

ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 58, No. 12 – December 2010

Wednesday, December 15, 2010 – 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)

JOHN DILLON

Lecturer

History and Philosophy of Science

Medieval Astronomy: More Exciting Than It Sounds!

The Middle Ages are often thought of as a time of ignorance, superstition, and inquisitions, but surprisingly greater advances were made in science and mathematics in those "dark ages" than in the "renaissance" that followed and Astronomy was a required subject for all university students! Dillon will examine the scientific vigor of the medieval worlds of Islam and Europe and how it fostered the breakthroughs of Copernicus and Galileo and the emergence of modern science.

John Dillon teaches extension courses in history and philosophy of science at Stanford University and UC Berkeley. Dillon recently retired as Curator of the Randall Museum and is a past president of the SFAA.



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.

December 15

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 lands end on Geary Street. We believe the address for this parking lot is 1 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>

December 11/5:00

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 as well as our 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).

January 8

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/>



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

2011 Ballot for Officers & Board of Directors

President (*vote for one*)

- Sue-Ellen Speight

Vice President (*vote for one*)

- Vivian White

Secretary (*vote for one*)

- Douglas Smith

Treasurer (*vote for one*)

- Bob Haberman

Directors (*seven + 2 alternates*)

- Dave Frey
 Angie Trager
 Anil Chopra
 Chris Coffin
 Dave Goggin
 Dean Gustafson
 Joe Heavey
 Matthew Jones
 Mitchell Schoenbrun

VOTING INSTRUCTIONS

You may cast your ballot at the membership meeting on 15 December 2010, or you may mail it to **SFAA Secretary, POB 15097, San Francisco, CA 94115**. Ballots must be received no later than January 19, 2010. 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 2011. 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 seven 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 two consecutive meetings during the calendar year for which they are nominated.

The seven board of directors 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 on January 25, 2010.

San Francisco Amateur Astronomers

P.O. Box 15097

San Francisco, CA 94115



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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

San Francisco Amateur Astronomers Upcoming Lectures –

Randall Museum Theater . Randall Museum . 199 Museum Way . San Francisco

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

February 16

R. Jay GaBanny, Bay Area Photographer

SEARCH FOR GALACTIC FOSSILS

The most widely accepted cosmological theory explains that major spiral galaxies, like the Milky Way, formed over the past 10 billion years from less massive clumps in a process described as galactic cannibalism. For the past decade an international group of professional astronomers has been searching outside the local group of galaxies for ancient relics to support our understanding about galactic evolution. Jay's talk will explain the team's efforts, review its findings and conclude with the release of new deep space image that represents the group's latest evidence.

March 16

Donald R. Lowe, Department of Geological and Environmental Sciences, Stanford University

DID LHB END NOT WITH A BANG BUT A WHIMPER? THE GEOLOGIC EVIDENCE.

Lunar evidence of Late Heavy Bombardment suggests that the terrestrial bombardment rate was not much greater than the low impact rate of today. This lecture addresses the geological evidentiary findings supporting this position.

SFAA Welcomes Volunteers for General Meeting Snacks

San Francisco Amateur Astronomers welcomes member volunteers to bring snacks for the general meeting lectures at the Randall Museum.

Plan to arrive to set up by 7:00pm. Plan to bring "munchie" snacks and soft drinks. In addition to paper supplies, the Randall provides a coffee pot for hot water, instant coffee & tea bags.

You may request reimbursement or donate your items with SFAA's thanks and appreciation.

Volunteers are needed for **November 17 - December 15** general meetings and into the coming year as well. SFAA's General Meetings take place on the 3rd Wednesday of each month (except January).





Please submit meeting date you wish to volunteer for with your name, e-mail address and telephone number to doublestar@comcast.net You will be contacted to confirm.

San Francisco Amateur Astronomers is most appreciative of your participation in supporting our organization.





December 2010 Almanac for San Francisco (Pacific Standard Time)




(Source: US Naval Observatory)

Sun and Moon Data:

Date	Astronomic al Twilight Begins	Sunrise	Sunset	Astronomic al Twilight Ends	Moon	Moonrise	Moonsset
4 Dec	5:36 am	7:09 am	4:51 pm	6:24 pm		6:12 am	4:00 pm
11 Dec	5:41 am	7:15 am	4:51 pm	6:25 pm		11:14 am	10:55 pm
18 Dec	5:46 am	7:20 am	4:53 pm	6:28 pm		2:43 pm	4:47 am
25 Dec	5:49 am	7:23 am	4:57 pm	6:31 pm		10:15 pm	10:22 am

Planetary Data:

	Mercury		Venus		Mars		Jupiter	
								
	Sagittarius (1-20) / Ophiuchus (21-31)		Virgo (1-11) / Libra (12-31)		Ophiuchus (1-2) / Sagittarius (3-31)		Aquarius (1-16) / Pisces (17-31)	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set
4 Dec	8:54 am	6:09 pm	3:49 am	2:48 pm	8:24 am	5:47 pm	1:04 pm	0:49 am
11 Dec	8:31 am	5:55 pm	3:41 am	2:36 pm	8:19 am	5:42 pm	12:37 pm	0:24 am
18 Dec	7:30 am	5:09 pm	3:38 am	2:25 pm	8:14 am	5:39 pm	12:11 pm	11:56 pm
25 Dec	6:20 am	4:12 pm	3:39 am	2:17 pm	8:09 am	5:36 pm	11:45 am	11:32 pm

	Saturn		Uranus		Neptune	
						
	Virgo		Pisces		Aquarius	
Date	Rise	Set	Rise	Set	Rise	Set
4 Dec	2:24 am	2:05 pm	1:08 pm	1:03 am	11:49 am	10:29 pm
11 Dec	1:59 am	1:39 pm	12:40 pm	0:36 am	11:22 am	10:02 pm
18 Dec	1:34 am	1:13 pm	12:13 pm	0:08 am	10:55 am	9:35 pm
25 Dec	1:09 am	12:46 pm	11:46 am	11:37 pm	10:28 am	9:09 pm

December Phenomena:

1 Dec, 8:00 pm: Spica 2.8° N of Moon
 5 Dec, 3:00 am: Antares 2.5° S of Moon
 6 Dec, 2:00 am: Uranus stationary
 6 Dec, 1:00 pm: Mars 0.5° S of Moon
 6 Dec, 11:00 pm: Pluto 4.4° N of Moon
 7 Dec, 0:00 am: Mercury 1.7° S of Moon
 9 Dec, 11:00 pm: Mercury stationary
 11 Dec, 3:00 am: Neptune 4.7° S of Moon
 13 Dec, 8:00 am: Mercury 4.5° S of Pluto
 13 Dec, 3:00 pm: Mercury 1.0° N of Mars

13 Dec, 8:00 pm: Mars 5.4° S of Pluto
 13-14 Dec: Geminids meteor shower
 19 Dec, 5:00 pm: Mercury inferior conjunction
 20 Dec, 9:27 pm-21 Dec, 3:06 am: Total lunar eclipse, North America
 21 Dec, 3:28 pm: Winter solstice
 25 Dec, 7:00 am: Regulus 4.8° N of Moon
 26 Dec, 5:00 pm: Pluto at conjunction
 29 Dec, 3:00 am: Spica 2.8° N of Moon
 30 Dec, 4:00 am: Mercury stationar

GEMINID METEOR SHOWER DEFIES EXPLANATION

NASA SCIENCE NEWS

Dec. 6, 2010: The Geminid meteor shower, which **peaks** this year on **Dec. 13th and 14th**, is the most intense meteor shower of the year. It lasts for days, is rich in fireballs, and can be seen from almost any point on Earth.

It's also NASA astronomer Bill Cooke's favorite meteor shower—but not for any of the reasons listed above.

"The Geminids are my favorite," he explains, "because they defy explanation."

Most meteor showers come from comets, which spew ample meteoroids for a night of 'shooting stars.' The Geminids are different. The parent is not a comet but a weird rocky object named 3200 Phaethon that sheds very little dusty debris—not nearly enough to explain the Geminids.

"Of all the debris streams Earth passes through every year, the Geminids' is by far the most massive," says Cooke. "When we add up the amount of dust in the Geminid stream, it outweighs other streams by factors of 5 to 500."

This makes the Geminids the 900-lb gorilla of meteor showers. Yet 3200 Phaethon is more of a 98-lb weakling.

3200 Phaethon was discovered in 1983 by NASA's IRAS satellite and promptly classified as an asteroid. What else could it be? It did not have a tail; its orbit intersected the main asteroid belt; and its colors strongly resembled that of other asteroids. Indeed, 3200 Phaethon resembles main belt asteroid Pallas so much, it might be a 5-kilometer chip off that 544 km block.



A Geminid fireball explodes over the Mojave Desert in 2009. Credit: Wally Pacholka / AstroPics.com / TWAN.



An artist's concept of an impact event on Pallas. Credit: B. E. Schmidt and S. C. Radcliffe of UCLA. [[larger image](#)]

An artist's concept of an impact event on Pallas. Credit: B. E. Schmidt and S. C. Radcliffe of UCLA.

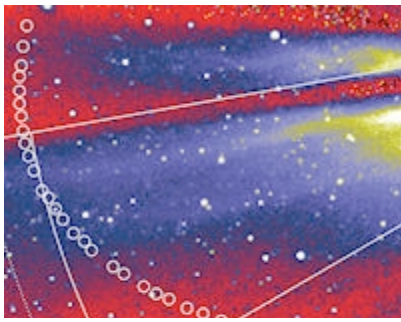
"If 3200 Phaethon broke apart from asteroid Pallas, as some researchers believe, then Geminid meteoroids might be debris from the breakup," speculates Cooke. "But that doesn't agree with other things we know."

Researchers have looked carefully at the orbits of Geminid meteoroids and concluded that they were ejected from 3200 Phaethon when Phaethon was close to the sun—not when it was out in the asteroid belt breaking up with Pallas. The eccentric orbit of 3200 Phaethon brings it well inside the orbit of

Mercury every 1.4 years. The rocky body thus receives a regular blast of solar heating that might boil jets of dust into the Geminid stream.

Could this be the answer?

To test the hypothesis, researchers turned to NASA's twin STEREO spacecraft, which are designed to study solar activity. Coronagraphs onboard STEREO can detect sungrazing asteroids and comets, and in June 2009 they detected 3200 Phaethon only 15 solar diameters from the sun's surface.



The path of 3200 Phaethon through STEREO's HI-1A coronagraph camera. False-color green and blue streamers come from the sun. [\[more\]](#)

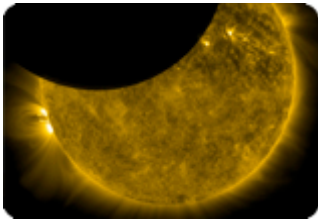
What happened next surprised UCLA planetary scientists David Jewett and Jing Li, who analyzed the data. "3200 Phaethon unexpectedly brightened by a factor of two," they wrote. "The most likely explanation is that Phaethon ejected dust, perhaps in response to a break-down of surface rocks (through thermal fracture and decomposition cracking of hydrated minerals) in the intense heat of the Sun."

Jewett and Li's "rock comet" hypothesis is compelling, but they point out a problem: The amount of dust 3200 Phaethon ejected during its 2009 sun-encounter added a mere 0.01% to the mass of the Geminid debris stream—not nearly enough to keep the stream replenished over time. Perhaps the rock comet was more active in the past ...?

"We just don't know," says Cooke. "Every new thing we learn about the Geminids seems to deepen the mystery."

This month Earth will pass through the Geminid debris stream, producing as many as 120 meteors per hour over dark-sky sites. The best time to look is probably between local midnight and sunrise on Tuesday, Dec. 14th, when the Moon is low and the constellation Gemini is high overhead, spitting bright Geminids across a sparkling starry sky.

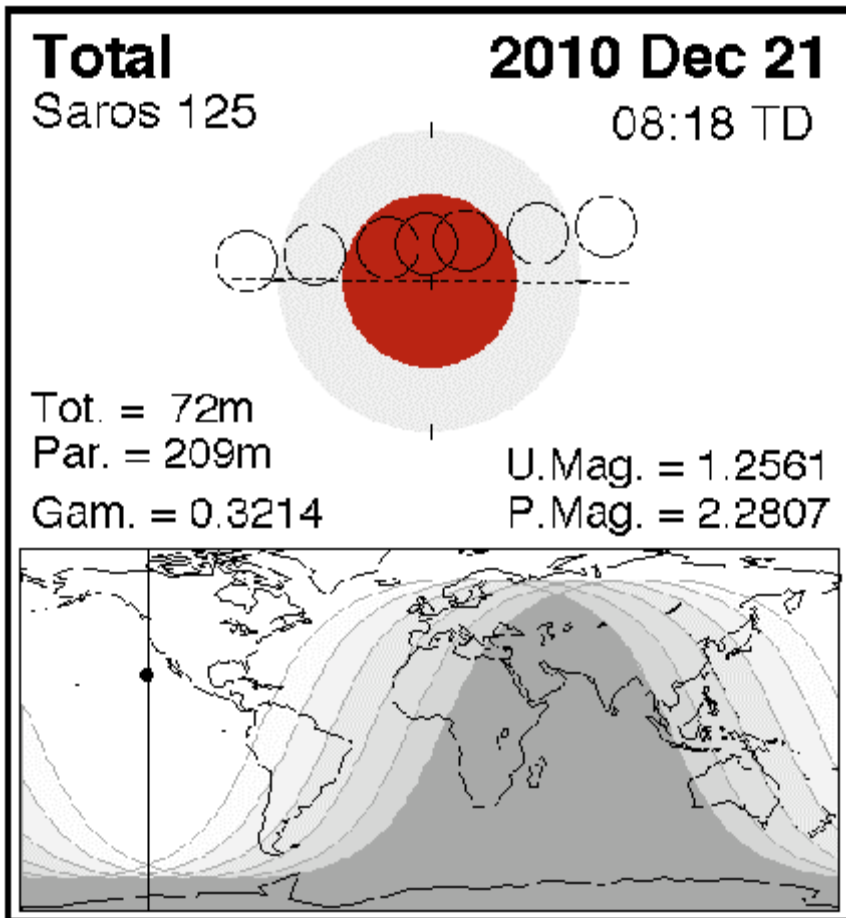
Bundle up, go outside, and savor the mystery.



MARK YOUR CALENDARS:
TOTAL LUNAR ECLIPSE ON DECEMBER 21ST, 2010 AT 11:40PM PST

The last lunar eclipse of 2010 is especially well placed for observers throughout North America

<http://eclipse.gsfc.nasa.gov/eclipse.html>



Five Millennium Canon of Lunar Eclipses (Espenak & Meeus)
 NASA TP-2009-214172

The last lunar eclipse of 2010 is especially well placed for observers throughout North America. The eclipse occurs at the Moon's descending node in eastern Taurus, four days before perigee.

The Moon's orbital trajectory takes it through the northern half of Earth's umbral shadow. Although the eclipse is not central, the total phase still lasts 72 minutes. The Moon's path through Earth's shadows as well as a map illustrating worldwide visibility of the event are shown in the figure above. The timings of the major eclipse phases are listed below.

- Penumbral Eclipse Begins: 05:29:17 UT
- Partial Eclipse Begins: 06:32:37 UT
- Total Eclipse Begins: 07:40:47 UT (11:40pm PST)
- Greatest Eclipse: 08:16:57 UT (12:16am PST)
- Total Eclipse Ends: 08:53:08 UT
- Partial Eclipse Ends: 10:01:20 UT
- Penumbral Eclipse Ends: 11:04:31 UT

At the instant of greatest eclipse (08:17 UT) the Moon lies near the zenith for observers in southern California and Baja Mexico. At this time, the umbral magnitude peaks at 1.2561

as the Moon's southern limb passes 2.8 arc-minutes north of the shadow's central axis. In contrast, the Moon's northern limb lies 8.1 arc-minutes from the northern edge of the umbra and 34.6 arc-minutes from the shadow center. Thus, the southern half of the Moon will appear much darker than the northern half because it lies deeper in the umbra. Since the Moon samples a large range of umbral depths during totality, its appearance will change dramatically with time. It is not possible to predict the exact brightness distribution in the umbra, so observers are encouraged to estimate the Danjon value at different times during totality (see Danjon Scale of Lunar Eclipse Brightness). Note that it may also be necessary to assign different Danjon values to different portions of the Moon (i.e., north vs. south).

During totality, the winter constellations are well placed for viewing so a number of bright stars can be used for magnitude comparisons. Pollux ($m_v = +1.16$) is 25° east of the eclipsed Moon, while Betelgeuse ($m_v = +0.45$) is 16° to the south, Aldebaran ($m_v = +0.87$) is 20° to the west, and Capella ($m_v = +0.08$) is 24° to the north.

The entire event is visible from North America and western South America. Observers along South America's east coast miss the late stages of the eclipse because they occur after moonset. Likewise much of Europe and Africa experience moonset while the eclipse is in progress. Only northern Scandinavians can catch the entire event from Europe. For observers in eastern Asia the Moon rises in eclipse. None of the eclipse is visible from south and east Africa, the Middle East or South Asia.

Table 6 lists predicted umbral immersion and emersion times for 20 well-defined lunar craters. The timing of craters is useful in determining the atmospheric enlargement of Earth's shadow (see Crater Timings During Lunar Eclipses).

The December 21 total lunar eclipse belongs to Saros 125 a series of 72 eclipses in the following sequence: 17 penumbral, 13 partial, 26 total, 9 partial, and 7 penumbral lunar eclipses (Espenak and Meeus, 2009). Complete details for the series can be found at: eclipse.gsfc.nasa.gov/LEsaros/LEsaros125.html

Posted by: Soderman/NLSI Staff

source: <http://eclipse.gsfc.nasa.gov/OH/OH2010.html#LE2010Dec21T>

Posted: Oct 29, 10:16 am

UPCOMING ASTRONOMY EVENTS – Kenneth Lum

<p>Every Weekend Friday & Saturday 7:30pm - 10:30pm Weather Permitting FREE TELESCOPE VIEWING</p> <p>Every Weekend Saturday & Sunday 12:00 Noon – 5:00pm Weather Permitting DAYTIME TELESCOPE VIEWING FREE WITH GENERAL ADMISSION</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) 12pm - 5pm: Observatories Open</p>
<p>Friday and Saturday December 17 and 18 6:00 p.m.</p> <p>Chabot Space and Science Center 10000 Skyline Boulevard Oakland, CA 94619-2450 (510) 336-7300</p>	<p>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.</p> <p>Dinner: Buy advance tickets to ensure your dinner reservation. Purchase dinner separately at the cafe (\$15).</p> <p>ADVANCED TICKETS A Movie and the Universe: Admission to Chabot includes access to all 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>Wednesday December 15 Noon</p> <p>SETI Institute 189 N. Bernardo Ave. Mountain View CA 94043</p>	<p>SETI Institute Colloquium Series Paul Mahaffy, Sciences and Exploration Directorate, Goddard Space Flight Center</p> <p>Dr. Mahaffy is the Principle Investigator for the SAM analysis suite on Mars Science Laboratory Rover (Curiosity). An important goal of upcoming missions to Mars is to understand if life could have developed there. The task of the Sample Analysis at Mars (SAM) suite of instruments and the other Curiosity investigations is to move us steadily toward that goal with an assessment of the habitability of our neighboring planet through a series of chemical and geological measurements. SAM is designed to search for organic compounds and inorganic volatiles and measure isotope ratios. Other instruments on Curiosity will provide elemental analysis and identify minerals. Dr. Mahaffy will discuss how SAM will analyze both atmospheric samples and gases evolved from powdered rocks that may have formed billions of years ago with Curiosity providing access to interesting sites scouted by orbiting cameras and spectrometers.</p>
<p>Saturday December 18, 2010</p>	<p>PARTICLE PHYSICS AND THE LHC PARTICLE DETECTOR</p>

<p>San Jose Astronomical Association Hogue Park Twilight Drive San Jose CA 95124</p> <p>Cost: Free</p>	<p>Speaker: Dr. Tim Dubbs, speaking on Particle Physics and on his work on the LHC's particle detector.</p>
<p>Saturday December 18</p> <p>Lawrence Hall of Science 1 Centennial Drive Berkeley CA 94720</p> <p>Cost: Free</p>	<p>SATURDAY NIGHT STARGAZING — ON THE LHS PLAZA</p> <p>See the Moon, Planets, Stars, Galaxies and More</p> <p style="padding-left: 40px;">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> <p>1st and 3rd CLEAR Saturday of every month throughout the year, weather permitting</p> <p style="padding-left: 40px;">8:00–10:00 p.m. September 15–March 31 9:00–11:00 p.m. April 1–September 14</p> <p>Saturday Night Stargazing is a free public viewing program sponsored by LHS 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 the LHS Stargazing Google Group or follow us on Twitter@lhsstargazing.</p>
<p>Friday December 17 9:00 p.m.</p> <p>Foothill Community College 12345 Moody Road Los Altos Hills</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 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>

	http://www.pastro.org/dnn/Observatory/FoothillObservatory.aspx
<p>Saturday December 18 10:00 – 12:00 Noon</p> <p>Foothill Community College 12345 Moody Road Los Altos Hills</p>	<p>Foothill College Observatory 10AM-12PM if it is clear 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. 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 \$2.00.</p>
<p>Monday December 20 8:00 p.m.</p> <p>Lawrence Hall of Science 1 Centennial Drive Berkeley</p>	<p>Totally Lunar!</p> <p>A Total Eclipse of The Moon: Telescope Viewing Planetarium Show Experts and Activities</p> <p>Come to the top of the hill for a stunning view of Planet Earth's shadow cast onto the Moon. Bring a friend and enjoy a Planetarium show, telescope viewing, and eclipse activities with astronomy experts and fellow sky-enthusiasts.</p>
<p>Monday December 20 9:00 p.m. – 2:00 a.m.</p> <p>Chabot Space and Science Center 10000 Skyline Blvd. Oakland</p> <p>Cost \$12 General \$6 Members</p>	<p>Midnight Delight: Total Lunar Eclipse</p> <p>Go <i>Lunar</i> with us as the Moon takes a delightful midnight frolic through Earth's shadow in a rare and beautiful Total Lunar Eclipse. View the event from our observatory deck and through our giant, historic telescopes (weather permitting). Enjoy a simulation of the eclipse in our Planetarium. Investigate all things Moon-hidden lunar secrets, stories and myths, music, eclipses, and Earth creatures that come out by moonlight--in our "Moon Labs." Doors open at 9:00 PM on Monday, December 20th, and the event will run until 2:00 AM Tuesday.</p>

2010 CLUB OFFICERS & CONTACTS

President	DAVE FREY	davef@SFAA-Astronomy.org
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Adviser		
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Webmaster	Joe Amato	wbmstr@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/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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You can choose E-Mail (Recommended) or hard copy delivery for Above the Fog (Check one)

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MEMBERSHIP APPLICATION

San Francisco Amateur Astronomers
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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.