Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, October 8th 2016 7:00pm at the Herrett Center for Arts & Science College of Southern Idaho.

Public Star Party Follows at the Centennial Observatory Club Officers

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Magic Valley Astronomical Society is a member of the Astronomical League





M-51 imaged by Rick Widmer & Ken Thomason Herrett Telescope Shotwell Camera

Colleagues,

A couple of weeks ago, a buzz arose in the world of astronomy. Astronomers used data from GAIA, the European Space Agency's space observatory to settle distance of more than 1.1 billion stars. This is the first step in one of hopefully many that will give us a better understanding of our galaxy,

President's Message

Just as GAIA last month expanded the understanding of many, the first week of this month, MVAS members helped in their own way. By the time you will have read this, many of you will have been at a star party such as the Idaho Star Party or the Hagerman Fossil Beds National Monument Star Party. I don't think we truly understand what we have accomplished even if we reach one person. Thank you for the time you put in to help us out.

October also signals a transition point for MVAS. It's time to hold regular elections for board members, and that election will be held on Saturday, Oct. 8, at 7 p.m. in the Rick Allen Room of the Herrett Center. Those with nominations are asked to contact any board member directly.

After the elections, we will have another treat -- the annual MVAS in Pictures presentation. If you have any pictures of anything MVAS-related, please feel free to E-mail them to me at <u>mayerrbrt@gmail.com</u> by Friday, Oct. 7. Even if you have no pictures, please come and see what we as a team have done over the last 12 months.

Until then, Clear Views, Rob Mayer

Event Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 New Moon Lunation 1160
2	3	4	5	6	7	8 MVAS General Mtg. 7:00pm at the CSI Herrett Center Main Campus Twin Falls
9 First Quarter Moon 54% Visible	10 Columbus Day U.S. Thanksgiving Day Canada	11	12	13	14	15
16 Full Moon 100% Visible	17	18	19	20	21	22 Last Quarter 54% Visible
23	24	25	26	27	28	29
30	31 Halloween					

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Celestial Calendar

The Sky This Month – October 2016

All times, unless otherwise noted, are Universal Time (subtract six hours and, when appropriate, one calendar day for MDT)

10/2 The Moon is 5.5 degrees north-northeast of the first magnitude star Spica (Alpha Virginis) at 7:00 10/3 Mars is at its greatest heliocentric ecliptic latitude south (-1.8 degrees) at 3:00; Venus is 4.9 degrees southsouthwest of the Moon at 20:00 10/4 The Moon is at apogee at a distance of 406,096 kilometers (252,336 miles) at 11:03 10/8 Fall Astronomy Day occurs today; the peak of the Draconid meteor shower (10 to 30 per hour) occurs at 2:00; asteroid 2 Pallas is stationary at 2:00; the Lunar X, also known as the Purbach or Werner Cross, an X-shaped illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 12:24: Mercury is at its greatest heliocentric ecliptic latitude north (+7.0 degrees) at 20:00 10/11 Mercury (magnitude -1.1) is 0.79 degree north of Jupiter (magnitude -1.7) at 10:00 10/13 Neptune is 1.2 degrees south of the Moon, with an occultation taking place in northwest Canada, Alaska, and easternmost Russia, at 6:00: the Moon is at the descending node at 9:43 10/15 Uranus (magnitude +5.7, apparent size 3.7") is at opposition at 11:00 10/16 Uranus is 2.7 degrees north-northwest of the Moon at 3:00; the Moon is at perigee at a distance of 357,861 kilometers (222,364 miles) at 23:34 10/18 The Moon is 9.1 degrees south of the bright open cluster M45 (the Pleiades) in Taurus at 15:00 10/19 The Moon is 0.3 degree north of the first-magnitude star Aldebaran (Alpha Tauri), with an occultation taking place in southern Europe, the eastern United States, southeast Canada, Central America, and Mexico, at 7:00; Mars is 3.3 degrees south of Pluto at 14:00 10/20 The Moon is 5.7 degrees south of the bright open cluster M35 in Gemini at 20:00 10/21 The peak of the Orionid meteor shower (15 per hour) occurs at 5:00; asteroid 1 Ceres (magnitude +7.4) is at opposition at 5:00 10/23 Asteroid 18 Melpomene (magnitude +8.0) is at opposition at 13:00 10/24 The Curtiss Cross, an X-shaped illumination effect located between the craters Parry and Gambart, is predicted to occur at 14:08 10/25 The Moon is 1.6 degrees south of the first-magnitude star Regulus (Alpha Leonis) at 16:53 10/26 The Moon is at the ascending node at 1:44; Venus is 3 degrees north of the first-magnitude star Antares (Alpha Scorpii) at 4:00 10/27 Mercury is in superior conjunction with the Sun at 16:00 10/28 Jupiter is 1.4 degrees north of the Moon at 13:42 10/29 Mars is at perihelion (1.24 astronomical units from the Sun) at 13:00 10/30 The New Moon (lunation 1161) occurs at 17:38; Saturn (magnitude +0.6) is 3 degrees north of Venus (magnitude -4.0) at 19:00

10/31 Venus is at aphelion (0.73 astronomical units from the Sun) at 9:00; the Moon is at apogee at a distance of 406,662 kilometers (252,688 miles) at 19:29

Ejnar Hertzsprung and Henry Norris Russell were born this month.

The first recorded solar eclipse took place on October 22, 2136 B.C. Giovanni Cassini discovered Saturn's odd satellite lapetus on October 25, 1671. William Lassell discovered Triton, Neptune's brightest satellite, on October 10, 1846. Two of the satellites of Uranus, Ariel and Umbriel, were discovered by William Lassell on October 24, 1851. Edwin Hubble discovered Cepheid variable stars in M31 (the Andromeda Galaxy) on October 5, 1923.



Saturn's Moon Iapetus NASA / ESA / Cassini Mission Photo

The Sun, the Moon, & the Planets



The Sun is located in Virgo on October 1st at 0:00 UT. It enters Libra at 18:00 UT on October 30th.

During October evenings, Venus and Saturn are in the southwest, Mars is in the south, Uranus is in the east, and Neptune is in the southeast. At midnight, Uranus is located in the south and Neptune in the southwest. Mercury and Jupiter can be found in the east and Uranus in the west in the morning sky.

For observers at latitude 40 degrees north at midmonth, Mercury is visible during morning twilight, Venus sets at 8:00 p.m. local time, Mars sets at 11:00 p.m. local time, Jupiter rises at 6:00 a.m. local time, and Saturn sets at 9:00 p.m. local time.

Mercury is visible in the morning sky in during the first half of October. Mercury is at its greatest heliocentric latitude north on October 8th and is in a daytime conjunction with Jupiter on October 11th. The speediest planet is in superior conjunction with the Sun on October 27th. Mercury decreases from 6.6 arc seconds to 4.7 arc seconds in apparent size but increases in illumination from 60% to 100% this month.

During October, the apparent diameter of **Venus** increases from 12.1 to 13.9 arc seconds while it decreases in phase from 85 to 78%. The brightest of the planets enters Scorpius on October 17th and Ophiuchus on October 24th. Venus is three degrees north of Antares on October 25th and three degrees south of Saturn on October 30th. It is at aphelion on October 31st.

Mars has a number of close encounters with globular clusters this month. It is located 0.8 degree south of the seventhmagnitude globular cluster M28 on October 5th and 0.2 degree south of the third-magnitude star Lambda Sagittarii on October 6th. On October 7th, the Red Planet appears just four arc minutes south of the ninth-magnitude globular cluster NGC 6638. Mars passes 1.6 degrees south of the fifth-magnitude globular cluster M22 on October 9th. The Red Planet is at its greatest southern heliocentric latitude on October 3rd. Mars is at perihelion on October 29th.

Jupiter reappears low in the morning sky by the middle of October. It is located 1.4 degrees south of the Moon on October 28th. Jupiter rises nearly 2.5 hours before the Sun by the end of the month.

Saturn sets in the late evening. Its disk spans 16 arc seconds and its rings 35 arc seconds in mid-October. The ring tilt angle is 26 degrees. Saturn, Venus, and Antares form a nearly vertical line seven degrees in length low in the southwest on October 27th. Eighth-magnitude Titan is due south of the planet on October 2nd and October 18th and north of it on October 11th and October 27th.

Uranus reaches opposition on October 15th. At that time, the seventh planet is located at declination +8.2 degrees, shines at magnitude +5.7, subtends 3.7 arc seconds, and is 2.6 light-hours (2.9 billion kilometers or 1.8 billion miles) from the Earth. Uranus is located roughly halfway between the two fifth-magnitude stars Zeta and Mu Piscium when it is at opposition.

Neptune continues to retrograde through Aquarius. In the early part of the month, Neptune lies two degrees southeast of the fourth-magnitude star Lambda Aquarii. The eighth planet is 2.5 degrees from that star and 0.1 degree north of two ninth-magnitude stars by the final week of October.

The dwarf planet **Pluto** is located 0.3 degree northwest of the fourth-magnitude star Omicron Sagittarii during the last week of October. It passes four arc minutes due north of a seventh-magnitude star on October 27th and only eight arc seconds north of a ninth-magnitude star on October 30th. Articles on locating and observing Pluto are available on pages 48 and 49 of the July issue of Sky & Telescope and pages 64 and 65 of the July issue of Astronomy and a finder chart appears online at http://www.bluewater.../Pluto-2016.jpg

For more on the planets and how to locate them, see http://www.nakedeyeplanets.com/

Asteroids



Asteroid 11 Parthenope shines at ninth magnitude as it travels southwestward from Cetus into Pisces this month. It passes less than two degrees south of 12 Ceti (magnitude +3.5) on October 4th and 5th. Asteroid 1 Ceres (magnitude +7.4) is at opposition on October 21st. Asteroid 18 Melpomene (magnitude +8.0) is at opposition on October 23rd. Browse https://in-the-sky.o...20161022_15_100 respectively for finder charts and additional information. Other asteroids brighter than magnitude +11.0 reaching opposition this month include 51 Nemausa (magnitude +10.6) on October 13th, 57 Mnemosyne (magnitude +10.7) on October 19th, and 444 Gyptis (magnitude +10.7) on Oct 26th. For information on this year's bright asteroids and upcoming asteroid occultation events respectively, consult http://www.curtrenz.com/asteroids.html and http://



During October, the periodic comet 43P/Wolf-Harrington glides southeastward near the borders of Hydra, Leo, and Sextans. The eleventh-magnitude comet passes between the twelfth-magnitude galaxy NGC 2962 and the sixth-magnitude star 2 Hydrae on October 5th. For additional information on comets visible in October, browse http://cometchasing.skyhound.com/ and <a hr



The Draconid (formerly the Giacobinid) meteor shower peaks on the evening of October 7th. A waxing crescent Moon will interfere with observing this shower. The Draconids are quite variable and have produced meteor storms in 1933 and 1946. Comet 21P/Giacobini-Zimmer is the parent comet of the Draconids. Consult http://earthsky.org/...d-meteor-shower for additional information on the Draconid meteor shower. The Southern Taurid shower, debris from Comet 2P/Encke, may produce five meteors per hour when it peaks on October 10th. The Orionid meteor shower peaks on the night of October 21st. A waning gibbous Moon will adversely affect viewing the shower during the morning hours of October 22nd. Orionid meteors are fragments of Comet 1P/Halley. Browse http://www.timeandda...er/orionid.html or <a h

Carbon Star



Notable carbon star for October: RZ Pegasi: Right Ascension: 22^h 05^m 53^s / Declination: +33° 30' 25"



Seventy-five deep-sky objects for October: NGC 7640, NGC 7662, NGC 7686 (Andromeda); NGC 7180, NGC 7183, NGC 7184, NGC 7293, NGC 7392, NGC 7585, NGC 7606, NGC 7721, NGC 7723, NGC 7727 (Aquarius); Cz43, K12, M52, NGC 7635, NGC 7788, NGC 7789, NGC 7790, St12 (Cassiopeia); B171, B173-4, IC 1454, IC 1470, K10, Mrk50, NGC 7235, NGC 7261, NGC 7354, NGC 7380, NGC 7419, NGC 7510 (Cepheus); IC 1434, IC 5217, NGC 7209, NGC 7223, NGC 7243, NGC 7245 (Lacerta); NGC 7177, NGC 7217, NGC 7320 (the brightest galaxy in Stephan's Quintet),

NGC 7331, NGC 7332, NGC 7339, NGC 7448, NGC 7454, NGC 7479, NGC 7619 (the brightest member of Pegasus I), NGC 7626, NGC 7678, NGC 7742, NGC 7769 (Pegasus); NGC 7541, NGC 7562, NGC 7611 (Pisces); IC 5156, IC 5269, IC 5271, NGC 7172, NGC 7173, NGC 7174, NGC 7176, NGC 7201, NGC 7203, NGC 7214, NGC 7221, NGC 7229, NGC 7314, NGC 7361 (Piscis Austrinus); NGC 7507, NGC 7513, NGC 7713, NGC 7755, NGC 7793 (Sculptor)

Top ten binocular deep-sky objects for October: M52, NGC 7209, NGC 7235, NGC 7243, NGC 7293, NGC 7510, NGC 7686, NGC 7789, NGC 7790, St12

Top ten deep-sky objects for October: K12, M52, NGC 7209, NGC 7293, NGC 7331, NGC 7332, NGC 7339, NGC 7640, NGC 7662, NGC 7789

Challenge deep-sky object for October: Jones 1 (PK104-29.1) (Pegasus) RA: 23h 35m 53.5s Dec: +30° 28' 01 Mag: 15, Size: 5.5'(3.5 light-year), Distance: 2300 light-year. Jones 1 is a type IIIb very faint planetary nebula in the constellation Pegasus and discovered by Rebecca Jones of Harvard University in 1941. Note: A scope of less than 254mm is recommended. A OIII filter is also recommended.



Jones 1 Minimum credit line: T.A. Rector/University of Alaska Anchorage, H. Schweiker / WIYN and NOAO/AURA/NSF

The objects listed above are located between 22:00 and 24:00 hours of right ascension.



Information on Iridium flares and passes of the ISS, the Tiangong-1, the USAF's X-37B, the HST, and other satellites can be found at http://www.heavens-above.com/

Current information on solar system celestial bodies is posted at http://www.curtrenz.com/astronomy.html and http://www.



For a larger star chart for October visit: http://www.telescope.com/assets/images/starcharts/2016-10-starchart_col.png

NASA Space Place

One Incredible Galaxy Cluster Yields Two Types of Gravitational Lenses By Ethan Siegel

There is this great idea that if you look hard enough and long enough at any region of space, your line of sight will eventually run into a luminous object: a star, a galaxy or a cluster of galaxies. In reality, the universe is finite in age, so this isn't quite the case. There are objects that emit light from the past 13.7 billion years—99 percent of the age of the universe—but none before that. Even in theory, there are no stars or galaxies to see beyond that time, as light is limited by the amount of time it has to travel. But with the advent of large, powerful space telescopes that can collect data for the equivalent of millions of seconds of observing time, in both visible light and infrared wavelengths, we can see nearly to the edge of all that's accessible to us.

The most massive compact, bound structures in the universe are galaxy clusters that are hundreds or even thousands of times the mass of the Milky Way. One of them, Abell S1063, was the target of a recent set of Hubble Space Telescope observations as part of the Frontier Fields program. While the Advanced Camera for Surveys instrument imaged the cluster, another instrument, the Wide Field Camera 3, used an optical trick to image a parallel field, offset by just a few arc minutes. Then the technique was reversed, giving us an unprecedentedly deep view of two closely aligned fields simultaneously, with wavelengths ranging from 435 to 1600 nanometers.

With a huge, towering galaxy cluster in one field and no comparably massive objects in the other, the effects of both weak and strong gravitational lensing are readily apparent. The galaxy cluster—over 100 trillion times the mass of our sun warps the fabric of space. This causes background light to bend around it, converging on our eyes another four billion light years away. From behind the cluster, the light from distant galaxies is stretched, magnified, distorted, and bent into arcs and multiple images: a classic example of strong gravitational lensing. But in a subtler fashion, the less optimally aligned galaxies are distorted as well; they are stretched into elliptical shapes along concentric circles surrounding the cluster.

A visual inspection yields more of these tangential alignments than radial ones in the cluster field, while the parallel field exhibits no such shape distortion. This effect, known as weak gravitational lensing, is a very powerful technique for obtaining galaxy cluster masses independent of any other conditions. In this serendipitous image, both types of lensing can be discerned by the naked eye. When the James Webb Space Telescope launches in 2018, gravitational lensing may well empower us to see all the way back to the very first stars and galaxies.

If you're interested in teaching kids about how these large telescopes "see," be sure to see our article on this topic at the NASA Space Place: <u>http://spaceplace.nasa.gov/telescope-mirrors/en/</u>



Galaxy cluster Abell S1063 (left) as imaged with the Hubble Space Telescope as part of the Frontier Fields program. The distorted images of the background galaxies are a consequence of the warped space dues to Einstein's general relativity; the parallel field (right) shows no such effects. Image credit: NASA, ESA and Jennifer Lotz (STScI)



This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

Centennial Observatory and Faulkner Planetarium



Herrett Telescope CSI Centennial Observatory

Event	Place	Date	Time	Admission
Monthly Free Star Party International Observe the Moon Night	Centennial Observatory	Saturday, October 8 th , 2016	7:30 PM to midnight	FREE
Astronomy Talk: "Introducing Capricornus, the Sea Goat"	Faulkner Planetarium	Wednesday, November 2 nd , 2016	6:30 to 7:30 PM	Adults: \$2.50 Children (7-17) & CSI students: \$1.50 Ages 0-6: FREE
Astronomy Talk Night Telescope Viewing	Centennial Observatory	Wednesday, November 2 nd , 2016	7:30 to 9:30 PM	Free with Astronomy Talk admission
Telescope Tuesday	Centennial Observatory	Tuesday, November 8 th , 2016	6:30 to 9:00 PM	\$1.50 or free with <u>Faulkner</u> <u>Planetarium</u> admission

Faulkner Planetarium Show Times

To find out what shows are available, and to view trailers click this link: Now Showing



About the Magic Valley Astronomical Society

Magic Valley Astronomical Society P.O. Box 445 Kimberly, ID, USA 83341

The Magic Valley Astronomical Society (MVAS) was founded in 1976. The Society is a non-profit [501(c) 3] educational and scientific organization dedicated to bringing together people with an interest in astronomy.

In partnership with the Centennial Observatory, Herrett Center, College of Southern Idaho - Twin Falls; we hold regularly scheduled monthly meetings and observation sessions, at which we share information on current astronomical events, tools and techniques for observation, astrophotography, astronomical computer software, and other topics concerning general astronomy. Members enthusiastically share their telescopes and knowledge of the night sky with all who are interested. In addition to our monthly public star parties we hold members only star parties at various locations throughout the Magic Valley.

MVAS promotes the education of astronomy and the exploration of the night sky along with safe solar observing through our public outreach programs. We provide two types of outreach; public star parties and events open to anyone interested in astronomy, and outreach programs for individual groups and organizations (e.g. schools, churches, scout troops, company events, etc.), setting up at your location. All of our outreach programs are provided by MVAS volunteers at no cost. However, MVAS will gladly accept donations. Donations enable us to continue and improve our public outreach programs.

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy. Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support.

Annual Membership dues will be:

\$20.00 for individuals, families, \$10.00 for students. Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com

Donations to our club are always welcome and are even tax deductible. Please contact a board member for details.

Membership Benefits:

Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others please contact President Robert Mayer, for more information on these and other benefits.



Telescopes are an individual thing and not practical for public use. However, everyone should have the experience of a good look at the moon for at least 5 minutes in their life time. It is a dimension and feeling that is unexplainable. Pictures or TV can't give this feeling, awareness, or experience of true dimension. A person will not forget seeing our closest neighbor, the moon. Norman Herrett in a letter to Dr. J. L. Taylor, president of the College of Southern Idaho, Twin Falls, ID, USA circa 1980.