



AU AstroNews

The Newsletter of the Astronomical Unit

July 2016

Sponsored by the Santa Barbara Museum of Natural History



JPL astronomer Steve Edberg captivates a group of visitors.

THE JULY GENERAL MEETING

JPL astronomer Dr. Stephen Edberg will be our guest speaker for the July General Meeting. His talk, titled "Pluto's New Horizons," will detail some of the latest findings for the dwarf planet, Pluto. In his own words: "Just a year ago, NASA's New Horizons was returning new findings about the first (dwarf) planet discovery of the 20th Century, Pluto. Even now, New Horizons' data continue to trickle back to Earth. To the surprise of many, cold, dark Pluto was not the battered target anticipated at the outskirts of the Sun's planetary system. Surface features, some familiar and many not, and other measurements indicate Pluto holds many surprises."

OUTREACH SUMMARY

Since the last newsletter, AU volunteers Bruce from Bakersfield, Tim Crawford, Art Harris, Ken Kihlstrom, Zanna Lucy, Pat & Chuck McPartlin, Janet & Martin Meza, Bruce Murdock, Edgar Ocampo, Tom Totton, and Patricia & Jerry Wilson showed cool astronomy stuff to 591 visitors.

JULY 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.

Here are the AU events scheduled so far for July. **SEE PAGE 3 FOR GRIFFITH TRIP** Events are subject to change, so to get the latest information on schedules, or directions, just contact Chuck at 964-8201 or macpuzl@west.net

SATURDAY, JULY 2, SETUP 8 PM

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

MONDAY, JULY 4, SETUP 8 PM

Telescopes for Refugio State Beach, in the SW corner of their day use parking lot.

THURSDAY, JULY 7, 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, JULY 8, 7 PM

AU monthly meeting in Farrand Hall at SBMNH. Hear about the Pluto mission from Dr. Steve Edberg of JPL.

FRIDAY, JULY 8, SETUP 8 PM

Telescopes for Refugio State Beach, in the SW corner of their day use parking lot.

SATURDAY, JULY 9, 6 PM

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

SATURDAY, JULY 9, 8 PM

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

TUESDAY, JULY 12, SETUP 7 PM

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

WEDNESDAY, JULY 13, 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, JULY 14, 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, JULY 15, 8 PM

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

SATURDAY, JULY 16, SETUP 8 PM

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

THURSDAY, JULY 21, 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.

WEDNESDAY, JULY 27, 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, JULY 28, 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, JULY 29, SETUP 8 PM

Telescopes for Refugio State Beach, in the SW corner of their day use parking lot.

SATURDAY, JULY 30, SETUP 8 PM

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



“Jerry, are you sure this is the end I look into?” Photo: T. Totton.

What is an orbit?

Jerry Wilson

In the space age we are accustomed to hearing about things in orbit. But at some of our outreaches I get questions that stem from a less than complete understanding of exactly what an orbit is. Some movies and news people are included. So why does an object in orbit stay up there? What holds it up? Why are astronauts seen floating, weightless in the ISS? Are they out of the Earth’s gravitational field?

All bodies that have mass have a gravitational field that extends from the center of that body to infinity. That includes an apple, a rock, the earth, and the sun - in fact, everything. Since gravity extends to infinity, no matter where we are we feel a gravitational attraction from every single object in the entire universe at once. But the vast distance to most objects in the universe dilutes the pull so we generally only have to consider the closest body. For us it’s the earth.

When something is in orbit above the earth, say the ISS at 250 miles above the surface, it experiences a gravitational pull toward the earth’s center that is only slightly weaker than we feel on the surface. So why doesn’t it fall down? The answer is that it is falling. The path it follows is the result of the gravitational pull of the earth plus the sideways speed of the object. Let me illustrate that combination.

Let's suppose you are a college student and you and your roommate are invited to a sorority party. You are late. You don't want to be late so you are speeding. You don't know the way, but your roommate says he knows. The trouble is your roommate is not very chatty. In fact he's quite taciturn. As you pass a side street he starts screaming in your ear "That's it, you're missing the turn. Turn here! Turn here!" You don't have a prayer of making the turn at this speed, but you try. You end up on the front lawn of the corner house with a cherub watering the hood of your car. For a moment you were essentially orbiting the street you wanted. You tried to turn but because of your speed, you missed it. That's exactly what happens in an orbit.

The ISS is falling toward the earth, but because of its sideways speed, it can't make the corner. If it were going slower it could make the corner. Gravity would win and it will fall out of the sky. If it's going faster the speed will win and it will shoot off into space. The orbit is just the right balance of sideways speed and gravity for the altitude you want.

The astronauts are weightless and appear to float because they are falling along with the ISS. It is not because there is no gravity up there.

TRIP TO GRIFFITH OBSERVATORY

The SBAU has scheduled a bus trip to the Griffith Observatory on Tuesday, July 26. We will leave the SBMNH front bus stop promptly at Noon and return by 10 PM. SBAU Members (as determined by latest member list maintained by the Secretary) will pay only \$20 each Non-members may be considered at \$28.50 each after the July 8th meeting if space is still available, so please email (President@sbau.org) or call and leave a message (Tom, 562-8795) on or before July 8 if you plan on going to reserve your spots. I will then need cash or a check made out to SBMNH, by July 15, sent to our mailing address (in info box at right) to guarantee your seats. More details on the AU Forum at:
<http://sbau.org/sbauforum/index.php?topic=223.0>

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On the Web: <http://www.sbau.org>

July 2016

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