

ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 62, No. 11 – November 2014

GENERAL MEETINGS

Randall Museum . 199 Museum Way . San Francisco

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

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

November 19, 2014

RICHARD McRAY, PH.D., UC BERKELEY

SUPERNOVA 1987A

Supernova 1987A in the Large Magellanic Cloud is one of the brightest supernova to be observed. Observations taken with almost every type of telescope, on the ground and in space, have yielded a rich story of the evolution of the explosion debris and its interaction with its circumstellar environment. In this talk, McCray will describe what we are learning from recent observations with the Hubble Space Telescope and the newly commissioned Atacama Large Millimeter Array (ALMA).

**SAN FRANCISCO
AMATEUR ASTRONOMERS
SFAA UPCOMING EVENTS**

<p>November 19 Wednesday 7:00 pm – 9:00 pm</p>	<p>Astronomy Lecture @ Randall Museum RICHARD McRAY, PH.D., UC BERKELEY SUPERNOVA 1987A</p>
<p>November 22 Saturday 5:00 pm – 2:00 am</p>	<p>Mt Tam Members Night Mt Tam - Rock Springs Parking Lot</p> <p>The SFAA hosts monthly public and members-only star parties at the Rock Springs parking lot in Mt Tamalpais State Park. The parking lot is above the Pan Toll ranger station, near the Mountain Theater.</p>
<p>November 29 Saturday 6:00 pm – 10:30 pm</p>	<p>San Francisco City Star Party @ Parade Grounds, The Presidio Nov 1 @ 5:30 pm – 10:00 pm Come join us for our monthly City Star Party. SFAA members provide telescopes for your viewing pleasure.</p>
<p>December 17 Wednesday 7:00 pm – 9:00 pm</p>	<p>Astronomy Lecture @ Randall Museum DR. RICHARD ELPHIC, PROJECT SCIENTIST, LADEE MISSION NASA AMES BRAINSTORMING THE MOON: ADVENTURES OF THE LUNAR ATMOSPHERE AND DUST ENVIRONMENT EXPLORER</p>
<p>December 20 Saturday 5:00 pm – 2:00 am</p>	<p>Mt Tam Members Night Mt Tam - Rock Springs Parking Lot</p> <p>The SFAA hosts monthly public and members-only star parties at the Rock Springs parking lot in Mt Tamalpais State Park. The parking lot is above the Pan Toll ranger station, near the Mountain Theater.</p>

UC CONFIRMS CONTINUED SUPPORT OF LICK OBSERVATORY

November 04, 2014

By [Hilary Lebow](#)



The Lick Observatory is located on the summit of Mount Hamilton east of San Jose.



The 36-inch Great Refractor telescope is housed in the South Dome of Lick Observatory. (Photo by Mike Bolte)

The University of California Office of the President has reversed a previous decision to pull funding from Lick Observatory by 2018, according to a written statement issued by UC Provost Aimee Dorr.

The letter confirms that Lick Observatory operations will continue under the management of UC Observatories (UCO), the multi-campus astronomical research unit headquartered at UC Santa Cruz.

In the letter to UCO Interim Director Claire Max, Dorr wrote: "Given the current state of affairs and trajectory for UCO and UC astronomy, we are rescinding the stipulations in our September 16, 2013 letter as to how Lick is to be funded and managed. It is no longer UCOP's intention to require that Lick Observatory be self supporting, begin a glide path to self-supporting status no later than FY 2016-17, or be managed by an entity other than UCO."

The letter gives the UCO Director, with advice from the UCO Advisory Committee and others, the flexibility to determine the best distribution of available UC resources between Lick and other UC-related astronomical facilities such as the 10-meter Keck Telescopes in Hawaii, the instrumentation labs at UC Santa Cruz and UCLA, and the future Thirty Meter Telescope now under construction.

"We are thrilled to hear this news," Max said. "This letter is confirmation of UCOP's support for Lick, which will allow us to focus our attention on building partnerships for research and public outreach for the future."

Max said that there are enough funds in the projected budgets of UCO to run Lick Observatory for the next five years, albeit at a frugal level. Lick has an annual operating budget of approximately \$1.5 million. Ongoing fundraising efforts and potential partnerships currently being explored may provide additional funding for Lick.

Lick Observatory was established in 1888 on Mt. Hamilton near San Jose, California. The observatory benefits from state-of-the-art instrumentation and serves as an active facility for astronomers and students to conduct research and test next-generation technologies.

"The facilities at Lick offer students unmatched hands-on experience and ample observation time, a huge benefit compared with the extremely competitive demand for observing time on larger telescopes," Max said. "Lick Observatory is a truly valuable resource for our students and astronomers, along with the Keck 10-meter telescopes in Hawaii and the future Thirty Meter Telescope."

In her letter, Dorr recognized the valuable role of Lick Observatory. "Indeed, we see the Lick, Keck, and Thirty Meter Telescope Observatories as an integrated ecosystem that can together maintain and grow UC's leadership in astronomy," she wrote.

Max said she feels optimistic about ongoing discussions and support from UCOP. "Now that we are all on the same page, we can move forward to put the past behind us and ensure that Lick has a vibrant future," she said. More information about UC Observatories and Lick Observatory is available online at ucolick.org.

HOW TO SEE THE BEST METEOR SHOWERS (*FOR THE REMAINDER*) OF THE YEAR



Whether you're watching from a downtown area or the dark countryside, here are some tips to help you enjoy these celestial shows of shooting stars. Those streaks of light are really caused by tiny specks of comet-stuff hitting Earth's atmosphere at very high speed and disintegrating in flashes of light.

First a word about the moon - it is not the meteor watcher's friend. Light reflecting off a bright moon can be just as detrimental

to good meteor viewing as those bright lights of the big city. There is nothing you can do except howl at the moon, so you'll have to put up with it or wait until the next favorable shower.

The best thing you can do to maximize the number of meteors you'll see is to get as far away from urban light pollution as possible and find a location with a clear, unclouded view of the night sky. If you enjoy camping, try planning a trip that coincides with dates of one of the meteor showers listed below. Once you get to your viewing location, search for the darkest patch of sky you can find, as meteors can appear anywhere overhead.

The meteors will always travel in a path away from the constellation for which the shower is named. This apparent point of origin is called the "radiant." For example, meteors during a Leonid meteor shower will appear to originate from the constellation Leo. (Note: the constellation only serves as a helpful guide in the night's sky. The constellation is not the actual source of the meteors. For an overview of what causes meteor showers click here: [Meteor Showers: Shooting for Shooting Stars](#))

Whether viewing from your front porch or a mountaintop, be sure to dress for success. This means clothing appropriate for cold overnight temperatures, which might include mittens or gloves, and blankets. This will enable you to settle in without having to abandon the meteor-watching because your fingers are starting to turn blue.

Next, bring something comfortable on which to sit or lie down. While Mother Nature can put on a magnificent celestial display, meteor showers rarely approach anything on the scale of a July 4th fireworks show. Plan to be patient and watch for at least half an hour. A reclining chair or ground pad will make it far more comfortable to keep your gaze on the night sky.

Lastly, put away the telescope or binoculars. Using either reduces the amount of sky you can see at one time, lowering the odds that you'll see anything but darkness. Instead, let your eyes hang loose and don't look in any one specific spot. Relaxed eyes will quickly zone in on any movement up above, and you'll be able to spot more meteors. Avoid looking at your cell phone or any other light. Both destroy night vision. If you have to look at something on Earth, use a red light. Some flashlights have handy interchangeable filters. If you don't have one of those, you can always paint the clear filter with red fingernail polish.

These meteor showers provide casual meteor observers with the most bang for their buck. They are the easiest to observe and most active. Be sure to also check the "Related Links" box in the right margin for additional information, and for tools to help you determine how many meteors may be visible from your part of the world.

Major Meteor Showers (*forRemainder of2014*)

Leonids

Comet of Origin: 55P/Tempel-Tuttle

Radiant: constellation Leo

Active: Nov. 6-30, 2014

Peak Activity: Nov. 17-18, 2014

Peak Activity Meteor Count: 15 meteors per hour

Meteor Velocity: 44 miles (71 kilometers) per second

Notes: The waning crescent moon should leave skies dark enough for a good show. The Leonids are usually a modest shower, with the peak occurring in the dark hours before dawn.

Geminids

Comet of Origin: 3200 Phaethon

Radiant: constellation Gemini

Active: Dec. 4-17, 2014

Peak Activity: Dec. 13-14, 2014

Peak Activity Meteor Count: 120 meteors per hour

Meteor Velocity: 22 miles (35 kilometers) per second

Notes: The Geminids are typically one of the best and most reliable of the annual meteor showers. This shower is considered one of the best opportunities for younger viewers who don't stay up late, because it gets going around 9 or 10 p.m. local time. This year, the last quarter moon will rise around midnight, making the prime time for viewing the first half of the night.

November 2014 - THE EVENING SKY

November Sky Map: <http://skymaps.com/skymaps/tesmn1411.pdf>

November Sky Calendar: <http://skymaps.com/articles/n1411.html>

BAY AREA ASTRONOMY EVENTS

Kenneth Lum

<http://tech.groups.yahoo.com/group/bayastro/?v=1&t=directory&ch=web&pub=groups&sec=dir&slk=94>

BAY AREA REGULARLY SCHEDULED EVENTS

<p>EVERY FRIDAY NIGHT 7:00 PM – 10:00 PM excluding major holidays</p> <p>The Telescope Makers’ Workshop</p> <p>CHABOT SPACE AND SCIENCE CENTER 10000 Skyline Boulevard Oakland, CA 94619-2450</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.</p> <p>Chabot's TMW is one of only a handful of regularly scheduled telescope making workshops in the U.S., and probably the world; it meets every Friday evening throughout the year, except Memorial Day weekend. It has been in operation since December of 1930, founded by Franklin B. Wright, and is currently run by Eastbay Astronomical Society member Rich Ozer, with help from other EAS members, Dave Barosso, Barry Leska, and others. The price of admission is FREE. All you have to do is show up, buy a mirror blank and a "tool" (typically around \$100 - \$200 depending on the size of the mirror) and start "pushin' glass!" We supply you with instruction, the various grits you'll need to first grind, and then polish and figure your mirror, and all the testing equipment needed. With a small bit of luck, you could wind up with a telescope that costs 1/3 or 1/4 the cost of a store-bought telescope, that is yet optically superior! It does take time - depending on how much time you put in on it, and other factors, it could take a few months or several months. But, it's a fun project, great for kids, and at the end you get a great telescope!</p> <p>For more information call or email Richard Ozer at rozer@pacbell.net or phone (510) 406-1914.</p>
<p>EVERY FRIDAY & SATURDAY EVENING, weather permitting 7:30 PM – 10:30 PM</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.chabotspace.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!</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>12pm - 5pm: Observatories Open</p>

<p>Sunset – 5:11 PM (TWICE MONTHLY)</p> <p>Inclement weather (clouds, excessive wind and showers) will cause the event to be canceled without notice.</p> <p>SAN MATEO COUNTY ASTRONOMICAL SOCIETY STAR PARTY</p>	<p>STAR PARTIES AT CRESTVIEW PARK, SAN CARLOS</p> <p>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. 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</p> <p>If you have kids interested in space or planets bring them here for a real life view of planets, nebula, star clusters and galaxies.</p> <p>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</p> <p>Dress warmly and wear a hat.</p> <p>Visitors should park on the street and walk into the park so your headlights don't affect the observer's dark adaptation.</p> <p>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.</p> <p>Parents, please watch your children.</p> <p>The park is residential, and adjacent to homes and backyards, please keep noise to a minimum.</p> <p>Schedule Time</p> <p>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>EVERY CLEAR SATURDAY MORNING OBSERVATORY 10:00 AM – 12:00 PM</p> <p>FOOTHILL COMMUNITY COLLEGE 12345 Moody Road Los Altos Hills</p> <p>Cost: 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>Admission is free.</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 \$ 3.00.</p>
<p>EVERY CLEAR FRIDAY EVENING 9:00 PM – 11:00 PM</p> <p>FOOTHILL COMMUNITY COLLEGE OBSERVATORY 12345 Moody Road Los Altos Hills</p> <p>Cost: Free</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 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. Deep space objects including star clusters, nebulae, and distant galaxies also provide dramatic demonstrations of the vastness of the cosmos. The choice of targets for</p> <p>Any evening's viewing depends on the season and what objects are currently in the sky.</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 \$3.00.</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>

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 \$3.00.

BAY AREA EVENTS – NOVEMBER 2014

<http://groups.yahoo.com/neo/groups/bayastro/conversations/topics/49>

Thursday, 11/20/14 7:30 PM

SAN FRANCISCO NATURAL HISTORY SERIES

The Randall Museum, 199 Museum Way, San Francisco, CA 94114

SKY PHENOMENA

Joe Jordan will come back with new material after having really wowed and inspired our audience with his slides on this topic in 1997. Joe will show pictures of all kinds of atmospheric phenomena, including rainbows, haloes, glories, aurorae, coronae, mirages, and the legendary (but real) "green flash". He'll bring along some hands-on 3-D models (to go along with his descriptions and explanations) that might help us understand what causes some of these things, and where and when to watch for them.

As an added treat, Joe will regale us with information and stories on a recent focus of his - the science, technology and politics, behind clean energy ("sky power to the people" - see his TED talk on it – shown below!) - including the scientific basis for a big public-art sculpture idea.

Website: <http://sfnhs.com/2014/10/22/nov-20th-2014-sky-phenomena/>

Cost: Free

Fri. 11/21/2014 7PM

TELESCOPE MAKERS WORKSHOP

CHABOT SPACE AND SCIENCE CENTER

10000 Skyline Boulevard, Oakland, CA 94619-2450

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FOOTHILL COLLEGE

12345 El Monte Rd

Los Altos Hills, CA 94022

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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. Deep space objects including star clusters, nebulae, and distant galaxies also provide dramatic demonstrations of the vastness of the cosmos. The choice of targets for any evening's viewing depends on the season and what objects are currently in the sky.

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Come to Foothill Observatory and join us in the exploration of our Universe!

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Saturday, 11/22/14 - 02:30 PM - 04:00 AM

JACKSON THEATRE, SMITH CENTER FOR THE FINE AND PERFORMING ARTS

Ohlone College, 3600 Mission Blvd., Fremont, CA 94539

SKEPTICS' GUIDE TO THE UNIVERSE -GEO SKEPTICAL EXTRAVAGANZA AND QUIZ SHOW

Join all the guys from the Skeptics' Guide to the Universe cast (Steve Novella, Bob Novella, Jay Novella, and Evan Bernstein), along with musician and emcee George Hrab for a skeptical extravaganza and quiz show. This 90-minute blowout will include: • Science • Games • Music • Quiz Show • Lamé Jokes • General Geekdom and • Skeptical Fun! Hosted by the Ohlone College Psychology Club and the Bay Area Skeptics

• Event Parking \$2

• Smith Center Box Office / Information

Website: <http://www.ohlone.edu/instr/psychology/speakerseries/>

Cost: \$15 general; \$10 Students with ID

See <http://tech.groups.yahoo.com/group/bayastro/?v=1&t=directory&ch=web&pub=groups&sec=dir&slk=94>
for additional events added since time of newsletter publication.

NASA SCIENCE NEWS

NASA ROCKET REDEFINES WHAT ASTRONOMERS THINK OF AS GALAXIES

Nov 6, 2014: A NASA sounding rocket experiment has detected a surprising surplus of infrared light in the dark space between galaxies, a diffuse cosmic glow as bright as all known galaxies combined. The glow is thought to be from orphaned stars flung out of galaxies.

The findings redefine what scientists think of as galaxies. Galaxies may not have a set boundary of stars, but instead stretch out to great distances, forming a vast, interconnected sea of stars.

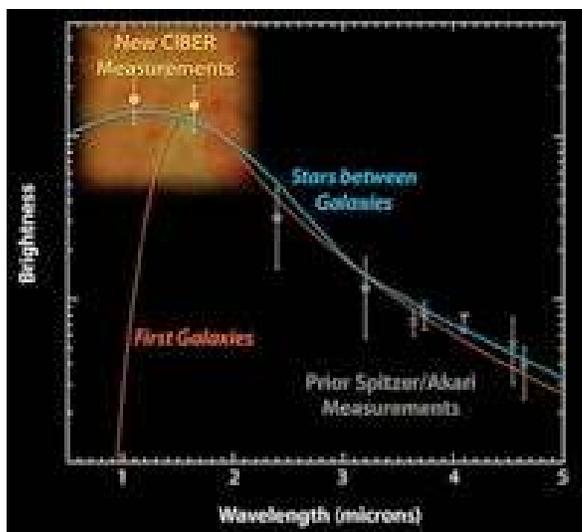


This is a time-lapse photograph of the Cosmic Infrared Background Experiment (CIBER) rocket launch, taken from NASA's Wallops Flight Facility in Virginia in 2013. The image is from the last of four launches. Image Credit: T. Arai/University of Tokyo

Observations from the Cosmic Infrared Background Experiment, or CIBER, are helping settle a debate on whether this background infrared light in the universe, previously detected by NASA's Spitzer Space Telescope, comes from these streams of stripped stars too distant to be seen individually, or alternatively from the first galaxies to form in the universe.

"We think stars are being scattered out into space during galaxy collisions," said Michael Zemcov, lead author of a new paper describing the results from the rocket project and an astronomer at the California Institute of Technology (Caltech) and NASA's Jet Propulsion Laboratory (JPL) in Pasadena, California. "While we have previously observed cases where stars are flung from galaxies in a tidal stream, our new measurement implies this process is widespread."

Using suborbital sounding rockets, which are smaller than those that carry satellites to space and are ideal for short experiments, CIBER captured wide-field pictures of the cosmic infrared background at two infrared wavelengths shorter than those seen by Spitzer. Because our atmosphere itself glows brightly at these particular wavelengths of light, the measurements can only be done from space.



"It is wonderfully exciting for such a small NASA rocket to make such a huge discovery," said Mike Garcia, program scientist from NASA Headquarters. "Sounding rockets are an important element in our balanced toolbox of missions from small to large."

During the CIBER flights, the cameras launch into space, then snap pictures for about seven minutes before transmitting the data back to Earth. Scientists masked out bright stars and

galaxies from the pictures and carefully ruled out any light coming from more local sources, such as our own Milky Way galaxy. What's left is a map showing fluctuations in the remaining infrared background light, with splotches that are much bigger than individual galaxies. The brightness of these fluctuations allows scientists to measure the total amount of background light.

To the surprise of the CIBER team, the maps revealed a dramatic excess of light beyond what comes from the galaxies. The data showed that this infrared background light has a blue spectrum, which means it increases in brightness at shorter wavelengths. This is evidence the light comes from a previously

undetected population of stars between galaxies. Light from the first galaxies would give a spectrum of colors that is redder than what was seen.

CIBER measurements favor a model in which the IR glow between distant galaxies is caused by orphan stars. [More](#)

"The light looks too bright and too blue to be coming from the first generation of galaxies," said James Bock, principal investigator of the CIBER project from Caltech and JPL. "The simplest explanation, which best explains the measurements, is that many stars have been ripped from their galactic birthplace, and that the stripped stars emit on average about as much light as the galaxies themselves."

Future experiments can test whether stray stars are indeed the source of the infrared cosmic glow. If the stars were tossed out from their parent galaxies, they should still be located in the same vicinity. The CIBER team is working on better measurements using more infrared colors to learn how stripping of stars happened over cosmic history.

Results from two of four CIBER flights, both of which launched from White Sands Missile Range in New Mexico in 2010 and 2012, appear Friday, Nov. 7 in the journal *Science*.

Credits:

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

More information:

For more information on NASA's sounding rocket experiments, visit: http://www.nasa.gov/mission_pages/sounding-rockets/

For more information about CIBER, visit: <http://ciber.caltech.edu/rocket.html>

Caltech manages JPL for NASA. The work was supported by NASA, with initial support provided by JPL's Director's Research and Development Fund. Japanese participation in CIBER was supported by the Japan Society for the Promotion of Science and the Ministry of Education, Culture, Sports, Science and Technology. Korean participation in CIBER was supported by the Korean Astronomy and Space Science Institute."



Click to visit the [LRO home page](#)



San Francisco Amateur Astronomers
Application for New or Renewing Membership

- Memberships, with dues payment, are for one year. Standard renewal dates of 1 July to 30 June and 1 January to 31 December.
- Submitting appropriate dues in April, May, June, July or August, membership will run to 30 June of the next year.
- Submitting appropriate dues in October, November, December, membership will run to 31 December of the next year; submitting appropriate dues in January, February or March, membership will run to 31 December of the same year.
- Renewals are maintained at the original membership date unless the renewal is made later than the original cutoff date (e.g. September or March as described in 3). In such cases the membership date is shifted to the next renewal date 30 June or 31 December.
- New or renewal memberships sent in via USPS mail will have membership start date based on postmark date.



This application is for:

- New
- Renewing

Name: _____

Address: _____

Email: _____

Home Telephone (optional): _____

Cell Phone (optional): _____

Membership Type: Individual \$25.00 / Family \$30.00 / Student \$10.00 / Supporting \$75.00

Please mail to me a Mt. Tamalpais Parking Permit

To complete the membership process:

- A. Print and fill out this form
- B. Make check or money order payable to San Francisco Amateur Astronomers
- C. Mail this form and payment to:

**Treasurer, SFAA
PO Box 15097
San Francisco, CA 94115**

New members will be entered onto the SFAA roster on the Night Sky Network (NSN) and will receive a verifying email from the NSN with username and password for the NSN. Renewing members will have their information updated but will not receive an email from the NSN. Both new and renewing members will receive a verifying email from the SFAA Treasurer upon completion of the membership process.

2013 Club Officers & Contacts

President	MATTHEW JONES	president@sfaa-astronomy.org
Vice President	Douglas Smith	vice-president@sfaa-astronomy.org
Treasurer	Michael Patrick	treasurer@sfaa-astronomy.org
Secretary	Ryan Binford	secretary@sfaa-astronomy.org
Speaker Chair	Linda Mahan	
Newsletter Editor	Annette Gabrielli	editor@sfaa-astronomy.org
Board Members	Anil Chopra	Anil.Chopra@sfaa-astronomy.org
	Anthony Barreiro	Anthony.Barreiro@sfaa-astronomy.org
	Bob Haberman	Bob.Haberman@sfaa-astronomy.org
	Jim Burke	Jim.Burke@sfaa-astronomy.org
	Joe Heavey	Joe.Heavey@sfaa-astronomy.org
	Mitchell Schoenbrun	Mitchell.Schoenbrun@sfaa-astronomy.org
	Paul Salazar	Paul.Salazar@sfaa-astronomy.org
	Sunil Nagaraj	Sunil.Nagaraj@sfaa-astronomy.org
	Suzanne Huang	Suzanne.Huang@sfaa-astronomy.org

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/ Ken Frank ken@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*

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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.
