

ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 62, No. 12 – December 2014

GENERAL MEETING

Randall Museum . 199 Museum Way . San Francisco

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

**Effective February 17, 2015: SFAA's General Meetings occur on the 3rd Tuesday of each month
(except January)**

This lecture was given at the December 17, 2014 general meeting.

Look for the video which will be appearing soon at www.sfaa-astronomy.org

DR. RICHARD ESPIC, NASA Ames, Planetary Systems Branch

Barnstorming the Moon:

Adventures of the Lunar Atmosphere and Dust Environment Explorer

The Lunar Atmosphere and Dust Environment Explorer (LADEE) was launched on September 6, 2013 aboard the very first Minotaur V, an ICBM converted for civilian use. LADEE entered lunar orbit one month later on October 6th. In the following weeks, the first laser communications from deep space achieved download link speeds sufficient for broadband video. Following instrument checkouts, LADEE began science operations on November 21st, 2013. Over the next 100 days LADEE's two spectrometers systematically mapped argon, helium, and discovered neon in the lunar exosphere. Simultaneously, the Lunar Dust EXperiment (LDEX) discovered and characterized the dust exosphere, caused by the continual bombardment of the Moon's surface by micrometeoroids. After the nominal science mission ended on March 1, 2014, LADEE continued to acquire data. This talk will describe the mission and some of the very interesting and recent science results.



Dr. Rick Elphic is Project Scientist for the LADEE mission. He received a BS in Astronomy from the University of Arizona, and his PhD in Geophysics and Space Physics from UCLA. His dissertation was based on observations from Ames' Pioneer Venus Orbiter mission. While at Los Alamos National Laboratory, he worked on another Ames mission, Lunar Prospector. Dr. Elphic's research interests include the history of water in the inner solar system, especially the Moon and Mars, and developing instrumentation to prospect for and characterize volatiles from landed, mobile platforms. He likes working with robotic rovers in wild places.

!!!!!!!!!!!! IN THIS NEWSLETTER !!!!!!!!!!!!!

- 1) ELECTION BALLOT - 2015 OFFICERS AND BOARD OF DIRECTORS**
- 3) CHANGE OF MEETING DATES AND PLACE EFFECTIVE FEBRUARY 2015**

PRESIDENT'S MESSAGE

Hello SFAA,

The year is coming to a close and soon another will take my place as president.

It's been a good year. I promised more social activities, and I hope you've had fun at all of the events we've had. The website continues to grow, our lectures are online, and we have a bigger online presence than ever before. The club continues to grow and I still think it's awesome!

We've had some eclipses that were nice, comets that were a no-show, and both good and bad weather on the mountain. One thing that remains constant is how amazing the members of this club are. Every star party, warm or cold, has smiling faces and warm voices promising offers of galaxies and beautiful nebulae. Years after coming to the area and finding the club, I'm still looking forward to our next meeting and excited about what I will learn next.

So thank you for making the club as great as it is. Thanks for the help we've received, for all the sights you've shown me, and for continuing to make this club the best astronomy club in the universe!

I'm excited to see how our next president will continue to expand the club and what ideas he has in store for us. I'm sure it will still be awesome.

Thanks again and keep looking up!

Matt Jones

President

San Francisco Amateur Astronomers

**San Francisco Amateur Astronomers
P.O. Box 15097
San Francisco, CA 94115
BALLOT FOR 2015 SFAA OFFICERS & BOARD OF DIRECTORS**

President (*Vote for one*) **Directors** **Vote for 7** – the top 7 become the Board Members and the 2 with the next highest votes become the Board Alternates.

- Douglas Smith
- _____ Adam Espisito

Vice-President (*Vote for one*) Agnes Pырchla

- Anil Chopra
- Matthew Jones
- Bob Haberman
- _____
- David Frey

Secretary (*Vote for one*)

- Katie Gallinger
- Anthony Barreiro
- Paul Salazar
- _____
- Scott Miller

Treasurer (*Vote for one*) Sue-Ellen Speight

- Michael Patrick _____
- _____
- _____

VOTING INSTRUCTIONS

You may cast your ballot at the membership meeting on 17 December 2014, or you may mail it to **SFAA Secretary, PO Box 15097, San Francisco, CA 94115**. Ballots must be received no later than December 31, 2014. Each club member may submit only one ballot; family memberships may submit a separate ballot for each voting family member.

The club members listed above are candidates for officers and board of directors of SFAA for the year 2015. Please vote for one candidate for each officer position and seven candidates for the board of directors including write-ins. Voting for more than one candidate for any officer position or for more than nine candidates for the board of directors will invalidate the entire ballot.

All candidates, including write-ins, must have committed to attending at least seven board meetings and may not miss more than three consecutive meetings during the calendar year for which they are nominated.

The seven Board of Director candidates who receive the highest number of votes will become regular board members. The two candidates receiving the next highest number of votes will become alternate board members. The new officers and board of directors will be installed at the Annual Awards Dinner in January.

**A NEW HOME
FOR
SAN FRANCISCO AMATEUR ASTRONOMERS**

**FIRST 2015 GENERAL MEETING
WILL BE HELD
FEBRUARY 17, 2015
AT MEETING FACILITIES LOCATED IN

THE PRESIDIO
at
OBSERVATION POST - BUILDING 211**

Following pages

Article including photos by Michael Patrick, Treasurer

Observation Post/Building 211 layout

<http://www.presidio.gov/venues/Documents/Bldg%20211%20Floor%20Plan.pdf>

Driving Directions

<http://www.presidio.gov/venues/Pages/observation-post-at-the-presidio-driving-directions.aspx>

Public transportation information link

<http://www.presidio.gov/transportation/Pages/default.aspx>

A Visit to SFAA's New Home at the Presidio **by Michael Patrick, Treasurer**

On Tuesday, 9 December Doug Smith and I visited the Presidio to scope the SFAA's new monthly meeting space which will begin with our first meeting/lecture in 2015 on Tuesday, 17 February. Since the Randall will be closed for major renovations in 2015, Paul Salazar reached out to some contacts he had at the Presidio to determine if there was any possible meeting space we could use and our visit was the result of his efforts. I remember the day well since it was overcast but relatively dry, being a "break" between storms with one ending the day before and a big one to follow the next day.

The Presidio, formerly one of the oldest continuously operating military bases in the United States, is a fairly large area within San Francisco at 1,491 acres. It contains many streets, buildings, Parade Grounds, restaurants and open space and is managed by the Presidio Trust whose Board of Directors are appointed by the President of the United States and Secretary of the Interior. It houses the Presidio Trust and 225 organizations with 3,000 people coming to work each day and about 3,000 people who live in the Presidio.

SEE FOLLOWING PAGES FOR PRESIDIO MAP SHOWING LOCATION OF BUILDING 211

We met at the Observation Post / Building 211 with a Presidio Trust representative who showed us around and discussed probable layouts for our monthly meeting/lecture and Board of Directors meetings. As we toured the building, Doug and I became increasingly impressed about the possibilities and dramatic quality of our new home. Final arrangements between the Presidio Trust and SFAA are in progress and we are told that SFAA is exactly the kind of organization that the Presidio seeks to provide a home for since we are non-profit (501 (c)(3)) and are devoted to education and outreach in providing the public, as well as members, with knowledge and experience of astronomy.

Our new meeting/lecture space at Building 211 is the Bay View Room which at 34' x 125', providing 4,250 square feet, will meet our needs quite well. The seating will be level and not 'stadium' as at the Randall, but we will have room for far more attendees.

SEE FOLLOWING PAGES FOR OBSERVATION POST FLOOR PLAN -

We will probably set up the seating facing west and place the viewing screen at the west end of the Bay View Room, which looks, facing west, like this:



The round interior window encloses the [Board Room](#) where the SFAA Board of Directors will meet.

Speakers and other presenters will face the audience and see the room like so:



All the exterior windows have blinds that will be lowered to control light for the lecture. But before the lecture we will keep some of them up so members and the public who attend can have a look at these (on an overcast day) views:





The concrete structures in front of the Observation Post are tunnels on Doyle Drive, which will eventually be covered over with earth and grass and paths so pedestrians will be able to leisurely walk from the main section of the Presidio to Crissy Field without having to dodge cars for dear life.

The SFAA also plans to hold some City Star Parties at the Presidio – probably at the Main Parade Ground. Along with our meetings and lectures the Presidio offers a welcoming and dramatic new home.

Astronomy Program Completes 26 Years on the Mountain



**FRIENDS OF
MT TAM**

The Astronomy Programs are hibernating for the winter, after concluding our 26th year of dedicated service by park staff and volunteers bringing the heavens a bit down to earth for the education and enjoyment of the general public. It was another dry year, that is until our October program which was “weathered out”. Even so, we were able to successfully present seven of the eight programs scheduled. Our speakers talked on an eclectic set of topics ranging from star formation to the Higgs Boson to planet searching to the Big Bang to colliding worlds to NASA’s NuSTAR to ‘masking’ the cosmos. Each lecture was followed by a laser pointer star talk in the theater then telescope viewing in the Rock Springs parking lot. The final program in Oct was to be part of the Fourth Annual Bay Area Science Festival. Attendance was up and we had some audiences of 400+. We welcomed the FMT Meet Up hiking groups to several programs. All in all, another good year for astronomy.

Many thanks to all who made the trek up the mountain at night, parked cars, set up and took down equipment, greeted the public, sat on hard rocks and provided telescopes to make the programs possible. Thank you to our assigned ranger this year, Cecilia Rejas, and for additional park staff assistance our appreciation to Tom Frazier, Ryen Goering, Dan Vianueva and Kenneth Stone. From the ranks of FMT and the VIP parks program we continued assistance from seasoned volunteers Noah Biernacki, Donna Garbesi, Susan Head, Stephanie Koutsaftis, Sophia Lehey, Mardi Leland, Jason Mdea, Alex Ross, Misha Ross, Tinka Ross. A welcome addition to our volunteer ranks included Carl Baech, Marty Fleisher, Jean and Andrew Jefferies, Joanne Lee, Hilda Leefeldt, and Jim Turner. We hope to have them all return next season. (Please note, some volunteers show up to help even when not scheduled, so if anyone has been missed please accept apologies.) And of course our thanks to Paul Salazar for our laser tours and to all the selfless Amateur Astronomers in the SFAA who, under the coordination of president Anthony Barriero, brought and shared their telescopes, enthusiasm and knowledge to the star parties in Rock Springs. And finally from Wonderfest thanks to Tucker Hiatt for helping coordinate the May and October programs.

Looking forward to 2015, we are in need of one or two volunteers to take over the contacting and scheduling of volunteers and someone to help with publicity. Anyone who has an interest in helping, please contact Tinka at 415-244-4714 for more information. And of course we can always use more volunteers and audience members. If you only know the Mountain by day light you are missing the full mystic of our beloved Mt Tam.

Come and join us!

Tinka Ross

Friends of Mt Tam

Astronomy Programs

<http://www.friendsofmontam.org/astronomy/directions-and-contact-information.html>

November Sky Map: <http://skymaps.com/skymaps/tesmn1412.pdf>

November Sky Calendar: <http://skymaps.com/articles/n1412.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

**EVERY FRIDAY NIGHT
7:00 PM – 10:00 PM
excluding major holidays**

**The Telescope Makers'
Workshop**

**CHABOT SPACE AND
SCIENCE CENTER
10000 Skyline Boulevard
Oakland, CA 94619-2450**

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.

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!

For more information call or email Richard Ozer at rozer@pacbell.net or phone (510) 406-1914.

**EVERY FRIDAY &
SATURDAY EVENING,
weather permitting
7:30 PM – 10:30 PM**

**CHABOT SPACE AND
SCIENCE CENTER
10000 Skyline Boulevard
Oakland CA 94619-2450
(510) 336-7300**

EXPLORE THE NIGHT SKIES AT THE CHABOT OBSERVATORIES

For more information: <http://www.chabotspace.org/>

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>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.</p> <p>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 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 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>BAY AREA EVENTS – DECEMBER 2014 http://groups.yahoo.com/neo/groups/bayastro/conversations/topics/49</p>	
<p>More coming up in the new year ... Happy Holidays!!!</p>	
<p>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.</p>	

NASA SCIENCE NEWS

REBORN KEPLER SPACECRAFT FINDS 'SUPER-EARTH'

Dec. 18, 2014: NASA's planet-hunting Kepler spacecraft is making a comeback with the discovery of the first exoplanet found using its new mission -- K2. The discovery was made when astronomers and engineers devised an ingenious way to repurpose Kepler for the K2 mission and continue its search of the cosmos for other worlds.

"Last summer, the possibility of a scientifically productive mission for Kepler after its reaction wheel failure in its extended mission was not part of the conversation," said Paul Hertz, NASA's astrophysics division director at the agency's headquarters in Washington. "Today, thanks to an innovative idea and lots of hard work by the NASA and Ball Aerospace team, Kepler may well deliver the first candidates for follow-up study by the James Webb Space Telescope to characterize the atmospheres of distant worlds and search for signatures of life."



The artistic concept shows NASA's planet-hunting Kepler spacecraft operating in a new mission profile called K2. Using publicly available data, astronomers have confirmed K2's first exoplanet discovery proving Kepler can still find planets. Image Credit: NASA Ames/JPL-Caltech/T Pyle

Lead researcher Andrew Vanderburg, a graduate student at the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts, studied publicly available data collected by the spacecraft during a test of K2 in February 2014. The discovery was confirmed with measurements taken by the HARPS-North spectrograph of the Telescopio Nazionale Galileo in the Canary Islands, which captured the wobble of the star caused by the planet's gravitational tug as it orbits.

The newly confirmed planet, HIP 116454b, is 2.5 times the diameter of Earth and follows a close, nine-day orbit around a star that is smaller and cooler than our sun, making the planet too hot for life as we know it. HIP 116454b and its star are 180 light-years from Earth, toward the constellation Pisces.

Kepler's onboard camera detects planets by looking for transits -- when a distant star dims slightly as a planet crosses in front of it. The smaller the planet, the weaker the dimming, so brightness measurements must be exquisitely precise. To enable that precision, the spacecraft must maintain steady pointing. In May 2013, data collection during Kepler's extended prime mission came to an end with the failure of the second of four reaction wheels, which are used to stabilize the spacecraft.

Rather than giving up on the stalwart spacecraft, a team of scientists and engineers crafted a resourceful strategy to use pressure from sunlight as a "virtual reaction wheel" to help control the spacecraft. The resulting K2 mission promises to not only continue Kepler's planet hunt, but also to expand the search to bright nearby stars that harbor planets that can be studied in detail and better understand their composition. K2 also will introduce new opportunities to observe star clusters, active galaxies and supernovae.

Small planets like HIP 116454b, orbiting nearby bright stars, are a scientific sweet spot for K2 as they are good prospects for follow-up ground studies to obtain mass measurements. Using K2's size measurements and ground-based mass measurements, astronomers can calculate the density of a planet to determine whether it is likely a rocky, watery or gaseous world.

"The Kepler mission showed us that planets larger in size than Earth and smaller than Neptune are common in the galaxy, yet they are absent in our solar system," said Steve Howell, Kepler/K2 project scientist at NASA's Ames Research Center in Moffett Field, California. "K2 is uniquely positioned to dramatically refine our understanding of these alien worlds and further define the boundary between rocky worlds like Earth and ice giants like Neptune."

Since the K2 mission officially began in May 2014, it has observed more than 35,000 stars and collected data on star clusters, dense star-forming regions, and several planetary objects within our own solar system. It is currently in its third campaign.

The research paper reporting this discovery has been accepted for publication in *The Astrophysical Journal*.

Credits and more information:

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

Ames is responsible for Kepler's mission concept, ground system development, science data analysis and K2 mission operations. NASA's Jet Propulsion Laboratory in Pasadena, California, managed Kepler mission development. Ball Aerospace & Technologies Corp. in Boulder, Colorado, developed the Kepler flight system and supports mission operations with the Laboratory for Atmospheric and Space Physics at the University of Colorado in Boulder. The Space Telescope Science Institute in Baltimore archives, hosts and distributes Kepler science data. Kepler is NASA's 10th Discovery Mission and was funded by the agency's Science Mission Directorate in Washington.

For more information about the Kepler mission, visit: <http://www.nasa.gov/kepler>



**San Francisco Amateur Astronomers
Application for New or Renewing Membership**

1. Memberships, with dues payment, are for one year. Standard renewal dates of 1 July to 30 June and 1 January to 31 December.
2. Submitting appropriate dues in April, May, June, July, August, or September, membership will run to 30 June of the next year.
3. 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.
4. 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.
5. 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.

2014 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*

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.
