

# The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

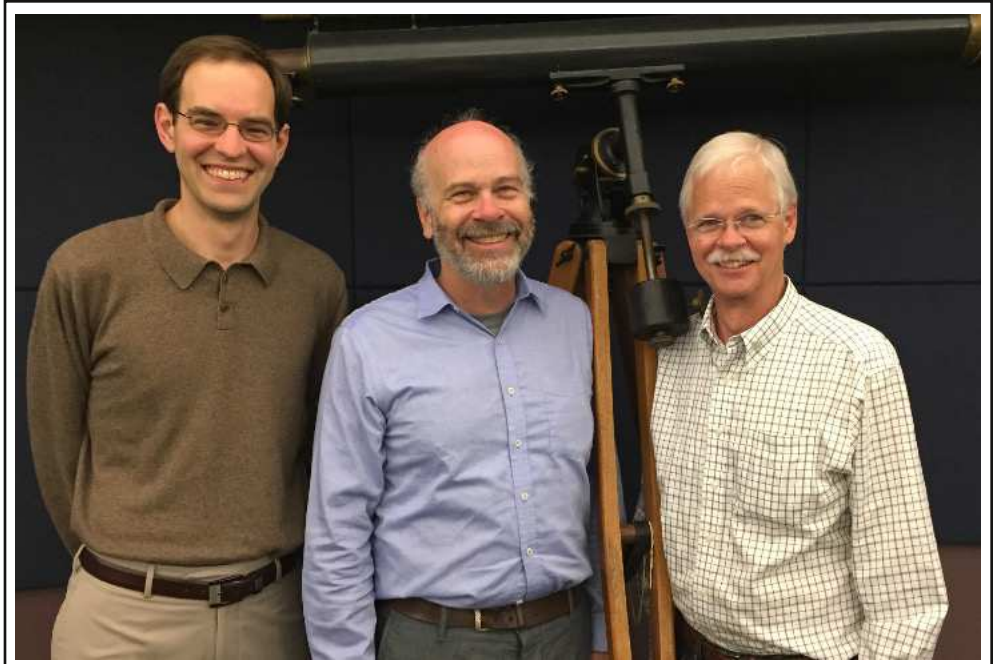
August/September 2017 — 645th General Meeting Notice



# 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.smcasastro.com](http://www.smcasastro.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](mailto:SMCAS@live.com), or call us at (650) 678-2762.



*THE JUNE 23 SMCAS MEETING featured two speakers, Dr Dan Fabrycky (left; University of Chicago) and Steve Kawaler (center; Iowa State University), shown here with SMCAS President Marion Weiler. Both were in the Bay Area to attend the fourth Kepler and K2 Science Conference at NASA AMES. See page 5 for Ken Lum's review of their talks.*

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## DATES TO SAVE

**Aug 21:** Solar eclipse. An eclipse viewing event at CSM will begin at 8:00 AM.

**Sep 1:** General meeting, pizza, and presentation at the CSM Planetarium. Details on page 4.

**Sep 30:** Family Science and Astronomy Festival at CSM. Planetarium. **Volunteers are needed!** See page 7.

More events and further details on page 8.

## President's Corner

Summer is waning, the Great American Eclipse of 8/21 will soon be history, and before you know it we will be back on our regular meeting schedule. It starts on Friday, September 1 with a presentation by Dr. Vanessa Bailey from Stanford University talking about the Gemini Planet Imager. After that, we will continue to have a busy fall, with meetings, star parties, socials, festivals and more! To stay abreast of it all, keep an eye on our SMCASASTRO website, emails from the SMCAS Yahoo Group, and our Facebook page.

We had a great Annual Banquet and Installation of Officers at Avanti Pizza on July 8. Plenty of food and good company! We installed our 2017–18 Officers and Board: Marion Weiler President, Ed Pieret Vice President, Karen Boyer Secretary and Board Members Ken Lum, Mike Ryan, Frank Seminario, Edwin Ching, Mary Ann McKay, and Steve Minkin. Many thanks to Bob Franklin, who is retiring from Board after many years of service! Also thanks to Steve Minkin who provided some entertainment with his top-10 list of astronomy jokes!

The annual Family Science and Astronomy Festival co-sponsored by SMCAS and the College of San Mateo is scheduled for Saturday, September 30, which is also National Astronomy Day. The program will be similar to previous years: activities, demos, planetarium shows during the day from 2:00pm to about 6:00pm, a keynote presentation in the CSM Theatre at 7:00pm, and then a star party at the CSM Observatory from 9:00pm on. Thanks to Ken Lum, we have arranged an outstanding keynote speaker : Dr Jeff Cuzzi, who will be talking on the final results of the Cassini mission, and providing us with some great visuals of Saturn, its rings and moons. We need SMCAS volunteers to help out with a variety of activities. See the announcement elsewhere in this Event Horizon, and contact Ed Pieret for more info and to volunteer!

Earlier this summer I was at the San Diego Airport and came across an art exhibition in the Southwest Airlines terminal titled Intergalactic Dreaming. I found the most interesting individual collection there was a display of a selection of the NASA-JPL Space Tourism travel posters. The posters are the brainchild of The Studio at JPL, a design and strategy team that works with JPL scientists and engineers to visualize and depict complex science and technology topics. Their work is used in designing space missions and in sharing the work of NASA/JPL with the public. The travel posters fire the imagination, helping us envision and create the future. A stroke of genius to put this exhibit in the airport terminal, where you could just as easily envision yourself waiting to board for your trip to Enceladus as you would for



***Continued on p. 3***



**President's Corner, continued from p. 2**

San Francisco. If you haven't seen the entire collection, check them out. The posters are free for viewing, downloading and printing at the website below. You will also find a bit of the history of the posters, comments by the artists, and more.

<https://www.jpl.nasa.gov/visions-of-the-future/>

The Great American Eclipse of 2017 is fast approaching, scheduled courtesy of celestial physics, for Monday morning August 21. While many of our members will be going out of town to view it in totality, many others of our members and the general public will not be so fortunate. For those remaining in the area, Professor Darryl Stanford at the College of San Mateo will be hosting partial eclipse viewing at the CSM Sun Plaza, by Building 36, from 8:30am to noon. I encourage any members available to head on up there and help out with answering questions from the public. There will be eclipse viewing glasses available, and several solar scopes set up. Parking will be free in lot 6 (Galileo).

RIP: Long time member Leroy Amen, who passed away in January, was interred at Skylawn Cemetery on June 23. A group of SMCAS members went to Skylawn for the interment ceremony, and helped see him off to his final resting place.

Happy stargazing!

**Marion Weiler**

*President, San Mateo County Astronomical Society*



*Friends and fellow Society members at the interment ceremony for Leroy Amen, held June 23 at Skylawn Cemetery. Pictured, left to right: Ed Pieret, Bud Hoff, photograph of Leroy, Ken Lum, Bob Franklin, Chanan Greenberg, Ron Cardinale, and Bill General.*

*SMCAS General Meeting and Presentation on Friday September 1, 2017*

## **Dr Vanessa Bailey**

**Astronomer, Post Doctoral Scholar  
Stanford University, KIPAC**

### **Finding Exoplanets with the Gemini Planet Imager**

Friday, September 1, 2017 , College of San Mateo, Building 36  
SMCAS General meeting at 7:00 p.m. ISC Room, room 110  
Presentation at 8:00 p.m. in the CSM Planetarium  
Free and open to the public, free parking (lots 5 and 6 recommended)

The Gemini Planet Imager Exoplanet Survey (GPIES), officially launched in November 2014, is an ambitious multi-year study dedicated to observing 600 young, nearby star systems to image young Jupiters and planet forming debris disks using the GPI instrument installed on the Gemini South telescope in Chile. The GPI instrument team and the GPIES survey team are composed of researchers from several dozen institutions in North and South America; the teams are led by Bruce Macintosh at Stanford University.

Project challenges run the gamut from instrument engineering to data analysis to theoretical modeling of planets' atmospheres. The engineering challenges are daunting: GPI takes pictures of planets orbiting stars many light years away. These high-resolution images must be able to detect planets a million times fainter than their host stars, despite looking through Earth's turbulent atmosphere. Adaptive Optics, Vanessa's specialty, is a key to obtaining these images. In this talk, Vanessa will give us an overview of the challenges of building and operating a planet imaging instrument, the role of adaptive optics, and some of GPIES' exciting and unexpected results.

Dr. Vanessa Bailey is a postdoctoral Scholar at Stanford University and KIPAC (Kavli Institute for Particle Astrophysics and Cosmology) where she is working on Adaptive Optics for the Gemini Planet Imager. Vanessa received a BS in Astrophysics with honors, and Physics summa cum laude, from the University of Minnesota in 2009. She earned her PhD in Astronomy from the University of Arizona in 2015, based on her work with another planet imaging instrument: the Large Binocular Telescope Interferometer.



## June Meeting Review

### Sounding Stars while Hunting for Planets

and

### Bumpy Rides in the Early Lives of Planetary Systems

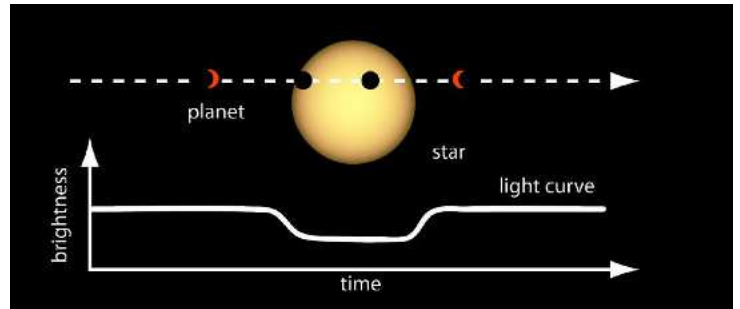
*Results from the 4th Kepler and K2 Science Conference at NASA Ames*

**By Ken Lum**

Our last SMCAS General meeting was held June 23 courtesy of outreach from participants from the 4th Kepler and K2 Science Conference which took place at NASA Ames summarizing the latest results from the Kepler mission search for extrasolar planets. Our club benefited from the generosity of Drs. Steve Kawaler of the University of Iowa and Dan Fabrycky of the University of Chicago who came to describe their work with the Kepler mission.

NASA's Kepler mission is a space-based photometer, launched in 2009, that measures the intensity of starlight gathered by the satellite's telescope. Because the instrument is located in space outside the interference of Earth's atmosphere, its sensitivity and ability to accurately measure small variations in brightness over time is extraordinary. Any extrasolar planet passing in front of its star will cause the overall luminosity to drop slightly for whatever period of time it takes to complete the transit thereby betraying the planet's presence (Fig. 1). Thus far, the Kepler mission has discovered 2337 verified planets—and counting!

Dr. Kawaler emphasized his work with asteroseismology to detect extrasolar planets using the Kepler data. Asteroseismology is the study of how stars vibrate as they burn their gaseous hydrogen and helium fuel. These stellar vibrations are manifested in very small, but regular, non-random variations in brightness detected by the Kepler photometer—somewhat like the flickering of a candle flame. Dr. Kawaler was able to record asteroseismic activity in some of the observed stars with considerable precision. These observations enabled him and his collaborators to calcu-



*Figure 1. Slight dimming of a star's light as an exoplanet passes in front of it.*

late the physical characteristics of many stars from the data and to improve the accuracy of the estimated sizes of the planets found around them.

An example of how asteroseismology improved the characterization of a planetary system is the extrasolar planet, Kepler 93b. Its parent star was found to have a mass of 0.911 solar masses with its planet having a mass of 3.8 Earth masses and a radius of 1.481 Earth radius with an uncertainty of only 120 km. This is the most accurate estimate of an extrasolar planet size to date—and remarkable given that it is 315 light years away. Kepler 93b orbits its star about every 4.73 days. The system also has a second planet, Kepler 93c.

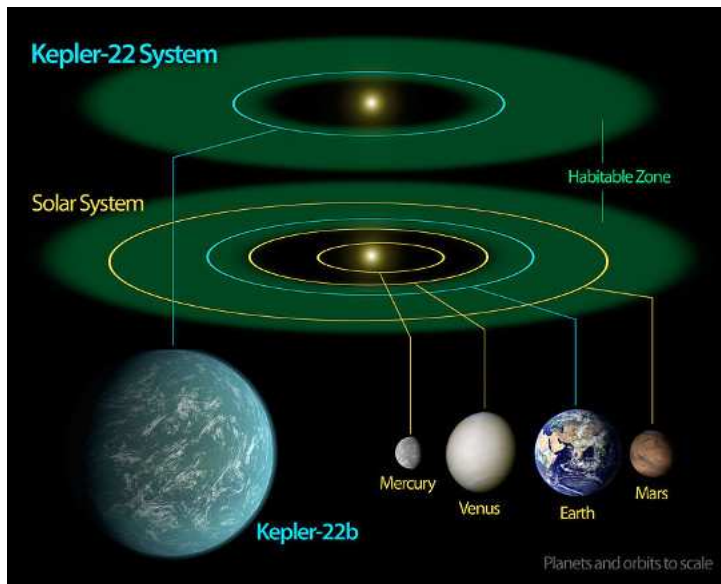
These techniques were also used to discover Kepler 22b, the first extrasolar planet to be found in its star's habitable zone which is the zone around a star where a planet could possibly have the right temperature and star light exposure to have liquid water and be compatible with having life as we know it (Fig. 2).

Our next speaker was Dr Dan Fabrycky of the University of Chicago. His discussion emphasized the study of stellar planetary systems having

**Continued on p. 6**



## Kepler talks, continued from p. 5



*Figure 2. Kepler 22b was the first exoplanet determined to be in its star's habitable zone.*

multiple planets and how they may have behaved in the past based on what their orbits look like today.

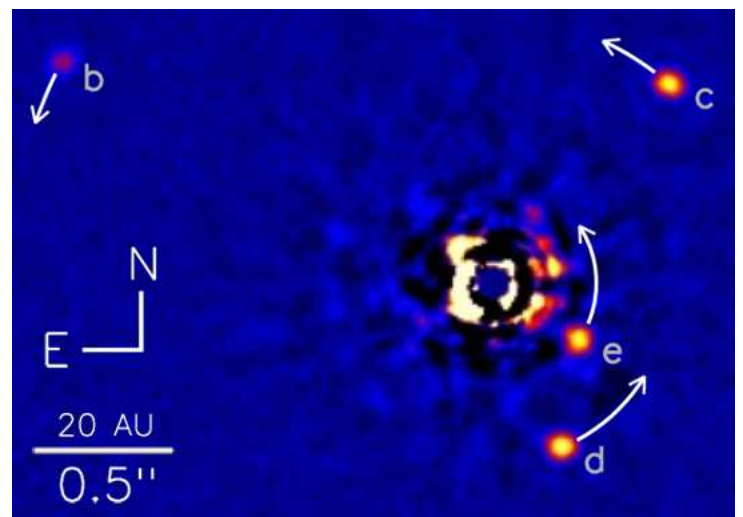
Kepler 11 is the first extrasolar planetary system to be found to have 6 confirmed planets with masses varying from that of the Earth to that of Neptune. Their densities suggest that the planets may have a significant portion of their masses to be made of material less dense than that of rock, perhaps even of water. Such a finding may indicate that these planets formed further from the parent star and eventually migrated inwards to their present locations.

Kepler 223 (also known as KOI (Kepler Object of Interest)-730) is another multiplanetary system that Dr. Fabrycky described containing 4 planets of masses approximating that of Neptune. The orbits appear to have whole number resonances with each other with orbital ratios of 8:6:4:3 with the innermost Kepler 223b completing 8 orbits for every 6 orbits of Kepler 223c, 4 orbits of Kepler 223d and 3 orbits of Kepler 223e. Computer simulations of this system suggest these planets likely formed in more distant orbits before

migrating inwards to assume their current more stable orbital resonance positions instead of forming where they are now.

Finally, Dr. Fabrycky showed an extraordinary movie made of the star, HR 8799 with its 4 known planets going around it. Instead of using indirect methods, these planets were imaged directly using the recently commissioned Gemini Planet Imager (GPI) which is an advanced adaptive optics device installed on the ground-based Gemini South Telescope in Chile (Fig. 3).

Newer and more sophisticated instruments for observing exoplanets are now in the planning stages or just starting operations including NASA's Transiting Exoplanet Survey Satellite (TESS) mission due for launch in 2018, the European Space Agency's Spectro-Polarimetric High-contrast Exoplanet REsearch (SPHERE), another adaptive optics instrument in use with the Very Large Telescope (VLT) in Chili, and Project 1640, still another advanced adaptive optics device now attached to the Palomar 200 inch telescope also designed to image exoplanets. More on these with [this article](#) from Sky and Telescope.



*Figure 3. The star HR 8799 with its four known planets, directly imaged by the Gemini Planet Imager.*

# Family Science & Astronomy Festival

Saturday, September 30, 2017 • 2–11 pm

## SMCAS Member Volunteers needed

We need help in presenting Astronomy topics for the Family Science and Astronomy Festival. Presentations are from 2-6 pm on September 30, 2017.

Volunteers will be supplied with presentation materials, personal and video instructions, documentation and as much support as they need.

Some of the topics we need presenters for are:

- How Telescopes Work
- Solar System Models
- Gravity and Black Holes
- The Search for Extraterrestrial Life
- Our Sun
- The Moon, Phases and Eclipses



If you can help or have questions, contact Ed Pieret at [EPIERET@comcast.net](mailto:EPIERET@comcast.net).

## Upcoming SMCAS Meetings and Events

We have many fun and interesting activities planned in the coming months. See the web site ([www.smcasastro.com](http://www.smcasastro.com)) or contact Marion Weiler (mgwe@pacbell.net) for more information or to volunteer at any of these events. Please contact Ed Pieret (epieret@comcast.net) if you are available to help out with Star Parties at Crestview Park and other locations.

Sat, Aug 19	8:00 pm	<b>Crestview Park Star Party</b>
Mon, Aug 21	8:00 am	<b>Solar Eclipse Observing at CSM</b>
Sat, Aug 26	7:45 pm	<b>Crestview Park Star Party</b>
Fri, Sep 1	7:00 pm	<b>General Meeting, Pizza Social and Presentation</b>
Tue, Sep 12	7:00 pm	<b>SMCAS Board Meeting</b>
Sat, Sep 16	7:15 pm	<b>Crestview Park Star Party</b>
Sat, Sep 23	7:00 pm	<b>Crestview Park Star Party</b>
Sat, Sep 30		<b>Family Science and Astronomy Festival at CSM</b>
Sat, Oct 14	6:30 pm	<b>Crestview Park Star Party</b>
Sat, Oct 21	6:15 pm	<b>Crestview Park Star Party</b>

*General meetings and board meetings are held in the ISC Room (room 110) in building 36 at the College of San Mateo. For directions to the building or to the star party site at Crestview Park in San Carlos, see page 11. All SMCAS members are welcome at board meetings.*

*The times given for the star parties are approximately at sunset. Arrive then to set up a telescope or if you want to learn about telescopes. If you would like to merely see the wonders of the night sky through our telescopes, observing starts about an hour later and usually continues for about two hours.*



## Twenty Years Ago on Mars...

*By Linda Hermans-Killiam*

On July 4, 1997, NASA's Mars Pathfinder landed on the surface of Mars. It landed in an ancient flood plain that is now dry and covered with rocks. Pathfinder's mission was to study the Martian climate, atmosphere and geology. At the same time, the mission was also testing lots of new technologies.

For example, the Pathfinder mission tried a brand-new way of landing on Mars. After speeding into the Martian atmosphere, Pathfinder used a parachute to slow down and drift toward the surface of the Red Planet. Before landing, Pathfinder inflated huge airbags around itself. The spacecraft released its parachute and dropped to the ground, bouncing on its airbags about 15 times. After Pathfinder came to a stop, the airbags deflated.

Before Pathfinder, spacecraft had to use lots of

fuel to slow down for a safe landing on another planet. Pathfinder's airbags allowed engineers to use and store less fuel for the landing. This made the mission less

expensive. After seeing the successful Pathfinder landing, future missions used this airbag technique, too!

Pathfinder had two parts: a lander that stayed in one place, and a wheeled rover that could move around. The Pathfinder lander had special instruments to study Martian weather. These instruments measured air temperature, pressure and winds. The measurements helped us better understand the climate of Mars.



**Continued on p. 10**



*The Mars Pathfinder lander took this photo of its small rover, called Sojourner. Here, Sojourner is investigating a rock on Mars. Image credit: NASA/JPL-Caltech.*

## SMCAS Members Visit the Ring of Brodgar

*By Mary Ann McKay and Ed Pease*

These photos are from our visit on July 18 to the Ring of Brodgar, a neolithic henge and stone circle located on the largest of the Orkney Islands of Scotland. At over 100 meters in diameter, it is one of the largest stone circles in the British Isles.

Right: Ed and Mary Ann in front of some of the stones. Below: a wider view giving a sense of the size of the stones.



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### **Mars, continued from p. 8**

The lander also had a camera for taking images of the Martian landscape. The lander sent back more than 16,000 pictures of Mars. Its last signal was sent to Earth on Sept. 27, 1997. The Pathfinder lander was renamed the Carl Sagan Memorial Station. Carl Sagan was a well-known astronomer and science educator.

Pathfinder also carried the very first rover to Mars. This remotely-controlled rover was about the size of a microwave oven and was called Sojourner. It was named to honor Sojourner Truth, who fought for African-American and women's rights. Two days after Pathfinder landed, Sojourner rolled onto the surface of Mars. Sojourner gathered data on Martian rocks and soil. The rover also carried

cameras. In the three months that Sojourner operated on Mars, the rover took more than 550 photos!

Pathfinder helped us learn how to better design missions to Mars. It gave us valuable new information on the Martian climate and surface. Together, these things helped lay the groundwork for future missions to Mars.

Learn more about the Sojourner rover at the NASA Space Place: <https://spaceplace.nasa.gov/mars-sojourner>

*This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit [spaceplace.nasa.gov](https://spaceplace.nasa.gov) to explore space and Earth science!*

## August/September Rise and Set Chart

<b>SMCAS 2017 (PDT)</b>	<b>Aug 19 Rise</b>	<b>Aug 19 Set</b>	<b>Aug 26 Rise</b>	<b>Aug 26 Set</b>	<b>Sep 16 Rise</b>	<b>Sep 16 Set</b>
Sun	6:29 AM	7:55 PM	6:35 AM	7:45 PM	6:52 AM	7:14 PM
Moon	4:08 AM	6:36 PM	11:33 AM	10:55 PM	3:00 AM	5:17 PM
Mercury	7:40 AM	8:05 PM	6:45 AM	7:25 PM	5:28 AM	6:37 PM
Venus	3:40 AM	6:04 PM	3:52 AM	6:07 PM	4:33 AM	6:05 PM
Mars	5:51 AM	7:38 PM	5:45 AM	7:23 PM	5:29 AM	6:36 PM
Jupiter	10:49 AM	10:11 PM	10:27 AM	9:47 PM	9:24 AM	8:34 PM
Jupiter's moons	g i j e c		g c i j e		c g j e i	
9 PM, East on left	J=Jupiter, c=Callisto, e=Europa, g=Ganymede, i=Io					
Saturn	3:46 PM	1:31 AM	3:18 PM	1:03 AM	1:58 PM	11:38 PM
Uranus	10:25 PM	11:38 AM	9:58 PM	11:09 AM	8:34 PM	9:44 AM
Neptune	8:34 PM	7:56 AM	8:06 PM	7:28 AM	6:42 PM	6:02 AM
Pluto	5:37 PM	3:24 AM	5:09 PM	2:56 AM	3:46 PM	1:32 AM

- Star parties are at Crestview on 8/19, 8/26, 9/16, and 9/23.
- Jazz Under the Stars is at CSM on 8/26.
- The equinox is on September 22nd at 1:02 PM.

– *courtesy of Ron Cardinale*

## Fundraising for the Group: 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](https://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](https://smile.amazon.com/about).



## [Members Forum](#)

### Star Parties

*By Ed Pieret*

At our meetings and on our publications we refer to star parties. This term may be confusing to some of our newer members.

A star party is a gathering of astronomers for the purpose of observing the night sky. Star parties are quiet, contemplative events.

SMCAS schedules regular star parties at Crestview Park approximately twice a month on Saturdays weather permitting. You can find Crestview dates, directions and details on our website under Star Parties.

In addition, we hold special star parties for schools and other groups. If you would like to schedule such an event, contact Ed Pieret at [EPieret@Comcast.net](mailto:EPieret@Comcast.net).

If you come to a star party, you will get a chance to see planets, star clusters, nebulae and even galaxies with your own eyes. You can also see telescopes of different designs and by different manufacturers in action. If you bring your own telescope, you will can get help in setting it up and finding objects to view.

Many people shy away from attending a star party because they don't want to disturb the astronomers. In fact, the astronomers love visitors and consider a star party with few or no visitors a failure.

You may also be concerned that the discussions will be filled with astronomy jargon. At the SMCAS events we try to engage the public and keep any technical terms to a minimum. If a term is used, we will gladly explain it.

There are a few rules about attending that will



*SMCAS member Ken Lum readies his telescope at an SMCAS star party on the night of November 17, 2016. This was a typical special star party, held as part of the Menlo Park Library Science Night.*

make the event more pleasant for everyone.

1. Avoid shining any white light or any light except a dim red light. This is to protect the night vision of the astronomers and guests. A particularly bright source of white light is your automobile. Unless you need it to transport a telescope, we ask that you park where your lights will not shine on the telescopes. At Crestview, this means parking on the street and walking into the park.
2. The telescopes are the personal property of the astronomers and cost thousands of dollars. Please be respectful around them, avoid touching them whenever possible and never touch a glass surface.

If you decide to come to a star party, bring your curiosity and your kids. We love showing the wonders of the night sky to non-astronomers and especially children. We hope to see you there.

San Mateo County Astronomical Society Event Calendar						
August 2017						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31	1	2	3	4	5 Sunset: 8:14 PM
6	7 	8	9	10	11	12 Sunset: 8:06 PM
13	14	15 	16	17	18	19 7:56 PM Crestview Star Party Sunset: 7:57 PM
20	21 9:00 AM Great American Eclipse 	22	23	24	25	26 7:46 PM Crestview Star Party Sunset: 7:48 PM
27	28	29 	30	31	1	2

San Mateo County Astronomical Society Event Calendar						
September 2017						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	1 7:00 PM General Membership Meetin	2 Sunset: 7:37 PM
3	Labor Day	4	5	6 	7	8 Sunset: 7:25 PM
10	11	12	13 	14	15	16 7:14 PM Crestview Star Party Sunset: 7:15 PM
17	18	19	20 	21	22	23 7:04 PM Crestview Star Party Sunset: 7:05 PM
24	25	26	27	28 	29	30 2:00 PM FS&AF Sunset: 6:54 PM

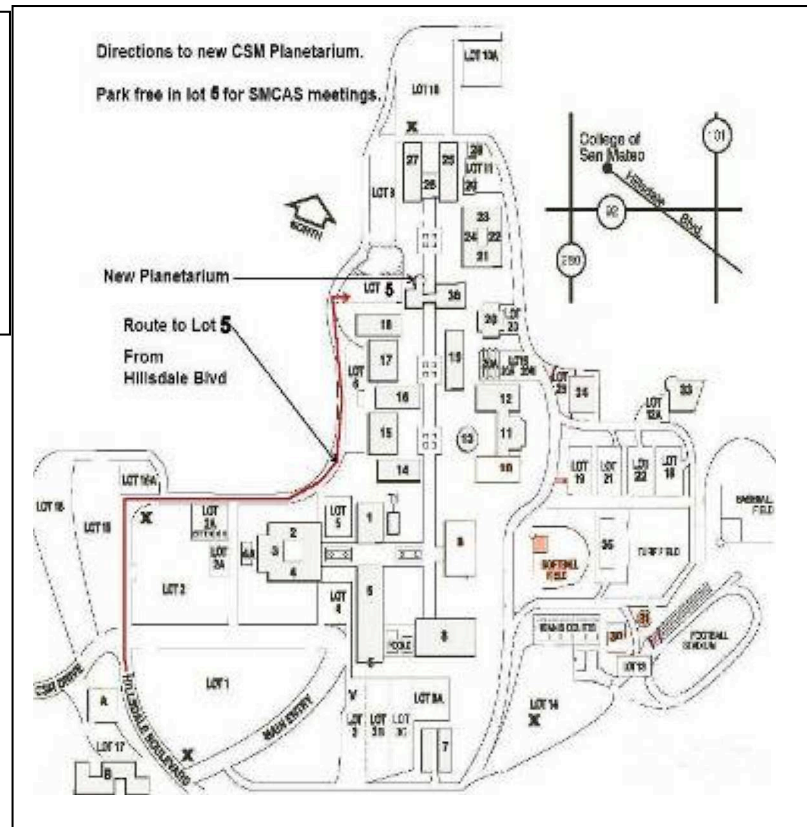
Calendars courtesy of Ed Pieret

## Directions to SMCAS Meetings at CSM, and to Star Parties

Star Parties are Free to Members and Visitors and are Held Regularly, Weather Permitting

### 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 walk around the dome to the courtyard entrance.



## 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:** Crestview Park 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.





# San Mateo County Astronomical Society Membership Application

rev 04022017

[SMCAS@live.com](mailto:SMCAS@live.com); P.O. Box 974, Station A, San Mateo CA 94403; (650) 678-2762

Date: \_\_\_\_\_ Please check one: [ ] New Member or [ ] Renewal

[ ] \$30 Regular Family Membership; [ ] \$15 Student Membership

**All members, please indicate areas of interest below.** New members, please complete entire form. Renewing members, please provide your name and any information that has changed in the last year.

**We will list your name, address, email address, and phone number(s) in our membership roster unless you have checked the box preceding that information. The membership roster is distributed to active members only.**

**Each member's name and mailing address must be provided to the Astronomical League (AL), SMCAS' parent organization. If you don't want AL to have your phone number and email address, indicate below.**

[ ] Name(s) \_\_\_\_\_ [ ] Email Address \_\_\_\_\_

[ ] Address \_\_\_\_\_

[ ] City & Zip Code \_\_\_\_\_

[ ] Phone Number(s): \_\_\_\_\_ [ ] Do not provide my phone number(s) to the AL.

[ ] Don't provide my email address to the AL. (Checking this means you can ONLY get **The Reflector** by regular mail)

Please check one: send **The Reflector** [ ] by mail, or [ ] by email.

## Areas of Interest

SMCAS encourages member involvement. We invite you to provide additional information about your interests, skills, occupation and prior experience. Please identify SMCAS projects and functions that you might like to help facilitate.

Please indicate which of the following activities might be of interest to you:

\_\_\_\_\_ Star Parties - Do you own a telescope you can bring: Yes ( ) No ( )

\_\_\_\_\_ General Meetings - Finding (or being) a Speaker. Official greeter. Set up or take down ISC or refreshments.

\_\_\_\_\_ Family Science Day & Astronomy Festival (Usually at CSM the first Saturday in October).

\_\_\_\_\_ Social Events - Equinoctial and Summer Solstice potlucks, Summer Star-B-Que, Holiday Potluck.

\_\_\_\_\_ SMCAS Membership and Promotional Drives

\_\_\_\_\_ Communications – 'Event Horizon' Newsletter, Website(s), Facebook page, group email, Publicity posting.

\_\_\_\_\_ Educational Programs – School, museum and library star parties, Bay Area Astro teacher assistants.

Other/Comments: \_\_\_\_\_

<http://www.SMCASASTRO.com>