



AU AstroNews

The Newsletter of the Astronomical Unit

August 2017

Sponsored by the Santa Barbara Museum of Natural History



"Tell me, Ed. Did your astro-card come with bubblegum, too?" Photo credit: Tom Totton.

THE AUGUST GENERAL MEETING

Our August General Meeting will feature Dr. Karl Blasius who will update us on the latest of the Mars missions.

OUTREACH SUMMARY

Since the last newsletter, AU volunteers Farshad Barman, Angela Bates, Mike Chibnik, Tim Crawford, Joe Doyle, John Edkins, Mike Farris & Koko, Art Harris, Jürgen Hilmer, Zanna Lucy, Pat & Chuck McPartlin, Janet & Martin Meza, Bonnie & Bruce Murdock, Max Neufeldt, Edgar Ocampo, Peggy O'Rork, Gustavo Ritterstein & Celeste, Diane & Russell Ruiz, Tom Totton, Tom Whittemore, and Jerry Wilson showed cool astronomy stuff to 1171 visitors.

AUGUST OUTREACH EVENTS

The Telescope Workshop meets on Tuesday evenings at 7:30 PM at the Broder Building at SBMNH. Contact Tim Crawford at tcrawf3@cox.net for information. Listen to the AU on the radio at KZSB 1290 AM at 9 AM on the second and fourth Monday of each month.

Pat & Chuck will be absent from outreach from July 19 to August 5, so if you can come out and help during that period, we would be grateful.

TUESDAY, AUGUST 1, SETUP 7 PM

Telescope Tuesday at the Camino Real Marketplace in Goleta. We set up in the plaza next to the theater.

THURSDAY, AUGUST 3, SETUP 7 PM

Telescopes for Bacara Resort and Spa. We set up on the lawn overlooking the ocean at the south edge of the main parking lot.

FRIDAY, AUGUST 4, 7 PM

AU monthly meeting in Farrand Hall at SBMNH. Dr. Karl Blasius will update us on Mars missions.

SATURDAY, AUGUST 5, SETUP 8 PM

Slide show and telescopes for campers at Cachuma Lake Campground. We set up on the field at Dakota Plains.

FRIDAY, AUGUST 11, SETUP 7 PM

Telescopes for Refugio Beach State Campground, in the day use parking lot, southwest corner.

SATURDAY, AUGUST 12, 5 PM

Planning meeting in the classroom next to Javier's office at SBMNH. Come plan your club's activities. All are welcome.

SATURDAY, AUGUST 12, 7 PM

Monthly Public Star Party, next to Palmer Observatory at SBMNH.

WEDNESDAY, AUGUST 16, SETUP 8 PM

Slide show and scopes for Carpinteria State Beach. We set up on the sidewalk toward the ocean from the entry kiosk.

THURSDAY, AUGUST 17, SETUP 7 PM

Telescopes for Bacara Resort and Spa. We set up on the lawn overlooking the ocean at the south edge of the main parking lot.

FRIDAY, AUGUST 18, SETUP 7:30 PM

Monthly Public Telescope Night at Westmont College Observatory, next to the baseball field.

SATURDAY, AUGUST 19, SETUP 8 PM

Slide show and telescopes for campers at Cachuma Lake Campground. We set up on the field at Dakota Plains.

MONDAY, AUGUST 21, 8 AM TO NOON

Partial solar eclipse, reaching about 70%. Events at SBMNH, MOXI, and Camino Real Marketplace.

THURSDAY, AUGUST 24, SETUP 7 PM

Telescopes for Bacara Resort and Spa. We set up on the lawn overlooking the ocean at the south edge of the main parking lot.

FRIDAY, AUGUST 25, SETUP 7 PM

Telescopes for Refugio Beach State Campground, in the day use parking lot, southwest corner.

SATURDAY, AUGUST 26, SETUP 8 PM

Slide show and telescopes for campers at Cachuma Lake Campground. We set up on the field at Dakota Plains.

THURSDAY, AUGUST 31, SETUP 7 PM

Telescopes for Bacara Resort and Spa. We set up on the lawn overlooking the ocean at the south edge of the main parking lot.



"Not sure if I can let you have a peek at this book. It contains all the secrets of the Universe!" Photo credit: Bruce Murdock.

From the President...

Jerry Wilson

What is in a vacuum that supports light waves? The luminiferous aether was disproved. But light, according to Einstein, is also a particle. He received the Noble prize for his explanation of the Photoelectric Effect showing that light came in

quanta of energy proportional to the frequency of the electromagnetic oscillation. Light, then, if not a wave, became even more mysterious. It was assumed that being a wave or a particle was an either-or question. But the reality is now both at the same time. To this day there is no intuitive understanding of the wave-particle duality. But photon quantization is real and was generalized to all subatomic particles with the development of quantum mechanics.

Quantum mechanics changed the view of a vacuum with the concepts of the state of a system and the uncertainty principal. If we have a box with N particles inside and we could define the position and momentum of every particle at a given instant we would be defining the state of that system. Due to the uncertainty principal we cannot measure momentum and position to any desired accuracy. So if we measure one very accurately, the other becomes less accurate. In quantum mechanics position and momentum are inversely related. Other pairs of uncertainty variables are: energy and time phase and particle number.

So now creating a vacuum is reducing the occupied energy states to the lowest level, the vacuum state. It cannot ultimately be zero, due to the uncertainty principal. From the quantum mechanical point of view a vacuum is now a state the universe, or a part of the universe, can occupy.

But there is another point of view that also applies and that is the general relativity point of view. This says the fabric of the Universe is made of some elastic medium called space-time, that also pervades a vacuum. It is a remaining unsolved issue of physics to bring quantum mechanics and general relativity into a single theory. The current three competing approaches are: Loop Quantum Gravity, M Theory and String Theory.

So the nothing of a vacuum is not really nothing.

Looking Back

Editor's note: We take another look at a book I enjoyed when I was new to amateur astronomy. This month's installment comes from "Starlight Nights" by Leslie Peltier – an ardent variable star observer and comet hunter. This selection is taken from Chapter 8 – "Sky Exploring."

I never tired of looking at the moon and in those early nights of watching with my 2-inch glass I often thought of Galileo and his tiny telescope.

When news of the invention of the telescope in Holland finally reached Galileo in Italy he immediately set about making one of his own. For this purpose he purchased two spectacle lenses from an optician. One of these, of convex shape like a reading glass, became his objective lens. His eyepiece was just the opposite in curvature, or concave. The two lenses were then fitted into the opposite ends of a leaden tube of the proper length to focus on distant objects. Then, just a little more than three hundred years before, in the spring of 1609, Galileo turned his tiny homemade “optic glass” upon the moon. It was man’s first skyward look through any telescope. As he related it: *“I betook myself to observations of the heavenly bodies; and, first of all, I viewed the moon as near as if were scarcely two semi-diameters of the earth distant. After the moon I viewed other heavenly bodies, both fixed stars and planets, with incredible delight.”*

I feel quite sure that I first viewed the moon in my small scope with just as much incredible delight as Galileo did in his. It is true that I had seen photographs of the moon and therefore had some vague idea of what its appearance would be like, but I still was wholly unprepared for all the wonders which I found on that first night as I explored the lunar surface. No photograph has yet been made which is not cold and flat and dead when compared with the scenes that meet one’s eyes when the moon is viewed through even a small telescope.



“So, Mike. If I hit “esc,” this chair will beam me up to Mars?”
 Photo credit: Tom Totton.

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August 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 CAMINO REAL MARKETPLACE 7PM	2	3 BACARA RESORT AND SPA 7PM	4 GENERAL MEETING 7PM	5 CACHUMA LAKE 8PM
6	7	8	9	10	11 REFUGIO STATE BEACH 7PM	12 PLANNING MEETING 5PM STAR PARTY 7PM SBMNH
13	14 TECH TALK KZSB (AM 1290) 9-10AM	15	16 CARPINTERIA STATE BEACH 8PM	17 BACARA RESORT AND SPA 7PM	18 WESTMONT COLLEGE 7:30PM	19 CACHUMA LAKE 8PM
20	21 PARTIAL SOLAR ECLIPSE 8AM-NOON	22	23	24 BACARA RESORT AND SPA 7PM	25 REFUGIO STATE BEACH 7PM	26 CACHUMA LAKE 8PM
27	28 TECH TALK KZSB (AM 1290) 9-10AM	29	30	31 BACARA RESORT AND SPA 7PM		

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