

The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

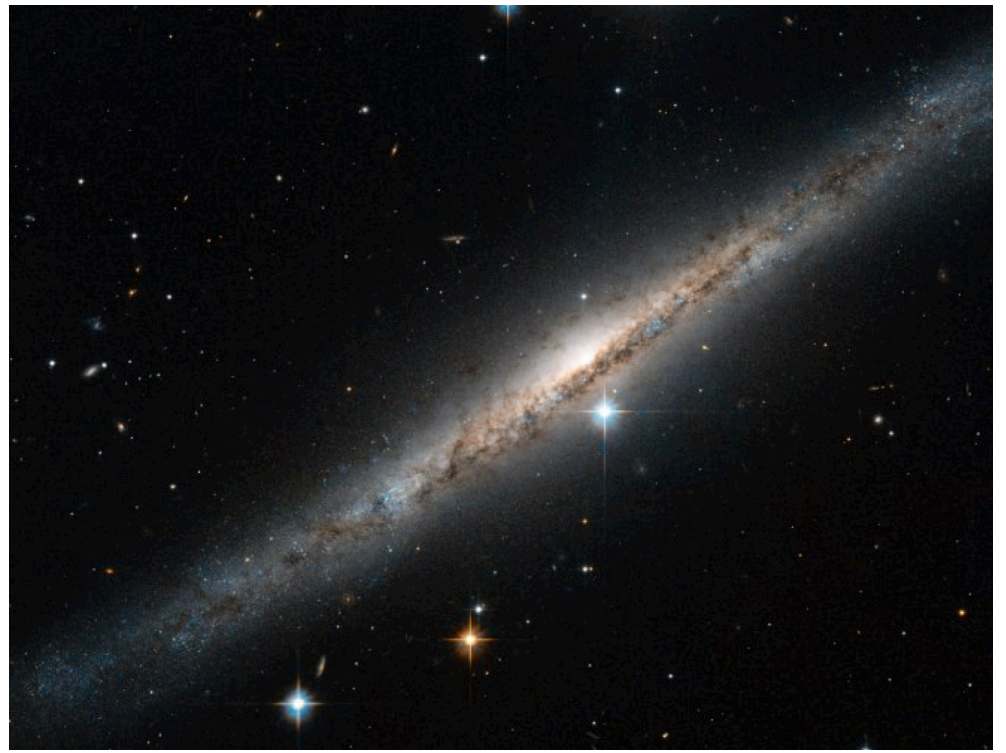
March 2015 – 627th General Meeting Notice



EVENT HORIZON

Founded in 1960, the San Mateo County Astronomical Society is a 501(c)(3) non-profit organization for amateur astronomers and interested members of the public. Visitors may attend Society meetings and lectures on the first Friday of each month, September to June, and star parties two Saturdays a month. All events are free for visitors and guests. Family memberships are offered at a nominal annual cost. Detailed info is found at www.smcas.com, where those who want can join via Paypal.

Membership includes access to this monthly Event Horizon newsletter, discounted costs and subscriptions to calendars and magazines, monthly star parties of the Society and the College of San Mateo, use of loaner telescopes, field trips, social occasions and general meetings presenting guest speakers and programs. For additional information, please email us at SMCAS@live.com, or call us at (650) 678-2762.



This stunning, sparkly collection of stars is called ESO 121-6; it can be found approximately 65 million light-years from Earth in the constellation of Pictor. In an image taken by the Hubble Space Telescope, we see this island universe from a side-on vantage point, which prevents us from seeing some of the features that make it a spiral galaxy. Things that are noticeably absent include sweeping spiral arms, however, it does put us in the unique position to see the full length of the galaxy, and its glowing central bulge — where a large quantity of stars packed densely in a small region reside. Continued on page 8.

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SAVE THESE DATES! MORE UPCOMING EVENTS ON PAGE 5!

- **SMCAS General Meeting**
Friday, March 6, 2015. CSM Planetarium, 7:00 p.m.
Evening's activities include pizza, an informal general meeting, and a special presentation at 8:00 p.m.
- **SMCAS General Meeting**
Friday, April 3, 2015. CSM Planetarium, 7:00 p.m. for informal general meeting and pizza, 8:00 p.m. for presentation. Details to come.
- **Spring Equinox Dinner**
Saturday, March 28, 2015. The Fireside Room at the Crystal Springs Methodist Church, 2145 Bunker Hill Drive, San Mateo. 7:00 p.m.

President's Corner

The Google Star Party on February 10th at Google headquarters in Mountain View was a big success! Around 800 Google employees and family attended. It was a fun afternoon and evening of socializing, learning, and stargazing. We networked with members of most of the astro-clubs from around the bay, and representatives from astronomy organizations such as the Astronomical Society of the Pacific (ASP), UC Berkeley Space Sciences Lab (SSL) and Multiverse, Chabot and Lick Observatories, plus the AstroWizard Dave Rodriques. To cap the day, Google announced they were making a \$1 million gift to Lick Observatory! Beyond the fun we had, it is important to recognize the value of our participation as individuals and the importance of groups such as ours.

Laura Peticolas from UC Berkeley SSL, one of the sponsors, summed it up well in her thank-you note to the event volunteers:

"I... would like recognize your great contributions to viewing the night sky, which made this event the spectacular star party that it was. For example, I heard from many people how excited they were to see Jupiter and the Orion nebula.

Your dedication to sharing this connection to the sky cannot be understated. As many lose this connection due to light pollution and overall pollution in our air, groups such as yours are incredibly important to rekindling very personal connections to the sky, which we know inspires the public to know more about astronomy and science. You certainly help us in our vision of a future world where people develop and sustain the ability to think critically using observation, and understand science within the context that we are all under one sky and on one Earth"

I would like to personally thank the following SMCAS volunteers who helped us provide such a successful and big presence there, I believe we had the biggest presence of any astronomy club, apologies if I missed anyone:

Bob Black
Karen Boyer
Rachel Freed
Ken Lum

Michael Ryan
Mike Ryan
Lilly Ryan

Andrew K. Thanos
Audrey Y. Thanos
Alexa K. Thanos
Andrew K. Thanos IV

In addition I want to thank all SMCAS members as a whole for your support of SMCAS thru your membership, helping us achieve our mission of public outreach and education in astronomy! To put an individual perspective on the impact we have, here is an update on Luis Alvarez, our former SMCAS student member. Many of you may recall that while Luis was a SMCAS member and student at CSM we (SMCAS) helped create an internship for him in the summer of 2011,

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President's Corner, continued from page 2

and funded the majority of its cost. That internship sent Luis with Dr. Pascal Lee to the Haughton-Mars Project Research Station at the Haughton meteorite impact crater, on Devon Island, Nunavut, in the Canadian high arctic. More information is available at <http://astroboyprime.blogspot.com>.



Photo left, group at Stanford University on February 17, 2015: Luis Alvarez, Marion Weiler, Irving Rodriguez, and Dr. Patrica Burchat.

Photo right: Luis preparing to leave Devon Island HMPRS 'airport' summer 2011.

Luis went on to finish up at CSM and attend Stanford University as a physics student, where he is doing well and expects to graduate this spring! Luis was an outstanding CSM student who benefited greatly from the internship, and I would like to think his path to Stanford University was helped by the internship SMCAS made happen. I recently caught up with Luis for lunch, along with his Stanford faculty advisor Dr. Patrica Burchat, his 2014 summer intern mentor Dr. Mandeep Gill from Stanford/KIPAC, and Irving Rodriguez (another of Dr. Burchat's students). Dr. Burchat and Dr. Gill have both presented to SMCAS and are our supporters. And heads up, Dr. Pascal Lee will be back to visit us at our October meeting with his latest stories of Mars science in the frozen north!

In the meantime, I'll look forward to seeing you at our March 6, 2015 general meeting where we'll gather for pizza and our special speaker, **Dr. Karel Schrijver**. He is a Lockheed Martin Senior Fellow at the Lockheed Martin Solar and Astrophysics Lab, and his topic will be **Living with the Stars**.

Marion Weiler, SMCAS President
mgwe@pacbell.net

[SMCAS General Meeting on March 6](#)

Dr. Karel Schrijver to Speak on “Living with the Stars”

- SPEAKER:** **Dr. Karel Schrijver**, Lockheed Martin Senior Fellow at the Lockheed Martin Solar and Astrophysics Lab
- TOPIC:** Living with the Stars
- DATE** Friday, March 6, 2015
- TIME:** General meeting, 7:00 p.m.
Presentation, 8:00 p.m.
- WHERE:** [The CSM Planetarium](#), Bldg. 36, Parking Lot 5
- FREE:** Presentation is free and open to the public.

We are quite literally not who we were years, weeks, or even days before today. The stuff that makes our body is being replaced all the time, from the chemicals in our cells to the very cells themselves. What lasts is not our literal substance but rather a pattern that is renewed with elements captured from the surrounding biosphere. The newly integrated material that replaced what was lost connects our body directly to animals and plants that contribute to our food and to the bacteria within us that help digest it. All of these depend on the energy of light released in the nuclear furnace deep inside the Sun combined with the carbon dioxide that cycles through the Earth’s atmosphere, originating in volcanic eruptions and being released in the burning of fossil fuels made from beings in the distant past. Mixed in with that are radioactive atoms that are caused by stellar explosions across the Galaxy and from the decay of atoms deep inside the Earth. All that makes us, and all that exists around us, is tied to the stardust released in the death throes of ancient stars and ultimately to the formation of the universe itself.



Karel Schrijver's research focuses on the magnetic activity of the Sun, the coupling of the Sun's magnetic field into the heliosphere and its solar wind, and the manifestations of magnetic activity of other Sun-like stars. In addition to scientific research, he is actively involved in developing and operating space instrumentation: he is currently the Principal Investigator for the Atmospheric Imaging Assembly of the Solar Dynamics Observatory; as Senior Fellow at the LM Advanced Technology Center, he is involved in defining and developing instrumentation for potential future heliophysics missions.



Mark Your Calendars! Many Fun and Educational Activities Scheduled For the Next Few Months, Including Tour of SLAC

We have many fun and interesting events scheduled for the next few months. Mark your calendars now, and please contact Ed Pieret (epieret@comcast.net) if you are available to volunteer to help out with Star Parties at Crestview Park and other locations.

Here is an overview of activities planned for the group.

Friday, March 6	7:00 p.m.	General Membership Meeting, pizza social and presentation
Saturday, March 14	5:00 p.m.	Crestview Park Star Party
Friday, March 20	6:00 p.m.	Bayside School STEM Fair Star Party
Friday, March 21	5:00 p.m.	Crestview Park Star Party
Saturday, March 28	7:00 p.m.	Spring Equinox Banquet
Friday, April 3	7:00 p.m.	SMCAS meets in CSM theater for Mohsen Janatpour Art & Science lecture
Saturday, April 11	5:00 p.m.	Stanford/KIPAC Open House Star Party
Friday, May 1	7:00 p.m.	General Membership Meeting, pizza social and presentation
Friday, May 8	3:00 p.m.	SLAC National Accelerator Lab tour (member only by RSVP)
Saturday, Oct. 17	2:00 p.m.	Family Science and Astronomy Festival

Reminder: SMCAS Participates in AmazonSmile and Receives a Percentage of Your Purchase

SMCAS is now enrolled in AmazonSmile, a program that enables certified 501(c)(3) non-profit organizations to receive donations from eligible purchases at Amazon.



To enroll in the program, go to smile.amazon.com. On your first visit to this site, you can select a charitable organization – San Mateo County Astronomical Society (SMCAS) – that will receive 0.5% of the purchase price of eligible items on Amazon. How will you know if an item is eligible? Items are clearly and literally marked on the product detail pages with “Eligible for AmazonSmile donation.” For more information, go to smile.amazon.com/about.

Event Review

February General Meeting Summary: Why the Theory of Cosmic Inflation is Important

By Ken Lum, SMCAS Board Member

The Cosmic Microwave Background (CMB) radiation is the observed afterglow of the Big Bang origin of the Universe that we live in. It is now mainly observable in the microwave part of the electromagnetic spectrum at a wavelength peaking at 1.9 mm and a temperature of 2.725° Kelvin due to the substantial redshift of the early light from the expansion of the Universe. It is one of the key pieces of evidence supporting the Big Bang theory of the origin of the Universe.

But confirmation of the Big Bang hypothesis is not enough to explain all the observed characteristics of the Universe. It is also very large and uniform in temperature to one part in 100,000. To explain these two characteristics, it has been necessary to propose that the very early Universe underwent an extremely rapid expansion called Cosmic Inflation, which can also lead to the generation of other universes. To date, no observational confirmation of this hypothesis has yet been made.

Recent Observations of the CMB and Why They Matter

The CMB has been measured with great precision using several space based microwave satellites such as WMAP (Wilkinson Microwave Anisotropy Probe) and Planck. More recently, ground-based observatories such as the BICEP (Background Imaging of Cosmic Extragalactic Polarization) series of microwave telescopes



and the Keck Array Polarimeter located in Antarctica at the South Pole have been used to search for polarization patterns (called B-mode polarization) in the CMB that could confirm Cosmic Inflation and even show evidence of gravity waves for the first time.

Last spring, there was great excitement over the discovery of these patterns in the CMB. Unfortunately, subsequent reanalysis of the data along with observations from Planck suggest that the initial findings of B-mode patterns were actually from foreground interstellar dust oriented by the Milky Way's magnetic field instead of from Cosmic Inflation.

It is now hoped that a new, more sensitive version of BICEP (BICEP3) now under construction will finally yield the desired observations. A signal to noise problem of the most challenging kind!

To read more, I recommend the cover story of Sky and Telescope, July 2014, and search BICEP2 on the S&T and Astronomy Magazine web sites for follow-up postings. Dr. Kernasovskiy's slides are also posted at [here](#):

https://www6.slac.stanford.edu/sites/www6.slac.stanford.edu/files/KIPAC_special_colloquia.pdf

Members' Forum

Google Star Party: A Celebration of Astronomy, Science and Technology

By Andrew K. Thanos, III, SMCAS Board Member

My family and I had the privilege and pleasure of being amongst the SMCAS volunteers at the Google Star Party on February 10, 2015. We arrived just after 4PM to help out and found that many scopes were already being set up! The weather was looking to be far less than ideal. This was a common topic of conversation as we milled about with our friends, met astronomers from several Bay Area astronomy clubs, and looked for opportunities to help out with the myriad of tasks that needed to be accomplished for an event of this scale to go well.

"Going well" would be an understatement. The Google Star Party was a phenomenal event! The poor weather gave way to much more favorable viewing conditions than expected. The turnout was fantastic. Volunteers from the various astronomy clubs enjoyed a great pizza dinner ahead of preparing for Googlers and their families to arrive for the festivities. Yes...there were festivities! To my family and me, this was no ordinary star party. It was more like a celebration of Astronomy, Science, and Technology.

Dozens of scopes were set up in parallel lines guided by red LED rope lights. The glow from those lights served as guides to attendees and as a beacon to some of us that wandered off to the Google Store and were not quite positive how to get back. There were tables of activities being enjoyed by attendees of all ages (including many small children). With an outdoor planetarium, picture booth, Galileo scopes being given out (free to Googlers), the food, socializing with Googlers and fellow Bay Area astronomers from several clubs, the Google Star Party definitely had the atmosphere of a celebration!

Attendees were able to view bright planets and dim deep sky objects through a variety of scopes ranging from large aperture Dobsonians, small aperture Newtonian reflectors, and many others in between! Some of the viewing highlights included Venus, Jupiter with Europa in transit, the Pleiades, the Andromeda Galaxy, the Orion Nebula and more. A notable example included our own Ken Lum sharing the view of the Orion Nebula through a photomultiplying eyepiece. After viewing it myself, I immediately encouraged everyone within a 25-meter radius where they could see a "spectacular" view. In just a few minutes, there was a substantial line at Ken's scope. (Thank you, Ken!)

It is an honor to serve SMCAS and share in the opportunities like the Google Star Party to help promote interest in Astronomy, other sciences, and evolving technology that makes astronomy more accessible to the amateur as well as the extraordinary advances being made by the professionals.

For event photos courtesy of Andy and team, visit our [Facebook page](#) at

<https://www.facebook.com/pages/San-Mateo-County-Astronomical-Society/444293602328040>

Questions about the event? Contact Andy via email: athanos@comcast.net

March Rise and Set Chart

SMCAS 2015 (DST)	Mar 14 Rise	Mar 14 Set	Mar 21 Rise	Mar 21 Set	Mar 28 Rise	Mar 28 Set
Sun	7:20 AM	7:15 PM	7:09 AM	7:22 PM	6:59 AM	7:28 PM
Moon	2:49 AM	1:15 PM	8:02 AM	9:17 PM	1:40 PM	3:04 AM
Mercury	6:38 AM	5:26 PM	6:40 AM	5:54 PM	6:42 AM	6:27 PM
Venus	8:45 AM	9:56 PM	8:39 AM	10:11 PM	8:34 AM	10:27 PM
Mars	8:23 AM	9:08 PM	8:08 AM	9:07 PM	7:54 AM	9:05 PM
Jupiter	3:46 PM	5:47 AM	3:16 PM	5:18 AM	2:47 PM	4:50 AM
Jupiter's moons	g J e i		g J i c		c g e J i	
8:30 PM, East on left	J=Jupiter, c=Callisto, e=Europa, g=Ganymede, i=Io					
Saturn	12:55 AM	10:56 AM	12:27 AM	10:29 AM	11:55 PM	10:01 AM
Uranus	8:19 AM	8:56 PM	7:52 AM	8:30 PM	7:26 AM	8:05 PM
Neptune	6:47 AM	5:53 PM	6:20 AM	5:27 PM	5:53 AM	5:01 PM
Pluto	3:51 AM	1:42 PM	3:24 AM	1:15 PM	2:57 AM	12:48 PM

- DST starts on the 8th.
- Equinox on the 20th.
- Star parties are at Crestview on the 14th and 21st.
- Jazz Under the Stars is at CSM on the 28th.

— Provided courtesy of Ron Cardinale

Continued from photo, page 1

Tendrils of dark dust can be seen across the frame, partially obscuring the bright center of the galaxy and continuing out towards the smattering of stars at its edges, where the dust lanes and shapes melt into the inky background. Numerous nearby stars and galaxies are visible as small smudges in the surrounding sky, and the brightest stars are dazzlingly prominent towards the bottom left of the image.

ESO 121-6 is a galaxy with patchy, loosely wound arms and a relatively faint central bulge. It actually belongs to a group of galaxies, a clump of no more than 50 similar structures all loosely bound to one another by gravity. The Milky Way is also a member of a galactic group, known as the Local Group.

Image and Article Credit: NASA/ESO/ESA

SMCAS Monthly Calendar — March 2015

March 2015						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 sunset 10:17	2	3	4	5	6 7:00 PM SMCAS Meeting	7
8 sunset 11:15	9	10	11	12	13	14 5:00 PM Crestview Star Party
15 sunset 11:13	16	17	18	19	20	21 5:00 PM Crestview Star Party
22 sunset 11:11	23	24	25	26	27	28 7:00 PM Equinox Spaghetti Feed
29 sunset 11:09	30	31				

▪ observing event
▪ club event
▪ community event

- Courtesy of Ed Pieret

Your Survey is in the Mail...

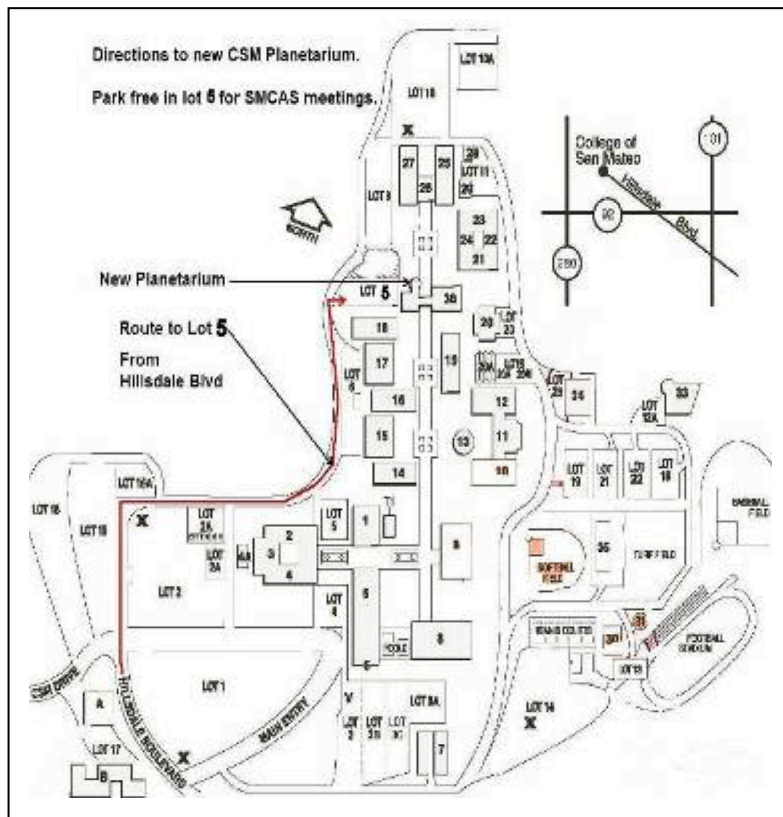
SMCAS Board President Marion Weiler is emailing a survey link to all members of the SMCAS Yahoo group. Please participate and get your voice heard! The purpose of the survey is to get feedback on SMCAS activities, communication, dues – and how the organization might better serve, maintain and grow its membership. Please complete and return the survey by March 9.

Directions to SMCAS Meetings at CSM, and to Star Parties

Star parties are held monthly, weather-permitting, and are free to members and visitors.

Directions to the CSM Planetarium for Meetings

After exiting Hwy 92 at Hillsdale Blvd, climb the hill towards CSM, passing two traffic lights to the stop sign at the top. Continue straight, bear right then, after the 2nd stop sign, bear left over the rise. Enter the next parking lot on the right, called Lot 5, "Marie Curie". Science Bldg 36 and the planetarium lie straight ahead. Enter Bldg. 36 thru the door facing the lot, or



Crestview Park

Come on out, and bring the kids, for a mind-blowing look at the Universe!

Bring your binoculars, telescopes, star guides, and lounge chairs for some informal star gazing at Crestview Park.

Dress warmly and wear a hat. Only visitors with telescopes should drive in. Others should park on the street and walk in, or arrive before dark so that car headlights don't affect the observers' dark adaptation. Bring small flash-lights only, covered with red cellophane or red balloon.

These measures avoid safety issues of maneuvering in the dark, as well as ruining the night vision of the viewers.

Please don't touch a telescope without permission. And, parents, please don't let children run around in the dark.

Directions to Crestview Park for Star Parties

From Hwy 101 or El Camino, take Brittan Avenue in San Carlos, west (to the hills). Follow Brittan 2.3 miles (from El Camino) to Crestview Drive. Turn right on Crestview. In half-a-block, you will see a small blue posted sign with an arrow, indicating the entry road into Crestview Park. It lies between houses with addresses #998 and #1000 Crestview Drive.

From Highway 280, take Edgewood Road exit. Go east (toward the Bay) about 0.8 miles. Turn left at Crestview Drive. Go 0.5 mile uphill to where Crestview meets Brittan. Again, drive the half-block, to the sign on the right, and the entry road on the left.

Note: If bringing a telescope and arriving after dark, please enter the Park with your headlamps and white interior lights off. If you aren't bringing a telescope, whether before or after dark, please park along Crestview Drive, and walk in.

2nd Note: Brittan Acres is residential, adjacent to homes and backyards. Before inviting potentially noisy groups, please call Ed Pieret at (650) 595-3691 for advice and advisories. Call Ed also to check the weather and 'sky clock', and to see whether the star party is still scheduled.

Membership Application and Society Information

To join the San Mateo County Astronomical Society, or to renew membership, please send your dues by check, payable to "SMCAS", to this address: **SMCAS (at) PO Box 974, Station A, San Mateo, CA 94403. Or, use PayPal at www.smcas.com.**

Dues are currently \$30 for a new (family) membership and renewing member and \$15 for a student membership.

Please check one of the following boxes: () New member () Membership renewal () Student () Address or info change

NOTE TO RENEWING MEMBERS: Please complete the following only for a change to your membership or contact info.

Name(s) _____

Address/City/Zip: _____

Phone(s) _____ Email _____

Meetings of the San Mateo County Astronomical Society are held the **first Friday of the month (except in July and August)** in the Planetarium at the College of San Mateo, 1700 West Hillsdale Blvd. in San Mateo. Exit Hwy. 92 at West Hillsdale Blvd. and, proceed uphill through the second and third sets of traffic lights, to the first stop sign at the top of the hill. Continue straight, bearing right then, after the second stop sign, left up over a rise. After the third stop sign, enter the first parking lot on the right with a sign 'Lot 5, Marie Curie', identifying the top level plus those below.

Science Bldg. 36 adjoins the lot, with the geodesic planetarium dome to its left. Circle the planetarium, or enter Bldg 36 thru the door facing Lot 5. For the 4th floor observatory, use the elevator just inside on the right. The planetarium corridor is ahead on the left. Turn left at the restroom sign.

Officers: President: Marion Weiler; **Vice-President:** Ed Pieret; **Secretary:** Karen Boyer; **Treasurer:** Tom Stephany

Board Directors-At-Large: Bob Franklin, Ken Lum, Karen Zamel, Jeff Dye, Ali Emami. Andy Thanos.

Event Horizon Editor: Karen Zamel. **NOTE:** Newsletter is posted by the beginning of each month (except for July and August). Postings and photos are welcome by the 15th of the month before publication.

SMCAS Contact Information

Website: <http://www.smcas.com>.

The CSM Astronomy Department schedule is at www.collegeofsanmateo.edu/astronomy/events.

Email: SMCAS@live.com

Society Yahoo group: <http://groups.yahoo.com/group/smcas>.

Yahoo Group Subscription: email smcas-subscribe@yahoogroups.com telling your interest in title and body text.

Event Horizon: To offer articles or photos, please email the editor, karenzamel@gmail.com or phone (650) 814-3902.