

THE Asteroid



Newsletter for the Astronomical Society of Nevada

3rd Quarter 2018

Star Parties and Donations

The ASN supported several star parties this summer and fall. Members participated in the Lassen Star party, the Great Basin Star party and the Golden State Star party.

In addition, we set up solar telescopes supporting an event at the Reno Sparks Convention Center for over 300 Girl scouts and family members. Our monthly Friday night Sparks Marina events continue to delight visitors.

If you are ever interested in joining one of these events, we would love to have you help us share the skies with others.

We had a successful swap meet this year with telescopes, accessories and even meteorites being traded and sold. Where else could you have picked up a piece of Mars?

Jim Fahey is still getting telescope donations to the club that I get working for sale to members or the public to raise funds for the club. We recently picked up a C8 that I emailed everyone about. Looking for new gear? Contact me, Jay Lawson !!



The ASN supports telescope viewing for the public and special groups like the Girl Scouts and local schools.

Check the calendar on the ASN website for other public observing opportunities and meeting dates.

The Astronomical Society of Nevada does public star gazing, presentations on Astronomy and Science and works with local schools to educate children on the wonders of the sky. In addition, we help each other learn more about the different aspects of Astronomy and participate as a group in celestial events. There is something for everyone.

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On line resources
Web Site www.astronomynv.org
Facebook
<https://www.facebook.com/groups/AstronomicalSocietyNV/>

"To encourage, foster, conduct and support programs on astronomy and related sciences for the education and enlightenment of the general public and the membership."

Supporting programs in Astronomy and related sciences in Northern Nevada since 1934

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2018 Annual officer election

Each year the ASN has open elections for the officer positions. It's a chance for members to actively participate in the club and carry on the tradition established by Professor Blair and the founding members in 1934.

The officer elections took place October and the club was fortunate enough to have the existing officers agree to continue on in their positions with the exception of Jim Fahey who is recovering from health issues. Tim Stoffel was nominated and elected as Vice President.

ASN officers and contact information are listed on the front page of this issue.

I would like to thank Jim Fahey his years of dedication and support of the ASN and we all wish him a speedy recovery (although it's really hard to see him slowing down!!)

Upcoming Star Parties and Events.

Monthly Events

ASN meetings, second Tuesday of each month.

Sparks Marina Star Party, third Friday of every month, open to the public. See the calendar on our website for up to date details.



Telescope donation from Steve Smythe

A recent significant donation was made from former ASN member Steve Smythe who contacted Dennis about a 10 inch ACF Meade LX850 and Mallincam camera. Steve had had the system for about a year and lost interest and decided to donate the equipment. The cost a year ago was nearly \$10,000.

This hardware is very heavy and difficult to set up each and every time, so it is being evaluated in my back yard on a pier mount until we decide what to do with it. It is meant for Astrophotography and early results are impressive. I still have not worked much with the Mallicam, but will update on this later.

The complete telescope assembled is about 220 pounds. Anyone interested in seeing this can contact me directly.



Telescopes donated to the ASN.

The club has had a variety of telescopes donated to us.

We get scopes donated at random times, and we evaluate them and fix them up.

Over the past year we have been able to put scopes with new users and raised thousands of dollar for the club.

We also managed to donate telescopes to several state parks so the Rangers can use them in their night sky presentations.

If members are looking for a second scope or an upgrade, please contact Dennis or Jim or Jay and let them know what your are looking for.

ASN equipment and resources

All ASN members have access to viewing with the clubs 20 and 24 inch telescopes. The club and several members have solar telescopes to view the sun in h-Alpha light, allowing you to see solar flares and surface details. At our public and members only star parties, members share views through club equipment as well as their own.

How to Join or Renew.

Joining or renewing your ASN membership is easy through the club website at www.astronomynv.org

Payment can be made by Paypal and sign up is quick and easy.

If you have any trouble, you can contact Robbin at her email address at robbin@screamingtigers.com

Astronomy News

Selected news from on line sources

Not a Nova

The star designated as CK Vulpeculae was seen to brighten dramatically for a period in 1670, and so was classed as a nova. There are various types of novae, caused either by material dropping onto a white dwarf star or by certain types of stars merging. New observations, however, of CK made by the ALMA radio telescope array show that it is none of these types of nova—it was instead a brown dwarf merging with a white dwarf. (A brown dwarf is a body without quite enough mass to sustain nuclear fusion, and so is not a true star.)

This is the first time such a merger has been firmly established. The new observations were made of more distant starlight shining through the remnant of the “nova.” The remnant showed lithium, unusual ratios of isotopes of carbon, nitrogen, and oxygen; and organic molecules including formaldehyde. None of these should be present in any type of star, but would be common in a brown dwarf. The merger blasted material outward into an hourglass-shaped remnant, seen in these observations.

Supernova Discovered

How to discover a supernova: Make numerous new images of galaxies and compare them to standard images of the same galaxies, looking for a star that isn't in those standard pictures. An amateur astronomer in Brazil did this with his 12-inch telescope, but unexpectedly, the “extra” star was on the *standard* image for galaxy NGC 1892, not his new image.

When he reported this to professional astronomers, they examined all the archived images they could find of this galaxy and determined that there was indeed a supernova on the standard image, taken 14 years ago by professional astronomers as part of the Carnegie-Irvine Galaxy Survey. No one had noticed the supernova at the time.

TESS

TESS (Transiting Exoplanet Survey Satellite), the replacement for Kepler, recently began operation, and has discovered its first exo-planet (confirmed by ground-based follow-up observations). It is orbiting the star Pi (π) Mensae, which is 60 light-years away. The planet's mass is in the range 4-5.7 times that of Earth, so is likely a mini-Neptune, with a solid core and huge atmosphere. Its year is only 6.27 Earth days. This is the second planet known to orbit this star. Expect thousands more exo-planets from TESS.

FRBs

You have probably seen videos of radio telescope arrays all moving in unison, pointing at the same spot in the sky. But what would happen if operators pointed every dish at a different part of the sky? A huge part of the sky would be imaged at once, albeit with reduced sensitivity. Astronomers who wanted to capture fast radio bursts (FRBs) used this “wide-angle” approach with the Australian radiotelescope array named ASKAP.

Because FRBs last only milliseconds and can occur randomly anywhere in the sky, only about three dozen had been caught

previously, but the new technique has already discovered 19 more. The new discoveries include the closest FRB yet and the most intrinsically bright one. (Distances to FRBs are determined by how much the interstellar gas has spread the arrival times of different frequencies within the burst.) Even with the new discoveries, only one FRB has ever been seen to repeat from the same location. Many astronomers now believe that the singles and the repeater are caused by different phenomena. The causes are still a heavily debated mystery.

Exploring an Asteroid

Hayabusa2 deployed three of its four landers onto the surface of asteroid Ryugu. They are known as MINERVA II-1a, MINERVA II-1b and MASCOT. (The fourth lander is scheduled to be deployed next summer.)

The first two were developed by the Japanese space agency, and the last by German and French scientists. Unlike the MINERVAs, MASCOT is battery powered; though planned to last 16 hours, it has exceeded this, with all instruments performing perfectly. Those instruments took images, and measured radiation, spectra, temperature, and magnetic fields. MASCOT spent three asteroid-days and two nights observing on the surface (a day on Ryugu lasts seven hours, 36 minutes).

All three landers are “hoppers;” they move to various locations on the surface by hopping, snapping a weight to accomplish that. Both MINERVAs are solar powered, and are expected to continue operation as long as the main spacecraft is orbiting nearby to relay data to Earth—about 18 months. The MINERVAs are cylindrical, only seven inches across, and weigh only 2.4 pounds, but they're equipped with stereo cameras, thermometers, and radios. The landers took 22 hours to drop gently to the surface, even though they were dropped from only about 60 yards away.

By the time you read this, the main spacecraft will have made its first landing and collected surface samples. These and additional samples are scheduled to return to Earth in December 2020.

The Goblin

Another dwarf planet has been discovered in the far outer reaches of our solar system. It is now about 80 astronomical units out (one AU = Earth's distance from the Sun), or about twice as far as Pluto. Officially named 2015 TG387, it has been nicknamed The Goblin for the “TG” in its assigned name, and because it was first seen around Halloween in 2015.

It took until now to determine the Goblin's orbit because it's very wide—more than 2,000 AU at its farthest—so the minor planet moves slowly, taking about 40,000 Earth years to complete each cycle. (It reaches no closer than 65 AU on the near end.) Its orbit is consistent with the Planet 9 theory, which says a very distant massive undiscovered planet is gravitationally pushing small bodies in the outer Solar System into just a few orbital alignments. Based on its brightness and distance, Goblin's likely diameter is about 180 miles, putting it toward the small end of the range that is considered a dwarf planet.

November 13th Meeting notice

The November 2018 meeting of the Astronomical Society of Nevada will be held on Tuesday Nov. 13th at 7 PM.

The location is KNPB TV (the Community Room), at 1670 N. Virginia St., Reno.

Our formal meetings are held (usually in even-numbered months) at KNPB's offices on the UNR campus at 7pm. These include a presentation or discussion on astronomy, followed by a business meeting. We also hold informal meetings (usually in odd-numbered months) at a local pizzeria or a member's home at 6:30 pm.

Whats up in November and December?

What's Up – Moon and Planets in November and December 2018:

Evening Planets (after sunset):

•Mercury, SW •Jupiter, SW •Saturn, SW •Mars, S •Neptune, SE •Uranus, E

Morning Planets (before sunrise):

•Venus, SE

Comets:

There are no comets brighter than magnitude 8 visible this month, however Periodic Comet 46P/Wirtanen is approaching Earth for a close encounter in December. On 12/16/18 it will pass within 0.0781 AU of Earth in the evening sky with a projected magnitude of between 3 and 7.5 making it likely it will be ***naked eye visible***.

On November 7th, former ASN member and guest lecturer Don Machholz discovered his 12th comet using visual techniques.

“With all the automated searches busily looking for anything crawling across the sky, it's a wonder an amateur can still discover a comet. Yet that's exactly what happened on November 7.53 UT, when Arizona's Don Machholz, the most successful living visual comet hunter, visually picked up a new comet in Virgo near the break of dawn. Two Japanese observers — Shigehisa Fujikawa and Masayuki Iwamoto — independently spotted the object around the same time and potentially will have their autographs added to the comet's final, official name.

Let's hear it from the discoverer via his Twitter account:

"746 hours of searching since my last visual comet discovery in 2010 and on Nov. 7.53 UT I visually discovered my 12th comet and today it was confirmed!"

Congratulations, Don — you beat the robots!" Bob King writing for Sky and Telescope

Meteors:

The Leonid meteor shower peaks on November 17/18. After the Moon sets, you may see up to 15 - 20 meteors per hour.

Phases of the Moon:

New Moon November 7 11:02 am EST

First Quarter Moon November 15 9:54 am EST

Full Moon November 23 12:39 am EST

Last Quarter Moon November 29 7:19 pm EST

Recent club photos !!



Swap meet photos



Girl Scout Solar viewing



Great Basin Star Party



Lassen Star Party

STEVE SMYTHE TELESCOPE DONATION



Telescope on Pier



Jay doing assembly



M27 Dumbbell nebula, 10ea 60 second exposures through LX850 10 inch ACF

Telescope donations to Parks



**Kim Zuch and Jay Lawson with ASN donated C8
for Washoe Lake State Park use**



**Jay Lawson, Kristin Sanderson, Dave Young and Brad Carlson
with ASN donated C8 for Fort Churchill State Park use.**