ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 63, No. 2 – February 2015

GENERAL MEETING
THE PRESIDIO . OBSERVATION POST . BUILDING 211
211 Lincoln Boulevard, San Francisco
7:00 pm Doors Open . 7:30 pm Announcements . 8:00 pm Speaker
Effective February 17, 2015: SFAA's General Meetings occur on the 3rd TUESDAY of each month (except January)

TUESDAY - FEBRUARY 17, 2015

FRANCK MARCHIS, PH.D.
SETI Institute & UC Berkeley
Breaking the Seeing Barriers for Planetary Astronomy

Once monthly, the San Francisco Amateur Astronomers hosts distinguished guest speakers who are leaders in the fields of astronomy, physics, and related disciplines, to present the latest developments from cutting-edge scientific programs.

Dr. Franck Marchis, currently a Principal Investigator at the Carl Sagan Center of the SETI Institute, opens the 2015 Monthly Lecture Series with a presentation on ***Breaking the Seeing Barriers for Planetary Astronomy***.

In the past four centuries planetary astronomy, the study of our solar system bodies using telescopes, has increased our knowledge of the environment of Earth, the evolution of planets, the origin of comets and asteroids, and the formation of our solar system. In this presentation, Dr. Marchis will discuss the contributions of telescopic observation over the past 50 years, highlighting the most recent discoveries and looking into the future of space-based astronomy, particularly for the search and study of planets around other stars in our galaxy.

About the Speaker:
Franck Marchis is a Principal Investigator at the SETI Institute, and also an Assistant Research Astronomer at UC Berkeley. He received his Ph.D. in 2000 from University of Toulouse, France in planetary science, then moved to California shortly after through a postdoctoral position at UC Berkeley. In 2007, he was appointed as a Planetary Scientist at the Carl Sagan Center of the SETI Institute where he expanded his research on multiple asteroids using space-telescope facilities. In June 2011, he took a full-time position at the Carl Sagan Center to lead the development of space mission concepts and new high-resolution & high contrast instruments for ground-based telescopes. He is an associate astronomer at Observatoire de Paris since June 2003.

Ages: **Geared for adults; All ages welcome**
Cost: **FREE - Donations encouraged**
Info: **www.sfaa-astronomy.org**

A NEW HOME
FOR
SAN FRANCISCO AMATEUR ASTRONOMERS

NEW MEETING LOCATION

EFFECTIVE
!!! TUESDAY !!!
FEBRUARY 17, 2015
7:30 pm

THE PRESIDIO OBSERVATION POST
BUILDING 211

Observation Post/Building 211 layout

http://www.presidio.gov/venues/Documents/Bldg%200211%20Floor%20Plan.pdf

Driving Directions

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

Public transportation information link

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

***** NEW MEETING LOCATION *****
The Observation Post at The Presidio
211 Lincoln Boulevard, San Francisco

PRESIDENT'S MESSAGE

First I would like to thank everyone for the votes- I'm happy to serve the club as the President this year. Matt Jones did a great job last year as President and is still going to be involved as our Vice President. And congratulations to the other officers- Michael Patrick is continuing as our Treasurer and Anthony Barreiro is stepping up as our Secretary after previously serving on the Board. We also welcome back Directors Anil Chopra, Bob Haberman, David Frey (a past-President), Paul Salazar and Sue-Ellen Speight (also a past-President). New to the Board we have Adam Espisito, Agnes Pyrchla, Katie Gallinger, and Scott Miller. We have an energetic group of volunteers ready to plan an eventful year!

A couple weekends ago most the 2015 Board met for an organizational meeting to brainstorm and plan for a great new year! We are planning more outreach and have even formed a new official committee -- the SFAA Outreach Committee. We also formed a Membership Committee to survey members and asses how we should grow the club- to make sure members receive what they expect. I've also initiated a History Committee to document the past accomplishes and to make sure our rich history is shared with the public. If you are interested in participating in any of these committees, please contact me and I will put you in touch with the appropriate Chair.

In addition to sharing our telescopes- "magic lanterns" to share science as John Dobson once said, at various events throughout the year, we also look forward to another year of great lectures at our new home at the Presidio. A special thank you to Linda Mahan for arranging such interesting talks. Our lectures are a direct connection to the profession. I look forward (and up) to a great year for the San Francisco Amateur Astronomers!

Douglas Smith
President
San Francisco Amateur Astronomers

2015 STAR PARTY DATES

Scott Miller

Below is the schedule for 2015 San Francisco City Star Parties staffed by volunteers of the SFAA. Note that the Presidio, our new host for SFAA meetings during the Randall Museum renovation, is a favored Star Party location for 2015. Lands End, a traditional City Star Party location, and the popular Exploratorium museum, are the other Star Party sites.

Saturday	January 31st,	Presidio Parade Grounds, 5:30 PM
Saturday	February 21st	Presidio Parade Grounds, 6:00 PM
Saturday	March 28th	Lands End, 7:00 PM
Friday	April 24th	Presidio Parade Grounds, 7:00 PM
Thursday	May 28th	The Exploratorium, 8:00 PM
Saturday	June 27th	Presidio Parade Grounds, 8:00 PM
Friday	July 24th	Lands End, 8:00 PM
Tuesday	August 25th	Presidio Parade Grounds, 7:30 PM
Thursday	September 24th	The Exploratorium, 6:30 PM
Thursday	October 22nd	Presidio Parade Grounds, 6:00 PM
Saturday	November 21st	Lands End, 5:30 PM
Saturday	December 19th	Presidio Parade Grounds, 5:30 PM

"We are invited to again take part in the Dominican University "Big History" program in San Rafael. SFAA members are welcome to bring telescopes and join an evening of pizza and stargazing with students, faculty and administration of Dominican. The event takes place on Monday evening March 23rd from 6;00 pm to 9:30 pm at the campus in San Rafael. If you can bring your telescope and take part, please contact Paul Salazar at salazar.paul@gmail.com."

BAY AREA ASTRONOMY EVENTS

Kenneth Lum

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

BAY AREA REGULARLY SCHEDULED EVENTS

EVERY FRIDAY NIGHT **7:00 PM – 10:00 PM** **excluding major holidays** **The Telescope Makers' Workshop** **CHABOT SPACE AND SCIENCE CENTER** **10000 Skyline Boulevard** **Oakland, CA 94619-2450**	**THE TELESCOPE MAKERS' WORKSHOP** is held every Friday night from 7pm - 10pm, excluding major holidays (e.g. Christmas Day and New Year's Day) that fall on Fridays. The Workshop is always closed on Memorial Day Weekend. Attendance every Friday night is not mandatory, and members work at their own pace. The Workshop meets at Chabot Space & Science Center, 10000 Skyline Blvd., Oakland. Chabot's TMW is one of only a handful of regularly scheduled telescope making workshops in the U.S., and probably the world; it meets every Friday evening throughout the year, except Memorial Day weekend. It has been in operation since December of 1930, founded by Franklin B. Wright, and is currently run by Eastbay Astronomical Society member Rich Ozer, with help from other EAS members, Dave Barosso, Barry Leska, and others. The price of admission is FREE. All you have to do is show up, buy a mirror blank and a "tool" (typically around $100 - $200 depending on the size of the mirror) and start "pushin' glass!" We supply you with instruction, the various grits you'll need to first grind, and then polish and figure your mirror, and all the testing equipment needed. With a small bit of luck, you could wind up with a telescope that costs 1/3 or 1/4 the cost of a store-bought telescope, that is yet optically superior! Itdoes take time - depending on how much time you put in on it, and other factors, it could take a few months or several months. But, it's a fun project, great for kids, and at the end you get a great telescope! For more information call or email Richard Ozer at rozer@pacbell.net or phone (510) 406-1914.
EVERY FRIDAY & SATURDAY EVENING, weather permitting **7:30 PM – 10:30 PM** **CHABOT SPACE AND SCIENCE CENTER** **10000 Skyline Boulevard** **Oakland CA 94619-2450** **(510) 336-7300**	**EXPLORE THE NIGHT SKIES AT THE CHABOT OBSERVATORIES** For more information: http://www.chabotspace.org/ **Free Telescope Viewing** Regular hours are every Friday & Saturday evening, weather permitting: 7:30pm - 10:30pm Come for spectacular night sky viewing the best kept secret in the Bay Area and see the magnificence of our telescopes in action! **Daytime Telescope Viewing** On Saturday and Sunday afternoons come view the sun, moon, or Venus through Chabot's telescopes. Free with General Admission. (weather permitting) 12pm - 5pm: Observatories Open

Sunset – 5:11 PM **(TWICE MONTHLY)** **Inclement weather (clouds, excessive wind and showers) will cause the event to be canceled without notice.** **SAN MATEO COUNTY ASTRONOMICAL SOCIETY STAR PARTY**	**STAR PARTIES AT CRESTVIEW PARK, SAN CARLOS** Come out and bring the kids for a mind expanding look at the universe The City of San Carlos Parks and Recreation Department and the San Mateo County Astronomical Society has open Star Parties twice a month. These events are held in Crestview Park, San Carlos California. Note that inclement weather (clouds, excessive wind and showers) will cause the event to be canceled without notice. 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.** **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. 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.
EVERY CLEAR SATURDAY MORNING OBSERVATORY **10:00 AM – 12:00 PM** **FOOTHILL COMMUNITY COLLEGE** **12345 Moody Road** **Los Altos Hills** **Cost: Free**	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. 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.
EVERY CLEAR FRIDAY EVENING **9:00 PM – 11:00 PM** **FOOTHILL COMMUNITY COLLEGE OBSERVATORY** **12345 Moody Road** **Los Altos Hills**	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.

Cost: Free	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. 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 $3.00.

BAY AREA SCHEDULED EVENTS – FEBRUARY 2015

Tuesday, February 17 **12:00 NOON** **SETI INSTITUTE** **COLLOQUIUM SERIES** **189 Bernardo Ave** **Mountain View, CA 94043**	**THE ANTHROPOCENE EPOCH IN COSMIC EVOLUTION** **DAVID GRINSPOON, SPACE SCIENCE INSTITUTE** Informed by comparative planetology and a survey of the major episodes in Earth history, Dr. Grinspoon will offer a taxonomy of planetary catastrophes meant to illuminate the unusual nature of the "Anthropocene", the current epoch of human-driven planetary-scale changes, and reframe our current environmental and technological predicaments as part of a larger narrative of planetary evolution. This saga has now reached the pivotal moment when humans have become a dominant force of planetary change, and geological and human history are becoming irreversibly conjoined. Is this a likely or even inevitable challenge facing other complex life in the universe? Possible implications for exoplanet characterization and SETI will be considered, as well as the choices our civilization faces in seeking to foster a wisely managed Earth.
Thursday, February 19 **7:30 PM** **Reception at 6:00 PM** **DIGITAL ARTS RESEARCH CENTER** **UC SANTA CRUZ** **Room 108** **Santa Cruz, CA 95064** **Cost: Free**	**THE MAKING OF THE 'BIRTH OF THE STARS'** What happens when a UC Santa Cruz astronomer meets a playwright on the garden path of faculty housing? A wildly successful collaboration of the arts and sciences. Join us for a behind the curtain look at an original theatrical production that explored the life of the stars and those that gaze up at them. Be our guest for a reception with our presenters and campus leadership followed by an engaged panel discussion with: Michael Chemers and Jim Bierman, Theater Arts Mark Krumholz, Astronomy and Astrophysics John Weber, Institute of the Arts and Science

Friday, February 15 **11:30 AM - 1:00 PM** **Stanford Linear Accelerator** **FKB 3rd Floor Conference Room** **Menlo Park, CA 94025**	**LSST (LARGE SYNOPTIC SKY SURVEY TELESCOPE)@SLAC: MATTHEW BECKER** On the topic of cosmological simulations and requirements for dark energy science Cost: Free
Friday, February 20 **8:00 PM - 10:00 PM** **CHABOT SPACE AND SCIENCE CENTER** **10000 Skyline Blvd** **Oakland, CA 94619** **Cost: $25**	**WOULD YOU BAPTIZE AN EXTRATERRESTRIAL?** This is a series of conversations, set in specific settings, on a half dozen topics coming from the sorts of questions we get asked all the time at the Vatican Observatory- ranging from the Big Bang to the Star of Bethlehem, from Galileo to Extraterrestrials. Neither science nor religion are big books of facts; they are conversations about how we understand those facts. This talk seeks to show that conversation – to show how a life of faith and science is lived. Br. Guy Consolmagno has a decades-long track record of communicating planetary science to the public while maintaining an active science career. In addition, he occupies a unique position as a credible spokesperson for scientific honesty within the context of religious belief. Br. Guy uses multiple media to reach his audience. He has authored or edited six books, with "Turn Right at Orion" in its fourth edition of publication. This book alone has had an enormous impact on the amateur astronomy community, engendering public support for astronomy. In Would You Baptize an Extraterrestrial? a variety of questions at the crossroads of faith and reason are explored: How do you reconcile the The Big Bang with Genesis? Was the Star of Bethlehem just a pious religious story or an actual description of astronomical events? What really went down between Galileo and the Catholic Church – and why do the effects of that confrontation still reverberate to this day? Will the Universe come to an end? And… could you really baptize an extraterrestrial?
Saturday, February 21 **11:00 AM - 12:00 PM** **GENETICS AND PLANT BIOLOGY BUILDING** **UC BERKELEY** **Room 100** **Berkeley, CA 94720** **Cost: Free**	Searching for Extraterrestrial Intelligence: The Quest to Find Ourselves Among the Stars For millennia, humans have pondered their place in the cosmos and asked the question "Are we alone?". Now, for the first time in our history, the answer may be within our grasp. In the last several decades, astronomers have determined that the key environmental factors that gave rise to life on Earth are present in abundance throughout the Milky Way galaxy. Long lived stars, planets, water and complex organic molecules are known to be ubiquitous. Armed with the certainty that life could have developed elsewhere, scientists everywhere are racing to determine if indeed it did, and if so, whether some of that life went on to develop a technological capability similar to our own.

	In this public lecture, Dr. Andrew Siemion will discuss the history of the Search for Extraterrestrial Intelligence (SETI), the latest developments in the science of astrobiology that are informing modern SETI and the prospects for dramatic advances in the field using the latest generation of world-class telescopes, including the Square Kilometer Array.
Monday, February 23 **05:30 PM - 06:30 PM** **BECHTEL ENGINEERING CENTER** **UC BERKELEY** **SIBLEY AUDITORIUM** **Berkeley, CA 94720** **Cost: Free**	**THE ROAD TO MARS** The Engineering Student Council and Berkeley Engineering are pleased to announce the 2015 Engineers Week keynote speaker: Gwynne Shotwell, president and chief operating officer of SpaceX. Ms. Shotwell's talk, The Road to Mars, will center on SpaceX, the engineering technologies used and exciting developments in the company. She will also share her personal story of becoming an engineer and her rise within the aerospace industry to become a leader of one of the country's most innovative companies.
Monday, February 23 **5:30 PM - 6:30 PM** **INTERNATIONAL HOUSE** **UC BERKELEY** **CHEVRON AUDITORIUM** **Berkeley, CA 94720** **Cost: Free**	**SPEAKER: ANDRE LINDE, STANFORD** **UNIVERSE OR MULTIVERSE?** Cosmological observations show that the universe is very uniform on the maximally large scale accessible to our telescopes. The best theoretical explanation of this uniformity is provided by the inflationary theory. I will briefly describe the status of this theory in view of recent observational data obtained by the Planck satellite. Rather paradoxically, this theory predicts that on a very large scale, much greater than what we can see now, the world may look totally different. Instead of being a single spherically symmetric balloon, our universe may look like a "multiverse", a collection of many different exponentially large balloons ("universes") with different laws of low-energy physics operating in each of them. The new cosmological paradigm, supported by developments in string theory, changes the standard views on the origin and the global structure of the universe and on our own place in the world.

NASA SCIENCE NEWS

An Edge-On Close Encounter with Jupiter

Fe**b 6, 2015:** Every 13 months, Earth and Jupiter have a close encounter. Astronomers call it an "opposition" because Jupiter is opposite the Sun in the sky. Our solar system's largest gas planet rises in the east at sunset, and soars overhead at midnight, shining brighter than any star in the night sky.
This year's opposition of Jupiter occurs on Feb. 6th. It isn't an ordinary close encounter with Earth (approximately 640 million kilometers), but in Feb. 2015, Jupiter is *edge on* to the Sun.

Efrain Morales Rivera of Aquadilla, Puerto Rico, photographed multiple shadows transiting the face of Jupiter on Jan. 24th. A full-sized version of his image matches each shadow to a moon.

In a rare coincidence, Jupiter's opposition on Feb. 6th coincides almost perfectly with its equinox on Feb. 5th when the Sun crosses Jupiter's equatorial plane. It is an edge-on apparition of the giant planet that sets the stage for a remarkable series of events. For the next couple of months, backyard sky watchers can see the moons of Jupiter executing a complex series of mutual eclipses and transits.

The eclipses have already started. On Jan. 24th, for example, three of Jupiter's moon's, Io, Europa, and Callisto, cast their inky-black shadows on Jupiter's swirling cloudtops. The "triple shadow transit" happened while Jupiter was high in the sky over North America, and many backyard astronomers watched the event.

As Earth's crosses the plane of Jupiter's equator in the weeks and months ahead, there will be many mutual events. For instance, on Feb. 5th, volcanic Io will cast its shadow on Mercury-sized Ganymede, Jupiter's largest moon. On Feb. 7th, icy Europa, home to what may be the solar system's largest underground ocean, will cast its shadow on Io. Events like these will continue, off and on, until July 2015.

During the last edge-on apparition in 2009, some observers managed to obtain the first resolved time-lapse videos of mutual phenomena. Experienced amateur astronomers recorded satellites ducking in and out of one another's shadows, moons in partial and total eclipse, and multiple shadows playing across the face of Jupiter. Backyard telescopes have come a long way in the past 6 years, so even better movies can be expected this time.

You don't have to be an experienced astronomer to experience Jupiter's opposition. Anyone can see the bright planet rising in the east at sunset. It outshines by far anything else in its patch of sky. Point a small telescope at the bright light and, voila!--there are Jupiter's cloud belts and storms, and the pinprick lights of the Galilean satellites circling the gas giant below.
Try it. 640 million kilometers won't seem so far away at all.

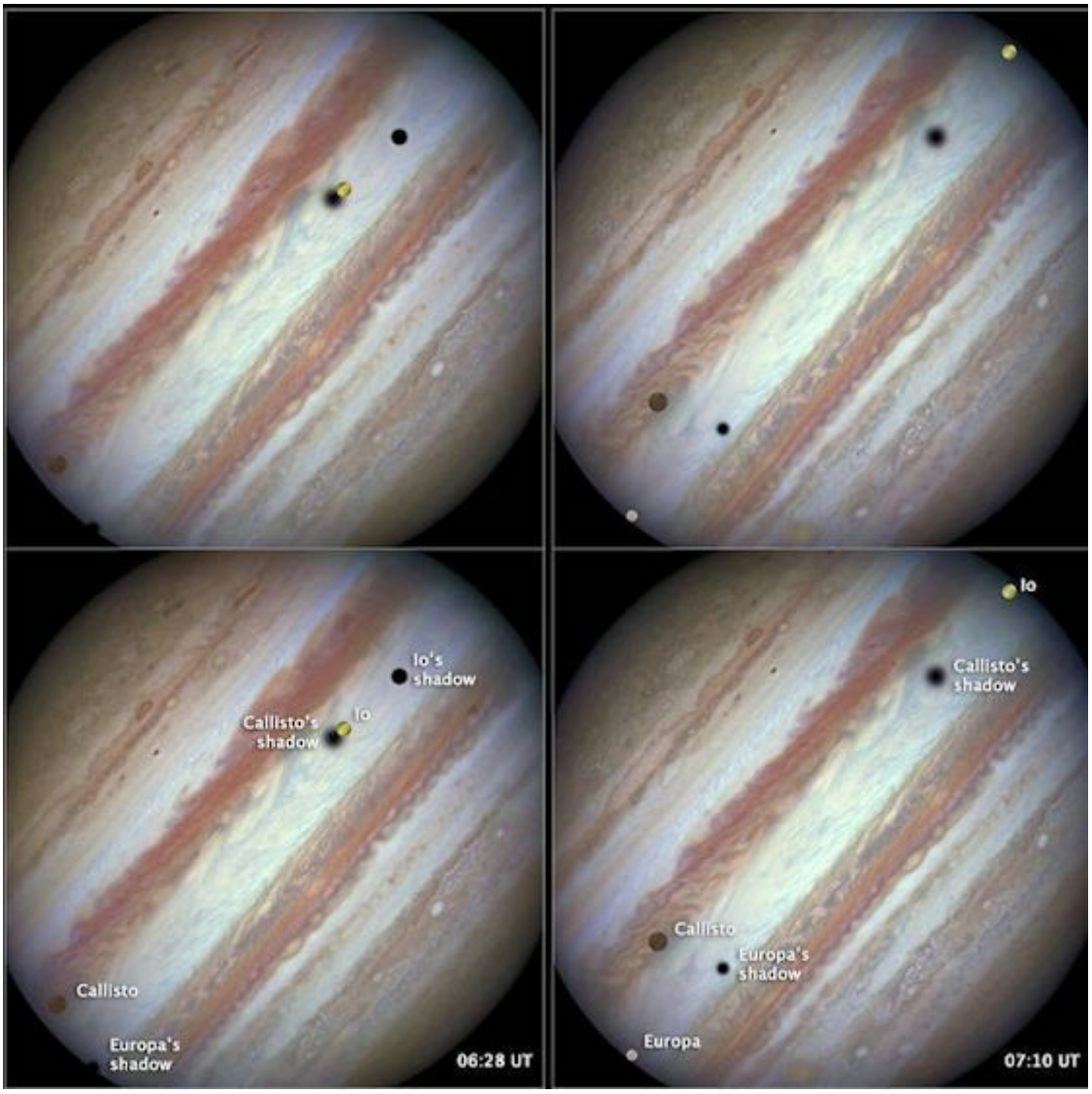
Credits:

Author: Dr. Tony Phillips | Production editor: Dr. Tony Phillips | Credit: Science@NASA

Hubble Captures Rare Triple-Moon Conjunction

Feb 5, 2015: Firing off a string of action snapshots like a sports photographer at a NASCAR race, NASA's Hubble Space Telescope captured the rare occurrence of three of Jupiter's largest moons racing across the banded face of the gas-giant planet: Europa, Callisto, and Io.

These so-called Galilean moons, named after the 17th century scientist Galileo Galilei, who discovered them with a telescope, complete orbits around Jupiter with durations ranging from 2 days to 17 days. They can commonly be seen transiting the face of Jupiter and casting shadows onto its cloud tops. However, seeing three moons transiting the face of Jupiter at the same time is rare, occurring only once or twice a decade.



Rare occurrence of all three of Jupiter's moon's in Hubble image Image Credit: NASA, ESA, and the Hubble Heritage Team (STScI/AURA)

The Hubble image on the left shows the beginning of the event, which took place on January 24, 2015. From left to right, the moons Callisto and Io are above Jupiter's cloud tops. The shadows from Europa, Callisto, and Io are strung out from left to right. Europa is not visible in this image.

Near the end of the event, approximately 42 minutes later (right-side image) Europa has entered the frame at lower left. Slower-moving Callisto is above and to the right of Europa. Fastest-moving Io is approaching the eastern limb of the planet; its shadow is no longer visible on Jupiter. Europa's shadow is toward the left side of the image, and Callisto's shadow to the right. The moons' orbital velocities are proportionally slower with increasing distance from the planet.

Missing from the sequence is Ganymede, one of the four Galilean moons that was outside Hubble's field of view and too far from Jupiter to be part of this conjunction.

The moons in these photos have distinctive colors. The ancient cratered surface of Callisto is brownish; the smooth icy surface of Europa is yellow-white; and the volcanic, sulfur-dioxide surface of Io is orange. The apparent “fuzziness” of some of the shadows depends on the moons’ distances from Jupiter. The farther away a moon is from the planet, the softer the shadow, because the shadow is more spread out across the disk.

The images were taken with Hubble's Wide Field Camera 3 in visible light.

Credits:

Production editor: Dr. Tony Phillips | Credit: Science@NASA

More information:

The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency. NASA's Goddard Space Flight Center in Greenbelt, Maryland, manages the telescope. The Space Telescope Science Institute (STScI) in Baltimore conducts Hubble science operations. STScI is operated for NASA by the Association of Universities for Research in Astronomy, Inc., in Washington, D.C.
For images and more information about the Hubble Space Telescope, visit: http://hubblesite.org/news/2015/05 or http://www.nasa.gov/hubble

San Francisco Amateur Astronomers
PO Box 15097
San Francisco, CA 94115

San Francisco Amateur Astronomers
Application for New or Renewing Membership

1. Memberships, with dues payment, are for one year running from standard renewal dates of 1 July to 30 June and 1 January to 31 December.

2. Submitting appropriate dues in April, May, June, July, August, September, membership will run to 30 June of the next year.

3. Submitting appropriate dues in October, November, December, membership will run to 31 December of the next year; submitting appropriate dues in January, February or March, membership will run to 31 December of the same year.

4. Renewals are maintained at the original membership date unless the renewal is made later than the original cutoff date (e.g. September or March as described in 3). In such cases the membership date is shifted to the next renewal date 30 June or 31 December.

5. New or renewal memberships sent in via USPS mail will have membership start date based on postmark date.

This application is for:

□ New

□ Renewing

Name:_____

Address:_____

_____

Email:_____

Home Telephone (optional):_____

Cell Phone (optional):_____

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

□ Please mail to me a Mt. Tamalpais Parking Permit

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

Treasurer, SFAA
PO Box 15097
San Francisco, CA 94115

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