper on an astronomy topic of their choice. You may register in advance at: www.foothill.edu/reg or get the paperwork at the Oct. 1 lecture by coming a little bit early.

Past Silicon Valley Astronomy Lectures are now available in MP3 format at:

<http://www.astrosociety.org/education/podcast/index.html>

Come Explore the Cosmic Frontiers with the SETI Institute

Participate in an Exciting "Day of Science"

Saturday, October 25, from 1:00 - 5:00 p.m.
at the Computer History Museum in Mountain View.

Seating is limited! Admission is free, but reservations are required.

Seven top scientists from the SETI Institute will share the latest results from the search for life in the universe, in a program designed for non-specialists. The speakers include:

- * Jill Tarter: Building Better Pitchforks for Searching the Cosmic Haystack (for intelligent signals)
 - * Seth Shostak: New Strategies and Weird Ideas (for SETI)
- * Cynthia Phillips: Exploration of Europa (the moon that might harbor life)
- * Doug Vakoch: The Art and Science of Interstellar Message Composition
- * Jon Jenkins: Kepler's Search for New Worlds (planet finding mission to launch next year)
- * Margaret Race: Astrobiology, Planetary Protection, and the Search for Life
- * Laurance Doyle: SOTI: The Search for Ocean-Terrestrial Intelligence

The moderator will be SETI Institute Trustee (and California Professor of the Year), Andrew Fraknoi (of Foothill College), who will set the astronomical background for the talks.

There will be ample time for questions from the audience and discussion among the speakers.

For more information or to register, go to the event web-site:

<http://www.seti.org/dayofscience2008program>

There will be general seating -- or join TeamSETI and receive priority seating! The program is for adults and older teens and we suggest not bringing younger children.

The SETI Institute is a private, nonprofit organization dedicated to scientific research, education and public outreach. The mission of the Institute is to explore, understand and explain the origin, nature and prevalence of life in the universe. We believe we are conducting the most profound search in human history - to know our beginnings and our place among the stars. **2008-2009**

MEMBERSHIP DUES

SFAA membership now comes due in June. Before now, dues were payable in the month a member first joined. Last year, the SFAA board voted to make everyone's dues payable at the same time - in June of each year. This was done for two reasons: 1) to save a great deal of work for our volunteer Treasurer, present and future, and, 2) for the convenience of members - it's easier to remember! In the past, many members forgot their due date and their membership unintentionally lapsed.

N.B. for those of you who have a club discounted *Sky and Telescope* magazine subscription, you will need to renew your subscription separately. The magazine will send you a renewal notice. In the past, you had to send that renewal notice with payment to the SFAA; now you can mail your *Sky and Telescope* subscription renewal payment directly to *Sky and Telescope*. **Note: Not renewing your club membership on time may mean your magazine subscription(s) will also terminate.**

Thanks for bearing with us during this transition process -- it'll all seem worth it next year! Just complete the membership form on the last page of the newsletter and submit with your renewal check to:

San Francisco Amateur Astronomers
P.O. Box 15097
San Francisco, CA 94108

YEARLY RATES FOR MEMBERSHIP

\$10 – Youth (under 18) Student Membership	\$25 – Individual Membership
\$30 – Family or Foreign Membership	\$40 – Institutional Membership
\$75 – Supporting Membership	

MEMBER BENEFITS INCLUDE

- Subscribing to our Announcements mailing list to receive newsletter, activity and event announcements.
- Interaction with world class speakers as they present cutting edge astronomical research
- Discounts on [Sky & Telescope](#) and [Astronomy](#) magazines*
- Discounts on equipment and accessories at [local telescope retailers](#)
- Annual club Astrophotography, Literary & Art Awards
- Social events, such as our annual picnic and our awards dinner
- Club telescopes – use one of the club's loaner scopes on a month-to-month basis
- Yosemite Star Party – held at Glacier Point exclusively for SFAA members
- Access to events and resources in Northern California and beyond
- Field trips – to observatories and other locations of scientific interest, such as Mt. Wilson Observatory in Pasadena, Chabot Space and Science Center, Fremont Peak, and the Stanford Linear Accelerator Center
- Extended observing hours at the Mount Tamalpais Astronomy Program
- Access to dark sites in Northern California

San Francisco Amateur Astronomers
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Sharing the Wonders of the Universe

Has your membership expired? Your mailing label includes the month and year through which your membership is paid. If it is past, your membership has expired and this may be your last issue.