The Observer

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

Volume #59, Issue 12 | **Since 1958** | **December, 2017**

Meeting:

December 2, 2017

Location:

Shakey's Pizza
836 W. Colton Ave.
Redlands, CA

H
A
P
P
Y

H
O
L
I
D
A
Y
S

Program
Annual Holiday Gathering

Saturday, December 2th
between 3 and 5 pm.

Shakey's Pizza
836 W. Colton Ave.
Redlands, CA 92373
909-793-5993

Seasons Greetings

There will also be a **Gift exchange**. For those wishing to participate please bring a nice wrapped gift..... 'value not to exceed $15.00.'

SBVAA Officers

President: Jamie "Rue" Countryman
jamie.countryman63@gmail.com

Treasurer: Fidel Hernandez 909-864-0615

Secretary - Educational Outreach: Chris Clarke
909-754-3894 Home

Star Party Coordinator: Tom Lawson
tlawson777@charter.net

SBVAA Webmaster: Gerald Rezes
geraldrezes@verizon.net

Newsletter Editor: Jim Sommer
k75jim@aol.com

Assoc. Editor: Megan Huynh
megan.huynh@gmail.com

Calendar of Upcoming Events

Nov. 11, Veterans' Day 

Nov. 18, Star Party, location TBA

Dec. 2, Annual Club Holiday Party
Shakey's Pizza, Redlands

Dec. 16, Star Party, Pioneer Town

Dec. 21, Winter Solstice

? Jan. 5, Star Party, Event & Loc. TBD

Jan. 6, Club Meeting

Jan. 13, Star Party, Loc. TBD

Feb. 3, Club Meeting

On Sale Now!

The world's best-selling astronomy magazine brings you a calendar filled with dramatic images of nebulae, spiral galaxies, planets, star-forming regions, and other mysteries of deep space. Each month details planet visibility, meteor showers, conjunctions, and other observing opportunities, as well as moon phases and major astronomical events.

See Fidel before or after the club meeting. Only $8.00.

Pulsars used to listen for Gravity Waves

there are large merging objects whose gravitational wave signals have not yet been detected: supermassive black holes, more than 100 million times more massive than our Sun. Most large galaxies have a central supermassive black hole. When galaxies collide, their central black holes tend to spiral toward each other, releasing gravitational waves in their cosmic dance. Much as a large animal like a lion produces a deeper roar than a tiny mouse's squeak, merging supermassive black holes create lower-frequency gravitational waves than the relatively small black holes LIGO and similar ground-based experiments can detect.

To explore this uncharted area of gravitational wave science, researchers look not to human-made machines, but to a natural experiment in the sky called a pulsar timing array. Pulsars regularly emit beams of radio waves, which is why some call them "cosmic lighthouses." Because their rapid pulse of radio emission is so predictable, a large array of well-understood pulsars can be used to measure extremely subtle abnormalities, such as gravitational waves.

"By expanding our pulsar timing array over the next 10 years or so, there is a high likelihood of detecting gravitational waves from at least one supermassive black hole binary," said Chiara Mingarelli, lead study author, who worked on this research as a Marie Curie postdoctoral fellow at Caltech and JPL, and is now at the Flatiron Institute in New York.

Black hole mergers generate gravitational waves because, as they orbit each other, their gravity distorts the fabric of space-time, sending ripples outward in all directions at the speed of light. These distortions actually shift the position of Earth and the pulsars ever so slightly, resulting in a characteristic and detectable signal from the array of celestial lighthouses.

Many open questions remain about how galaxies merge and what will happen when the Milky Way approaches Andromeda, the nearby galaxy that will collide with ours in about 4 billion years.
"Detecting gravitational waves from billion-solar-mass black hole mergers will help unlock some of the most persistent puzzles in galaxy formation,

For more details, go to:
jpl.nasa.gov

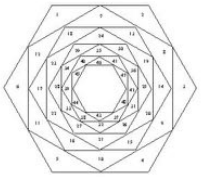
Origami for Space-ware Design?

The ancient art of origami has inspired designs for numerous pieces of hardware on NASA missions, allowing scientists to pack more technology into smaller space-bound packages.

For example, the agency is working on a piece of hardware called Starshade, which looks like a massive sunflower and could be made compact using what's known as an iris-folding pattern.

This pattern allows Starshade to be packed down into a space small enough to fit atop a rocket; the object could then unfurl to its full diameter of about 85 feet (26 meters) in space, according to NASA. Starshade would be used to block the light of distant stars so that a space-based telescope could image faint exoplanets in orbit around those stars.

For the full story, go to
space.com



For Sale

I have a Celestron C5 telescope along with its Motor Drive & Cable; 5x24 Finder Scope; 1¼" Star Diagonal; 4, 9 & 25mm 1¼" Orthoscopic Oculars; 1¼" Visual Back; Tripod; Photo Tripod Adapter; Equatorial Wedge; Cannon FD Lens T-Adapter; Tele-Extender; Hard Case & Instruction/Operating Manuals.

I'm selling all for $500. If anyone in your club is interested I may be contacted at 909-792-6600 or via email at waldorfmm@gmail.com.
Joe

Zombie in Space ?

For the first time, astronomers have discovered a star that has gone supernova more than once. This so-called "zombie star" — which exploded at least twice in the last 60 years alone — has baffled scientists by challenging many of the existing theories about how massive stars end their lives.

The undying star, named iPTF14hls, was first discovered in September 2014 by the Palomar Transient Factory (PTF), a fully automated, wide-field survey designed to spot cosmic objects that vary in brightness over time — such as variable stars, transient objects, and, of course, supernovae.

When the astronomers realized iPTF14hls was not an average supernova, they decided to go back and search through archival data. The researchers were flabbergasted when they found that in 1954, another explosion was recorded in the exact same location as iPTF14hls. Somehow, the star survived its first explosion, waited 60 years, and then exploded again.

Although researchers are still uncertain what caused iPTF14hls to go supernova twice, one theory is that the "zombie star" is actually a "pulsation pair instability supernova." According to this theory, it is possible that this was the result of a star so massive and hot that it generated antimatter in its core.

(For full article, see Astronomy Magazine *on-line, Nov. 8.)*