ABOVE THE FOG
• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 58, No. 5 – May 2010

Wednesday, May 19, 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)

Dr. Nathan Smith
UC Berkeley Astronomy Department

Massive Stars and Their Temper Tantrums

This talk discusses the properties of the most massive stars known, born with masses of 30 to 150 times the mass of our Sun. Massive stars dominate many of the physical processes in interstellar space when they explode as brilliant supernovae, but these stars also wreak havoc on their surroundings before they die, leading short lives that are very different from that of the Sun. Early on, their ultraviolet radiation and fast winds carve huge cavities in the dark clouds that gave birth to them, disrupting the cradles where many other less massive stars are quietly trying to begin their lives. Such regions are likely to be the birthplace of solar systems like our own. Later on, as these monster stars become violently unstable, they can erupt repeatedly like volcanoes or undergo violent encounters with companion stars before they finally meet their end in a supernova explosion, ending up as either a compact neutron star or black hole.

Nathan Smith is a researcher in astronomy at UC Berkeley, where he works on the life and death of massive and violently unstable stars such as Eta Carina. He earned Bachelor's degrees in music and astronomy from the u. of Minnesota, received a Master's in astronomy from Boston University, and came back to Minnesota to finish a PhD in astronomy in 2002. He was then a NASA Hubble Fellow at the University of Colorado in Boulder, before moving to Berkeley. Outside of astronomy, he is passionate about skateboarding, art, and music, with a particular interest in playing free jazz, experimental improvised music, and Indian classical music. He is also responsible for producing some of the most dramatic images taken with the Hubble Space Telescope and the Spitzer Space Telescope, including images of the Carina Nebula, which is a violent home for very massive stars.

PRESIDENT'S MESSAGE

OK, the telescope class at the Randall is going well, started out with 10 students, one guy started a 16 incher, had his first child and disappeared, 5 are keeping up and the other 4 are MIA. We star tested two of the scopes and they are good to go! Look out for the new scopes at an upcoming Mt Tam event.

We had a really great Land's End star party last month, 10 or so scopes and about 50 members of the public. Looked at Saturn, Venus, the moon (oh, how I love the moon) and a couple of galaxies – Great time.

Super massive Stars
Super massive black holes
Super massive Galaxies
Super , Super, SUPER!
1,300,000,000 light years
I so do love big numbers and Astronomy

May 22 8:30pm Mt Tamalpias Public Star Party –
SFAA Board member John Dillon will be giving the following talk:

GALILEO, TELESCOPES AND THE BEGINNING OF MODERN SCIENCE

Review of the history of science and an exploration of the subtle, complex relationship between Galileo, telescopes, Science and the Church.

May 22nd and May 23rd SFAA will be at the Makers Faire at the San Mateo County Event Center

And as always, telescope on the roof at the California Academy of sciences on Thursday nights.

Lastly, Yosemite is filling up fast so if you are interested in going go to the SFAA website and sign up – the dates are Friday August 20th and Saturday August 21st. We get free camping at Bridal Veil Campground so don't miss out.

Have a great month, and get out that telescope!

Dave

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.

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

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

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

May 22/8:00	August 21/7:30	November 13/5:00
June 5/8:30	September 18/7:30	December 11/5:00
July 13/8:30 Tue	October 16/6:30	

TELESCOPE CLINIC ONE HOUR BEFORE SUNSET

NOTE: While City Star Parties WILL ALWAYS be held on Saturdays, 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).

May 15	August 7	November 6
June 12	September 4	December 4
July 10	October 2	

MT TAM PUBLIC STAR PARTIES – TO BE ANNOUNCED

MAY THROUGH OCTOBER ANNUALLY

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 Lecture Series, 2010

Free & Open to the Public sfaa-astronomy.org

Randall Museum, 199 Museum Way, S.F.
7:30pm , Randall Museum Theater randallmuseum.org

May 19th
Nathan Smith, UC Berkeley
Dr. Smith will discuss the properties of the most massive stars known and the effects on their surroundings. He is responsible for producing some of the most dramatic images with the Hubble and Spitzer space telescopes, including the Carina Nebula.

June 16th
Mate Adamkovicks, UC Berkeley
This discussion will feature the results of the Cassini and ground based telescopes with data on Saturn and the complex moon, Titan, and its atmosphere.

July 21st
Jack Lissauer, NASA Ames
Dr Lissauer will discuss the Kepler Mission, launched March 2009 to search for habitable planets, and the most recent discoveries.

August 18th
Bryan Mendez, UC Berkeley
We will learn about the latest discoveries from NASA's WISE (Wide Field Infrared Survey Explorer) mission.

September 15th
Chris McKay, NASA Ames
"Hot and Cold Extreme Environments". This talk centers on astrobiologist Chris McKay's travels and his research to learn about possible life in our Solar System.

October 20th To be announced.

November 17th
Lynn Cominsky, NASA Fermi & Sonoma State Astrophysics Dept.
Dr. Cominsky has been analyzing data on high energy physics and neutron star binaries from X-ray satellites for over 25 years. She will share the most recent discoveries.

Dec. 15th
John Dillon, past president of San Francisco Amateur Astronomers
John will continue with another of his insightful talks on the history of science, especially as it relates to astronomical knowledge

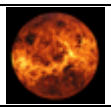
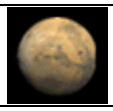
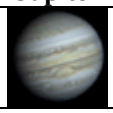
May 2010 Almanac for San Francisco (Pacific Daylight Time)

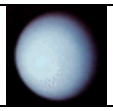
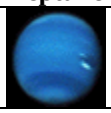
(Source: US Naval Observatory)

Sun and Moon Data:

Date	Astronomical Twilight Begins	Sunrise	Sunset	Astronomical Twilight Ends	Moon	Moonrise	Moonset
1 May	4:35 am	6:14 am	8:00 pm	9:39 pm		11:47 pm	8:23 am
8 May	4:25 am	6:06 am	8:07 pm	9:49 pm		3:02 am	5:11 pm
15 May	4:15 am	6:00 am	8:13 pm	9:58 pm		7:03 am	10:27 pm
22 May	4:07 am	5:55 am	8:19 pm	10:07 pm		3:01 pm	2:23 am
29 May	4:00 am	5:51 am	8:24 pm	10:15 pm		10:25 pm	7:07 am

Planetary Data:

	Mercury		**Venus**		**Mars**		**Jupiter**	
								
	Ari (1–8) / Psc (9–13) / Cet (14–21) / Ari (22–31)		Taurus (1–19) / Gemini (20–31)		Cancer (1–11) / Leo (12–31)		Aquarius (1–2) / Pisces (3–31)	
Date	**Rise**	**Set**	**Rise**	**Set**	**Rise**	**Set**	**Rise**	**Set**
1 May	6:02 am	7:31 pm	7:38 am	10:15 pm	12:30 pm	2:41 am	4:19 am	4:03 pm
8 May	5:33 am	6:45 pm	7:41 am	10:29 pm	12:18 pm	2:21 am	3:55 am	3:42 pm
15 May	5:12 am	6:17 pm	7:46 am	10:42 pm	12:07 pm	2:02 am	3:31 am	3:21 pm
22 May	4:56 am	6:08 pm	7:55 am	10:52 pm	11:56 am	1:43 am	3:07 am	2:59 pm
29 May	4:47 am	6:14 pm	8:05 am	11:00 pm	11:46 am	1:25 am	2:42 am	2:37 pm

	Saturn		**Uranus**		**Neptune**	
						
	Virgo		Pisces		Aquarius	
Date	**Rise**	**Set**	**Rise**	**Set**	**Rise**	**Set**
1 May	4:17 pm	4:43 am	4:30 am	4:28 pm	3:12 am	1:58 pm
8 May	3:48 pm	4:15 am	4:04 am	4:02 pm	2:45 am	1:31 pm
15 May	3:20 pm	3:47 am	3:37 am	3:56 pm	2:18 am	1:04 pm
22 May	2:52 pm	3:19 am	3:10 am	3:09 pm	1:50 am	12:36 pm
29 May	2:24 pm	2:51 am	2:43 am	2:43 pm	1:23 am	12:09 pm

May Phenomena:

6 May, 11:00 pm: Neptune 4.0° S of Moon
9 May, 5:00 am: Jupiter 5.9° S of Moon
9 May, 1:00 pm: Uranus 5.6° of Moon
10 May, 5:00 pm: Mercury stationary
16 May, 3:00 am: Venus 0.1° S of Moon
20 May, 1:00 am: Mars 4.8° N of Moon
24 May, 12:00 pm: Spica 3.0° N of Moon
27 May, 10:00 pm: Antares 1.8° S of Moon
31 May, 11:00 am: Saturn stationary
31 May, 6:00 pm: Neptune stationary

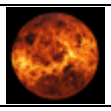
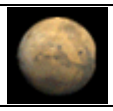
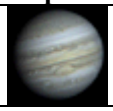
June 2010 Almanac for San Francisco (Pacific Daylight Time)

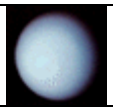
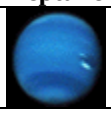
(Source: US Naval Observatory)

Sun and Moon Data:

Date	Astronomical Twilight Begins	Sunrise	Sunset	Astronomical Twilight Ends	Moon	Moonrise	Moonset
5 Jun	3:55 am	5:48 am	8:29 pm	10:22 pm		1:28 am	1:57 pm
12 Jun	3:53 am	5:47 am	8:32 pm	10:27 pm		5:49 am	9:12 pm
19 Jun	3:53 am	5:48 am	8:35 pm	10:30 pm		2:02 pm	1:26 am next day
26 Jun	3:55 am	5:40 am	8:36 pm	10:30 pm		9:03 pm	5:55 am

Planetary Data:

	Mercury		**Venus**		**Mars**		**Jupiter**	
								
	Ari (1–4) / Tau (5–24) / Gem (25–30)		Gem (1–11) / Can (12–28) / Leo (29–30)		Leo		Pisces	
Date	**Rise**	**Set**	**Rise**	**Set**	**Rise**	**Set**	**Rise**	**Set**
5 Jun	4:44 am	6:34 pm	8:17 am	11:05 pm	11:37 am	1:06 am	2:17 am	2:14 pm
12 Jun	4:49 am	7:05 pm	8:30 am	11:07 pm	11:28 am	0:48 am	1:52 am	1:51 pm
19 Jun	5:06 am	7:47 pm	8:44 am	11:06 pm	11:19 am	0:29 am	1:26 am	1:27 pm
26 Jun	5:37 am	8:31 pm	8:58 am	11:03 pm	11:11 am	0:11 am	1:01 am	1:03 pm

	Saturn		**Uranus**		**Neptune**	
						
	Virgo		Pisces		Aquarius	
Date	**Rise**	**Set**	**Rise**	**Set**	**Rise**	**Set**
5 Jun	1:57 pm	2:23 am	2:16 am	2:16 pm	0:55 am	11:41 am
12 Jun	1:30 pm	1:56 am	1:49 am	1:49 pm	0:28 am	11:14 am
19 Jun	1:03 pm	1:29 am	1:22 am	1:22 pm	0:00 am 11:56 pm	10:46 am
26 Jun	12:37 pm	1:02 am	0:54 am	12:55 pm	11:28 pm	10:18 am

June Phenomena:

3 Jun, 7:00 am: Neptune 4.2° S of Moon
5 Jun, 11:00 pm: Uranus 5.8° S of Moon
6 Jun, 9:00 pm: Mars 0.8° N of Regulus
8 Jun, 5:00 am: Jupiter 0.4° S of Uranus
8 Jun, 10:00 am: Venus 4.7° S of Pollux
10 Jun, 5:00 pm: Mercury 5.2° S of Moon
14 Jun, 10:00 pm: Venus 3.7° N of Moon
15 Jun, 10:00 am: Mercury 4.5° N of Aldebaran
16 Jun, 10:00 pm: Regulus 4.3° N of Moon
17 Jun, 7:00 am: Mars 5.3° N of Moon
20 Jun, 6:00 pm: Spica 3.1° N of Moon
21 Jun, 4:28 am: Summer solstice
24 Jun, 5:00 am: Antares 1.8° S of Moon
25 Jun, 11:00 am: Pluto at opposition
26 Jun, 3:00 am: Pluto at 5.8° N of Moon
26 Jun, 4:38 am: Partial lunar eclipse, South Pacific
28 Jun, 5:00 am: Mercury at superior conjunction
30 Jun, 3:00 pm: Neptune 4.3° S of Moon

2010 GENERAL MEETING SNACKS SIGN-UP LIST

San Francisco Amateur Astronomers list for volunteers to bring snacks before the lectures at the Randall Museum. Plan to arrive to set up by 7:00pm.

Plan to bring "munchie" snacks and soft drinks.
The Randall supplies a coffee pot to make hot water, instant coffee & tea bags, and paper supplies.
You may be reimbursed, or donate your items to SFAA, with thanks.

Date Name email phone #

April 21_____

May 19_____

June 16_____

July 21_____

August 18_____

September 15_____

October 20_____

November 17_____

December15_____

You will be contacted to confirm the month you've volunteered to bring snacks.

Thank you.

JANE'S MONTHLY PODCAST - JANE HOUSTON JONES

Last August, I sat in a huge tent in the middle of an Ontario (Canada) field waiting to give my talk at the annual Starfest star party. The speaker before me was playing a drum, and singing and telling star stores. The drummer was Wilfred Buck, a Cree First Nation Elder and Science Educator with the Manitoba First Nation Education Resource Center.

Wilfred travels the length and breadth of the Canadian province of Manitoba presenting starlab planetarium shows to nearly 60 First Nation schools with 17,000 students. While he drummed, he sang songs and told star and constellation stories he gathered first-hand from Cree First Nation Elders. When it was dark, he took us out into the field and pointed out the constellations while he told even more star tales. :-)

I was literally star-struck with his presentation and stargazing stories, and asked him for a copy of it. Over the months, we became friends, and I asked him if I could write up some of the stories and share them with others. He said yes, and then invited me to the annual First Nation Science Fair in late March (it was awesome!!). Here is how I presented his stories on my blog last year. http://is.gd/b8Lps

Recently, I asked him if I could do one of my monthly NASA podcasts about the Cree Constellation stories he shared at the August star party and he said yes and he even reviewed my script. :-) So with the rich Cree constellation paintings as a base, Wilfred's stories as the glue, I added some ancient star charts and constellation stories from other cultures to make May's What's Up podcast. And here it is:

The SSE (Solar System Exploration) web version has related links - stories of the Night sky, including one video of Wilfred telling a big bear tale, so click through the links. http://solarsystem.nasa.gov/news/whatsup-view.cfm?WUID=364

Youtube might be easier for some: http://www.youtube.com/profile?user=JPLnews#g/u
iTunes: http://itunes.apple.com/us/podcast/nasacast-whats-up-video-podcasts/id252873 558

Please share with story lovers you know. :-)

Over and Out! Jane

-- Jane Houston Jones
Monrovia, CA
Blog: http://jane.whiteoaks.com/
My What's Up podcast for May 2010: http://solarsystem.nasa.gov/news/whatsup.cfm
Twitter: http://twitter.com/jhjones http://twitter.com/CassiniSaturn

GIVE A CHILD THE UNIVERSE:
SHARE YOUR ENTHUSIASM FOR ASTRONOMY WITH A CLASSROOM NEAR YOU

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 an enthusiastic 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 first attend a 2-day summer workshop to learn hands-on, inquiry-based astronomy activities designed to involve students in the excitement of scientific discovery.

Astronomer and teacher partners receive "The Universe at Your Fingertips," a rich curriculum resource, as well as access to books, videos, and telescopes from our lending library. Throughout the year, partners are invited to attend follow-up workshops.

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.

Astronomer applications are now being accepted for the 2010 - 2011 school year. The deadline is Friday, June 11th and space is limited. All participants are required to attend a 2-day workshop held August 6 & 7, 2010, at the San Mateo County Office of Education in Redwood City.

APPLY ONLINE by JUNE 11th:
http://www.astrosociety.org/education/astro/bayarea/volunteer.html

MORE INFORMATION:
http://www.astrosociety.org/baprojectastro.html

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

Project ASTRO, a program of the nonprofit Astronomical Society of the Pacific, began with support from the National Science Foundation and the NASA Office of Space Science. Currently, over 500 active educator-astronomer partnerships bring the excitement of scientific discovery through astronomy to over 20,000 students annually.

==========

Andrew Fraknoi, Chair, Astronomy Program
Foothill College, 12345 El Monte Rd.,
Los Altos Hills, CA 94022, USA

E-mail: fraknoiandrew@fhda.edu

==========

Lick Observatory Summer Programs

Tickets Available beginning Tuesday May 18th

Summer Visitors Program

Each summer, Lick Observatory hosts a Summer Visitors Program (SVP) where the public is invited to observe through both the **36-inch Great Lick Refractor** and **Nickel 40-inch Reflecting Telescope**. Each evening also features two speakers, who present programs even if clouds or fog prohibit viewing.

Lick astronomers present multimedia lectures on their research or topics of current interest. A "History of Lick Observatory" talk is also presented. Amateur astronomer volunteers provide additional outside viewing and informal talks.

The first talk begins at sunset. Observing begins when it gets dark and continues until everyone has had the opportunity to view through both telescopes. Because of the late hours and the need for reasonable public behavior, attendance is not advisable for most children under 8 years old.

Ticket Info at: **http://www.ucolick.org/public/sumvispro.html**

Music of the Spheres Concert Series

Lick Observatory presents a variety of performers in a summer concert series to benefit the Lick Observatory Visitors Programs. Doors open and seating begins one half hour before the concert.

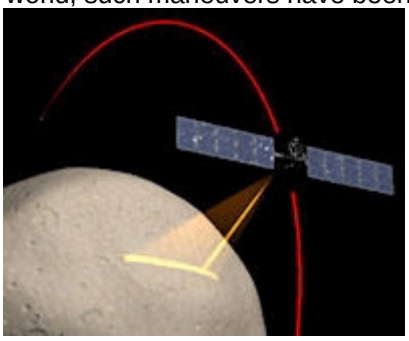
Talks by our famous research astronomers begin right after the music. Viewing through both the **36-inch Great Lick Refractor** and the **Nickel 40-inch Reflecting Telescope** follows, weather permitting. Amateur astronomer volunteers provide additional outside viewing and informal talks. Attendance not advisable for children under ten years old.

Only 160 seats are available each night. Concerts sell out quickly and ticket requests are filled in the order received.

Ticket and Performance Info at: **http://www.ucolick.org/public/music.html**

SCIENCE @ NASA - HOW CAPT. KIRK CHANGED THE WORLD

May 4, 2010: "Standard orbit, Mr. Sulu." Captain Kirk barks out the order with such confidence. He knows the USS Enterprise can slip in and out of planetary orbits with ease. But it's only easy in the realm of science fiction. In the real world, such maneuvers have been impossible --until now.



An artist's concept of Dawn in "standard orbit" around asteroid Vesta. [larger image]

Enter Dawn, NASA's cutting edge mission to the asteroid belt.
Powered with a futuristic sounding new technology called "ion propulsion," this spacecraft will perform space moves rivaling those of the Enterprise.
At this very moment, Dawn is slowly climbing away from the sun, beyond Mars, on its way to its first destination, asteroid Vesta. Dawn will enter "standard orbit" around this rocky world for a year, exploring its mysteries.
Then Dawn will do something unprecedented in real-world spaceflight: exit the orbit of one distant body, and fly to and orbit another. The second destination is asteroid Ceres.
"Dawn will be the first spacecraft ever built to orbit two target bodies after leaving Earth," says Marc Rayman, Dawn chief engineer at NASA's Jet Propulsion Laboratory. "There's not even a concept for doing such a mission with conventional propulsion systems. The spacecraft would have to carry so much fuel, it would be too heavy to launch."
Instead, Dawn relies on ion propulsion, which doesn't require a huge spacecraft. Rayman first heard the term years ago while watching – you guessed it -- Star Trek.

Scotty: "I've never seen anything like it--and ion propulsion at that!" Youtube video.

Using solar arrays spanning 65 feet, Dawn collects power from the sun to ionize atoms of xenon. These ions are expelled by a strong electric field out the back of the spacecraft, producing a gentle thrust. The weightless and frictionless conditions of space flight allow this gossamer force effect to build up, so the spacecraft gains speed slowly and continuously.
"Dawn isn't exactly a hot rod," says Rayman. "It would take 4 days to go from 0 to 60. But it ultimately achieves fantastically high velocity while consuming very little propellant. It uses only a kilogram of xenon every 4 days."
Typically, conventional rockets thrust for a few minutes at most before they run out of fuel, then they coast to their destination. Dawn's engines, on the other hand, are almost constantly active.

Dawn's Chief Engineer Marc Rayman of JPL.

In the Youtube video, William Shatner likens Rayman to Scotty of the Enterprise.
"Dawn will thrust for 5 ½ years!" says Rayman. "It's already been thrusting for 591 days. That's 62% of the time it's been in space."

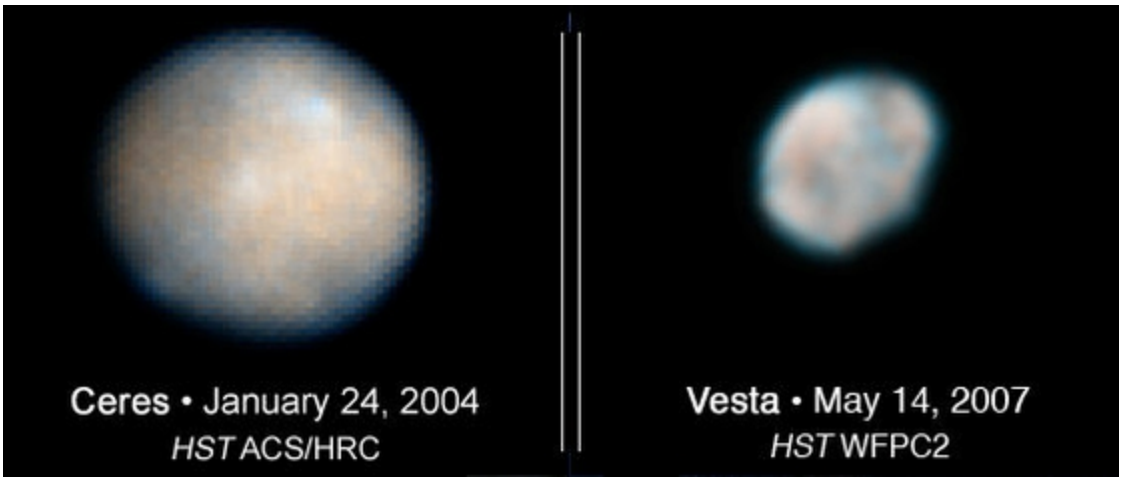
This means Dawn must be very fuel efficient. "A typical Mars orbiter could consume more than 600 pounds of propellants to enter orbit around the red planet," says Rayman. "With its ion propulsion system, Dawn could do it with less than 60 pounds of xenon."

Add all of these advantages together and you get a spacecraft that can accomplish – well – the impossible.

"Dawn is taking us, in the truest sense, up close to two distant, alien, unexplored worlds."

Its destinations -- Ceres and Vesta – are two of the biggest asteroids in the solar system. Indeed, Ceres is so big, it is actually classified as a dwarf planet, and Vesta is not far behind. Yet to date they've been studied only from a great distance, so they're virtually unknown. What is known is that they're not alike.

"Vesta is more like the rocky bodies of the inner solar system, one of which is right under our feet," explains Rayman. "And Ceres is more like the icy moons of the outer solar system. Scientists think it may even have a subsurface ocean of liquid water!"



Hubble Space Telescope photos of Dawn's targets, giant asteroids Ceres and Vesta. [more] Credit: NASA/HST

Dawn's instruments will collect data and images to uncover the secrets these two bodies conceal and perhaps reveal why they're so different from one another even though they inhabit such similar regions of the solar system.

"This mission will help us understand what the conditions were when Vesta and Ceres formed at the dawn of the solar system. It will fit more pieces in the grand puzzle of how our solar system formed and evolved – and perhaps how others do as well."

Executing new cosmic maneuvers, exploring alien worlds, answering profound questions – Dawn has it all. But Rayman thinks the most compelling aspect of missions like Dawn may be that we are, in a sense, going along for a deep-space ride.

"Dawn is taking us all on a virtual trip through the cosmos. It's not just a mission by the JPL team, or by NASA, or by the U.S and its partner countries. It's a mission of humankind -- something that represents all of us who share a spirit of adventure and curiosity, a passion for exploration. It's an extension of ourselves into the universe."

As one Star Trek crew member with particularly pointy ears would say -- "Fascinating."

Author: Dauna Coulter | Editor: Dr. Tony Phillips | Credit: Science@NASA

More Information

The Chief Engineer's Dawn Journal -- penned by Marc Rayman of JPL
Dawn -- (JPL) mission home page
Deep Space 1: The Archeology Mission -- (Science@NASA)
Dawn: Voyage to the Giant Asteroids --- (Science@NASA)
The Continuing Adventures of Deep Space 1 -- (Science@NASA)

MAY ASTRONOMY EVENTS

Kenneth Lum

EVERY Friday & Saturday 7:30pm - 10:30pm Weather Permitting FREE TELESCOPE VIEWING EVERY Saturday & Sunday 12:00 Noon – 5:00pm Weather Permitting DAYTIME TELESCOPE VIEWING FREE WITH GENERAL ADMISSION 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
5/19 7:30 PM Silicon Valley Astronomy Lecture series **Smithwick Theater, Foothill College** **Perimeter Road & S. El Monte Rd.** **Los Altos Hills,, CA 94022** $2 Parking	**Hearts of Darkness: Black Holes in Space** **Black holes are regions of space where gravity is so strong that nothing, not even light, can escape! No longer confined to the imaginations of science-fiction writers and theoretical physicists, black holes have recently been discovered in large numbers by observational astronomers. Smaller black holes can form during the deaths of some types of massive stars, and super-massive black holes are found at the centers of many galaxies, including our own. Come learn about the remarkable properties of these bizarre objects from one of the finest explainers in the field of astronomy.** **Alex Filippenko is a world-renowned expert on exploding stars, black holes, gamma-ray bursts, galaxies, and cosmology. Voted the 'best professor' on the UC Berkeley campus seven times and winner of the 2010 Emmons Award for undergraduate teaching, he was also named the Carnegie/CASE National Professor of the Year in 2006 among doctoral institutions. For his pioneering research , he was elected a member of the National Academy of Sciences. He recently produced a 12-lecture DVD video course on black holes with The Teaching Company.**

Fri. 5/21 7:30PM **Peninsula Astronomical Society mtg.** **Foothill Community College** **Rm. 5015, Bldg. 5000 near parking lot #5** **12345 El Monte Ave.** **Los Altos Hills, CA**	**The Origin of Star Clusters** **Dr. Steve Stahler, Univ. of Calif., Berkeley** 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. 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. 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. Come to Foothill Observatory and join us in the exploration of our Universe! 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.
Sat. 5/22 10AM-12PM if it is clear **Foothill Community College** **12345 Moody Rd.** **Los Altos Hills**	**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.** **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.**
Fri.5/21 and Sat. 5/22 **7:30pm - 10:30pm** **Chabot Space and Science Center** **10000 Skyline Boulevard** **Oakland, CA 94619-2450** **(510) 336-7300** **http://www.chabotspace.org/**	**EXPLORE THE NIGHT SKIES AT THE CHABOT OBSERVATORIE** **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**

Fri. 5/21 and Sat. 5/220 **6:00 PM** **Chabot Space and Science Center-Don't miss the new Tales of the Maya Skies!** **10000 Skyline Boulevard** **Oakland, CA 94619-2450** **(510) 336-7300**	**Dinner, a Movie, and the Universe at Chabot Space Center** **Chabot Space and Science Center, Oakland** **Join us for Chabot's unique evening social rendezvous. Start your night off with dinner and drinks, then cozy up in the planetarium as you're whisked to the edge of the universe and cap off the evening with telescope viewing featuring breathtaking views of the cosmos.** **Dinner: Buy advance tickets to ensure your dinner reservation. Purchase dinner separately at the cafe ($15).** **ADVANCED TICKETS** **A Movie and the Universe: Admission to Chabot includes all access to our interactive exhibitions, a film in the MegaDome theater AND a show in the Digital Planetarium. Purchase your advanced tickets online or call the Box Office at (510) 336-7373.**
Sat. 5/22 **10:00 PM - 05:00 PM** **Chabot Space and Science Center** **Chabot Space and Science Center** **10000 Skyline Blvd** **Oakland, CA 94619 USA** **Cost: Free with admission** **Email: info@chabotspace.org** **Phone: (510) 336-7300**	**Space Day** **Chabot's Space Day celebration will include hands-on activities and demonstrations by our Galaxy Explorers, public missions in the** **Challenger Learning Center (space is limited), along with our hands-on exhibitions. A special showing of Two Small Pieces of Glass will be part of our celebration. Also get down and dirty with Kids Go Green and the Galaxy Explorers as we continue work on our community butterfly garden - visitors are welcome to participate.** **Mission fees: $10 General, $5 members** **Chabot Space & Science Center inspires and educates students of all ages about our Planet Earth and the Universe.** **Its observatory, planetarium, exhibits, and natural park setting are a place where a diverse population of students, teachers, and the public can imagine, understand, and learn to shape their future through science.**
Wed. 05/26/2010 12 Noon SETI Institute Colloquium Series 515 N. Whisman Road, Mountain View The SETI Institute, Arecibo Rm.	**The Maunder Minimum: Astrophysical Connection to Climate Change** **Dan Lubin, SETI Institute** **The Maunder Minimum refers to an abrupt drop in solar luminosity of less than 1% during the mid-17th Century, which had profound impacts on global climate. We may be due for another solar "grand minimum" later this century. Dr. Lubin will discuss the implications of such a grand minimum during the era of anthropogenic global warming, and will also discuss astrophysical research efforts to determine how frequently a Maunder Minimum event occurs in nature.**

THE DEPARTMENT OF RECREATION AND PARK
HAS DECIDED TO REQUEST
AN ENVIRONMENTAL IMPACT REPORT
FOR THE
BEACH CHALET ATHLETIC FIELDS

1. You did it! RPD has decided to do an Environmental Impact Report!
2. Next steps in the EIR process.
3. Please contribute to legal fund.
4. Sign on to SF Gate and **vote** – add your comments!

1. The Recreation and Park Department has decided to do an EIR. This was reported in today's *SF Chronicle*. (See below.) This is the result of all of your efforts, in outreach, in gathering petition signatures, in writing letters, in calling your representatives, and in attending meetings and hearings. Also, our thanks goes out to our team of co-appellants and our skilled legal counsels for assembling a powerful CEQA appeal.

2. It may take awhile for the next step in the environmental review, but it's important to stay involved and weigh in on the EIR scoping process. We will ask for a scoping hearing, at which the focus of the EIR will be discussed and determined. You letters can be a part of this process. We will let you know more as we work through this. We are working with the same legal team to guide us through this process.

3. Therefore, we will still need contributions for our legal fund (see our website: www.sfoceanedge.org) .

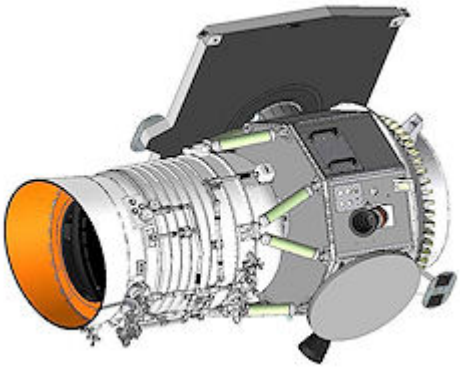
4. See the SF Gate, City Insider link below. BE SURE TO SIGN ON, **VOTE**, AND IF YOU HAVE TIME, ADD YOUR COMMENTS – look for Sunset Citizen, page 2, for our statement of our goals for this project. You can vote daily.

http://www.sfgate.com/cgi-bin/blogs/cityinsider/detail?blogid=55&entry_id=62598&tsp=1

SCIENCE@NASA

An Avalanche of Asteroids

03.26.2010



March 26, 2010: Imagine you're a Brontosaurus[1] with your face in a prehistoric tree top, munching on fresh leaves. Your relatives have ruled planet Earth for more than 150 million years. Huge and strong, you feel invincible.

You're not.

Fast forward about 65 million years. A creature much smaller and weaker dominates the Earth now, with brains instead of brawn. Its brain is a lot larger relative to its body size – plenty big enough to conceive a way to scan the cosmos for objects like the colossal asteroid that wrought the end of your kind.

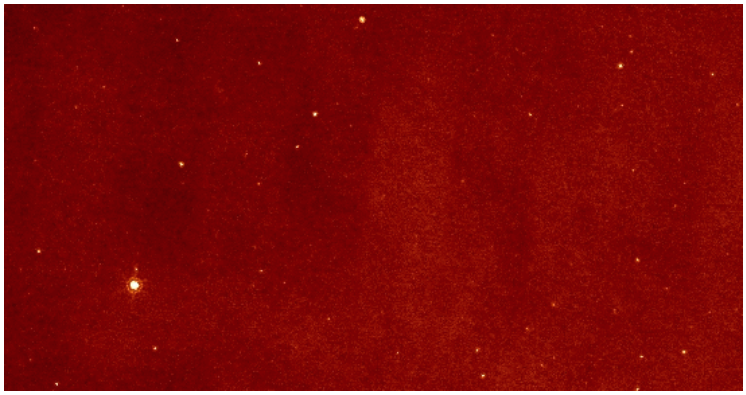
Right: An artist's concept of NASA's Wide-field Infrared Survey Explorer (WISE). [more]

The creature designed and built WISE, NASA's Wide-field Infrared Survey Explorer, to search for "dark" objects in space like brown dwarf stars, vast dust clouds, and Earth-approaching asteroids. WISE finds them by sensing their heat in the form of infrared light most other telescopes can't pick up.

"Our instrument is finding [dozens] of asteroids every day that were never detected before," says Ned Wright, principal investigator for WISE and a physicist at the University of California in Los Angeles. "WISE is very good at this kind of work."

Most of the asteroids WISE is finding are in the main asteroid belt between Mars and Jupiter, but a fraction of them are different—they're the kind of Earth-approaching asteroids that send shivers all the way down a Brontosaurus' spine.

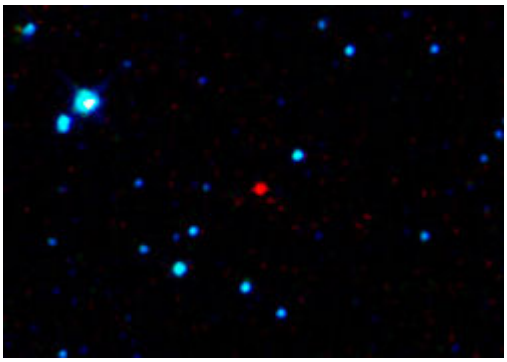
"WISE has only been in orbit for about three months, but we've already found a handful of asteroids classified as 'potentially hazardous,' including one seen in 1996 but lost until re-observed by WISE. To be named 'potentially hazardous,' an asteroid's orbit has to pass within about 5 million miles of Earth's orbit. One of our discoveries' orbit will cross Earth's orbit less than 700,000 miles away."



Above: This blink comparison shows why infrared wavelengths are so good for asteroid hunting. It's a patch of sky in the constellation Taurus photographed at two different times by the infrared Spitzer Space Telescope. The two frames are correctly aligned; the objects are moving because they are asteroids. At thermal infrared wavelengths, most of the bright objects in the plane of the solar system are space rocks. [more]

WISE tracks each potentially hazardous near-Earth object (NEO) it finds every three hours for up to 30 hours and then produces a "short track" predicting where it will be for the next few weeks. The WISE team sends all of this information to the NASA-funded Minor Planet Center in Boston. They post it on a publicly available NEO confirmation page, where scientists and amateur astronomers alike can continue to track the asteroid.

The asteroid that is thought to have wiped out the dinosaurs was big--about 6 miles or 10 km in diameter. The chances of a similar hit in modern times are almost non-existent, but that doesn't mean we're out of the woods. Smaller asteroids are fairly common, and they could do damage, too, in the rare event of impacting the Earth. As recently as 1908, for instance, an asteroid some tens of meters across exploded over Tunguska, Russia, wiping out eight hundred square miles of remote forest.



Right: The red dot in this image is the first near-Earth asteroid discovered by WISE. [full story]

"Regional damage from a small asteroid strike can be very serious indeed," says Wright. "We need to keep surveying the skies to find these NEOs and precisely measure their orbits. If we can find the really dangerous asteroids early enough, we might have time to figure out how to deal with them."

Many telescopes on Earth are already searching. Notable programs include LINEAR, the Catalina Sky Survey and others[2]. Working together over the years they have found more than a thousand potentially hazardous asteroids.

WISE's contribution to the total will be impressive. Between now and late October, when the mission is slated to end, Wright estimates the observatory will find a hundred thousand asteroids, mostly in the main belt, and hundreds of near Earth objects.

Those are numbers even a Brontosaurus could appreciate.

Author: Dauna Coulter | Editor: Dr. Tony Phillips | Credit: Science@NASA

Wednesday, May 19, 2010, 7:00 p.m.

Silicon Valley Astronomy Lecture Series

Smithwick Theater, Foothill College, El Monte Road and Freeway 280, in Los Altos Hills

Astronomer Alex Filippenko, UC Berkeley

will give a non-technical, illustrated talk on:

HEARTS OF DARKNESS: BLACK HOLES IN SPACE

Free and open to the public. Parking on campus costs $2.

Call the series hot-line at 650-949-7888 for more information and driving directions.

No background in science will be required for this talk.

Black holes are regions of space where gravity is so strong that nothing, not even light, can escape! No longer confined to the imaginations of science-fiction writers and theoretical physicists, black holes have recently been discovered in large numbers by observational astronomers. Smaller black holes can form during the deaths of some types of massive stars, and super-massive black holes are found at the centers of many galaxies, including our own. Come learn about the remarkable properties of these bizarre objects from one of the finest explainers in the field of astronomy.

Alex Filippenko is a world-renowned expert on exploding stars, black holes, gamma-ray bursts, galaxies, and cosmology. Voted the "best professor" on the UC Berkeley campus seven times and winner of the 2010 Emmons Award for undergraduate teaching, he was also named the Carnegie/CASE National Professor of the Year in 2006 among doctoral institutions. For his pioneering research , he was elected a member of the National Academy of Sciences. He recently produced a 12-lecture DVD video course on black holes with The Teaching Company.

The lecture is co-sponsored by:

* NASA Ames Research Center
* The Foothill College Astronomy Program
* The SETI Institute
* The Astronomical Society of the Pacific.

Past Silicon Valley Astronomy Lectures are now available in MP3 format at:

http://www.astrosociety.org/education/podcast/index.html

Andrew Fraknoi, Chair, Astronomy Program

Foothill College, 12345 El Monte Rd., Los Altos Hills, CA 94022, USA

Telephone: (650) 949-7288

E-mail: fraknoiandrew@fhda.edu

REGISTER EARLY FOR GSSP 2010!
SATURDAY, JULY 10, TO WEDNESDAY, JULY 14

It's that time again to make your observing plans for 2010. Be sure to include this year's Golden State Star Party!

In 2010, GSSP will carry on its long tradition as California's premier dark sky star party.

This year's event will again be under the ever-friendly skies of the Frosty Acres Ranch near Adin in beautiful Northeastern California and will be held from Saturday, July 10, to Wednesday, July 14.

In addition to exceptional dark sky observing, GSSP offers a wide variety of other fun activities and features, including a door-prize raffle, memorable local community events, an excellent speaker program, kite flying, home-grown barbeques, and countless other great things to do and enjoy in the surrounding area.

The Early Registration Period began this week and will extend through March 30.
Early registration fee is $60 this year.
After March 30, the fee will increase to $70. On-site registration will be $75. Kids under 18 are free.

The more people who register early, the better we will be able to plan and provide the best possible star party for the attendees.

To register and learn more about GSSP 2010, visit our Web site at: http://www.goldenstatestarparty.org/

We'll see you there!

The GSSP Organizing Committee

2010 Club Officers & Contacts

President	*DAVE FREY*	davef@SFAA-Astronomy.org
Vice President	Vivian White	vicepresident@sfaa-astronomy.org
Secretary		
Treasurer	Dave Wilton	treasurer1@sfaa-astronomy.org
Speaker Chair	Linda Mahan	speakerchair@sfaa-astronomy.org
City Star Party	Stephanie Ulrey	csp@sfaa-astronomy.org
Bulletin Editor	Annette Gabrielli	editor@sfaa-astronomy.org
Telescope Loans	Pete Goldie	telescopes@sfaa-astronomy.org
Honorary Director and Board Member Emeritus	John Dobson	
Board Members	Jim Cottle	jimc@sfaa-astronomy.org
	John Dillon	johnd@sfaa-astronomy.org
	Kenneth Frank	ken@sfaa-astronomy.org
	Annette Gabrielli	editor@sfaa-astronomy.org
	Elan Morpurgo	elan@sfaa-astronomy.org 415 383-2247
	Doug Smith	
	Stephanie Ulrey	csp@sfaa-astronomy.org
1st Alternate	Joe Amato	wbmstr@sfaa-astronomy.org
2nd Alternate	Dave Goggin	daveg@SFAA-Astronomy.org
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
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.

MEMBERSHIP APPLICATION

Membership is billed for each upcoming year on June 30. Between January 1 and June30, new members pay one half the amount listed below

Membership Categories (Check one):
_____ $10 Youth/Student _____ $40 Institutional
_____ $25 Individual _____ $75 Supporting
_____ $30 Family

Information:
Name(s) _____
Address _____
City _____
State _____ **Zip** _____
Home Phone _____
E-Mail _____

You can choose E-Mail (Recommended) or hard copy delivery for Above the Fog(Check one)

_____ **E-Mail** _____ **Hard Copy**

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

San Francisco Amateur Astronomers
POB 15097
San Francisco CA 94115