

ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 59, No. 10 – October 2011

Wednesday, October 19, 2011 – General Meeting

Randall Museum . 199 Museum Way . San Francisco

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

SFAA's General Meetings take place on the 3rd Wednesday of each month (except January)



CATCHING SHADOWS: KEPLER'S QUEST FOR NEW WORLDS

DR. NATALIE BATALHA

**Assistant Professor, Physics and Astronomy
San Jose State University**

Humankind's speculation about the existence of other worlds like our own turned into a veritable quest with the launch of NASA's Kepler spacecraft in March 2009. The mission is designed to survey a slice of the Milky Way Galaxy to identify planets orbiting other stars. It looks for the telltale dimming of light that occurs when an orbiting planet passes in front of the star thereby casting a shadow into space. The roster of exoplanets discovered by Kepler has reached 18 in number, including one world that is unquestionably rocky in composition. Moreover, the team has released a catalog of nearly one thousand stars showing the recurring dimmings of light that suggest the presence of a planet. The methods used to identify planets will be described in this talk as well as the discoveries that have been announced to date. Now in its third year of operation, Kepler is honing in on the answer to the question that drives the mission: are potentially habitable worlds abundant in our galaxy.

Dr. Natalie Batalha is a professor of physics and astronomy at San Jose State University in the heart of Silicon Valley, California and the Deputy Science Team Lead on NASA's Kepler Mission. She holds a bachelor's in physics from the University of California (UC), Berkeley, and a doctorate in astrophysics from UC Santa Cruz. Dr. Batalha started her career as a stellar spectroscopist studying young, sun-like stars. After a post-doctoral fellowship in Rio de Janeiro, Brazil, Dr. Batalha returned to California. Inspired by the growing number of exoplanet discoveries, she joined the team led by William Borucki at NASA's Ames Research Center working on transit photometry – an emerging technology for finding exoplanets. Twelve years later, she stands poised with the Kepler team to make discoveries that humans, up to now, have left to the imagination and the realms of science fiction.

Dr. Batalha has been affiliated with NASA Ames Research Center since 2000 where she conducts research on extrasolar planet detection and stellar astrophysics. She is a co-Investigator for NASA's Kepler Mission whose objective is to identify and characterize habitable, earth-like planets orbiting sun-like stars. As Director of the Systems Teaching Institute at the NASA Research Park (<http://luarc.ucsc.edu/sti>), Dr. Batalha is responsible for creating programs and resources for students pursuing careers in fields relevant to the mission of NASA Ames Research Center.

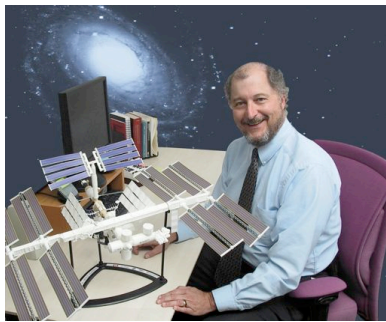


San Francisco Amateur Astronomers

Upcoming Lectures and Lecturers

Randall Museum Theater . Randall Museum
199 Museum Way
San Francisco

7:30 p.m. . Free & Open to the Public



November 16

PSYCHOLOGICAL ISSUES AFFECTING ASTRONAUTS IN SPACE

Dr. Nick Kanas - Emeritus Professor of Psychiatry, University of California, San Francisco

A number of psychiatric and interpersonal issues can affect astronauts in space. Professor Nick Kanas will review important psychosocial issues, describe his research with astronauts and cosmonauts who have flown on the Mir and International Space Stations, and discuss countermeasures that will improve the psychological well-being of future space travelers.



December 21

SOFIA: ASTRONOMY FROM NASA'S AIRBORNE INFRARED OBSERVATORY

ERICK YOUNG, SOFIA Science Mission and Operations Director

Erick Young, a widely recognized authority on infrared astronomy, is Science Mission Operations Director for SOFIA. Most recently, Young was responsible for developing the far-infrared detector arrays on the Spitzer Space Telescope's Multiband Imaging Photometer for Spitzer (MIPS). The instrument provided both imaging and spectroscopic data at far-infrared wavelengths. Dr. Erick Young will describe both the technology of SOFIA as well as some of the scientific highlights in the past year of observing.

IMPORTANT DATES

SFAA GENERAL MEETINGS & LECTURES

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

Third Wednesday of each month: 7:00 p.m. Doors open. 7:30 p.m. Announcements. 8:00 p.m. Speaker

SFAA BOARD MEETINGS IMMEDIATELY PRECEDE GENERAL MEETINGS AND BEGIN AT 6:00 P.M.

October 19
November 16

December 21

CITY STAR PARTIES *Land's End (Point Lobos)*

The parking lot at Lands End is currently under construction and will be inaccessible for a few months. SFAA Public Star Party will be held at the multi-tiered parking lot just past the entrance of land's end on Geary Street. We believe the address for this parking lot is I Merry Way.

Directions:

If you are heading west on Geary (toward the Ocean), the entrance will be on your right a few hundred feet after the Lands End turn off. It is located above the Cliff House Restaurant.

Map and directions: <http://www.sfaa-astronomy.org/clubarchive/directions-pointlobos.php>

TELESCOPE CLINIC ONE HOUR BEFORE SUNSET

NOTE: While City Star Parties **WILL ALWAYS** be held on a Saturday, some will be close to the last quarter phase of the moon; others will be close to first quarter. This is so we can work around dates for Mt. Tam public star parties and Mt. Tam members-only events.

2010 MT TAM SPECIAL USE PERMIT STAR PARTIES - MEMBERS ONLY

GATEKEEPERS NEEDED

Special Use Permit observing nights on Mount Tamalpais are private and open *only* to SFAA members. Please arrive by sunset. 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).

October 22
November 26

December 24

MT TAM PUBLIC STAR PARTIES (May through October)

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 from approx. 11 pm-2 am.

For more information: <http://www.sfaa-astronomy.org/starparties/>

President's Message – October

What a fantastic month for viewing events we've had in the club!

On September 29th, nearly 20 SFAA club members brought their scopes and wisdom to the Dominican University's sports-field for a 'live viewing' event in support of the college's 'Big History' program. We had such wonderful luck with the fog disappearing just as the first students appeared and staying away until just after Jupiter appeared above the tree line. This will become an annual event, so I hope that next year we will have even more members and excited students to connect with.

Included here are photos that we snapped at the Dominican University event (before flash photography was banned!)

The next big event for all members is our **Annual Star-B-Q** taking place at the grill area immediately above the Bootjack parking lot on Mt Tam on **October 22nd, 2011** at **5pm**. Come out and enjoy burgers, dogs and treats before heading up to the Members-Only SUP viewing night at Rock Springs. Even if viz is likely poor we'll do the BBQ. If it's pouring rain...we'll reschedule...no-one likes soggy bread rolls!

San Francisco Day School, on 350 Masonic Ave in SF, has approached us to ask for our club to field some scopes at their school on **October 25th at 6.30pm**. Contact science teacher Herb Bool : hbool@sdfs.net or on 415 568 3654. They expect 50-80 elementary students from 2nd Grade through 5th, which is a great age to introduce children to the wonders of the universe!

Finally, we are participating in the International Science Week's Astronomy program up at Rock Springs parking lot (where our SUP takes place) on **November 5th**. In an event that is similar to the Summer Astronomy Program (which ended this month) the public is invited to listen to a talk by a Bay Area physicist, as well as an astronomy sky tour and viewing through our scopes! Please come out in force to the Rock Springs parking lot for this event, and help us close out the 'summer program' for 2011.

Sue-Ellen Speight
SFAA President 2011



October 8, 2011

SFAA - INTERNATIONAL OBSERVE THE MOON NIGHT

Kenneth Frank

The SFAA Marinites gathered at Courthouse Square in San Rafael for some sidewalk astronomy and InOMN.

International Observe the Moon Night is an evening where you can observe the Moon from just about anywhere on the planet (when the Moon is above the horizon) and see it the same time someone else in the world sees it like my friend [Gianluca Masi in Italy](#). <http://observethemoonnight.org/>

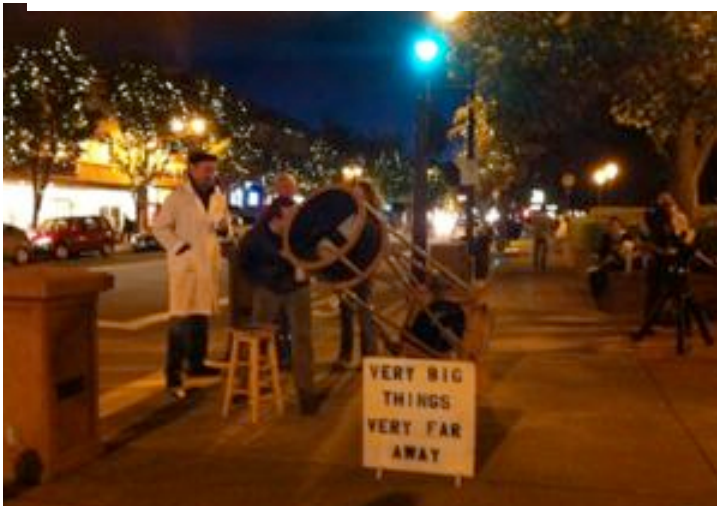
We tweeted like nuts and took pix:

<http://twitter.com/#!/sfsidewalk/media/slideshow?url=http%3A%2F%2Ftwitpic.com%2F6xf9yr>

Robert (UB-13) English, Angie & Doug Traeger, Mimi, Adrian & their dog had scopes set up ranging in size from 6 to 18 inches. We shared our energetic lunatic views with what Angie counted ~ 100 passersby going to and fro the Mill Valley Film fest showing at the Rafael theatre. Ken



"This telescope is like a transformer! You can really see the Moon!" - Margie



Shoot the moon!

SAN FRANCISCO AMATEUR ASTRONOMERS 2011 ANNUAL STAR B QUE



October 22nd, 2011 –
5:00pm
If it's pouring rain...we'll
reschedule

Mt. Tamalpais
Bootjack Parking Lot - Grill
Area
Poor visibility – we'll still do
the barbecue

Come out and enjoy burgers, dogs and treats before heading up to the Members-Only SUP viewing night at Rock Springs.

This is the biggest opportunity during the late summer months for members to meet, greet, eat, and retreat to dark skies. Our annual Star-B-Q will be held at Bootjack Campground on Mt Tam.

The Star-B-Q starts with a picnic. SFAA supplies the basic main course (hamburgers, hot dogs) -- you bring whatever you like to drink and share. Immediately following, the group repairs to our Rock Springs permit area behind locked gates for a night of members-only stargazing.

RSVP to sfaapresident@gmail.com

**SAN FRANCISCO AMATEUR ASTRONOMERS
INTERNATIONAL SCIENCE WEEK EVENT
November 5, 2011
MT. TAMALPAIS STATE PARK
Rock Springs**

We are participating in the International Science Week's Astronomy program up at Rock Springs parking lot (same location as our star parties) on **November 5th**.

In an event that is similar to the Summer Astronomy Program (closing program – October 17) the public is invited to listen to a talk by a Bay Area physicist, as well as an astronomy sky tour and viewing through our scopes!

Please come out in force to the Rock Springs parking lot for this event, and help us close out the 'summer program' for 2011.

**From Andrew Fraknoi:
The Bay Area Science Festival presents: The 2011 Bay Area Star Party**

The evening of Saturday, Nov. 5th, 2011

As part of the Bay Area Science Festival (Oct. 29 - Nov. 6), we are throwing a regional "star party" at over 20 different sites on Nov. 5. Colleges, schools, observatories and science centers around the Bay Area will be open, and both professional and amateur astronomers will be on hand to offer telescope viewing and observing tips. If the sky is cloudy, many sites will still offer indoor astronomy activities. Some institutions will also have astronomy talks and events that evening, regardless of the weather. The sites are listed below. Please invite friends, colleagues, students, neighbors, and even your in-laws to join us for a stellar evening.

Other sites may be added. Check out the full details of what's happening at each site at:
<http://www.astrosociety.org/events/starparty.html>

Participating Institutions:

California State University, East Bay (in Hayward)
Chabot College (in Hayward)
Chabot Space & Science Center (in Oakland)
The College of San Mateo (and the San Mateo Astronomical Society)
DeAnza College Planetarium (in Cupertino)
Deer Valley High School Planetarium (in Antioch)
Diablo Valley College (in Pleasant Hill)
Evergreen Valley College (in San Jose)
Foothill College and the Peninsula Astronomical Society (in Los Altos Hills)
Hartnell College Planetarium (in Salinas)
Lawrence Hall of Science in Berkeley
The Lick Observatory (on Mount Hamilton, San Jose)
Mount Diablo Astronomical Society (in Walnut Creek)
Mount Tamalpais State Park Programs, the San Francisco Amateur Astronomers and Wonderfest (on Mt. Tamalpais in Marin)
The National Lunar Science Institute & the SETI Institute (at Foothill College, see above)
Newark Junior High School
San Francisco State University
San Jose Astronomical Association
San Jose State University
Sonoma State University (in Rohnert Park)
University of California, Berkeley Space Sciences Lab & Astronomy Dept. (in San Leandro)
University of California, Santa Cruz Astronomy Department



2011 MT TAM ASTRONOMY PROGRAMS MT. TAMALPAIS STATE PARK

Cushing Memorial Theatre, aka the Mountain Theatre

EXPLORE THE WONDERS OF THE UNIVERSE 23RD SERIES OF LECTURES & STAR PARTIES ON MT TAM

Talk takes place in the Cushing Memorial Theatre (usually just called the Mountain Theatre) and is followed by observing in the Rock Spring Parking Lot. This program is sponsored by your state park and is FREE and open to the public. Bring your neighbors and friends. Encourage young people to participate and introduce them to the experience of learning some science in a friendly setting followed by a chance to view through telescopes provided by the San Francisco Amateur Astronomers.

If you wish to receive notices of these programs, send e-mail addresses to tinkaross@comcast.net . Reminder notices are sent the week prior to each event and emails are not shared with anyone else.

You can learn more about our programs by checking our web site: www.mttam.net or by calling our hot line: 415-455-5370. If you still have questions or comments contact Tinka at 415-244-4715.

Come join us on the Mountain!

DR. ANNE METEVIER

UC Santa Cruz/Sonoma State University

Oct 17
7:30pm

MILKY WAY GALAXIES ACROSS THE UNIVERSE

The universe contains many vast galaxies containing stars, gas and dust. What do we know about the formation and evolution of galaxies most like our own Milky Way.

Thank you for sharing this information with others.

Looking for a flashlight for the mountain? Check out Visionaryflashlights.com. Use the code astro for a 15% discount

NIGHT SKY NETWORK

The Evening Sky Map

October Evening Sky Map: <http://www.skymaps.com/skymaps/tesmn1110.pdf>

Sky Calendar -- October 2011: <http://www.skymaps.com/articles/n1110.html>

BAY AREA ASTRONOMY EVENTS – Kenneth Lum

<p>Friday, 10/14 7:00 PM</p> <p>Chabot Space and Science Center 10000 Skyline Boulevard Oakland CA 94619-2450 (510) 336-7300</p>	<p>The Telescope Makers' Workshop is held every Friday night from 7pm - 10pm, excluding major holidays (e.g. Christmas Day and New Year's Day) that fall on Fridays. The Workshop is always closed on Memorial Day Weekend. Attendance every Friday night is not mandatory, and members work at their own pace. The Workshop meets at Chabot Space & Science Center, 10000 Skyline Blvd., Oakland. Contact us for more specific details: E-mail Richard Ozer (rozer@pacbell.net) or (510) 406-1914.</p>
<p>Wednesday, 10/12 12:00 PM NOON</p> <p>SETI Institute Colloquium Series 189 Bernardo Avenue Mountain View CA 94043</p>	<p>Earth science collaborative for ecological forecasting</p> <p>Ramakrishna Nemani NASA AMES</p> <p>There is increasing pressure on the science community not only to understand how recent and projected changes in climate are likely to impact our global environment and the natural resources on which we depend, but also to design solutions to mitigate or cope with the likely impacts. Responding to this multi-dimensional challenge requires new tools and research frameworks that assist scientists in collaborating to rapidly investigate complex, interdisciplinary science questions of critical societal importance. I will describe one such collaborative research framework, funded through the American Recovery and Reinvestment Act, within the National Aeronautics and Space Administration Earth sciences program called NASA Earth Exchange (NEX). NEX combines state-of-the-art supercomputing, Earth system modeling, remote sensing data from NASA and other agencies, and a scientific social networking platform to deliver a complete work environment in which users can explore and analyze large Earth science data sets, run modeling codes, collaborate on new or existing projects, and share results within and/or among communities. Through NEX we hope to lower the barrier of entry to data/compute intensive science and provide a mechanism for continuous engagement among members of the global change science community.</p>
<p>Friday, 10/14 Saturday, 10/15</p> <p>Chabot Space and Science Center 10000 Skyline Boulevard Oakland CA 94619-2450 (510) 336-7300</p>	<p>EXPLORE THE NIGHT SKIES AT THE CHABOT OBSERVATORIES for more information: http://www.chabot.space.org/</p> <p>Free Telescope Viewing Regular hours are every Friday & Saturday evening, weather permitting: 7:30pm -10:30pm Come for spectacular night sky viewing the best kept secret in the Bay Area and see the magnificence of our telescopes in action! Daytime Telescope Viewing On Saturday and Sunday afternoons come view the sun, moon, or Venus through Chabot's telescopes. Free with General Admission. (weather permitting) 12pm - 5pm: Observatories Open</p> <p>Dinner, a Movie, and the Universe at Chabot Space Center 06:00 PM Join us for Chabot's unique evening social rendezvous. Start your night off with dinner and drinks, then cozy up in the planetarium as you're whisked to the edge of the universe and cap off the evening with telescope viewing featuring breathtaking views of the cosmos. Dinner: Buy advance tickets to ensure your dinner reservation. Purchase dinner separately at</p>

	<p>the cafe (\$15).</p> <p>ADVANCE TICKETS A Movie and the Universe: Admission to Chabot includes all access to our interactive exhibitions, a film in the MegaDome theater AND a show in the Digital Planetarium. Purchase your advanced tickets online or call the Box Office at (510) 336-7373.</p>
<p>Friday, 10/14 9PM – 11:00PM Open for public viewing every clear Friday evening</p> <p>Foothill Observatory Foothill Community College 12345 Moody Road Los Altos Hills</p>	<p>COME TO Foothill Observatory AND JOIN US IN THE EXPLORATION OF OUR UNIVERSE!</p> <p>Visitors can view the wonders of the universe through the observatory's new computer-controlled 16- inch Schmidt-Cassegrain telescope. Views of objects in our solar system may include craters and mountains on the moon, the moons and cloud-bands of Jupiter, the rings of Saturn, etc. The choice of targets for any evening's viewing depends on the season and what objects are currently in the sky.</p> <p>On clear, dark, moonless nights, the telescopes give visitors views into the deeper reaches of space. Star clusters, nebulae, and distant galaxies provide dramatic demonstrations of the vastness of the cosmos.</p> <p>The public viewing programs at Foothill are free of charge and are open to guests of all ages. Please note that the observatory is closed when the weather is cloudy. Also note that visitor parking permits are available from the machines in the parking lots for \$2.00.</p> <p>Foothill Observatory is located on the campus of Foothill College in Los Altos Hills, CA. Take Highway 280 to the El Monte Rd exit. The observatory is next to parking lot 4. Parking at the college requires visitor parking permits that are available from the machines in the parking lots for \$2.00.</p>
<p>Saturday, 10/15 10:00 AM – 12:00 Noon IF IT IS CLEAR</p> <p>Foothill Observatory Foothill Community College 12345 Moody Road Los Altos Hills</p> <p>Admission: FREE</p>	<p>Solar observing with a Hydrogen alpha solar telescope every clear Saturday morning. This allows spectacular views of solar prominences and unusual surface features on the Sun not otherwise visible with regular white light telescopes.</p> <p>Foothill Observatory is located on the campus of Foothill College in Los Altos Hills, CA. Take Highway 280 to the El Monte Rd. exit. The observatory is next to Parking Lot 4. Parking at the college requires visitor parking permits that are available from the machines in the parking lots for \$ 2.00.</p>
<p>Saturday, 10/15 10:00 AM - 4:00 PM</p> <p>NASA Ames Research Center Moffett Field Mountain View CA 94043</p> <p>Cost: Free</p>	<p>SOFIA AT AMES</p> <p>The public is invited to tour SOFIA, the Stratospheric Observatory for Infrared Astronomy on Saturday, Oct. 15, 2011. SOFIA is a highly modified Boeing 747SP aircraft that carries a telescope with a 100-inch reflecting mirror that conducts astronomy research not possible with ground-based telescopes. SOFIA is housed at NASA's Dryden Aircraft Operations Facility in Palmdale, Calif., however, this Saturday SOFIA will be located at NASA's Ames Research Center in Moffett Field, Calif.</p> <p>Admission is free but tickets are required to tour the aircraft. Limit six tickets per family. To register, visit:</p> <ul style="list-style-type: none"> • 10 a.m. to noon tickets • Noon to 2 p.m. tickets • 2 p.m. to 4 p.m. tickets <p>The event will take place, rain or shine, so please dress accordingly. Moffett Field is federal property. Guests may not bring animals, weapons, or illegal substances in their car or to the venue. All vehicles and persons are subject to inspection. Entry at the gate requires a government-issued picture identification (e.g. driver's license). Visitors under the age of 18 must be accompanied by an adult.</p>

<p>Saturday, 10/15/11 10:00 AM - 03:00 PM</p> <p>Lawrence Berkeley National Laboratory 1 Cyclotron Road Berkeley, CA 94720</p> <p>Cost: Free</p>	<p>LAWRENCE BERKELEY NATIONAL LABORATORY OPEN HOUSE</p> <p>Ladies and gentlemen, boys and girls, and children of all ages are invited to experience amazing feats of cutting-edge science at Berkeley Lab's Open House. A three-ring circus under the Big Top, surrounded by nearly an acre of exciting exhibits, will delight and entertain families, community members, and all who want to learn more about the Lab's stupendous scientific research.</p> <p>Visitors can:</p> <ul style="list-style-type: none"> • Talk with some of the world's most brilliant scientists on an astonishing array of topics...from the massive mysteries of the universe to tiny but mighty nano materials. • Peek inside a humongous domed light source and learn how its brilliant x-rays further scientific research. • Embark on a thrilling bus tour up, down and around the Lab's hilly home. • Listen to scintillating speakers discuss their riveting research and answer your questions. • Watch their children's imaginations soar as they perform delightful and educational hands-on experiments. • Take in an eclectic variety of performances by Lab employees that are guaranteed to entertain. • Purchase a palate-pleasing plate of delicious and nutritious locally grown food. <p>Registration Required!</p> <p>Berkeley Lab's Open House is one the Bay Area Science Festival Pre-Festival Events. To ensure safe and comfortable access to all activities, registration is required (including employees), and all guests are asked to attend either a morning (10 a.m. to 12:30 p.m.) or afternoon (12:30 to 3 p.m.) session.</p> <p>Visitors and employees will need a printout of their registration confirmation to enter the event. Visitors will access the Lab via a shuttle bus that departs from UC Berkeley's West Gate. Employees who drive will enter via Blackberry Gate. See "Getting to the Lab" for more details. To help limit the use and disposal of plastic water bottles, visitors are encouraged to bring their own containers and fill them at one of several water stations.</p>
<p>Saturday, 10/15/11 Starts at 7:30 PM</p> <p>Chabot Space & Science Center Hauben Resource Center Dellums Building 10000 Skyline Blvd Oakland, CA</p>	<p>East Bay Astronomical Society Meeting</p> <p>Speaker: DR. JASON DEXTER, UC BERKELEY WHAT DO BLACK HOLES LOOK LIKE?</p>
<p>Saturday, 10/15 8:00 PM</p> <p>Lawrence Hall of Science One Centennial Drive #5200 Berkeley, CA 94720-5200</p>	<p>SATURDAY NIGHT STARGAZING—ON OUR PLAZA</p> <p>See the Moon, Planets, Stars, Galaxies, and More</p> <ul style="list-style-type: none"> • Stargaze through astronomical telescopes. • Ask questions and talk with amateur astronomers. • Learn how to use a star map to find constellations. • Share in the wonder of the universe with your friends. <p>Third CLEAR Saturday of every month throughout the year, weather permitting</p> <ul style="list-style-type: none"> • 8:00–10:00 p.m. September–March • 9:00–11:00 p.m. April–August <p>Saturday Night Stargazing is a free public viewing program sponsored by the Hall and Bay Area amateur astronomers. Stargazing is always weather permitting, so dress warmly. Foggy and overcast skies can cancel stargazing at the last minute. For more information, join our Stargazing Google Group, follow us on Twitter@lhsstargazing, and visit our Google site.</p>

<p>Monday, 10/17 4:15 PM - 05:45 PM</p> <p>UC Berkeley LeConte Hall, Room 1 Berkeley, CA 94720</p> <p>Cost: Free</p>	<p>Speaker: ANDREAS HOECKER, PHYSICIST, CHIPP/CERN THE PICTURE OF ELEMENTARY PARTICLE PHYSICS AT YEAR TWO OF THE LARGE HADRON COLLIDER</p> <p>The Large Hadron Collider (LHC) at CERN collides protons with unprecedented high energy and intensity. Dedicated detectors, named ATLAS, CMS and LHCb, measure these collisions and attempt to reconstruct the stable, unstable and elusive particles that were produced therein. Most of the observed reactions can be described with particles and forces that are part of the well known Standard Model of particle physics. The goal of the LHC physics programme is to understand how the elementary particles can have mass (for example via the, so-called, Higgs mechanism), and to give insight into how the particles and forces behave when the energy is risen beyond everything every studied in the laboratory, energies as they occurred in the earliest moments of our universe. The Standard Model becoming unstable at these high energies, strong theoretical arguments favour the appearance of new phenomena. Astrophysical observations corroborate this perception. The colloquium will provide a journey through the most salient results obtained at the LHC and their impact on our understanding of particle physics.</p>
<p>Monday, 10/17 Starts at 07:30 PM</p> <p>California Academy of Sciences 55 Music Concourse Drive San Francisco, CA 94118</p> <p>Cost: \$12 General \$6 Members</p>	<p>Benjamin Dean Lecture Series TINY BUT POWERFUL: THE SMALLEST SUPERMASSIVE BLACK HOLES</p> <p>Supermassive black holes, with masses of millions to billions of times that of our own Sun, are found lurking at the centers of most nearby large galaxies. But which came first, the black hole or the galaxy? Dr. Greene will talk about the search for the smallest supermassive black holes today, and what they teach us about the first black holes.</p> <p>Speaker: Dr. Jenny Greene, Department of Astrophysical Sciences, Princeton University</p>
<p>Wednesday, 10/19 12:00 NOON</p> <p>SETI Institute 189 Bernardo Avenue Mountain View CA 94043</p>	<p>Colloquium Series KEVIN MCKEEGAN, UCLA THE OXYGEN ISOTOPIC COMPOSITION OF THE SUN: IMPLICATIONS FOR SOLAR NEBULA CHEMISTRY</p> <p>We have measured the oxygen isotopic composition of the solar wind, captured and returned to Earth by NASA's Genesis mission. The data demonstrate that the Earth, Moon, Mars, and bulk meteorites are depleted in ^{16}O by $\sim 7\%$ relative to the bulk solar system in a non-mass-dependent manner. Gas phase photochemistry, occurring either in the solar nebula or in its progenitor molecular cloud, is most likely responsible for changing the isotopic composition of planetary materials in the inner solar system prior to planetesimal accretion. Understanding how, when, and where the rocky planets acquired an isotopic composition distinct from the average composition of the dust and gas from which the solar system formed is a major challenge for the science of planetary origins.</p>
<p>Friday, 10/21 Starts at 07:30 PM</p> <p>Milagra Ridge 600 Sharp Park Road Pacifica, CA 94044</p> <p>Cost: Free</p>	<p>ASTRONOMY IN THE PARK</p> <p>Join Suzanne Gurton, the Education Manager at the Astronomical Society of the Pacific, and Price Sheppy from Park Stewardship as we enjoy our night time National Park. We will be exploring the stars above through education, activities, and star gazing opportunities. This will be a great experience for all ages.</p> <p>Where did we come from and where are we going? Come star gaze with us during the Orionid meteor shower and hear about the fate of the universe. Learn about the rocks under our feet and then stare out into the night sky beyond our galaxy to our neighboring Andromeda galaxy.</p> <p>RSVP required for all events. Bad weather will cancel events. You will be notified by email if the event is cancelled because of bad weather.</p> <p>For all events please bring:</p> <ul style="list-style-type: none"> • Warm Clothes • Blankets to lay on and snuggle up in • Binoculars for looking at the moon and stars • A flashlight

	Register at website -- http://www.parksconservancy.org/visit/park-sites/milagra-ridge.html
<p>Friday, 10/21 Starts at 8:00 PM</p> <p>Chabot Space & Science Center 10000 Skyline Boulevard Oakland, CA 94619</p> <p>Cost: Free with admission</p>	<p>Speaker: Stephanie Asker MY EINSTEIN: PERSONAL MEMORIES OF ALBERT EINSTEIN</p> <p>Join us for an intimate conversation with Stephanie Asker, family friend of Albert Einstein. She will share her personal stories, photos and home movies from her childhood - including how the Center came to own one of Einstein's personal telescopes. Explore our Center and engage in fun Einstein-esque activities.</p>
<p>Friday, 10/21 7PM</p> <p>Chabot Space and Science Center 10000 Skyline Boulevard Oakland, CA 94619-2450</p>	<p>THE TELESCOPE MAKERS' WORKSHOP</p> <p>The Telescope Makers' Workshop is held every Friday night from 7pm - 10pm, excluding major holidays (e.g. Christmas Day and New Year's Day) that fall on Fridays. The Workshop is always closed on Memorial Day Weekend. Attendance every Friday night is not mandatory, and members work at their own pace.</p> <p>Contact us for more specific details: E-mail Richard Ozer (rozer@pacbell.net) or (510) 406-1914</p>
<p>Friday, 10/21 Saturday, 10/22</p> <p>Chabot Space and Science Center 10000 Skyline Boulevard Oakland CA 94619-2450 (510) 336-7300</p>	<p>EXPLORE THE NIGHT SKIES AT THE CHABOT OBSERVATORIES for more information: http://www.chabot.space.org/ Free Telescope Viewing</p> <p>Regular hours are every Friday & Saturday evening, weather permitting: 7:30pm -10:30pm Come for spectacular night sky viewing the best kept secret in the Bay Area and see the magnificence of our telescopes in action!</p> <p>Daytime Telescope Viewing On Saturday and Sunday afternoons come view the sun, moon, or Venus through Chabot's telescopes. Free with General Admission. (weather permitting)</p> <p>12:00 PM – 5:00 PM: Observatories Open 6:00 PM - Dinner, a Movie, and the Universe at Chabot Space Center</p> <p>Join us for Chabot's unique evening social rendezvous. Start your night off with dinner and drinks, then cozy up in the planetarium as you're whisked to the edge of the universe and cap off the evening with telescope viewing featuring breathtaking views of the cosmos. Dinner: Buy advance tickets to ensure your dinner reservation. Purchase dinner separately at the cafe (\$15).</p> <p>ADVANCE TICKETS A Movie and the Universe: Admission to Chabot includes all access to our interactive exhibitions, a film in the MegaDome theater AND a show in the Digital Planetarium. Purchase your advanced tickets online or call the Box Office at (510) 336-7373.</p>
<p>Friday, 10/21 9:00 PM</p> <p>Foothill Observatory Foothill Community College 12345 Moody Road Los Altos Hills CA</p>	<p>Foothill Observatory is open for public viewing every clear Friday evening from 9:00 p.m. until 11:00 p.m. Visitors can view the wonders of the universe through the observatory's new computer-controlled 16- inch Schmidt-Cassegrain telescope. Views of objects in our solar system may include craters and mountains on the moon, the moons and cloud-bands of Jupiter, the rings of Saturn, etc. The choice of targets for any evening's viewing depends on the season and what objects are currently in the sky.</p> <p>On clear, dark, moonless nights, the telescopes give visitors views into the deeper reaches of space. Star clusters, nebulae, and distant galaxies provide dramatic demonstrations of the vastness of the cosmos.</p> <p>The public viewing programs at Foothill are free of charge and are open to guests of all ages. Please note that the observatory is closed when the weather is cloudy. Also note that visitor parking permits are available from the machines in the parking lots for \$2.00.</p> <p>Come to Foothill Observatory and join us in the exploration of our Universe!</p> <p>Foothill Observatory is located on the campus of Foothill College in Los Altos Hills, CA. Take Highway</p>

	<p>280 to the El Monte Rd exit. The observatory is next to parking lot 4. Parking at the college requires visitor parking permits that are available from the machines in the parking lots for \$2.00.</p>
<p>Saturday, 10/22 10AM-12PM if it is clear</p> <p>Foothill College Observatory Foothill Community College 12345 Moody Road Los Altos Hills CA</p> <p>Admission is free</p>	<p>Solar observing with a Hydrogen alpha solar telescope every clear Saturday morning. This allows spectacular views of solar prominences and unusual surface features on the Sun not otherwise visible with regular white light telescopes.</p> <p>Foothill Observatory is located on the campus of Foothill College in Los Altos Hills, CA. Take Highway 280 to the El Monte Rd. exit. The observatory is next to parking lot 4. Parking at the college requires visitor parking permits that are available from the machines in the parking lots for \$ 2.00.</p>
<p>Saturday, 10/22 Sunset: 6:14 PM</p> <p>Star Parties Crestview Park San Carlos</p>	<p>SAN MATEO COUNTY ASTRONOMICAL SOCIETY STAR PARTY</p> <p>Star Parties At Crestview Park Come out and bring the kids for a mind expanding look at the universe</p> <p>The City of San Carlos Parks and Recreation Department and the San Mateo County Astronomical Society has open Star Parties twice a month. These events are held in Crestview Park, San Carlos California.</p> <p>Note that inclement weather (clouds, excessive wind and showers) will cause the event to be canceled without notice.</p> <p>For more information call Bob Black, (650)592-2166, or send an email to SMCAS@live.com or call Ed Pieret at (650)862-9602.</p> <p>Reasons to Attend If you have kids interested in space or planets bring them here for a real life view of planets, nebula, star clusters and galaxies. If you are thinking of buying a telescope or want help using a telescope you own, come here to talk with experienced users. If you think you might have an interest in astronomy come and talk to experienced amateur astronomers.</p> <p>Cautions Dress warmly and wear a hat. Visitors should park on the street and walk into the park so your headlights don't affect the observer's dark adaptation. Only park in the parking lot if you are arriving before dark and plan to stay until the end of the event. You shouldn't need lights but if you feel you do, only bring a small flashlight with the lens covered using red cellophane or red balloon.</p> <p>Please respect the telescopes and ask permission from the owner if you wish to touch. Parents, please watch your children. The park is residential, and adjacent to homes and backyards, please keep noise to a minimum.</p> <p>Schedule Time Astronomers arrive to set up at around sunset. Observing starts at about one hour after sunset and continues for two to three hours.</p>

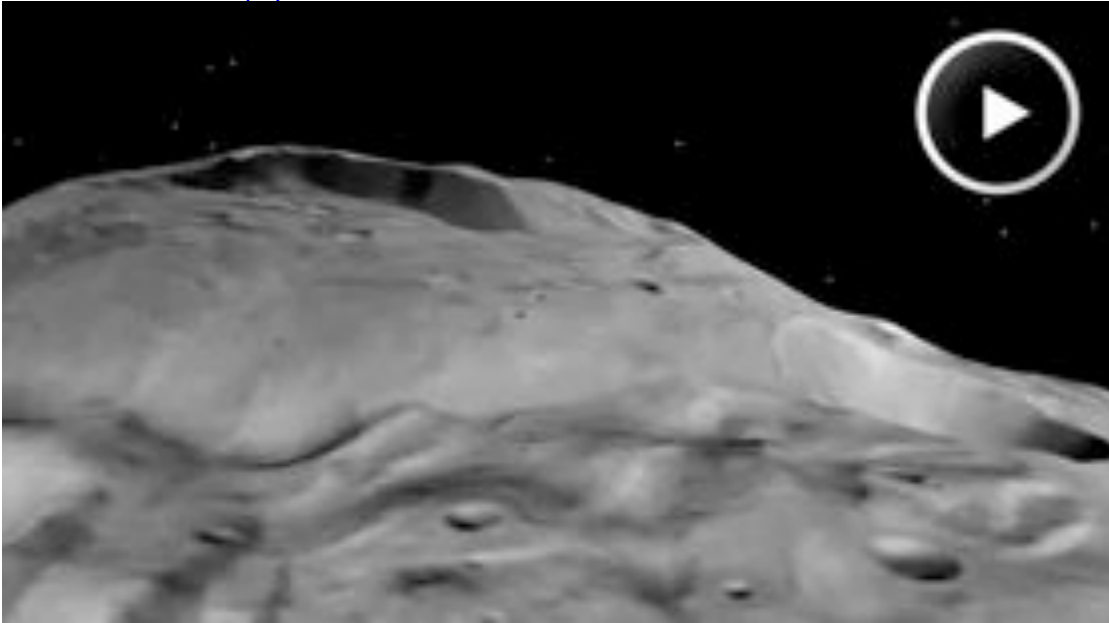
<p>Monday, 10/24 5:00 PM - 06:00 PM</p> <p>UC Berkeley Bechtel Engineering Center Berkeley, CA 94720</p> <p>Cost: Free</p>	<p>SPEAKER: BLAS CABRERA, PROFESSOR OF PHYSICS, STANFORD UNIVERSITY</p> <p>What makes up the dark matter of our universe Through cosmology and particle physics we can view our understanding of how our universe came into existence. Of particular interest is what makes up dark matter. CDMS experiments search directly for dark matter particles passing through the laboratory. GLAST/Fermi look for gamma rays from dark matter particle-antiparticle annihilations, and the LHC at CERN may soon provide direct evidence for the structure of particle physics in dark matter. We will then tour the current range of experiments in direct detection, indirect detection, and accelerator experiments.</p>
<p>Saturday, 11/5</p> <p>College of San Mateo Building 36 1700 West Hillsdale Blvd San Mateo, CA 94402</p>	<p>FAMILY SCIENCE AND ASTRONOMY FESTIVAL</p> <p>In conjunction with Bay Area Science Festival, College of San Mateo and San Mateo County Astronomical Society present Family Science and Astronomy Festival Saturday, Nov. 5, 2:00 - 11:00 pm. Enjoy science and astronomy activities for the whole family. Events are free to the public. Free parking in Marie Curie Lot 5, and Beethoven Lot 2 by CSM Theatre.</p> <p>Photos: John Fiske & Ed Pieret, SMCAS Keynote speaker Alex Filippenko Jazz Under The Stars</p> <p>Schedule of events: College of San Mateo, Building 36, 1700 West Hillsdale Boulevard, San Mateo, CA 94402 2:00 pm: Planetarium show 2:30 to 4:30 pm: Science demonstrations by CSM science faculty (Biology, Geology, and Physics) 4:30 to 6:30 pm: Astronomy demonstrations, hands-on workshops, and planetarium shows. 7:00 to 8:30 pm: Keynote speaker: Dr. Alex Filippenko, Professor of Astronomy, UC Berkeley "Dark Energy and the Runaway Universe" CSM Theater (Building 3). 8:30 to 9:00 pm: Speaker reception in the Theater Lobby 9:15 to 11:00 pm: Telescope viewing of the night sky in our rooftop observatory. (Dress warmly!)</p>
<p>Friday, 10/28 – Tuesday, 11/1</p>	<p>ANTIQUATE TELESCOPE SOCIETY MEETING/TOUR OF KITT PEAK NATIONAL OBSERVATORY – ARIZONA</p> <p>These are great tours where one gets to see the inner workings of great professional and public astronomical observatories as well as hear neat lectures. This one will be nearby in AZ. Highly recommended! Check out their web site. http://www.webari.com/oldscope/ On October 28 through Nov. 1, 2011, the Antique Telescope Society will hold its 20th Annual Convention in Tucson, AZ, with optional tours planned for the two following days. One of the highlights will occur on Saturday, October 29, when we will take a VIP tour of Kitt Peak during the day and have optional observing on Kitt Peak during the evening. In addition, the program includes a reception on Friday evening and a banquet on Sunday which will feature a keynote address. The Convention will also have talks and exhibits. A tour of Steward Mirror Laboratory is planned for Friday, a tour of the Whipple Observatory on Mount Hopkins will be held on Monday, and a tour of Mount Graham International Observatory and its Large Binocular Telescope is planned for Tuesday. While in Tucson, the Four Points Sheraton Hotel University Plaza will serve as our headquarters. We look forward to welcoming ATS members and friends to Tucson. Please join us. Ken Launie, Convention Co-Chairman and President Peter Abrahams, Convention Co-Chairman and Paper Sessions Chairman Jack Koester, Treasurer Walter H. Breyer, Executive Secretary</p>

The Science@NASA team is pleased to announce a new product: the ScienceCast. Every week, we produce a short video highlighting a topic in NASA science news. A complete list of ScienceCast episodes may be found on Science@NASA's Youtube channel: <http://www.youtube.com/user/ScienceAtNASA> . Enjoy!

Cool Video: Dawn Flies Around Vesta

Sept. 16, 2011: A new video from NASA's Dawn spacecraft takes us on a flyover above the surface of the giant asteroid Vesta.

The data obtained by Dawn's framing camera will help scientists determine the processes that formed Vesta's striking features. It will also help Dawn mission fans all over the world visualize this mysterious world, which is the second most massive object in the main asteroid belt. [Click to play.](#)



The voice of Carol Raymond, Dawn deputy principal investigator, narrates this unique fly-around of the giant asteroid. [\[video\]](#) You'll notice in the video that Vesta is not entirely lit up. There is no light in the high northern latitudes because, like Earth, Vesta has seasons. Currently it is northern winter on Vesta, and the northern polar region is in perpetual darkness. When we view Vesta's rotation from above the south pole, half is in daylight and half is in the darkness of night .

Another distinct feature seen in the video is a massive circular structure in the south pole region. Scientists were particularly eager to see this area close-up, since NASA's Hubble Space Telescope first detected it years ago. The circular structure, or depression, is several hundreds of miles, or kilometers, wide, with cliffs that are also several miles high. One impressive mountain in the center of the depression rises approximately 9 miles (15 kilometers) above the base of this depression, making it one of the highest elevations on all known bodies with solid surfaces in the solar system.

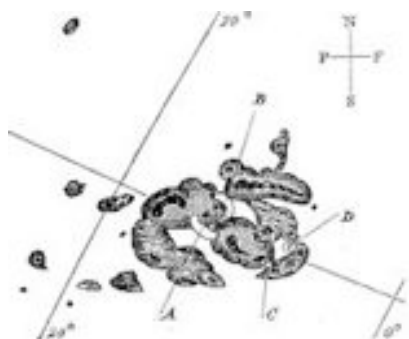
The collection of images, obtained when Dawn was about 1,700 miles (2,700 kilometers) above Vesta's surface, was used to determine its rotational axis and a system of latitude and longitude coordinates. One of the first tasks tackled by the Dawn science team was to determine the precise orientation of Vesta's rotation axis relative to the celestial sphere.

The zero-longitude, or prime meridian, of Vesta was defined by the science team using a tiny crater about 1,640 feet (500 meters) in diameter, which they named "Claudia," after a Roman woman during the second century B.C. Dawn's craters will be named after the vestal virgins—the priestesses of the goddess Vesta, and famous Roman women, while other features will be named for festivals and towns of that era.

Stay tuned for more.

The Secret Lives of Solar Flares

Sept. 19, 2011: One hundred and fifty two years ago, a man in England named Richard Carrington discovered solar flares.



Sunspots sketched by R. Carrington on Sept. 1, 1859. © R. Astronomical Society. [\[more\]](#)

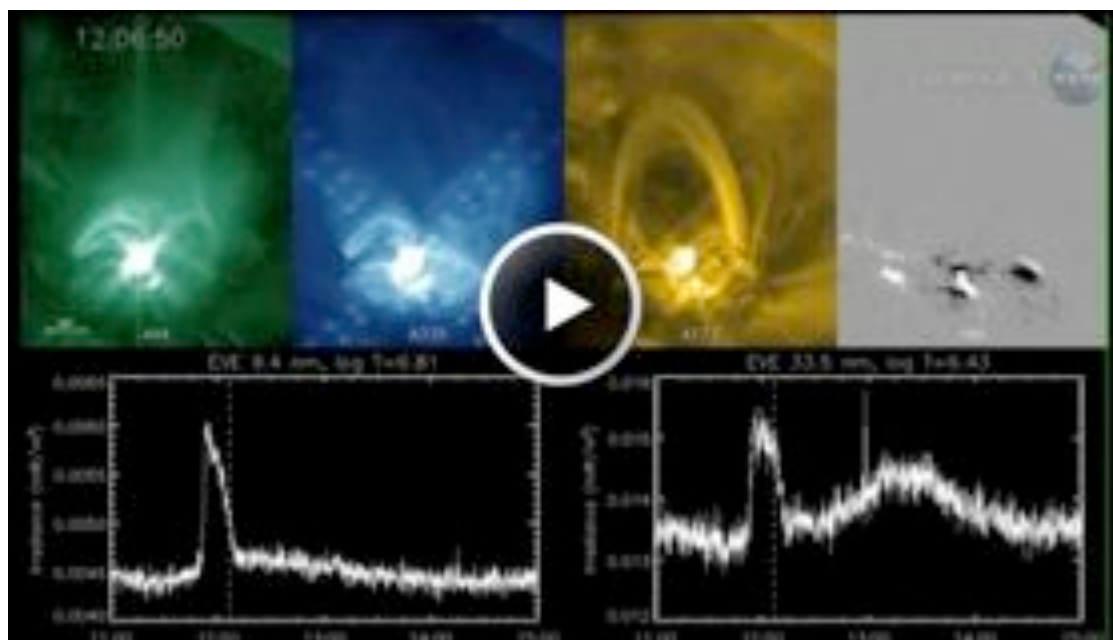
It happened at 11:18 AM on the cloudless morning of Thursday, September 1st, 1859. Just as usual on every sunny day, the 33-year-old solar astronomer was busy in his private observatory, projecting an image of the sun onto a screen and sketching what he saw. On that particular morning, he traced the outlines of an enormous group of sunspots. Suddenly, before his eyes, two brilliant beads of white light appeared over the sunspots; they were so bright he could barely stand to look at the screen.

Carrington cried out, but by the time a witness arrived minutes later, the first solar flare anyone had ever seen was fading away.

It would not be the last. Since then, astronomers have recorded thousands of strong flares using instruments ranging from the simplest telescopes in backyard observatories to the most complex spectrometers on advanced spacecraft. Possibly no other phenomenon in astronomy has been studied as much.

After all that scrutiny, you might suppose that everything about solar flares would be known. Far from it. Researchers recently announced that solar flares have been keeping a secret.

“We’ve just learned that some flares are many times stronger than previously thought,” says University of Colorado physicist Tom Woods who led the research team. “Solar flares were already the biggest explosions in the solar system—and this discovery makes them even bigger.”



Click to view more videos and images in support of this story.

NASA's Solar Dynamics Observatory (SDO), launched in February 2010, made the finding: About 1 in 7 flares experience an "aftershock." About ninety minutes after the flare dies down, it springs to life again, producing an extra surge of extreme ultraviolet radiation.

"We call it the 'late phase flare,'" says Woods. "The energy in the late phase can exceed the energy of the primary flare by as much as a factor of four."

What causes the late phase? Solar flares happen when the magnetic fields of sunspots erupt—a process called "magnetic reconnection." The late phase is thought to result when some of the sunspot's magnetic loops re-form. A [diagram](#) prepared by team member Rachel Hock of the University of Colorado shows how it works.

The extra energy from the late phase can have a big effect on Earth. Extreme ultraviolet wavelengths are particularly good at heating and ionizing Earth's upper atmosphere. When our planet's atmosphere is heated by extreme UV radiation, it puffs up, accelerating the decay of low-orbiting satellites. Furthermore, the ionizing action of extreme UV can bend radio signals and disrupt the normal operation of GPS.

SDO was able to make the discovery because of its unique ability to monitor the sun's extreme UV output in high resolution nearly 24 hours a day, 7 days a week. With that kind of scrutiny, it's tough to keep a secret—even one as old as this.

The [original research](#) of Woods *et al* may be found in the Oct. 1, 2011, issue of the *Astrophysical Journal*.

Author: [Dr. Tony Phillips](#) | Credit: Science@NASA

NASA FOR KIDS

<http://www.nasa.gov/audience/forstudents/k-4/index.html>

2010 CLUB OFFICERS & CONTACTS

<i>President</i>	SUE-ELLEN SPEIGHT	sfaapresident@sfaa-astronomy.org
<i>Vice President</i>	Vivian White	vicepresident@sfaa-astronomy.org
<i>Secretary</i>	Douglas Smith	
<i>Treasurer</i>	Bob Haberman	treasurer1@sfaa-astronomy.org
	Angie Traeger	angjetraeger@gmail.com
<i>Speaker Chair</i>	Linda Mahan	speakerchair@sfaa-astronomy.org
<i>Star Party</i>	David Frey	csp@sfaa-astronomy.org
<i>Bulletin Editor</i>	Annette Gabrielli	editor@sfaa-astronomy.org
<i>Telescope Loans</i>	Pete Goldie	telescopes@sfaa-astronomy.org
<i>Honorary Director</i>	John Dobson	
<i>Board Member</i>		
<i>Advisors</i>		
<i>Board Members</i>	Doug Smith	
	Dave Frey	
	Joe Heavey	joe@sfjupiter.com
	Dean Gustavson	deangustavsonartist@gmail.com
	Elan Morpurgo	elan@sfaa-astronomy.org
		415 383-2247
	Doug Smith	
	Matthew Jones	sfaa@strider.com
	Anil Chopra	
	Mitchell	webmaster@sfaa-astronomy.org
	Schoenbrun	
<i>1st Alternate</i>	Chris Coffin	wbmstr@sfaa-astronomy.org
<i>2nd Alternate</i>	Dave Goggin	daveg@SFAA-Astronomy.org
<i>Webmaster</i>	Mitchell	wbmstr@sfaa-astronomy.org
	Schoenbrun	
	Matthew Jones	

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 25th day of the month.** Send your articles to Editor@sfaa-astronomy.org

San Francisco Amateur Astronomers
POB 15097
San Francisco CA 94115

Please make checks payable to San Francisco Amateur Astronomers and mail to:

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 \$75 Supporting _____

Membership is billed for each upcoming year on June 30. Between January 1 and June 30, new members pay one half the amount listed below

MEMBERSHIP APPLICATION

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



Information Hotline: (415) 289-6636

Web Page: www.sfaa-astronomy.org

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.