The Observer

SAN BERNARDINO VALLEY AMATEUR ASTRONOMERS
Member of The Astronomical League
http://sbvaa.org/

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Meeting:

September 7, 2019

Location:

First Christian Church
2102 E. Foothill Dr.
San Bernardino, CA

7:00 p.m.

Pre-meeting Dinner,
5:00 to 6:30 p.m.,

Jenny's Family Resturant
7750 Palm Ave.
Highland, CA

After the meeting telescopes will be set up for viewing and members will be available to answer questions. Bring your telescope to observe with us.

No telescope is too humble, and beginners are always made welcome!

Program
"Grandview, etc. Show & Tell"
+ General Roundtable Discussion

Moderated by our club prez Jamie, the Grandview adventurers will share their experiences over an exceptional weekend. Plus: New piece of equipment? Bring it & tell us about it. Recent observing highlight? Share it with us. Have a helpful hint? Pass it on.

Join with your fellow club members as we discuss these and many other subjects about our favorite hobby.

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Calendar of Upcoming Events

Sept. 7, Club Meeting

Sept. 28, Star Party/Outreach. Oak Glen

Oct. 1, Outreach, Alice Birney Sch.
Colton

Oct. 5, Star Party/Outreach Pioneer Tn.

Oct. 12, Club Meeting

Nov. 3, Daylight Saving Time Ends

Nov. 11, Veterans Day (fly your flag!)

Nov. 23, Star Party, loc. TBA

Dec. 7, Annual Holiday Party

Is the Hubble Constant Not So Constant?

By Adam Mann. space.com

There's a puzzling mystery going on in the universe. Measurements of the rate of cosmic expansion using different methods keep turning up disagreeing results. The situation has been called a "crisis."

The problem centers on what's known as the Hubble constant. Named for American astronomer Edwin Hubble, this unit describes how fast the universe is expanding at different distances from Earth. Using data from the European Space Agency's (ESA) Planck satellite, scientists estimate the rate to be 46,200 mph per million light-years (or, using cosmologists' units, 67.4 kilometers/second per megaparsec). But calculations using pulsating stars called Cepheids suggest it is 50,400 mph per million light-years (73.4 km/s/Mpc).

If the first number is right, it means scientists have been measuring distances too faraway objects in the universe wrong for many decades. But if the second is correct, then researchers might have to accept the existence of exotic, new physics. Astronomers, understandably, are pretty worked up about this discrepancy.

What is a layperson supposed to make of this situation? And just how important is this difference, which to outsiders looks minor?

There are two teams working on the answer. The first is using the classic Cepheid variable measurement and the second is using a newer Planck Institute measurement. If the Planck measurement turns out to be correct, we may see the borning a whole new theory of astro physics.

For a detailed report, go to the space.com web site and open your mind!

What's Up in September

This just in from NASA/JPL/CIT:We're in a several-month period right now when the new moon falls right around the end of each month. This means we get to enjoy lovely waning crescent moons at dusk for the first few days of each month, and delightful waxing crescents in the predawn sky near the end of each month.
This month, look low in the west about half an hour after sunset to enjoy the crescent moon on September 1st through the 4th, with the Moon appearing a bit higher in the sky each night. By the 5th, the first-quarter (that is, half-full) Moon winds up here, just a couple of degrees to the right of Jupiter. At the end of the month, from September 23rd to the 27th, look east half an hour before dawn for an increasingly slimmer crescent, that appears lower in the sky each day.

In late August and early September this year, Mars is more or less behind the Sun as seen from Earth. This has implications for spacecraft at Mars, like NASA's Insight lander and Curiosity rover.

This event, called solar conjunction, happens about every two years. During this time, mission controllers on Earth stop sending commands to our spacecraft, in order to avoid potential radio interference from the Sun. A few weeks later, when Mars has moved farther apart from the Sun as seen from Earth, normal communications can resume. For those of us eager for a peek at Mars with our own eyes once again, it'll return to our pre-dawn skies in early November.

September 23rd marks the equinox, with day and night being of equal length. This marks the beginning of fall in the Northern Hemisphere. And this means the dark skies of winter will soon be upon us.

30th Anniversary of Voyager 2's Neptune Flyby

Thirty years ago, on Aug. 25, 1989, NASA's Voyager 2 spacecraft made a close flyby of Neptune, giving humanity its first close-up of our solar system's eighth planet. Marking the end of the Voyager mission's Grand Tour of the solar system's four giant planets - Jupiter, Saturn, Uranus and Neptune - that first was also a last: No other spacecraft has visited Neptune since.

Wrapped in teal- and cobalt-colored bands of clouds, the planet that Voyager 2 revealed looked like a blue-hued sibling to Jupiter and Saturn, the blue indicating the presence of methane. A massive, slate-colored storm was dubbed the "Great Dark Spot," similar to Jupiter's Great Red Spot. Six new moons and four rings were discovered.

The conclusion of the Neptune flyby marked the beginning of the Voyager Interstellar Mission, which continues today, 42 years after launch. Voyager 2 and its twin, Voyager 1 (which had also flown by Jupiter and Saturn), continue to send back dispatches from the outer reaches of our solar system. At the time of the Neptune encounter, Voyager 2 was about 2.9 billion miles (4.7 billion kilometers) from Earth; today it is 11 billion miles (18 billion kilometers) from us. The faster-moving Voyager 1 is 13 billion miles (21

The Apollo Experiment That Keeps on Giving

From NASA/JPL/CIT:Neil Armstrong, Buzz Aldrin and Michael Collins departed from the Moon 50 years ago, but one of the experiments they left behind continues to return fresh data to this day: arrays of prisms that reflect light back toward its source, providing plentiful insights. Along with the Apollo 11 astronauts, those of Apollo 14 and 15 left arrays behind as well: The Apollo 11 and 14 arrays have 100 quartz glass prisms (called corner cubes) each, while the array of Apollo 15 has 300.

The longevity of the experiment can be attributed at least in part to its simplicity: The arrays themselves require no power. Four telescopes at observatories in New Mexico, France, Italy and Germany fire lasers at them, measuring the time that it takes for a laser pulse to bounce off the reflectors and return to Earth. This allows the distance to be measured to within a fraction of an inch (a few millimeters), and scientists at the Jet Propulsion Laboratory analyze the results.
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The orbit, rotation and orientation of the Moon are accurately determined by lunar laser ranging. The lunar orbit and the orientation of the rotating Moon are needed by spacecraft that orbit and land on the Moon. For instance, cameras on spacecraft in lunar orbit can see the reflecting arrays, relying on them as locations accurate to less than a foot (a fraction of a meter).

Note the footprints around the reflector.