

# The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

July-August, 2009 563-4th General Meeting Notice



# EVENT HORIZON

Founded in 1960, the San Mateo County Astronomical Society is a non-profit organization for amateur astronomers. Family memberships are open to the public, and visitors are cordially invited to the Society's meetings, which are held on the first Friday of the month, September through June. Detailed information about our events and membership can be found at [www.smcas.com](http://www.smcas.com)

Membership includes a monthly bulletin, discounted subscriptions to calendars and magazines, monthly star parties, use of our loaner telescopes, tours, field trips and guest speakers, plus an invitation to join our online discussion group. To receive additional information, send a note to [SMCAS@live.com](mailto:SMCAS@live.com) or call (650) 862-9602.

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## SCHOOL'S OUT!!

(No more lectures, no more books,  
no more teachers' dirty looks.  
Until September.)

Owing to a distinct preference for barbecues, baseball, beach activities and fretting over the state of the economy and the world, and a consequent temporary diminishment of interest in things celestial, there will be a two month holiday for your intrepid San Mateo County Astronomical Society officers and board members. Have a great summer!!

And speaking of summer activities, don't miss our joint **Star-Be-Que**, details of which can be found on Page Two in our From the Prez article.

**NOTE: this is a special two-month holiday issue of your Event Horizon**

## MONTHLY STAR PARTIES

**Crestview Park in San Carlos**  
**Saturdays when the sky is clear**  
**and the moon isn't overly bright**

See p 11 for directions  
See pp 5-6 bottom of calendar for rise & set times

## From the Prez:

I hope everyone is enjoying their summer.

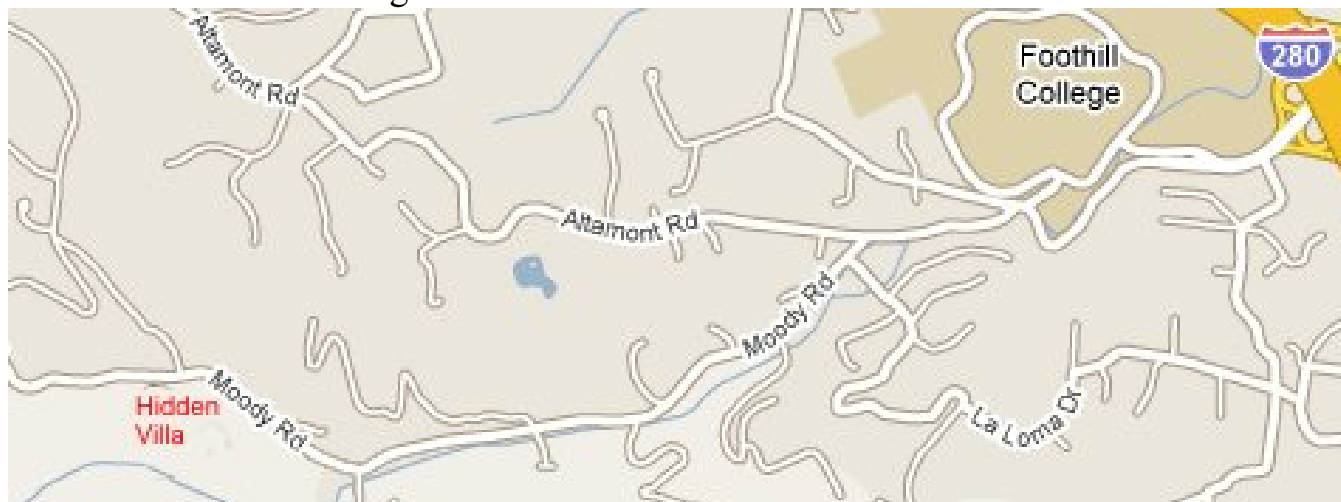
This newsletter covers both July and August. During the summer we do not have meetings so there is no speaker information to include in the newsletter.

Our Star Parties at Crestview Park will continue and there are dramatic sights visible in the summer sky. As Saturn moves to the west and behind the sun, Jupiter will be moving into the evening sky. Other outstanding sights in the summer sky include the Globular Cluster in Hercules (M13), The Ring Nebula (M57) and the Lagoon Nebula (M08). It is worth your time to stop by a Crestview Star Party or Jazz Under the Stars and take a look at these objects. Dates, times and details can be found at [http://www.smcas.com/events/star\\_parties/crestview\\_park/](http://www.smcas.com/events/star_parties/crestview_park/).

The big event for the club during the summer will be the joint **Star-B-Que** with the Peninsula Astronomical Society being held on August 29th. As before, it will be a pot luck picnic with members bringing a sample of their favorite dishes for everyone to share. The clubs will supply hamburgers, sausages, and chicken. Please bring your own non-alcoholic drinks.

The paying public will be gathering at about 8PM for the famous Dave Rodrigues Astrowizard show. This show uses magic to introduce astronomy concepts, is a favorite of kids, and is open to all members free of charge. Dave's show will be followed by a public star party, so bring your telescopes.

Hidden Villa is at 26870 Moody Road in Los Altos Hills and may be reached by getting off the El Monte Rd. exit off Hwy 280 and driving west on El Monte Road past Foothill College. At the intersection with Moody Road, take the left fork. Follow Moody Road about 2 miles until you see the Hidden Villa sign on the left side of the road. Turn into the entrance and over a wood bridge and past the Visitor Center to the right. The Star-B-Que will be at the picnic area across a clearing to the west of the visitor's center and near the main buildings.



I hope to see you all there!

**Ed Pieret, President - San Mateo County Astronomical Society**



## The Cool Chemistry of Alien Life

Alien life on distant worlds. What would it be like? For millennia people could only wonder, but now NASA's Spitzer Space Telescope is producing some hard data. It turns out that life around certain kinds of stars would likely be very different from life as we know it.

Using Spitzer, astronomers have discovered the organic chemical acetylene in the planet-forming discs surrounding 17 M-dwarf stars. It's the first time any chemical has been detected around one of these small, cool stars. However, scientists are more intrigued by what was *not* there: a chemical called hydrogen cyanide (HCN), an important building block for life as we know it.

"The fact that we do not detect hydrogen cyanide around cool stars suggests that that prebiotic chemistry may unfold differently on planets orbiting cool stars," says Ilaria Pascucci, lead scientist for the Spitzer observations and an astrophysicist at Johns Hopkins University in Baltimore, Maryland.

That's because HCN is the basic component for making adenine, one of the four information-carrying chemicals in DNA. All known life on Earth is based on DNA, but without adenine available, life in a dwarf-star solar system would have to make do without it. "You cannot make adenine in another way," Pascucci explains. "You need hydrogen cyanide."

M-dwarf and brown dwarf stars emit far less ultraviolet light than larger, hotter stars such as our sun. Pascucci thinks this difference could explain the lack of HCN around dwarf stars. For HCN to form, molecules of nitrogen must first be split into individual nitrogen atoms. But the triple bond holding molecular nitrogen together is very strong. High-energy ultraviolet photons can break this bond, but the lower-energy photons from M-dwarf stars cannot.

"Other nitrogen-bearing molecules are going to be affected by this same chemistry," Pascucci says, possibly including the precursors to amino acids and thus proteins.

To search for HCN, Pascucci's team looked at data from Spitzer, which observes the universe at infrared wavelengths. Planet-forming discs around M-dwarf stars have very faint infrared emissions, but Spitzer is sensitive enough to detect them.

HCN's distinctive 14-micron emission band was absent in the infrared spectra of the M-dwarf stars, but Spitzer did detect HCN in the spectra of 44 hotter, sun-like stars.

Infrared astronomy will be a powerful tool for studying other prebiotic chemicals in planet-forming discs, says Pascucci, and the Spitzer Space Telescope is at the forefront of the field. Spitzer can't yet draw us a picture of alien life forms, but it's beginning to tell us what they could—and could not—be made of. "That's pretty wonderful, too," says Pascucci.

For news of other discoveries based on Spitzer data, visit [www.spitzer.caltech.edu](http://www.spitzer.caltech.edu). Kids can learn Spitzer astronomy words and concepts by playing the Spitzer "Sign Here!" game at [spaceplace.nasa.gov/en/kids/spitzer/signs](http://spaceplace.nasa.gov/en/kids/spitzer/signs).

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*



*Do alien planets around other stars have the right ingredients for a pre-biotic soup?.*

NOTE: for their bimonthly newsletter, go to: <http://spaceplace.nasa.gov/en/educators> The newsletter is all about the many useful and free resources on The Space Place website that can be helpful to classroom and home school teachers, after-school program directors, museum and library program directors, and other informal educators.

NOTE: For those of you with Facebook pages, there's now a page for NASA's Space Place Web site, <http://spaceplace.nasa.gov>. The Space Place is an extensive, content-rich Web site for upper elementary age kids, their teachers, parents, and anyone else who likes a simple, readable, fun presentation of a wide range of space and Earth science and technology topics. Most of the site is great for kids to explore on their own, with interactive games, hands-on projects, and fun facts. But it also has lots of stuff for teachers. Teachers especially appreciate the bi-monthly Space Place Newsletter for educators, which has lots of suggestions for how to use the resources of this Web site in the classroom. See the "Teacher's Corner" at <http://spaceplace.nasa.gov/en/educators>.



Scope City, 350 Bay Street, San Francisco, offers a huge selection of telescopes, accessories and more. They also offer a \$25 merchandise discount to new SMCAS members. Obtain a receipt from SMCAS Treasurer showing you have paid your dues for the current year. To arrange for your discount, contact Sam Sweiss at Scope City, in the store, at 415-421-8800, or email [sanfrancisco@scopecity.com](mailto:sanfrancisco@scopecity.com). Check them out at <http://www.scopecity.com>



San Mateo Astronomical Society





Pacific Daylight Time

July 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
			1	2	3	4	
5	6	7  Full Moon 01:21 PT	Penumbral Lunar Eclipse	8	9	10 Public Planetarium Show	11
12	13	14	15  Last Quarter 01:53 PT	16	17	18 Crestview Star Party	
19	20	21  New Moon 18:35 PT	Total Solar Eclipse 16:53 – 20:18 PT	22	23	24	25 Crestview Star Party
26	27	28  First Quarter 14:00 PT	29	30	31		

2009		<u>Jul 18 Rise</u>	<u>Jul 18 Set</u>	<u>Jul 25 Rise</u>	<u>Jul 25 Set</u>
<u>Object</u>					
Sun		6:02 AM	8:28 PM	6:08 AM	8:23 PM
Moon	Very feeble eclipse on 7th	2:04 AM	5:34 PM	10:27 AM	10:32 PM
Mercury	In the twilight	6:29 AM	8:53 PM	7:11 AM	9:08 PM
Venus	In the wee hours	3:08 AM	5:26 PM	3:10 AM	5:36 PM
Mars	In the wee hours	2:22 AM	4:42 PM	2:11 AM	4:38 PM
Jupiter	Late at night	9:53 PM	8:29 AM	9:24 PM	7:58 AM
	9 PM, E on left				
	red spot transit				
		c g J i	g J i c		
		1:03 AM	1:48 AM		
Saturn	In the evening	10:15 AM	11:03 PM	9:51 AM	10:37 PM
Uranus	Late at night	11:12 PM	11:03 AM	10:45 PM	10:35 AM

# August 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 Jazz Under the Stars
2	3	4	5  Full Moon 16:55 PT	6 Penumbral Lunar Eclipse	7	8
9	10	11	12	13  Last Quarter 10:55 PT	14	15 Crestview Star Party
16	17	18	19	20  New Moon 02:02 PT	21	22 Crestview Star Party
23	24	25	26	27  First Quarter 03:42 PT	28	29 Jazz Under the Stars
30	31					

2009		<u>Aug 15 Rise</u>	<u>Aug 15 Set</u>	<u>Aug 22 Rise</u>	<u>Aug 22 Set</u>
<u>Object</u>					
Sun		6:25 AM	8:01 PM	6:31 AM	7:52 PM
Moon		12:48 AM	4:23 PM	9:14 AM	8:59 PM
Mercury	In the twilight	8:36 AM	9:03 PM	8:49 AM	8:51 PM
Venus	In the wee hours	3:32 AM	5:58 PM	3:43 AM	6:03 PM
Mars	In the wee hours	1:43 AM	4:22 PM	1:34 AM	4:15 PM
Jupiter	Opposition on 14 <sup>th</sup>	7:54 PM	6:22 AM	7:24 PM	5:50 AM
	9 PM, E on left		e J g i c		c e J g i
	red spot transit		11:54 PM		12:39 AM on 23rd
Saturn	After sunset	8:39 AM	9:20 PM	8:16 AM	8:54 PM
Uranus	After sunset	9:21 PM	9:10 AM	8:53 PM	8:41 AM
Neptune	In the twilight	8:00 PM	6:39 AM	7:32 PM	6:11 AM
Pluto	In the wee hours	4:25 PM	2:39 AM	3:57 PM	2:11 AM

# Amateur Digital Astrophotography: the affordable end of the spectrum

A practical guide on how to see beyond what meets the eye(piece) without being a zillionaire

**By Chanan Greenberg**

VP San Mateo County Astronomical Society

Member of Fremont Peak Observatory Association

## **Imaging**

This section will describe the steps I follow in an imaging session, which are:

- Plan
- Setup
- Improve Polar Alignment
- Star Alignment
- Focus
- Slew to Object
- Start Guiding
- Imaging

*Plan* – think about what objects are going to be visible and which ones you want capture. Use CCDCalc or Starry Night to see what your field of view will be when looking at these objects with your scope and camera combination so you can plan what orientation your camera may need to be in, in order to capture the image. Spending some time planning your session allows you to be more effective during your session.

*Setup* – if you are fortunate enough to have a permanent setup you can skip this section. If you are like me and have to setup every time here are the steps I follow:

- Rough polar alignment
- Balance scope
- Check collimation (important for Newtonian scopes)
- Install all cables, control boxes for focusers and guider

### *Improve Polar Alignment*

I recommend either drift alignment method or using PoleAlignMax which were described in chapter 2. This process of adjusting your azimuth and altitude to get as close as possible to the true pole can take 15 to 45 minutes based on experience and some luck. While this is a time consuming process it will make for a better imaging session and is worth the investment.

### *Star Alignment*

This is the same process you would do for an observation session, using 2 or 3 star alignment to allow your scope to find its bearings and be able to accurately point to your desired object. Make sure that tracking or tracking with PEC is turned on.

### *Focus*

Find a star that is 3 to 5 magnitude and center it. Using your focuser controls move the camera in or out and watch what happens to the FWHM and HFD numbers. Make sure your camera is on continuous exposure mode exposing an image every second or so. If your camera supports sub-frames draw a rectangle around the star you are focusing on and the images will download much faster from your camera. After each change you make to the focuser allow for 3 -4 exposures to determine if this made

things better or worse as minor vibrations from the motion of the focuser tube and slight changes in seeing may impact the results of a single exposure. Keep making changes until you can bring the numbers of FWHM to below 4 and HFD below 3. These numbers will produce decent focus. If you have very good seeing you might be able to get the numbers down to 2 which is very good focus. Using the free FocusMax application can effectively automate the entire process for you.

### *Slew to Object*

Using your planetarium software select the object you wish to image and slew the scope to that image. If it is a very dim object try taking a few sample exposures increasing their time until you can see the object you are looking for is in fact located in your field of view. If needed make minor adjustments in RA and DEC to place the object where you want it to be in the final image.

### *Star Guiding*

Using PHD guiding establish a connection to your guiding camera and to the mount. Start capturing images, try 2-3 second exposures and see if you can find a reasonably bright star to use for guiding. Click on the star and a green rectangle will appear around the star. Click the stop button and then click on the Guide button – lean back and enjoy the show. PHD Guiding will conduct a calibration process slewing the scope West, East, North and South measuring the distance the star moves. Once done it will start guiding. Congratulations if your scope is well aligned you should get rock solid guiding.

### *Imaging*

So this is what all the fuss is about...you are now ready to start imaging! When imaging you should take into account the nature of the object you are trying to capture, its brightness and the light pollution situation as well as seeing conditions. Under certain conditions a 2 minute exposure may look better than a 3 minute exposure that got oversaturated with light pollution – so experiment and see what produces the best results. In principal longer exposures produce better results. In other words a 10 minute exposure should look better than 5 X 2 minute exposures. BUT, this rule works well under dark skies, in light polluted areas CCD chips get oversaturated quickly and so combining shorter exposures will produce better results. If you are using the full version of MaxIm DL you can easily setup an Imaging Sequence, instructing MaxIm DL to take 20 2 minute exposures and 10 3 minute exposures etc and it will execute for you and automatically save the images in a folder you designate. When you are at this phase it is pretty much an auto pilot situation but its always a good idea to keep track of what is going on. I always try to take several types of images ranging from 90 seconds and up to 10 minutes to see what produces the best results. I use the Orion StarShoot Deep Space Pro camera which is a One Shot color camera. So when imaging it is important to make sure the output is set to raw or monochrome. These images contain color data but you currently cannot see it. Do not try to shoot directly in color it will produce poor results.

A useful tool to combat light pollution is Orion's Sky Glow Filter for Imaging. Unlike regular broadband filters available from Orion, Lumicon and many other vendors that block out sodium spectrum lines they also block out quite a bit of red light, this filter was designed specifically for imaging and lets a lot more red data get through while still doing a good job reducing the effects of light pollution.

**Next Month: Image Processing**

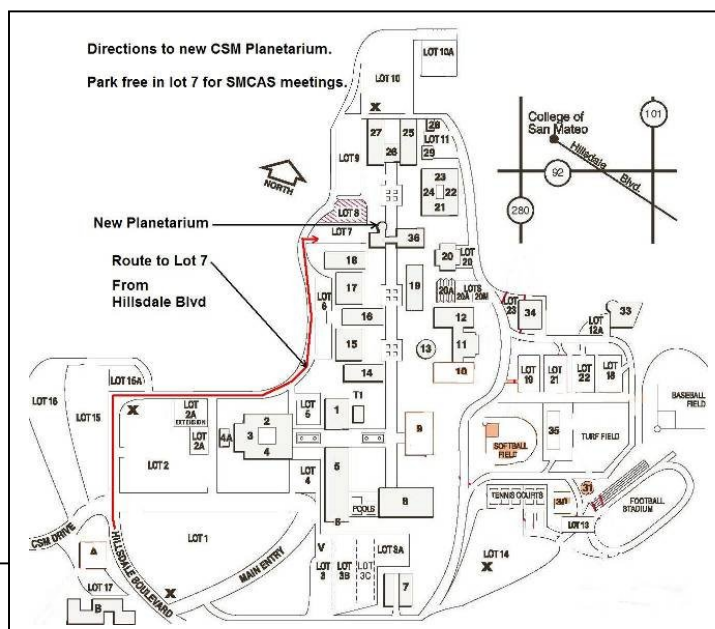
**Carpe Noctem!  
(Seize the night)**



**Reach for the stars**  
at **CSM**

With its planetarium, variety of astronomy courses, top-notch faculty and special events such as Star Parties when the College partners with the San Mateo County Astronomical Society ...or with CSM's many A.A., A.S. or certificate programs, its scenic and historic campus, the ease with which you can sign-up for classes online as a first-time or returning student...

**COLLEGE of SAN MATEO** The possibilities are astronomical.  
Visit us on the web at <http://gocsm.net>.



**Directions to Planetarium**

After coming off HW92 at Hillsdale Blvd towards CSM, proceed up hill through the second and third sets of traffic lights until you come to the first stop sign, where you enter the campus, and continue straight. After the third stop sign, turn into the first parking lot on the right. This is Lot 7. The planetarium is directly ahead of you. Enter the building (36) through the door facing the parking lot.

**Directions to Crestview Park**

**Crestview Park**

**Come out and bring the kids for a mind-expanding 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. Visitors should park on the street or arrive before dark so that headlights don't affect the observers' dark adaptation. Bring small flashlights only, with the lens covered with red cellophane or red balloon. Please don't touch a telescope without permission. And parents, please watch your children.

Take Hwy 101 or El Camino to Brittan Avenue in San Carlos, and turn west (right from El Camino). From El Camino, follow Brittan about 2.3 miles to the intersection with Crestview Drive.

**From Alameda**, go about 1.4 miles to Crestview. Turn right on Crestview. A small sign saying "Crestview Park" is a half-block ahead on the right. Look to the left for the park entry road, a small street between houses #998 and #1000. If after dark, please park on Crestview near the park entrance and walk in the short distance, to avoid safety issues and disturbing the telescope setup and viewing.

**From Highway 280** to Edgewood Road. Go east (toward Bay) about 0.8 miles. Left on Crestview Dr. Go 0.5 miles uphill to the intersection with Brittan Avenue. Go one short block to the park entrance on the left.

**Note:** The park is residential, and adjacent to homes and backyards. Before inviting noisy groups, please call Ed Pieret or Leroy Amen.

**For more information, call:**  
Leroy Amen: 573-0935  
Leroy's cell: 504-5196  
Ed Pieret: 595-3691

**Membership Dues:** Membership annual dues are payable yearly, on your renewal date which is shown on your Event Horizon mailing label. See the back page of the Event Horizon for mailing instructions. Members who are over 3 months past due will be removed from the Event Horizon mailing list until their dues are paid. Members who are over 6 months past due will be removed from the active membership rolls. These members will not be eligible for club privileges but can retain membership in the Yahoo group. We will try to contact the members personally prior to making them inactive.

# Membership Application

To join the San Mateo County Astronomical Society or to renew your membership please send dues by check payable to "SMCAS" to the address below. Dues are \$35 for a new member, \$30 for Renewing members and \$25 for students and seniors.

**SMCAS, at PO Box 974, Station A, San Mateo, CA 94403**

Check one: ( ) New member ( ) Membership renewal ( ) Address or info change

**NOTE TO EXISTING MEMBERS: do not fill in address etc. unless it's changed!**

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, located at 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 until you come to the first stop sign, where you enter the campus, and continue straight. After the third stop sign, turn into the first parking lot on the right. This is Lot 7. The planetarium is directly ahead of you. Enter the building (36) through the door facing the parking lot.

**Officers: President:** Edmund Pieret; **Vice-President:** Chanan Greenberg; **Secretary:** Helen Asker; **Treasurer:** Bob Franklin

**Board Members-At-Large:** Bob Frommer, Ken Lum, Mike Ryan., Marion Weiler, and John Fiske.

**Membership:** Hank Washauer. **Newsletter:** Dave Wolf, Ron Cardinale, Darryl Stanford, John Garis, Bob Fies.

**Program:** Marion Weiler, **Publicity:** Helen Asker; **Reporter:** open position

**Event Horizon Editor:** Dave Wolf **NOTE:** We welcome articles and photos submitted by the 15th of the month prior to publication.

**Contacts:**

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