

# The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

March 2017 — 642nd General Meeting Notice



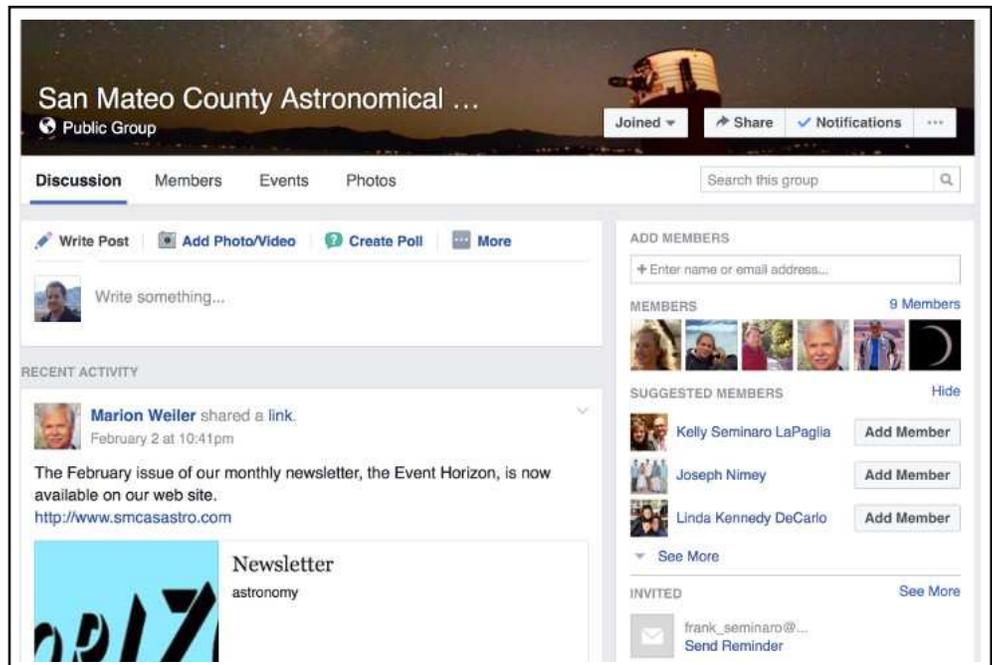
# EVENT HORIZON

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.

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*A NEW SMCAS FACEBOOK GROUP supplements and will eventually replace the current SMCAS Facebook page. It will create opportunities for interaction, communication, and discussion between members that are not possible on a static page. See Frank Seminario's article on page 6 for more about the new group.*

## DATES TO SAVE

**Mar 3:** General Meeting, Pizza, and Presentation at the CSM Planetarium. Details on page 3.

**Apr 7:** No general meeting in April.

**Apr 8:** Spring Equinox Spaghetti Feed/Potluck at Crystal Springs Methodist Church, San Mateo.

**Apr 14:** Art & Science Presentation by Mohsen Janatpour at CSM.

*More events and further details on page 7.*

## President's Corner

Of all the things we do as amateur astronomers, helping inspire the next generation about science may be one of the most important. Astronomy is often called a gateway science that leads people into deeper interest in STEM (Science, Technology, Engineering, Math) in general.

Amateur astronomers are often the people who act as the gatekeepers, they have the first opportunity to show children and even adults the night sky through a telescope and spark their lifelong interest in Astronomy and science in general. Teaching, engaging and motivating children in particular to have a lifelong interest in Astronomy can be a challenge. At our SMCAS star parties, we interact with hundreds of children each year. How we go about doing that can make a difference in people's lives, and we certainly want to make sure we are doing it as best we can!

Training can help make our job easier. A great training opportunity which Ed Pieret and myself took advantage of in February is a pilot program called "Reaching for the Stars: NASA Science for Girl Scouts" developed by a team led by the SETI Institute and including many others such as the Astronomical Society of the Pacific and the Girl Scouts. While being developed for girls in general and for the Girl Scouts in specific, what we learned about teaching astronomy to girls was quite valuable and can be applied to any youngster - boy, girl or even adult. This training program will be repeated in the future, and I encourage attending if you can!

*Astronomical tip of the month.* After sunset on the evening of March 29, turn your gaze towards the Western sky and you will be treated to a rare sight. The crescent moon will form a triangle in the Western sky with Mars above the Moon and Mercury below it and to the right. This will be your best opportunity to see Mercury at its brightest and highest in the sky this year. Usually Mercury is hard to spot because of the glare of the sun. But on March 29 Mercury will be at its furthest point from the Sun, and thus easiest to see.

Lastly, please join me in welcoming our newest member: Joel Colburn of Foster City.

Happy stargazing!

**Marion Weiler**

*President, San Mateo County Astronomical Society*



*Jessica Henricks, Program Manager, STEM, NorCal Girl Scouts and Ed Pieret at the training.*

*SMCAS General Meeting and Presentation on Friday March 3, 2017*

## **Dr Mehmet Alpaslan**

**Post Doctoral Research Fellow  
NASA Ames Research Center**

### **How Galaxies are Influenced by the Largest Structures in the Universe**

Friday, March 3, 2017 , College of San Mateo, Building 36

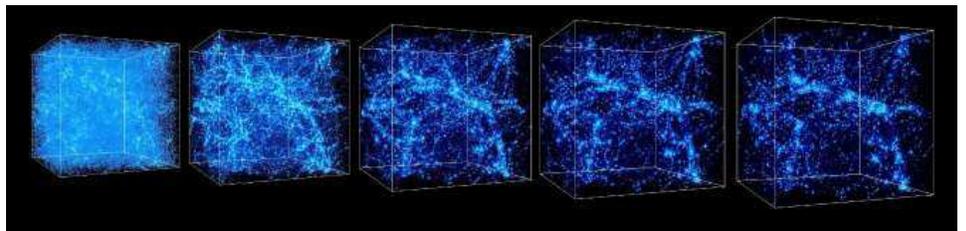
SMCAS General meeting at 7:00 p.m. ISC Room, room 110

Presentation at 8:00 p.m. in the CSM Planetarium

Free and open to the public, free parking (lots 5 and 6 recommended)

At the largest scales, the distribution of galaxies in the Universe resembles a complex, tangled web: an interconnected network of filaments of galaxies that surround vast, empty voids.

Simulations and theory have established that filaments—the largest, most densely populated structures in the Universe—have formed in the billions of years after the Big Bang, and serve as conduits for transporting gas into galaxies, which they then turn into stars.



*Simulation of the Formation of the large scale structure of the universe*

Thanks to advances in telescope instrumentation the current generation of galaxy surveys is finally able to accurately map the Cosmic Web for the first time, and begin to understand the role it plays in influencing the evolutionary fate of galaxies. Dr. Alpaslan will review advances in mapping out the filamentary network of the Universe using data from the Galaxy And Mass

Assembly (GAMA) survey, and discuss recent advances in understanding how galaxies in dense filaments differ from those that exist alone in isolated voids.



Dr Alpaslan is a postdoctoral research fellow based at NASA's Ames Research Center. His research focuses primarily on detecting and classifying large scale structures in the Universe and understanding their role in galaxy evolution and formation. He is also deeply interested in galaxy redshift surveys, astrostatistics, big data astronomy, and is a member of the GAMA survey. Mehmet received his PhD at the University of St Andrews

and the International Centre for Radio Astronomy Research at the University of Western Australia, working with Simon Driver and Aaron Robotham.

## February Meeting Review

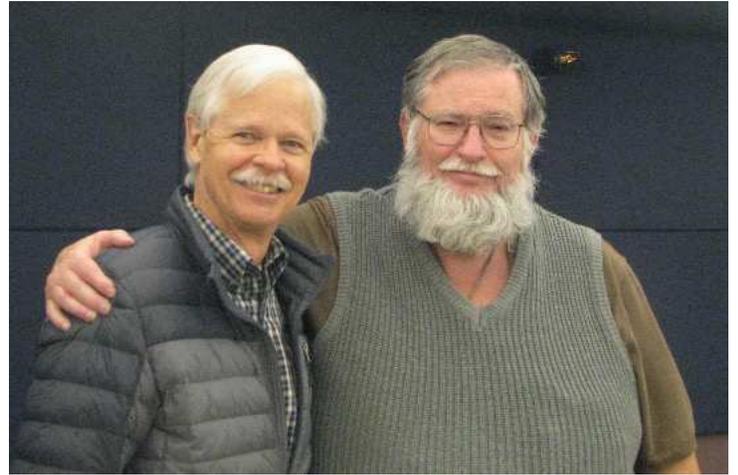
### Sunset/Sunrise Phenomena

**By Ken Lum**

Well, what can I say after being left speechless by the many fine photos taken by Greg Edwards of sunset and sunrise atmospheric phenomena? So rather than write about them, I decided to post some images from his show, for your entertainment, of what he spoke about. His slide show is posted on our club website, at

[www.smcasastro.com/meetings.html](http://www.smcasastro.com/meetings.html)

All the explanations you need are there. Further explanations can be found on the Web and in the references and web links he cites.



*SMCAS President Marion Weiler with our February speaker, Greg Edwards.*



*Top left: rainbow, secondary Rainbow and unlit Alexander's Band between them.*

*Bottom left: a halo around the Sun (photograph by Ken Lum)*

*Right: cloud pareidolia that looks like a bat.*

*Below: sundogs on each side of the Sun.*



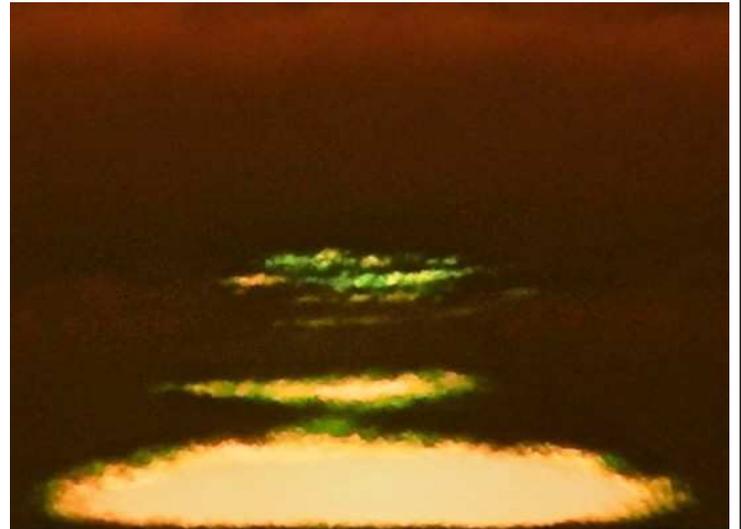
**Continued on p. 5**

## February Meeting, continued from p. 4

*Right: a Sun pillar.*

*Below left: cloud iridescence.*

*Below right: green flash above the Sun at sunset.*



## Venus at Inferior Conjunction

*By Ted Jones*

The current apparition of Venus in the evening sky began at superior conjunction (SC) on June 6 last year. SC is the moment when the sun lies directly between us and the planet. At that time, we have a "full Venus", with the entire disk illuminated, although it can be somewhere between hard and impossible to see because of the Sun's glare. Venus leaves the evening sky at inferior conjunction (IC), the moment when the planet lies directly between us and the Sun. IC is coming up later this month, on March 25.

At SC, Venus is at its greatest distance from us, appearing small in a telescope. After it rounds the Sun its distance from Earth decreases and it

appears to grow larger. At the same time, the changing angles make the portion we see illuminated decrease, so Venus's light comes from a decreasing fraction of an increasing planetary disk. The two effects combined cause the planet's brightness to increase until well into the crescent phase. This year it achieved maximum brightness on February 17, achieving the spectacular magnitude of  $-4.8$ , almost the brightest possible.

As Venus's apparent size increases, so does its apparent speed; nearer objects look like they are moving faster other things being equal. Shortly after SC Venus's eastward apparent motion

*Continued on p. 6*

## New SMCAS Public Facebook Group

**By Frank Seminaro**

SMCAS recently created a Public Facebook Group. This will allow SMCAS to interact with both members and the public who decide to join the Facebook Group. Members of the Group will receive announcements and reminders for SMCAS events, discuss astronomy related topics, read the SMCAS newsletter, share photos, and ask equipment related questions. We intend to keep the group up to date on all our efforts and activities, and only focus on astronomy topics. The group will be moderated by several Board members to keep out inappropriate material and non-astronomy topics such as politics. SMCAS currently has a Facebook Page which you may already follow. A Facebook Page is different from a Facebook Group, as it can act as a static information page, much like a roadside billboard. In an effort to become more interactive between club members and the public in general, we decided to migrate our efforts to a Facebook Group. If you are already a Facebook user, use the Facebook search bar to enter "San Mateo County Astronomical Society". You should see both the San Mateo County Astronomical Society

### **Venus, continued from p. 5**

through the constellations is only a little faster than the Sun's, frustrating fans who have to wait several months for it to open a gap wide enough to still be visible after twilight. Eventually, however, as it nears us it starts pulling quickly ahead of the Sun, becoming visible until well after dark and causing a sharp increase in questions whose answer is "Venus".

The gap cannot continue widening forever, because the two bodies are due for a rendezvous at IC. Venus will become stationary relative to the stars on March 2, then it will begin retrograde motion westward toward the Sun, quickly closing the gap and setting sooner after sunset.

"page" and "group" in the search results. Click on the Group and you will be directed to a screen where you can join. SMCAS will phase out the "page" over the next few months.

It is important to note that other group members who joined the Facebook group will see you as a member. They will not be able to see your personal page unless either of you sends and accepts a friend request. In any event, please review your personal Facebook settings to suit your preferences. There are a number of videos on Youtube with up to date information on how to do this.

If you have any questions, please contact Frank Seminaro ([frank\\_seminaro@yahoo.com](mailto:frank_seminaro@yahoo.com)). We look forward to seeing you on the Group page!

### ***Telescope Assistance***

*If you seek further information about telescope selection, use or maintenance, feel free to contact members Mike Ryan ([jmraastro@yahoo.com](mailto:jmraastro@yahoo.com), or cell phone # 650-678-2762) or Frank Seminaro ([frank\\_seminaro@yahoo.com](mailto:frank_seminaro@yahoo.com)) for guidance.*

After Venus emerges in the morning sky, everything happens in reverse order. Retrograde motion continues and it moves rapidly away from the Sun until second stationarity on April 13. Maximum morning brightness is reached on April 30. Eventually it will begin its much slower transition from morning to evening at its next SC early in 2018 after a long period of slowly closing the Venus-Sun gap, moving eastward just slightly faster than the Sun.

At its upcoming IC Venus will pass more than 8 degrees north of the Sun, offering a particularly good opportunity to follow its transition from evening to morning sky.

## Event Update

### Upcoming Holiday Party, Star Parties, and Monthly Meetings, for SCMAS this Year and Beyond!

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.

Fri, Mar 3	7:00 pm	<b>General Meeting, Pizza Social and Presentation</b>
Sat, Mar 18	7:00 pm	<b>Crestview Park Star Party</b>
Sat, Mar 25	7:15 pm	<b>Crestview Park Star Party</b>
Fri, Apr 7		<b>No General Meeting in April</b>
Sat, Apr 8	6:00 pm	<b>Spring Equinox Social, Crystal Springs Methodist Church</b>
Fri, Apr 14	7:30 pm	<b>Presentation of Art &amp; Science: Celebration of Color by Mohsen Janatpour, CSM Theater</b>
Sat, Apr 22	8:00 pm	<b>Crestview Park Star Party</b>
Sat, Apr 29	8:00 pm	<b>Crestview Park Star Party</b>
Sat, May 20	8:15 pm	<b>Crestview Park Star Party</b>
Sat, May 27	8:15 pm	<b>Crestview Park Star Party</b>

*The times given for Crestview 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.*

*Comets of note: 41P/T-G-K and 45P/H-M-P. Ephemerides are available at <http://www.minorplanetcenter.net/iau/MPEph/MPEph.html>. Enter "41P" or "45P" in the search form and submit the query. For finder charts, see <https://is.gd/4pcometcampaign> (scroll down the page).*

# Solar Eclipse Provides Coronal Glimpse

By Marcus Woo

On August 21, 2017, North Americans will enjoy a rare treat: The first total solar eclipse visible from the continent since 1979. The sky will darken and the temperature will drop, in one of the most dramatic cosmic events on Earth. It could be a once-in-a-lifetime show indeed. But it will also be an opportunity to do some science.

Only during an eclipse, when the moon blocks the light from the sun's surface, does the sun's corona fully reveal itself. The corona is the hot and wispy atmosphere of the sun, extending far beyond the solar disk. But it's relatively dim, merely as bright as the full moon at night. The glaring sun, about a million times brighter, renders the corona invisible.

"The beauty of eclipse observations is that they are, at present, the only opportunity where one can observe the corona [in visible light] starting from the solar surface out to several solar radii," says Shadia Habbal, an astronomer at the University of Hawaii. To study the corona, she's traveled the world having

experienced 14 total eclipses (she missed only five due to weather). This summer, she and her team will set up identical imaging systems and spectrometers at five locations along the path of totality, collecting data that's normally impossible to get.

Ground-based coronagraphs, instruments designed to study the corona by blocking the sun, can't view the full extent of the corona. Solar space-based telescopes don't have the spectrographs needed to measure how the temperatures vary throughout the corona. These temperature variations show how the sun's chemical composition is distributed—crucial information for solving one of long-standing mysteries about the corona: how it gets so hot.

While the sun's surface is ~9980 Fahrenheit (~5800 Kelvin), the corona can reach several millions of degrees Fahrenheit. Researchers have proposed

many explanations involving magneto-acoustic waves and the dissipation of magnetic fields, but none can account for the wide-ranging temperature distribution in the corona, Habbal says.

You too can contribute to science through one of several citizen science projects. For example, you can also help study the corona through the Citizen CATE experiment; help produce a high definition,

**Continued on p. 10**

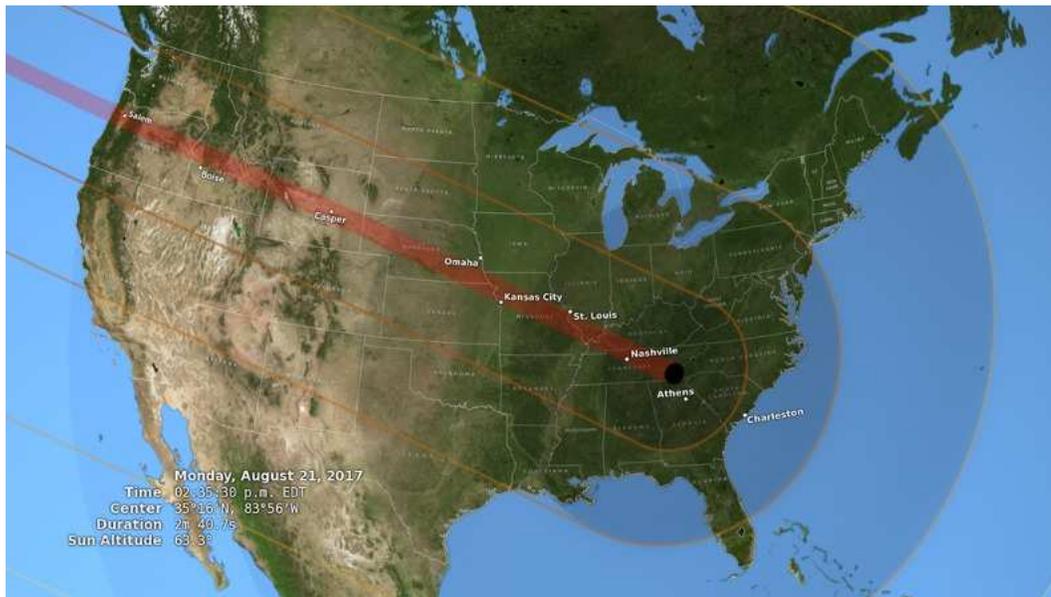


Illustration showing the United States during the total solar eclipse of August 21, 2017, with the umbra (black oval), penumbra (concentric shaded ovals), and path of totality (red) through or very near several major cities. Credit: Goddard Science Visualization Studio, NASA.

## March Rise and Set Chart

<b>SMCAS 2017 (PT*)</b>	<b>Mar 4 Rise</b>	<b>Mar 4 Set</b>	<b>Mar 18 Rise</b>	<b>Mar 18 Set</b>	<b>Mar 25 Rise</b>	<b>Mar 25 Set</b>
Sun	6:34 AM	6:06 PM	7:13 AM	7:19 PM	7:02 AM	7:26 PM
Moon	10:45 AM	Next Day	12:19 AM	10:57 AM	5:44 AM	5:05 PM
Mercury	6:40 AM	5:54 PM	7:44 AM	8:15 PM	7:42 AM	8:50 PM
Venus	7:17 AM	8:33 PM	7:05 AM	8:18 PM	6:28 AM	7:30 PM
Mars	8:21 AM	9:30 PM	8:52 AM	10:25 PM	8:39 AM	10:23 PM
Jupiter	9:00 PM	8:23 AM	8:58 PM	8:25 AM	8:26 PM	7:55 AM
Jupiter's moons	ie J c g		c e ij g		e J g c	
11 PM, East on left	J=Jupiter, c=Callisto, e=Europa, g=Ganymede, i=Io					
Saturn	2:16 AM	11:55 AM	2:23 AM	12:03 PM	1:56 AM	11:36 AM
Uranus	8:14 AM	9:08 PM	8:20 AM	9:16 PM	7:54 AM	8:51 PM
Neptune	6:35 AM	5:50 PM	6:41 AM	5:57 PM	6:14 AM	5:31 PM
Pluto	3:46 AM	1:33 PM	3:53 AM	1:39 PM	3:25 AM	1:12 PM

- \* Daylight Saving Time starts on the 12th.
- Jazz Under the Stars is at CSM on the 4th.
- Star Parties are at Crestview on the 18th and 25th.

- 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).

San Mateo County Astronomical Society Event Calendar						
< March 2017 >						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	1	2	7:00 PM General Membership Meetin 3	6:00 PM School Star Party 4  Sunset: 6:08 PM
5 	6	7	8	9	10	11  Sunset: 6:15 PM
DST Begins 12 	13	14	15	16	17	7:30 PM Crestview Star Party 18  Sunset: 7:21 PM
19	Spring Equinox 20 	21	22	23	24	7:30 PM Crestview Star Party 25  Sunset: 7:27 PM
26	27	28 	29	30	31	1

San Mateo County Astronomical Society Event Calendar from the Night Sky Network.

Calendar courtesy of Ed Pieret

**Comet Campaign, continued from p. 8**

time-expanded video of the eclipse; use your ham radio to probe how an eclipse affects the propagation of radio waves in the ionosphere; or even observe how wildlife responds to such a unique event.

Otherwise, Habbal still encourages everyone to experience the eclipse. Never look directly at the sun, of course (find more safety guidelines at [eclipse2017.nasa.gov/safety](http://eclipse2017.nasa.gov/safety)). But during the approximately 2.5 minutes of totality, you may remove your safety glasses and watch the eclipse directly—only then can you see the glorious corona. So enjoy the show. The next one visible from North

America won't be until 2024.

For more information about the upcoming eclipse, please see the NASA eclipse [citizen science](#) and [safety](#) pages. Want to teach kids about eclipses? Go to the NASA Space Place and see our article on solar and lunar eclipses! [spaceplace.nasa.gov/eclipses](http://spaceplace.nasa.gov/eclipses)

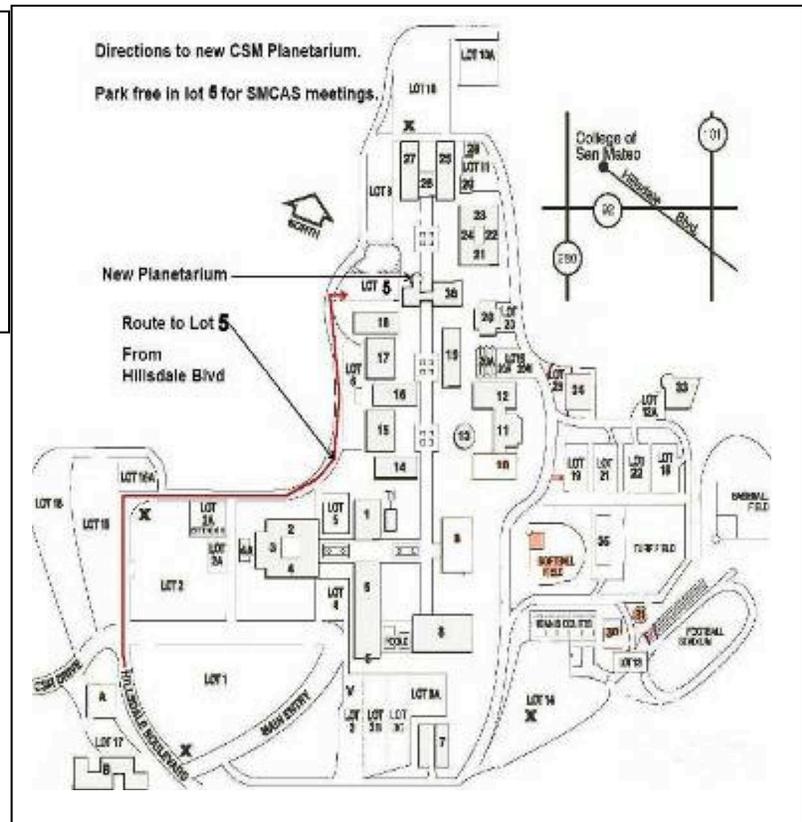
*This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit [spaceplace.nasa.gov](http://spaceplace.nasa.gov) to explore space and Earth science!*

## 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.

# Membership Application and Society Information

To join the San Mateo County Astronomical Society or to renew membership, you can pay dues via Pay Pal on our website ([www.smcasastro.com](http://www.smcasastro.com)), at any monthly meeting, or send your check, payable to SMCAS, to: SMCAS, PO Box 974, Station A, San Mateo, CA, 94403.

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 form only if you have a change to your membership or contact info.

Name(s) \_\_\_\_\_

Address/City/Zip: \_\_\_\_\_

Phone(s) \_\_\_\_\_ Email \_\_\_\_\_

## SMCAS – Society Information

**Meetings** of the San Mateo County Astronomical Society are usually 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. Check our web site for any meeting changes. Directions: 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. Additional parking is available in Lot 6 if Lot 5 is full.

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 4<sup>th</sup> 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; **Treasurer:** Karen Boyer; **Secretary:** Vacant.  
**Board Directors-At-Large:** Ed Ching, Bob Franklin, Ken Lum, Mary Ann McKay, Mike Ryan, and Frank Seminario.

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

## SMCAS Contact Information

**Website:** [www.smcasastro.com](http://www.smcasastro.com)

The CSM Astronomy Department schedule is at [www.collegeofsanmateo.edu/astronomy/events](http://www.collegeofsanmateo.edu/astronomy/events).

**Facebook:** [www.facebook.com/groups/1800419490194179/](http://www.facebook.com/groups/1800419490194179/)

**Email:** [SMCAS@live.com](mailto:SMCAS@live.com)

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

**Yahoo Group Subscription:** email [smcas-subscribe@yahoogroups.com](mailto:smcas-subscribe@yahoogroups.com) to subscribe.

**Event Horizon:** To submit articles or photos, please contact Ed Pieret — [epieret@comcast.net](mailto:epieret@comcast.net) or 650.862.9602.