

The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

October 2016 — NO GENERAL MEETING THIS MONTH



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, 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.



THE SEPTEMBER SMCAS MEETING featured member presentations instead of an outside speaker. Above, Marion Weiler, Darryl Stanford, and Ken Lum stand next to equipment Ken brought to show its configuration. See Marion's President's Corner column on page 2 for more about the meeting.

Table of Contents

President's Corner.....	2
Family Science and Astronomy Day.....	4
Event Update.....	5
NASA Space Place.....	6
Rise and Set Chart.....	7
Calendar.....	8
Directions to CSM and Crestview.....	9
Membership form and club information.....	10

DATES TO SAVE

Oct 7: NO GENERAL MEETING in October.

Oct 8: Family Science and Astronomy Festival + Makerspace at the College of San Mateo, 2:00–11:00 PM. See page 4. **Volunteers are still needed for this event.** Contact Ed Pieret.

Nov 4: General Meeting, Pizza, and Presentation at the CSM Planetarium.

More events on page 5.

President's Corner

I was able to take a short trip to Yosemite Valley the third week of September, and had the opportunity to view the night sky in much better dark sky conditions than we have in the Bay Area. What a treat to see the Milky Way and many stars that we only know from star charts in the Bay Area! I had forgotten what a beautiful sight it is to see with the naked eye.

Seeing dark skies at Yosemite really brought home the value of trying to protect dark skies for our own and everyone's enjoyment, species that depend on dark skies, as well as for research and other benefits. Many individuals and organizations around the world work on this issue in a variety of ways. One such organization that SMCAS supports in particular is the International Dark-Sky Association



A clear moonless night at the Tunnel View Overlook in Yosemite National Park. Photo credit: Ohad Ben-Yoseph (flickr user ohad), under Creative Commons License BY-NC-ND 2.0.



Ed Ching and Frank Seminaro at the September meeting.

(IDA), who works to protect the night skies for present and future generations. If you are not familiar with the many issues surrounding light pollution around the world, solutions, and what you can do, be sure to check out the IDA web site at <http://darksky.org>.

After our summer break since our June meeting, we had our first general meeting on Friday September 2nd. This meeting was structured as a members sharing night, rather than have an outside speaker. We had great talks on eclipses and eclipse adventures that built interest in the August, 2017 eclipse (thanks Tom Stephany, Ed Pieret, Ken Lum, and Mike Ryan), plus talks on personal telescope configurations (thanks Frank Seminaro and Ken Lum). It ended up being a very worthwhile and informative evening!

On Saturday, September 17, SMCAS held its Autumnal Equinox spaghetti social. Members congregated once again at the Crystal Springs Methodist Church, arranged by Bob Franklin, and had a great spaghetti and pot luck dinner, socialized, and enjoyed Ken Lum's talk on his

Continued on page 3

President's Corner, continued from page 2

fascinating aeronautical and astronomical model collection, learning some of the interesting history surrounding the subjects of these models.

SMCAS is once again helping put on the annual Family Science and Astronomy Festival in partnership with the College of San Mateo. The festival will be on October 8, at the CSM Science Building 36 and Theatre. Planning has been under way for several months, and it looks like it will be another fun event. Plan to be there, help out by volunteering if you can, please contact Ed Pieret or myself—we have several simple activities any SMCAS member could lead—or just stop by to enjoy the activities and talks. For details see p. 4 or visit www.collegeofsanmateo.edu/calendar/events/index.php?com=detail&eID=18058

Remember, due to the Family Science and Astronomy Festival, we will not be having our usual first Friday of the month general meeting on October 7, so that the SMCAS member volunteers working at the Festival will have time and energy to participate in that. We will be back on schedule for our November 4 meeting, where we have a great speaker lined up, as you will find on our web site.



Early in Ken Lum's presentation at the Equinox Social, with only a few models on display. There were many more to follow!

Marion Weiler

President, San Mateo County Astronomical Society



Board member Mary Ann McKay and Unidentified Martian at the Sequoia National Park Dark Sky Program

Family Science & Astronomy Festival

+ Makerspace



Saturday, October 8, 2016 • 2–11 pm

Keynote presentation: “Detection of Gravitational Waves” by Dr. Peter Beyersdorf

Science demonstrations by CSM faculty; astronomy workshops by SMCAS, ASP, SLAC, and KIPAC; planetarium shows, telescopic observation of the celestial bodies, and much more! Free and open to the public.

College of San Mateo, Science Building 36, Plaza of the Sun & Theatre Building 3
1700 W. Hillsdale Blvd., San Mateo, CA 94402

Visit collegeofsanmateo.edu/events for full event schedule and additional information.

Festival coordinator: Mohsen Janatpour, janatpour@smccd.edu, (650) 574-6272

Sponsored by CSM Math/Science Division, San Mateo County Astronomical Society, and the CSM Library.

Supported by Astronomical Society of the Pacific, SLAC National Accelerator Laboratory, and KIPAC.



College of San Mateo

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) 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, or to volunteer to help out with the Family Science and Astronomy Festival on October 8.

Fri, Oct 7		There will be NO general meeting on this date
Sat, Oct 8	see below	Family Science and Astronomy Festival at CSM
Sat, Oct 22	6:15 pm	Crestview Park Star Party
Sat, Oct 29	6:15 pm	Crestview Park Star Party
Fri, Nov 4	7:00 pm	General Meeting, Pizza Social and Presentation
Sat, Nov 26	5:00 pm	Crestview Park Star Party
Sat, Dec 3	5:00 pm	Crestview Park Star Party

The **Family Science and Astronomy Festival** runs from 2:00 to 11:00 pm. The Keynote presentation begins at 7:00 pm at the CSM Theatre (building 3). See page 4 for the speaker and title. After the presentation at approximately 9:00 pm the CSM Observatory will be open for Jazz Under the Stars.

One Incredible Galaxy Cluster Yields Two Types of Gravitational Lenses

By Ethan Siegel

There is this great idea that if you look hard enough and long enough at any region of space, your line of sight will eventually run into a luminous object: a star, a galaxy or a cluster of galaxies. In reality, the universe is finite in age, so this isn't quite the case. There are objects that emit light from the past 13.7 billion years—99 percent of the age of the universe—but none before that. Even in theory, there are no stars or galaxies to see beyond that time, as light is limited by the amount of time it has to travel. But with the advent of large, powerful space telescopes that can collect data for the equivalent of millions of seconds of observing time, in both visible light and infrared wavelengths, we can see nearly to the edge of all that's accessible to us.

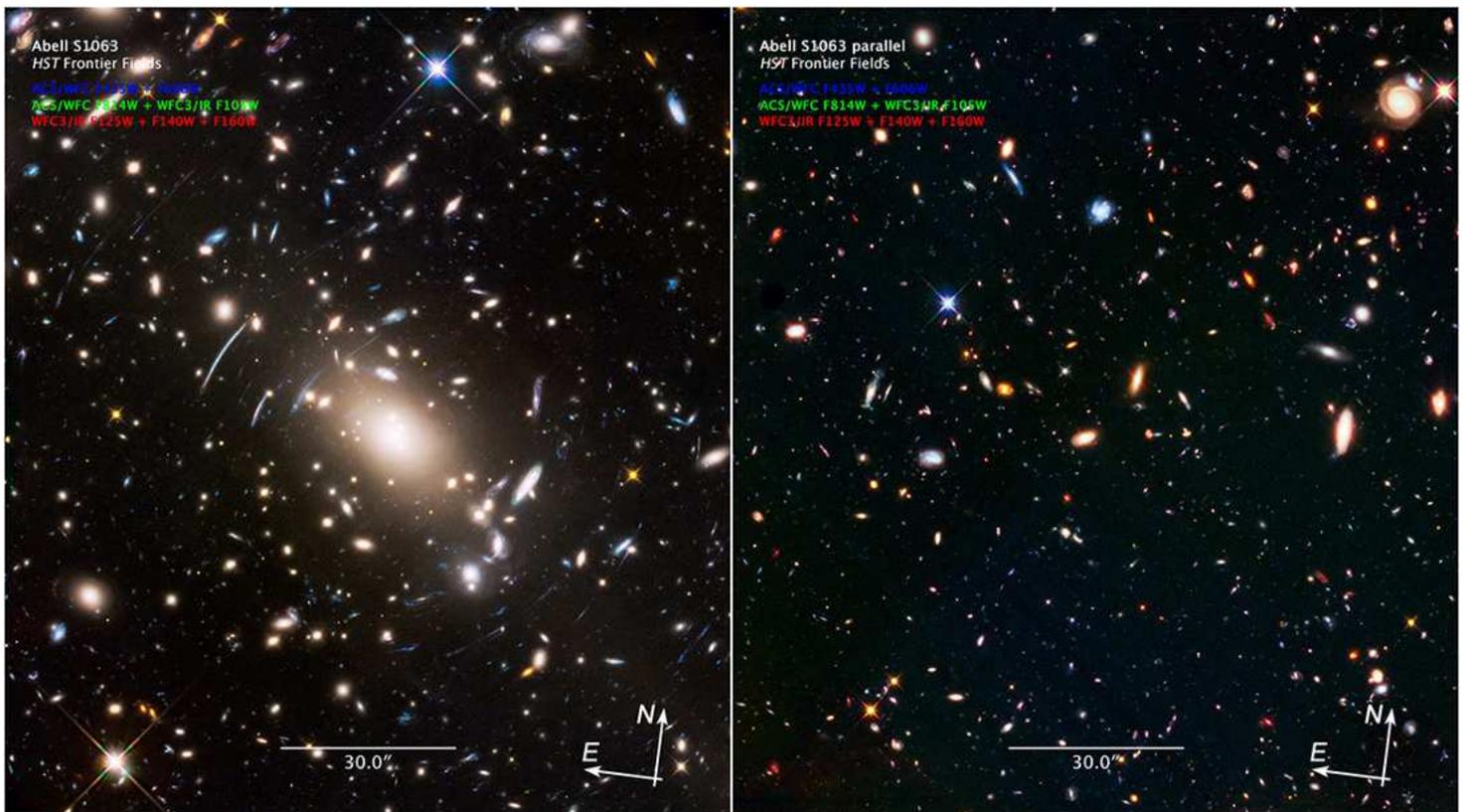
The most massive compact, bound structures in the universe are galaxy clusters that are hundreds or even thousands of times the mass of the Milky

Way. One of them, Abell S1063, was the target of a recent set of Hubble Space Telescope observations as part of the Frontier Fields program. While the Advanced Camera for Surveys instrument imaged the cluster, another instrument, the Wide Field Camera 3, used an optical trick to image a parallel field, offset by just a few arc minutes. Then the technique was reversed, giving us an unprecedentedly deep view of two closely aligned fields simultaneously, with wavelengths ranging from 435 to 1600 nanometers.

With a huge, towering galaxy cluster in one field and no comparably massive objects in the other, the effects of both weak and strong gravitational



Continued on page 8



Galaxy cluster Abell S1063 (left) as imaged with the Hubble Space Telescope as part of the Frontier Fields program. The distorted images of the background galaxies are a consequence of the warped space due to Einstein's general relativity; the parallel field (right) shows no such effects. Image credit: NASA, ESA and Jennifer Lotz (STScI)

October Rise and Set Chart

SMCAS 2016 (PDT)	Oct 1 Rise	Oct 1 Set	Oct 22 Rise	Oct 22 Set	Oct 29 Rise	Oct 29 Set
Sun	7:05 AM	6:50 PM	7:25 AM	6:21 PM	7:32 AM	6:12 PM
Moon	7:38 AM	7:32 PM	-11:44 PM	2:04 PM	6:28 AM	6:05 PM
Mercury	5:39 AM	6:15 PM	7:07 AM	6:17 PM	7:39 AM	6:17 PM
Venus	9:40 AM	8:10 PM	10:26 AM	8:05 PM	10:41 AM	8:07 PM
Mars	2:02 PM	11:14 PM	1:37 PM	11:01 PM	1:28 PM	10:58 PM
Jupiter	6:45 AM	6:44 PM	5:44 AM	5:32 PM	5:24 AM	5:08 PM
Jupiter's moons	c g J i e		g J i c e		g J i c e	
6 AM, East on left	J=Jupiter, c=Callisto, e=Europa, g=Ganymede, i=Io					
Saturn	12:11 PM	10:01 PM	10:57 AM	8:45 PM	10:33 AM	8:20 PM
Uranus	7:22 PM	8:21 AM	5:57 PM	6:54 AM	5:29 PM	6:25 AM
Neptune	5:35 PM	4:49 AM	4:12 PM	3:25 AM	3:44 PM	2:57 AM
Pluto	2:36 PM	12:25 AM	1:14 PM	10:59 PM	12:47 PM	10:32 PM

- Family Science and Astronomy Festival is at CSM on the 8th.
- Uranus is at opposition on the 10th.
- Star parties are at Crestview on the 1st, 22nd, and 29th.
- Orionid meteors are on the 21st.
- Negative moonrise means the previous day.

- 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. 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.

San Mateo County Astronomical Society Event Calendar						
< October 2016 >						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	29	30	1 8:30 PM Crestview Star Party Sunset: 6:51 PM 
2	3	4	5	6	7	8 2:00 PM FS&AF Sunset: 6:41 PM
9 	10 Columbus Day 7:00 PM Crestview Star Party	11	12	13	14	15 Sunset: 6:32 PM
16 	17	18	19	20	21	22 8:30 PM Crestview Star Party Sunset: 6:23 PM 
23	24	25	26	27	28	29 8:30 PM Crestview Star Party Sunset: 6:14 PM
30 	31	1	2	3	4	5

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

Calendar courtesy of Ed Pieret

Galaxy Cluster, continued from page 6

lensing are readily apparent. The galaxy cluster—over 100 trillion times the mass of our sun—warps the fabric of space. This causes background light to bend around it, converging on our eyes another four billion light years away. From behind the cluster, the light from distant galaxies is stretched, magnified, distorted, and bent into arcs and multiple images: a classic example of strong gravitational lensing. But in a subtler fashion, the less optimally aligned galaxies are distorted as well; they are stretched into elliptical shapes along concentric circles surrounding the cluster.

A visual inspection yields more of these tangential alignments than radial ones in the cluster field, while the parallel field exhibits no such shape distortion. This effect, known as weak gravitational

lensing, is a very powerful technique for obtaining galaxy cluster masses independent of any other conditions. In this serendipitous image, both types of lensing can be discerned by the naked eye. When the James Webb Space Telescope launches in 2018, gravitational lensing may well empower us to see all the way back to the very first stars and galaxies.

If you're interested in teaching kids about how these large telescopes “see,” be sure to see our article on this topic at the NASA Space Place: spaceplace.nasa.gov/telescopemirrors/en

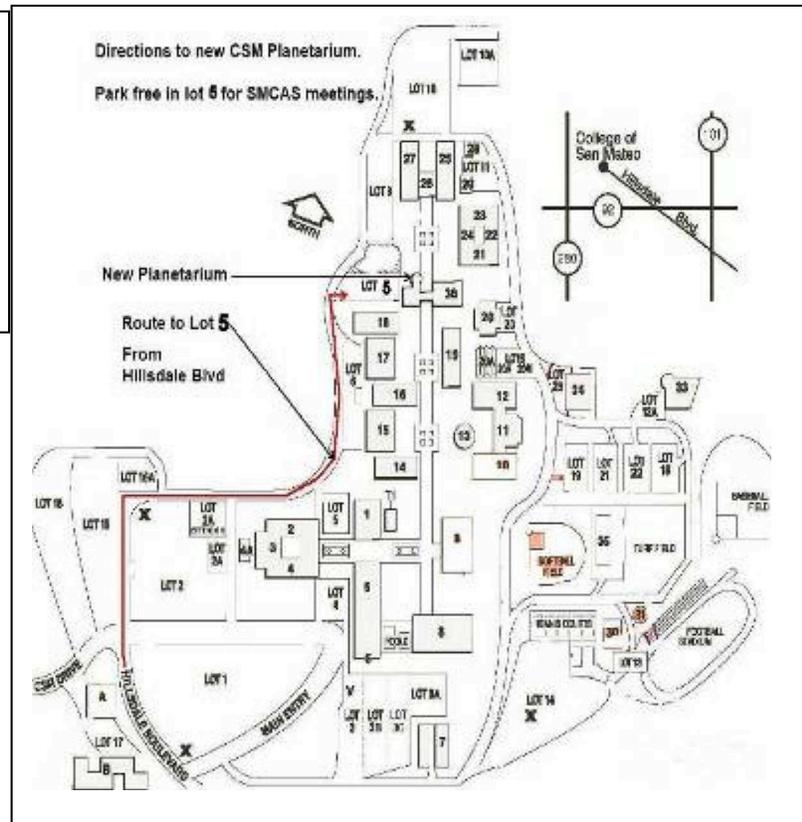
This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

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.

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.

Directions to Crestview Park for Star Parties

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), 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 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; **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.smcas.net

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 to subscribe.

Event Horizon: To submit articles or photos, please contact Ed Pieret — epieret@comcast.net or 650.862.9602.