

★ ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 60, No. 3 - April 2012

Wednesday, April 18, 2012 – 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 occur on the 3rd Wednesday of each month (except January)

KIRILL FILIMONOV, PH.D.

Space Sciences Laboratory, University of California , Berkeley

EXTREME ASTRONOMY: EYEING THE COSMOS THROUGH ONE CUBIC KILOMETER OF ICE



IceCube is the world's largest particle detector buried a mile deep in the ice of Antarctica and searching for particles called neutrinos. Neutrinos are expected to come from the most violent astrophysical sources—exploding stars, gamma ray bursts, and cataclysmic events happening in black holes and neutron stars. Unlike charged cosmic rays, neutrinos point back to their origin but are very difficult to detect. They travel at the speed of light through space, through the Earth, and all they encounter. Very rarely, one will crash into a single atom and create a cascade of other charged particles. This reaction will produce blue light that can be detected by optical sensors. To find these rare events, a neutrino telescope was built at the South Pole: a 1-cubic kilometer array of optical sensors buried a mile deep in the ultra-clear glacial ice. IceCube will attempt to elucidate the origin of the highest energy cosmic rays and probe the most extreme astrophysical accelerators.

Dr. Kirill Filimonov earned his M.Sc. in nuclear physics at the Moscow Engineering Physics Institute, and his Ph.D. at McGill University in Canada. He worked at the particle accelerators at the Brookhaven National Laboratory and at the CERN laboratory in Europe. In 2005 he joined UC Berkeley's Space Sciences Laboratory to work on IceCube. He spent four field seasons working on the IceCube's construction at the South Pole.

IMPORTANT DATES

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UPCOMING SIGNIFICANT VIEWING EVENTS

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.

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|-----------|--------------|
| April 18 | September 19 |
| May 16 | October 17 |
| June 20 | November 21 |
| July 18 | December 19 |
| August 15 | |

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).

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|---------------------|-----------|--------------|------------|-------------|-------------|
| Always on Saturday. | April 14 | May 19 | June 16 | July 14 | August 11 |
| | August 11 | September 15 | October 13 | November 10 | December 15 |

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/>

ANNULAR SOLAR ECLIPSE

May 20, 2012

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

TRANSIT OF VENUS

Evening of TUESDAY, JUNE 5, 2012 through sunset (North America)

<http://www.exploratorium.edu/venus/>

<http://www.transitofvenus.org/>

<http://www.transitofvenus.org/june2012/where-to-be>

<http://eclipse.gsfc.nasa.gov/transit/venus0412.html>

<http://eclipse.gsfc.nasa.gov/OH/transit12.html>

2012 METEOR SHOWERS INTERNATIONAL METEOR ORGANIZATION

2012 Meteor Shower Calendar

<http://www.imo.net/calendar/2012>

President's Message – April



planning updates.

April has been a mixed bag of viewing so far, but we have plenty to look forward to coming up for the club. Our road trip to the northern parts of the great state of California to view May 20th's Annular Eclipse is in full planning mode. Contact Paul Salazar and Jessica Santascoy at roadtrip@sfaa-astronomy.org to let them know you are interested and to get trip tips and

Closer to home, the Exploratorium plans an event at Chrissy Field on May 20th to celebrate, so those of you who can't take a long weekend can be involved with the San Francisco public event that the SFAA will support.

Looking ahead to the Transit of Venus on June 5th, NASA Ames Research Center has asked the SFAA to take part in an outreach event on the day. Please email me at president@sfaa-astronomy.org if you would like to take part.

Finally, Yosemite dates of July 20th and 21st have been confirmed! So please email Dave Frey at fiestascope@yahoo.com with the subject line "Yosemite Sign Up" if you'd like to go on the camping road trip.

Our next speaker Dr. Kirill Filiminov, on April 18th will be wonderful. I heard him speak on Mt Tam last Summer and the work his team is doing in Antarctica is truly amazing. I hope to see you there!

Sue-Ellen Speight
President, 2011-2012
San Francisco Amateur Astronomers



San Francisco Amateur Astronomers

Upcoming Lectures and Lecturers

Randall Museum Theater . Randall Museum
199 Museum Way
San Francisco

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



May 16

MICHAEL KUHLEN

Theoretical Astrophysics Center Fellow
UC Berkeley

THE MILKY WAY AS A DARK MATTER LABORATORY

Presenting an overview of the nature of dark matter, touching upon astronomical observational evidence, theoretical ideas about its identity, and supercomputer simulations of its expected behavior in our own Galaxy.

June 20

ADAM MILLER

Graduate Student, UC Berkeley, Astronomy Department
Member, Palomar Transient Factory

THE VERY BRIGHTEST SUPERNOVAE: NATURE'S NEW MYSTERIOUS EXPLOSIONS DEFY CONVENTIONAL EXPLANATION

Presentation on methods used by astronomers to discover new supernovae and describe recent surveys, such as the Palomar Transient Factory, that have led to the discovery of thousands of new supernovae.

July 18

JOHN DILLON

THE HISTORY OF ASTRONOMY

August 15

To Be Announced

September 19

To Be Announced

October 17

RISA WECHSLER – Topic to be Announced

November 21

NO LECTURE (Thanksgiving)

December 19

To Be Announced

SFAA Annular Eclipse Roadtrip

May 2012



The SFAA is planning a roadtrip for the May 20, 2012 annular eclipse that will be visible across the western US. We are going to camp in Northern California at a location to be determined along the eclipse track.

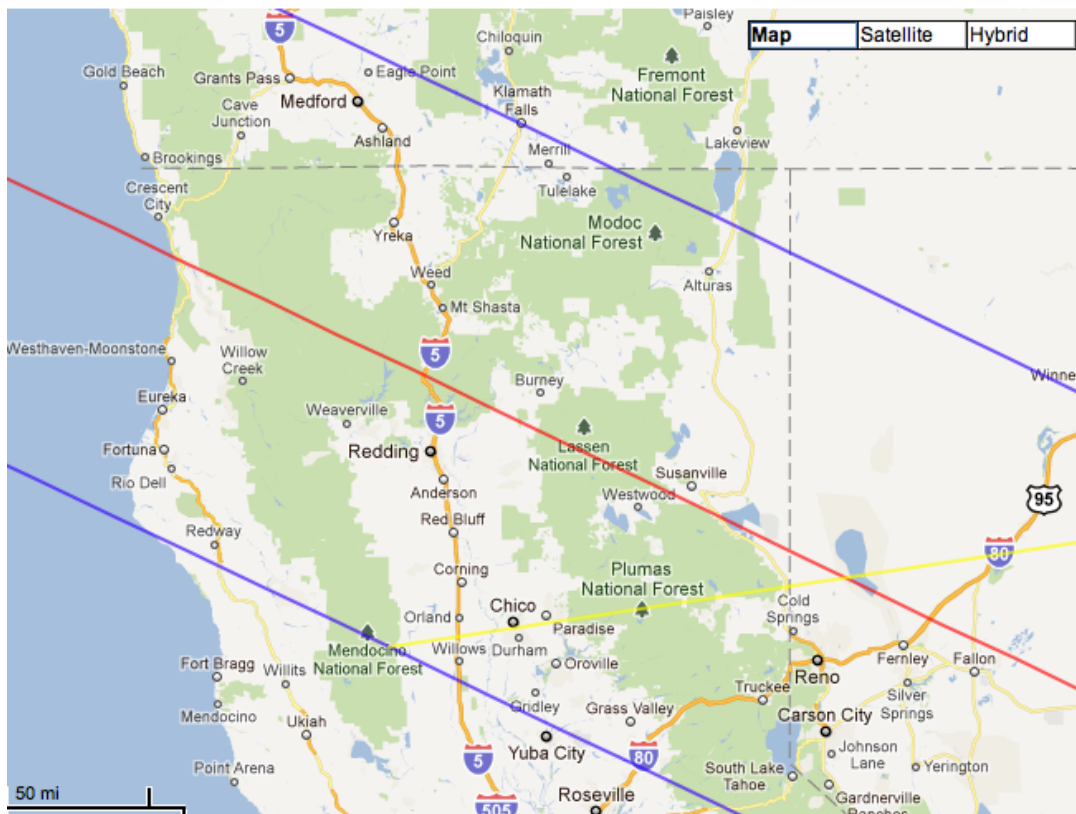
The eclipse takes place near sunset on Sunday 20th. We plan to spend Sunday at the campsite, enjoy the eclipse, and spend the evening having a celebratory star party and overnight camping event. We'll return to the Bay Area on Monday 21st.

If you'd like to join the roadtrip, or if you have questions or ideas, send an email to:

roadtrip@sfaa-astronomy.org

Hope to see you there!

Paul Salazar and Jessica Santascoy



**MT. TAMALPAIS STATE PARK
EXPLORE THE WONDERS OF THE UNIVERSE**

2012 ASTRONOMY PROGRAMS -- OUR 24TH SEASON ON THE MOUNTAIN

- Dr. Alex Filippenko, UC Berkeley Dept of Astronomy**
“The May 2012 Annular Solar Eclipse, the June 2012 Transit of Venus, and the Search for Transiting Exoplanets”
April 21
8:30pm
Be prepared to observe two exciting upcoming celestial events and learn their connection to the search for planets orbiting other stars.
- Kristina Wilmoth, NASA-Ames Research Center**
“Sustainability Base”
May 26
8:30pm
NASA is using lessons and innovations from space exploration to build the government’s greenest building on Earth. Sustainability Base will be an evolving exemplar for the future of buildings.
- Dr. Michael Kuhlen, UC Berkeley Theoretical Astrophysics Center**
“The Milky Way as a Dark Matter Laboratory”
June 23
8:30pm
Over the next decade, a combination of astronomical observations and particle physics experiments hold great promise to finally shed light on the nature of dark matter.
- Dr. David J. Des Marais, NASA-Ames Research Center**
“Astrobiology Investigates Life in the Context of Space”
July 21
8:30pm
How does life begin and evolve? Does life exist beyond Earth? What is our future, here and beyond? Research and space exploration effectively pursue these questions in inspiring ways.
- Ransom W. Stephens, Ph.D.**
“The Reality Interface”
August 18
8:30pm
Every emotion, memory, concept-however abstract or concrete, everything you know is derived from your five senses. Learn how the brain processes sensory data and affects your perceptions of reality.
- Dr. Seth Shostak, Senior Astronomer SETI Institute**
"What Happens if We Find ET?"
Sept 22
7:30pm
Searches for signals from intelligent extraterrestrials are getting better as technology improves. So a signal might be discovered in your lifetime. But then what? Would you be told, and would it be dangerous?
- Dr. Chris McKay NASA-Ames Research Center**
"MSL and the search for organics on Mars”
Oct 20
7:00pm
NASA’s Mars Science Laboratory will arrive on the red planet in August. How can the mission’s rover, Curiosity, with unprecedented research tools to study the early environmental history of Mars, contribute to the search for evidence of life on Mars

Immediately following each month's lecture, the audience is invited to remain in the Mountain Theater for a brief Night Sky Tour by the [Urban Astronomer](#), highlighting the prominent constellations, stars and planets visible in the night time sky, before enjoying the observing session (star party) conducted by the San Francisco Amateur Astronomers in the Rock Springs parking lot.



Astronomical Society of the Pacific

Advancing science literacy through astronomy



Project ASTRO: Astronomers and Educators as Partners for Learning

Project ASTRO™ is a national program that improves the teaching of astronomy and physical science by linking professional and amateur astronomers with local educators. Each astronomer is matched with an educator in a one-on-one partnership and commits to visiting the educator's students at least four times during the school year. Over 500 active educator-astronomer partnerships currently bring the excitement of scientific discovery through astronomy to over 20,000 students annually.

GIVE A CLASS THE UNIVERSE: VOLUNTEER FOR PROJECT ASTRO

Project ASTRO is looking for amateur and professional astronomers to work with teachers and students in 3rd - 9th grade classrooms. This is a great opportunity to share your love of astronomy with a receptive audience and help kids learn about science.

Bay Area Project ASTRO, part of a national program at the Astronomical Society of the Pacific, pairs you with a local teacher at a school convenient for you. Together, you and your teacher partner attend a 2-day summer workshop to learn hands-on, inquiry-based astronomy activities and then you "adopt" a class for a year.

Astronomer and teacher partners will receive "The Universe at Your Fingertips 2.0" -- a rich curriculum resource on DVD-ROM featuring a host of materials on teaching astronomy that you can use in many settings.

Astronomer applications are now being accepted for the 2012 - 2013 school year. There is no cost, but space is limited. All participants are required to attend a 2-day workshop held July 27 & 28th, 2012, at the San Mateo County Office of Education in Redwood City.

APPLY ONLINE by MAY 29th:

<http://www.astrosociety.org/education/astro/bayarea/volunteer.html>

MORE INFORMATION:

<http://www.astrosociety.org/baprojectastro.html>

Project ASTRO emphasizes ongoing partnerships that foster a nurturing environment for students to learn. To accomplish this, astronomers make at least four visits to their adopted classroom at mutually convenient times.

Project ASTRO has been operating since 1993 in the Bay Area. Previous participants often report that it is one of the most satisfying volunteer endeavors they have undertaken.

Graduate students and advanced undergraduate students majoring in astronomy are also encouraged to apply.

If you have questions, please contact Brian Kruse, Project ASTRO Coordinator
Email: bayareaastro@astrosociety.org

NIGHT SKY NETWORK
APRIL 2012 - THE EVENING SKY
 April Sky Map: <http://skymaps.com/skymaps/tesmn1204.pdf>
 April Sky Calendar: <http://skymaps.com/articles/n1204.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>

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| <p>Wednesday, April 11 12:00pm</p> <p>SETI Institute Colloquium Series 189 Bernardo Avenue Mountain View CA 94043</p> | <p>ADVANCES IN FAST BURNING FUELS AND HIGH PERFORMANCE HYBRID ROCKET PROPULSION BRIAN CANTWELL, School of Engineering, Stanford University</p> <p>The hybrid rocket concept has been around for more than seventy-five years. The idea is to store the oxidizer as a liquid and the fuel as a solid producing a design that is immune to large-scale chemical explosion. The fuel is contained within the combustion chamber in the form of a cylinder with one or more channels called ports hollowed out along its axis. Combustion takes place between vaporized oxidizer flowing through the ports and fuel evaporating from the solid surface.</p> <p>While the hybrid rocket enjoys many safety and environmental advantages over conventional systems, large hybrid rockets have not been commercially viable. The reason is that traditional systems use polymeric fuels that evaporate too slowly making it difficult to produce the high thrust needed for most applications. To compensate, the surface area for burning must be increased, and as the size of a hybrid rocket increases the number of required ports also increases leading to poor volumetric loading and poor fuel structural characteristics.</p> <p>Recent research at Stanford University has led to the development of a class of paraffin-based fuels that burn at surface regression rates that are several times that of conventional polymeric fuels. These new fuels form a thin, hydro-dynamically unstable liquid layer on the melting surface of the fuel grain. Entrainment of droplets from the liquid-gas interface can substantially increase the rate of fuel mass transfer leading to much higher surface regression rates than can be achieved with conventional polymeric fuels. This permits the design of a high volumetric loading single-port hybrid rocket system with a density impulse comparable to a conventional hydrocarbon fueled liquid rocket propulsion system. Since the start of this work more than 800 tests have been carried out using a variety of oxidizers including LOx, GOx and Nitrous Oxide.</p> <p>Dr. Cantwell will show the analysis and performance of these fast burning systems along with comparisons with conventional solid and liquid systems.</p> |
| <p>Thursday, April 12 12:00 PM - 1:00 PM</p> <p>Stanford University James H. Clark Center Auditorium Stanford, CA 94305</p> | <p>COMMUNICATING SCIENCE TO NONSCIENTISTS JEAN-LUC DOUMONT, Louvain School of Engineering</p> <p>Researchers seldom earn a reputation as great communicators to lay audiences. On the contrary, they are often seen as living in their own world, fascinating yet impenetrable. In this presentation, Dr Jean-luc Doumont will advance explanations for this situation, discuss the challenges of communicating science to nonscientists, and propose strategies for doing a better job of it.</p> |
| <p>Thursday, April 12, 2012 12:00 PM</p> <p>Chabot Space and Science Center 10000 Skyline Blvd Oakland, CA 94619</p> | <p>YURI'S DAY</p> <p>On April 12, 1961, Soviet Cosmonaut Yuri Gagarin became the first human in space. Come celebrate the anniversary of this historic flight and find out if you have the right stuff to be an astronaut in our Astronaut Lab and Beyond Blast Off exhibit. Build a rocket and blast it into space or try to keep your heart rate down while being subjected to extreme pressure. Test your hand-eye-brain coordination with our black hole goggles and more.</p> |
| <p>Thursday, April 12 6:00 PM - 10:00 PM</p> <p>California Academy of Sciences 55 Music Concourse Dr. San Francisco, CA 94118</p> <p>Cost: \$12 General, \$10 Members</p> | <p>SPACE ODDITIES NIGHTLIFE</p> <p>In honor of the 51st anniversary of the first human in space, Yuri Gagarin, explore the dark and mysterious abyss of space with a cocktail in your hand. Meet researchers at UC Berkeley's Space Science Laboratory studying planetary magnetic fields, supernovas, and black holes that violently drive gas out of their galaxies. Unravel the mysteries of the Sun with hands-on activities at the Surfin' the Solar Wind booth. Ponder the past, present and future of space exploration during special showings of Dawn of the Space Age in the planetarium. Sound doesn't travel in space, and for the night, it won't travel in the piazza either—imagine yourself in the void during a silent disco from the folks at Silent Storm.</p> |

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| <p>Friday, April 13 8:45 PM - 11:45 PM</p> <p>San Jose Astronomical Association Houge Park Twilight Drive San Jose, CA 95124</p> | <p>HOUGE PARK STAR PARTY</p> <p>Meet with members of San Jose Astronomical Society for a Star Party, weather permitting.</p> |
| <p>Friday, April 13 7:30PM- PAS Mtg</p> <p>Room 5015 Foothill College Los Altos Hills, CA</p> <p>Parking Lot 5 Bring \$3 for a parking permit</p> | <p>"THE FASCINATING UNIVERSE OF VARIABLE STARS" DR. GORDON MYERS</p> <p>Historians debate whether the first confirmed variable star was Mira (a.k.a. Omicron Ceti, with observations recorded in 1596), or Algol (a.k.a. the Demon star, with observations recorded in 1667 - but which may have been known in antiquity). Since then, thousands of variable stars have been identified. Over the past century astrophysicists have begun to understand why these "stars" rapidly change brightness. Yesterday's "variable stars" are now realized to be a menagerie of strange celestial objects – including stars in birth throes, eclipsing binaries, stars in death agonies, and the bizarre world of cataclysmic variables.</p> <p>After briefly reviewing the intriguing history of mankind's discovery of variable stars, different causes of variability will be discussed with special focus on cataclysmic variables. The stars in these binary systems are so close their orbit would fit inside our Sun! They revolve around each other in a matter of hours; matter flowing between the stars creates a disk which can change in brightness by a factor of over a hundred in just a few minutes. Cataclysmic variables are one of the most studied areas in astronomy today. Amateurs are playing a key role in the measurement and analysis of these systems working through the AAVSO and the Center for Backyard Astrophysics. Opportunities to get personally involved will be discussed.</p> <p>Dr. Gordon Myers is a life-long astronomy enthusiast. He graduated from Caltech and worked with NASA on the Apollo and Space Shuttle Programs for which he received NASA's Public Service Medal. After retiring after a career with IBM, he became an "Earth and Space Explainer" at the American Museum of Natural History in New York. He completed a series of astrophysics courses at Columbia University, and is currently President-elect of the Astronomical Society of the Pacific. He is an active variable star observer using remote telescopes operated over the Internet.</p> |
| <p>Friday, April 13 7:00 PM</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. Contact us for more specific details:</p> <p>Contact: E-mail Richard Ozer (rozer@pacbell.net) or (510) 406-1914</p> |
| <p>Friday, April 13 Saturday, April 14</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</p> <p>For more information: http://www.chabot.space.org/</p> <p>Free Telescope Viewing Regular hours are every Friday & Saturday evening, weather permitting: 7:30pm - 10:30pm Come for spectacular night sky viewing the best kept secret in the Bay Area and see the magnificence of our telescopes in action! Daytime Telescope Viewing On Saturday and Sunday afternoons come view the sun, moon, or Venus through Chabot's telescopes. Free with General Admission. (weather permitting)</p> <p>12pm - 5pm: Observatories Open</p> |
| <p>Friday, April 13 9:00 PM</p> <p>Foothill Observatory Foothill Community College 12345 Moody Rd. 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 computer-controlled 16-inch Schmidt-Cass grain 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> |

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| <p>Saturday, April 14 10:00 AM – 12PM IF IT IS CLEAR</p> <p>Foothill College Observatory Foothill Community College 12345 Moody Rd. Los Altos Hills, CA</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. 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>Saturday, April 14 7:00 PM - 11:30 PM</p> <p>Mt. Diablo State Park 96 Mitchell Canyon Road Clayton , CA 94517</p> | <p>Mt Diablo April 14 Astronomy Program</p> <p>This month's program is - "NEIGHBOR PLANETS." See Venus and Mars through telescopes and find out why Earth has life, but not Venus or Mars.</p> <p>See stars, nebula, galaxies, clusters, the moon and planets through member telescopes. Bring kids, binoculars, warm clothes (temperature can drop), snacks, water. No need for a flashlight but if you must bring one cover it in red plastic. Escorted exit several times during the evening through Northgate entrance.</p> <p>Astronomy program is weather dependent including high fire danger. Check our web site www.mdas.net, 925-695-3134 or call the park 925-837-2525. Although there is no fee for this program there is a \$10 park entrance fee. Plan to enter the park at least 45 minutes before the event.</p> |
| <p>Saturday, April 14 7:00 PM - 11:00 PM</p> <p>Mt. Diablo State Park Lower Summit Parking Lot Walnut Creek, CA 94598</p> | <p>NEIGHBOR PLANETS See our Solar System neighbors: Venus and Mars through telescopes tonight and find out why Earth has abundant life, but not Mars and Venus.</p> |
| <p>Saturday, April 14 Sunset - 7:43PM</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>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.</p> <p>Note that inclement weather (clouds, excessive wind and showers) will cause the event to be canceled without notice.</p> <p>For more information call Bob Black, (650)592-2166, or send an email to SMCAS@live.com or call Ed Pieret at (650)862-9602.</p> <p>Reasons to Attend If you have kids interested in space or planets bring them here for a real life view of planets, nebula, star clusters and galaxies. If you are thinking of buying a telescope or want help using a telescope you own, come here to talk with experienced users. If you think you might have an interest in astronomy come and talk to experienced amateur astronomers.</p> <p>Cautions Dress warmly and wear a hat. Visitors should park on the street and walk into the park so your headlights don't affect the observer's dark adaptation. Only park in the parking lot if you are arriving before dark and plan to stay until the end of the event. You shouldn't need lights but if you feel you do, only bring a small flashlight with the lens covered using red cellophane or red balloon. Please respect the telescopes and ask permission from the owner if you wish to touch. Parents, please watch your children. The park is residential, and adjacent to homes and backyards, please keep noise to a minimum. 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>Wednesday, April 18 7:00pm NOTE THE LATER TIME</p> <p>SETI Institute Colloquium Series 189 Bernardo Ave Mountain View, CA 94043</p> | <p>THE SEARCH FOR NEW PARTICLES AT THE CERN LARGE HADRON COLLIDER MICHAEL PESKIN, Stanford Linear Accelerator Center</p> <p>The Large Hadron Collider at CERN in Geneva, Switzerland, has begun its study of physics at distances 10,000 times smaller than an atomic nucleus. This accelerator and its experiments are enormous in many respects---in the physical size of the facilities, in the sizes of the experimental teams, but also in the stakes for our understanding of elementary particles, mass, and the universe.</p> <p>In this colloquium, Dr. Peskin will describe the physics questions that motivate the LHC experiments, the detectors that are designed to meet these goals, and the challenges that the experiments must overcome.</p> <p>Dr. Peskin will show some of the first results from the LHC, including the status of the search for the much-anticipated Higgs boson.</p> |

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| <p>Wednesday, April 18</p> <p>San Francisco Amateur Astronomers mtg. 7:00 PM</p> <p>Randall Museum 199 Museum Way San Francisco, CA 94114</p> | <p>SAN FRANCISCO AMATEUR ASTRONOMERS GENERAL MEETING AND LECTURE</p> <p>EXTREME ASTRONOMY: EYEING THE COSMOS THROUGH ONE CUBIC KILOMETER OF ICE KIRILL FILIMINOV</p> <p>Cost: Free</p> |
| <p>Thursday, April 19 4:15 PM - 5:45 PM</p> <p>Lockheed Martin Colloquia 3251 Hanover St ATC Auditorium - Building 202 Palo Alto CA 94304</p> | <p>A 21ST-CENTURY VIEW OF THE UNIVERSE: DARK MATTER AND DARK ENERGY DR. PATRICIA BURCHAT, STANFORD</p> <p>Cost: Free</p> |
| <p>Friday, April 20 6:00 PM - 7:30 PM</p> <p>Chabot Space and Science Center 10000 Skyline Boulevard Oakland, CA 94619-2450</p> <p>Tickets: \$20 Members / \$23 Guests (\$29 at the door, no discounts & subject to availability) Check Chabot web site to purchase tickets</p> | <p>BEN BURTT - SOUND DIRECTOR, DESIGNER & ENGINEER LUCASFILMS/PIXAR</p> <p>"FROM THE DEATHSTAR TO WALL-E AND BEYOND!"</p> <p>Ever wonder who created the voice for R2D2, Wall-E, or Darth Vader's heavy breathing? Join us for a rousing evening of dynamic conversation about the science of noise and sound effects from the one and only Ben Burtt, Sound Designer and Director, Lucasfilm/Pixar.</p> <p>Ben has won four Academy Awards for Sound Effects in such films as E.T., Indiana Jones and the Last Crusade, Raiders of the Lost Ark, and Star Wars Episode IV: A New Hope, for which he created the sound of the light sabers by mixing the humming sound of his TV set - tuned between channels - with the sound of an old 35mm projector. Ben was a physics major and has enjoyed an illustrious career in the motion picture industry for over 30 years. "Sound Effects in the movies are there to create an illusion," says Burtt, "But behind all this sonic "make-believe", I exploit scientific principles to create special noises."</p> |
| <p>Fri. 4/20 7:00 PM</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. Contact us for more specific details:</p> <p>Contact: E-mail Richard Ozer (rozer@pacbell.net) or (510) 406-1914</p> |
| <p>Friday, April 20 Saturday, April 21</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! 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, April 20 9:00 PM</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 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> |

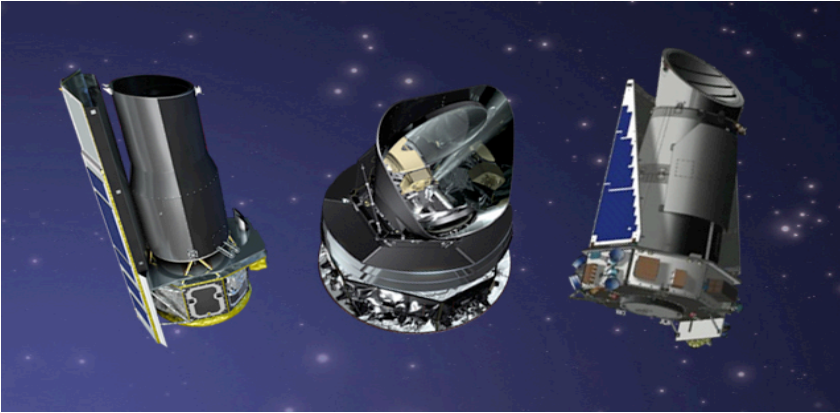
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| <p>Saturday, April 21 10:00 AM – 12:00 Noon IF IT IS CLEAR</p> <p>Foothill College Observatory Foothill Community College 12345 Moody Rd. Los Altos Hills, CA</p> | <p>Solar observing with a Hydrogen alpha solar telescope every clear Saturday morning. This allows spectacular views of solar prominences and unusual surface features on the Sun not otherwise visible with regular white light telescopes. 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>Saturday, April 21 7:30 PM</p> <p>East Bay Astronomical Society Chabot Space & Science Center Hauben Resource Center Dellums Bldg 10000 Skyline Boulevard Oakland CA 94619</p> <p>Cost: Free</p> | <p>EXTRA-SOLAR PLANETS AND THE KEPLER MISSION HOWARD ISSACSON</p> |
| <p>Saturday, April 21 Sunset: 7:49pm</p> <p>San Mateo County Astronomical Society Star Party</p> <p>Star Parties At Crestview Park, San Carlos</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.</p> <p>Note that inclement weather (clouds, excessive wind and showers) will cause the event to be canceled without notice.</p> <p>For more information call Bob Black, (650)592-2166, or send an email to SMCAS@live.com or call Ed Pieret at (650)862-9602.</p> <p>Reasons to Attend If you have kids interested in space or planets bring them here for a real life view of planets, nebula, star clusters and galaxies. If you are thinking of buying a telescope or want help using a telescope you own, come here to talk with experienced users. If you think you might have an interest in astronomy come and talk to experienced amateur astronomers.</p> <p>Cautions Dress warmly and wear a hat. Visitors should park on the street and walk into the park so your headlights don't affect the observer's dark adaptation. Only park in the parking lot if you are arriving before dark and plan to stay until the end of the event. You shouldn't need lights but if you feel you do, only bring a small flashlight with the lens covered using red cellophane or red balloon. Please respect the telescopes and ask permission from the owner if you wish to touch. Parents, please watch your children. The park is residential, and adjacent to homes and backyards, please keep noise to a minimum. Schedule Time Astronomers arrive to set up at around sunset. Observing starts at about one hour after sunset and continues for two to three hours.</p> |

NASA SCIENCE CAST

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

<http://science.nasa.gov/science-news/>

NASA Extends Kepler, Spitzer, Planck Missions



From left to right, artist's concepts of the Spitzer, Planck and Kepler space telescopes. NASA extended Spitzer and Kepler for two additional years; and the U.S. portion of Planck, a European Space Agency mission, for one year. The relative sizes of the artist's concepts are not to scale. Image credit: NASA/JPL-Caltech

[> Larger image](#)

April 05, 2012

PASADENA, Calif. -- NASA is extending three missions affiliated with the Jet Propulsion Laboratory in Pasadena, Calif. -- Kepler, the Spitzer Space Telescope and the U.S. portion of the European

Space Agency's Planck mission -- as a result of the 2012 Senior Review of Astrophysics Missions.

The 2012 NASA Senior Review report, which includes these three missions and six others also being extended, is available at: <http://science.nasa.gov/astrophysics/2012-senior-review/>

"This means scientists can continue using the three spacecraft to study everything from the birth of the universe with Planck, and galaxies, stars, planets, comets and asteroids with Spitzer, while Kepler is determining what percentage of sun-like stars host potentially habitable Earth-like planets," said Michael Werner, the chief scientist for astronomy and physics at JPL.

Kepler has been approved for extension through fiscal year 2016, which ends Sept. 30, 2016. All fiscal year 2015 and 2016 decisions are for planning purposes and will be revisited in the 2014 Senior Review. The extension provides four additional years to find Earth-size planets in the habitable zone -- the region in a planetary system where liquid water could exist on the surface of the orbiting planet -- around sun-like stars in our galaxy.

Spitzer, launched in 2003, continues to provide the astronomical community with its unique infrared images. It has continued to explore the cosmos since running out of coolant, as expected, in 2009. Among its many duties during its warm mission, the observatory is probing the atmospheres of planets beyond our sun and investigating the glow of some of the most distant galaxies known. As requested by the project, Spitzer received two additional years of operations. Like other NASA missions, the Spitzer team will be able to apply for a further extension in 2014.

NASA will fund one additional year of U.S. participation in the European Space Agency's Planck mission, for the U.S. Planck data center and for operations of Planck's Low Frequency Instrument. Planck, launched in 2009, is gathering data from the very early universe, shortly after its explosive birth in a big bang. Planck's observations are yielding insight into the origin, evolution and fate of our universe. The U.S. Planck team will apply for additional funding after a third data release has been approved by the European consortiums.

Ames Research Center, Moffett Field, Calif., manages Kepler's ground system development, mission operations and science data analysis. JPL managed the Kepler mission's development. Ball Aerospace & Technologies Corp. in Boulder, Colo., 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 is funded by NASA's Science Mission Directorate at the agency's headquarters in Washington. For more information about the Kepler mission, visit: <http://www.nasa.gov/kepler> and <http://kepler.nasa.gov>.

JPL manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate, Washington. Science operations are conducted at the Spitzer Science Center at the California Institute of Technology in Pasadena. Data are archived at the Infrared Science Archive housed at the Infrared Processing and Analysis Center at Caltech. For more information about Spitzer, visit: <http://spitzer.caltech.edu> and <http://www.nasa.gov/spitzer>.

Planck is a European Space Agency mission, with significant participation from NASA. NASA's Planck Project Office is based at JPL. JPL contributed mission-enabling technology for both of Planck's science instruments. European, Canadian and U.S. Planck scientists will work together to analyze the Planck data. More information is online at: <http://www.nasa.gov/planck> and <http://www.esa.int/planck>

The California Institute of Technology in Pasadena, Calif., manages JPL for NASA.

Whitney Clavin 818-354-4673, Jet Propulsion Laboratory, Pasadena, Calif., whitney.clavin@jpl.nasa.gov 2012-097

Venus Invades the Pleiades

April 2, 2012: Watch out Seven Sisters, Venus is coming.

This week the second planet from the sun will pass directly in front of the Pleiades star cluster. It's a rare sunset conjunction that's easy to find with the unaided eye, but best seen through binoculars or a small telescope.

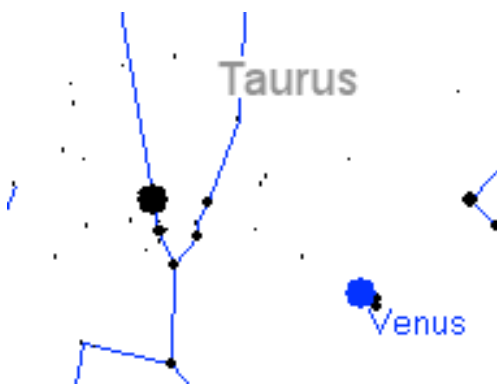
The action begins on Monday evening, April 2nd, when Venus enters the outskirts of the little dipper-shaped asterism. Look west at sunset for Venus--it's the brightest thing around--then scan the area using binoculars. The conjunction will be immediately clear.



Venus approaching the Pleiades on March 31st, photographed by astronomy professor Jimmy Westlake of Stagecoach, Colorado.

The best evening to look is Tuesday, April 3rd, when the brilliant planet glides just south of the dipper's bowl. Venus exits by the handle on Wednesday, April 4th. Venus passes through the Pleiades in this way about once every 8 years.

To say this is a mixture of dissimilar things would be an understatement.



[Click to view](#) a sky map of the conjunction.

The Pleiades are elusive. You rarely find them on purpose. They're best seen out of the corner of your eye, a pretty little surprise that pops out of the night sky when you're staring elsewhere.

Venus is just the opposite. Dazzling, bright enough to cast faint shadows, it beams down from the heavens and grabs you when you're not even looking.

The Pleiades, also known as the "Seven Sisters," are a cluster of young stars. They formed barely 100 million years ago during the age of dinosaurs on Earth from a collapsing cloud of interstellar gas. The biggest and brightest members are blue-

white and about five times wider than our own sun.

Because of their distance, about 400 light years away, the Pleiades are near the limit of naked-eye visibility. When Venus joins them in conjunction, it will look like a supernova has gone off inside the cluster. Venus's thick clouds reflect so much sunlight, the planet outshines every thing in the night sky except the Moon. Strangely, though, the Pleiades do not look puny in comparison, just delicately beautiful.

Look west just after sunset, and see for yourself.

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

2010 CLUB OFFICERS & CONTACTS

| | | |
|--|--|----------------------------------|
| <i>President</i> | SUE-ELLEN SPEIGHT | sfaapresident@sfaa-astronomy.org |
| <i>Vice President</i> | Joe Heavey | vicepresident@sfaa-astronomy.org |
| <i>Secretary</i> | Douglas Smith | |
| <i>Treasurer</i> | Angie Traeger | treasurer1@sfaa-astronomy.org |
| <i>Speaker Chair</i> | Linda Mahan | speakerchair@sfaa-astronomy.org |
| <i>City Star Party</i> | | |
| <i>Bulletin Editor</i> | Annette Gabrielli | editor@sfaa-astronomy.org |
| <i>Telescope Loans</i> | Anhil Chopra | telescopes@sfaa-astronomy.org |
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| <i>Webmaster</i> | Matthew Jones | |

CLUB TELESCOPES

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

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

CLUB ASTRONOMY VIDEOS

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

<http://www.teach12.com/ftc/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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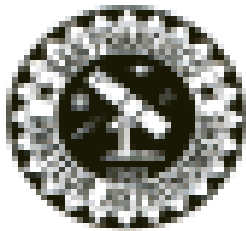
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Information: Name(s) _____
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State _____
Home Phone _____
E-Mail _____
Zip _____

Membership Categories (Check one): _____
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\$25 Individual _____
\$30 Family _____
\$40 Institutional _____
\$75 Supporting _____
Members pay one half the amount listed below
Membership is billed for each upcoming year on June 30. Between January 1 and June 30, new

MEMBERSHIP APPLICATION

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



Information Hotline: (415) 289-6636

Web Page: www.sfaa-astronomy.org

Sharing the Wonders of the Universe

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