Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, April 8th 2017
7:00pm at the
Herrett Center for Arts & Science
College of Southern Idaho.

Public Star Party Follows at the Centennial Observatory

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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

President's Message

Colleagues,

The weather is clearing! Already our colleagues are out enjoying the clear skies. At the end of March, a small contingent hit the Jerome Gun Club and took advantage of great skies to take in some fantastic views.

This month, we have two opportunities to get out. First, Friday, April 21, is another MVAS star party. As usual, location will be determined the closer we get to the date. The following week, Saturday, April 29, is Astronomy Day at the Herrett Center. Calls for volunteers should be out soon.

Our next MVAS meeting will be Saturday, April 8th. We will be having a NASA night. The evening will feature updates on several NASA programs.

Until then,
Clear Views,

Rob Mayer

Calendar for April

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 April Fool's Day 
2	3 First Quarter 47% Visible ↑ 	4	5	6	7	8 Membership Meeting at 7:00pm at the Herrett Cntr. Public Star Party Follows Centennial Obs.
9	10	11 Full Moon 100% Visible Age: 15-days 	12	13	14	15
16 Easter 	17	18	19 Last Quarter Visible 50% ↓ Age: 23-Days 	20	21 Club Star Party TBD via members list 	22 Earth Day 
23	24	25	26 New Moon Lunation 1166 1% Visible↑ 	27	28	29 International Astronomy Day 
30						

Snake River Skies is the Newsletter of the Magic Valley Astronomical Society and is published electronically once a month.

Be Safe – Get Out There – Explore Your Universe

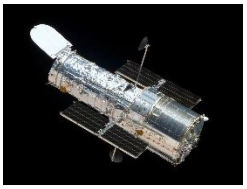
Celestial Calendar for April

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

4/1 The Moon is 0.35 degree north-northwest of the first-magnitude star Aldebaran (Alpha Tauri); Mercury is at greatest eastern elongation (19.0 degrees) at 10:00
4/2 Mercury is at greatest heliocentric latitude north (7.0 degrees) at 19:00; the Moon is 5.4 degrees south of the bright open cluster M35 in Gemini at 23:00;
4/3 The Lunar X (also known as the Werner or Purbach Cross), an X-shaped Clair-Obscure illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to begin at 22:21
4/4 The Moon is 9.9 degrees south of the first-magnitude star Pollux (Beta Geminorum) at 12:00
4/5 The Moon is 3.5 degrees south of the bright open cluster M44 (the Beehive Cluster or Praesepe) in Cancer at 12:00
4/6 Saturn is stationary in right ascension at 5:00
4/7 The Moon is 0.7 degree south-southwest of the first-magnitude star Regulus (Alpha Leonis), the Moon is at the ascending node (longitude 152.7 degrees) at 9:16; Jupiter (magnitude -2.5, 44.2" in apparent size) is at opposition at 22:00
4/10 Mercury is stationary in right ascension at 1:00; Jupiter is 2.0 degrees south of the Moon at 21:00
4/11 The Moon is 6.1 degrees north-northeast of the first-magnitude star Spica (Alpha Virginis) at 10:00
4/13 Venus is stationary in right ascension at 0:00; the periodic comet 41P/Tuttle-Giacobini-Kresák is at perihelion at 23:00
4/14 Uranus is in conjunction with the Sun at 6:00
4/15 The Moon 9.6 degrees north of Antares at 7:00; the equation of time equals zero at 10:00; the Moon is at apogee, subtending 29' 28" from a distance of 405,474 kilometers (251,950 miles), at 10:05
4/16 Saturn is 3.2 degrees south of the Moon at 19:00
4/18 Pluto is 2.5 degrees south of the Moon at 14:00; the Sun enters the constellation of Aries at 22:00
4/20 The Curtiss Cross, an X-shaped Clair-Obscure illumination effect located between the craters Parry and Gambart, is predicted to begin at 1:27; Mercury is in inferior conjunction with the Sun at 6:00; Pluto is stationary in right ascension at 11:00; the periodic comet 103P/Hartley is at perihelion at 12:00
4/21 Mars is 3.5 degrees south-southeast of the bright open cluster M45 (the Pleiades) in Taurus at 20:00; the Moon is at the descending node (longitude 331.5 degrees) at 22:32
4/22 The peak of the Lyrid meteor shower (20 per hour) occurs at 12:00; Neptune is 0.21degrees northwest of the Moon.
4/23 Venus is 4.9 degrees north-northwest of the Moon at 21:00
4/24 The Moon is 0.8 degree north of asteroid 2 Pallas, with an occultation taking place in Ireland, Iceland, Greenland, and most of North America, at 16:00
4/25 Uranus is 3.5 degrees north-northwest of the moon at 18:00; Mercury is 4.3 degrees north-northeast of the Moon at 20:00; the Moon, Mercury, and Uranus all lie within a circle of diameter 4.3 degrees at 20:00
4/26 Mercury is at the descending node through the ecliptic plane at 5:00; New Moon (lunation 1167) occurs at 12:17
4/27 The Moon is at perigee, subtending 33' 15" from a distance of 359,329 kilometers (223,275 miles), at 16:15
4/28 The moon is 9.1 degrees south-southeast of the bright open cluster M45 (the Pleiades or Subaru) in Taurus at 2:00; Comet C/2015 V2 (Johnson) is at opposition at 2:00; Mars is 5.7 degrees north of the moon at 9:00; Mercury (magnitude +3.0) is 0.09 degree southeast of Uranus (magnitude +5.9) at 12:00; the Moon is 0.49 degree north of Aldebaran, with an occultation taking place in northern Africa, Europe, far southern Greenland, eastern Canada, Cuba, and North America, at 18:00
4/30 May Eve, a cross-quarter day; Venus is at greatest illuminated extent at 4:00; the Moon is 5.2 degrees south of the bright open cluster M35 in Gemini at 6:00

Christiaan Huygens (1629-1695) was born this month.

Johann Koehler discovered the elliptical galaxies M50 and M60 on April 11, 1779. Caroline Herschel discovered C/1790 H1 (Herschel) on April 18, 1790. The first photograph of the Sun was taken on April 2, 1845. The first radar signal was bounced off of the Sun on April 7, 1959. The Hubble Space Telescope was placed in orbit on April 25, 1990. The Compton Gamma Ray Observatory achieved orbit on April 7, 1991.



The Sun, the Moon, & the Planets

The Moon is 3.9 days old, is illuminated 20.0%, subtends 30.1', and is located in Taurus at 0:00 UT on April 1st. The Moon is at its greatest northern declination of +18.9 degrees on April 3rd and +19.0 degrees on April 30th and its greatest southern declination of -19.0 degrees on April 18th. Longitudinal libration is at a maximum of +5.6 degrees on April 6th and a minimum of -7.4 degrees on April 22nd. Latitudinal libration is at a maximum of +6.7 degrees on April 1st and +6.6 degrees on April 28th and a minimum of -6.7 degrees on April 15th. New Moon occurs on April 26th. Very large tides occur for several days thereafter. The Moon can be seen occulting Aldebaran from various parts of the world twice this month, on April 1st and April 28th. Consult http://www.lunar-occultations.com/iota/bstar/bstar.htm for additional information on these events. Visit http://saberdoesthestars.wordpress.com/2011/07/05/saber-does-the-stars/ for tips on spotting extreme crescent Moons. Times and dates for the lunar light rays predicted to occur this month are available at http://www.lunar-occultations.com/rlo/rays/rays.htm

The Sun is located in Pisces on April 1. It enters Aries on April 18th.

Mercury is at greatest eastern elongation on April 1st, reaches its greatest latitude north of the ecliptic plane on April 2nd, and is stationary on April 10th. It is in inferior conjunction on April 20th and is at the descending node through the ecliptic plane on April 26th.

Venus grows increasingly more prominent in the morning sky. On April 13th, it reaches its second stationary point in the Circlet of Pisces and thereafter resumes prograde motion. The Moon passes five degrees north of Venus on April 23rd. Venus decreases in apparent size from 57.9 to 38.5 arc seconds and increases in illumination from 2 to 26% over the course of the month.

Mars sets shortly after 10:00 p.m. local daylight time this month. It shrinks in apparent size to less than four arc seconds. Mars departs Aries and enters Taurus on April 12th. The Red Planet passes less than four degrees south of M45 (the Pleiades) on April 19th and April 20th and lies between the M45 and Melotte 25 (the Hyades) during the final week of April.

Jupiter reaches opposition on April 7th. Jupiter is two degrees south of the Moon on April 10th. Jupiter shrinks in apparent diameter from 44.2 to 43.6 arc seconds and decreases in brightness from magnitude -2.5 to magnitude -2.4 during the course of the month. On April 2nd, Io's shadow falls on the planet at 9:31 p.m. MDT. Eight minutes later the satellite begins to transit Jupiter's disk. On April 9th, Io reappears from eclipse by Jupiter's shadow at 4:18 a.m. MDT. Io begins to transit the planet again at 11:22 p.m. MDT on April 10th, followed by its shadow three minutes later. Europa is occulted by Jupiter at 1:52 a.m. MDT on April 14thFor information on transits of Jupiter's central meridian by the Great Red Spot, consult https://www.projectpluto.com/jeve_grs.htm#apr. If you want to learn more about how to see Jupiter, have a look at the *Cosmic Pursuits* 'Observer's Guide to the Planet Jupiter' at this link.

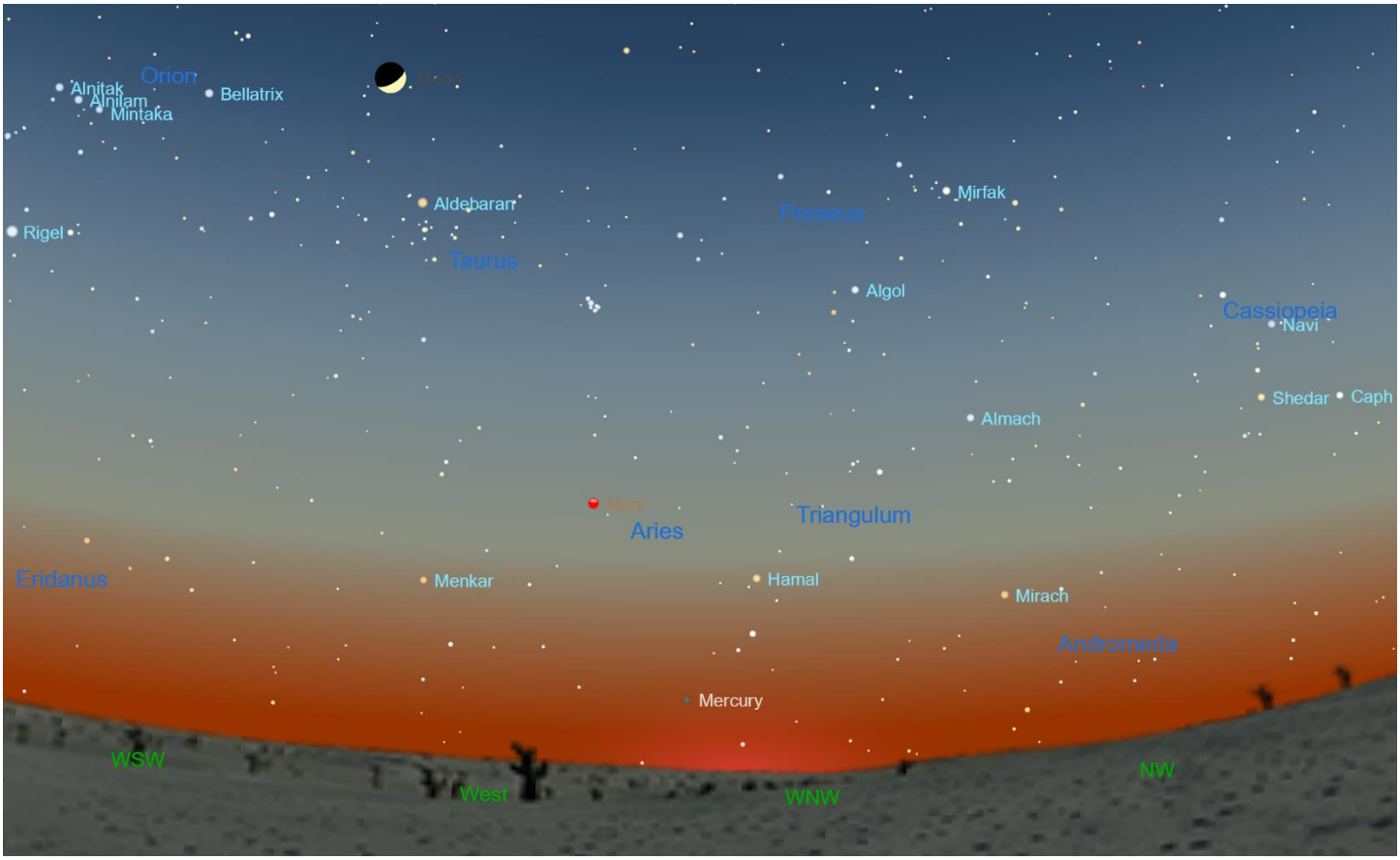
Saturn rises at approximately 1:30 a.m. local daylight time. The planet rises around 11:30 p.m. local daylight time, brightens to magnitude +0.3, and subtends 17.8 arc seconds by the end of the month. At midmonth, its rings span 39 arc seconds and are tilted more than 26 degrees with respect to the Earth. Saturn is stationary in right ascension on April 6th and commences retrograde (western) motion thereafter. It is situated within four degrees of the open clusters M21 and M23 and the nebulae M 8 (the Lagoon Nebula) and M20 (the Trifid Nebula) for the duration of the month. The waning gibbous Moon passes three degrees north of the Ringed Planet on April 16th. Titan, Saturn's largest satellite, is north of the planet on April 6th and April 22nd and south of it on April 13th and April 29th. For further information on Saturn's satellites, browse http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/

Uranus is in conjunction with the Sun on April 14th and consequently is not visible this month.

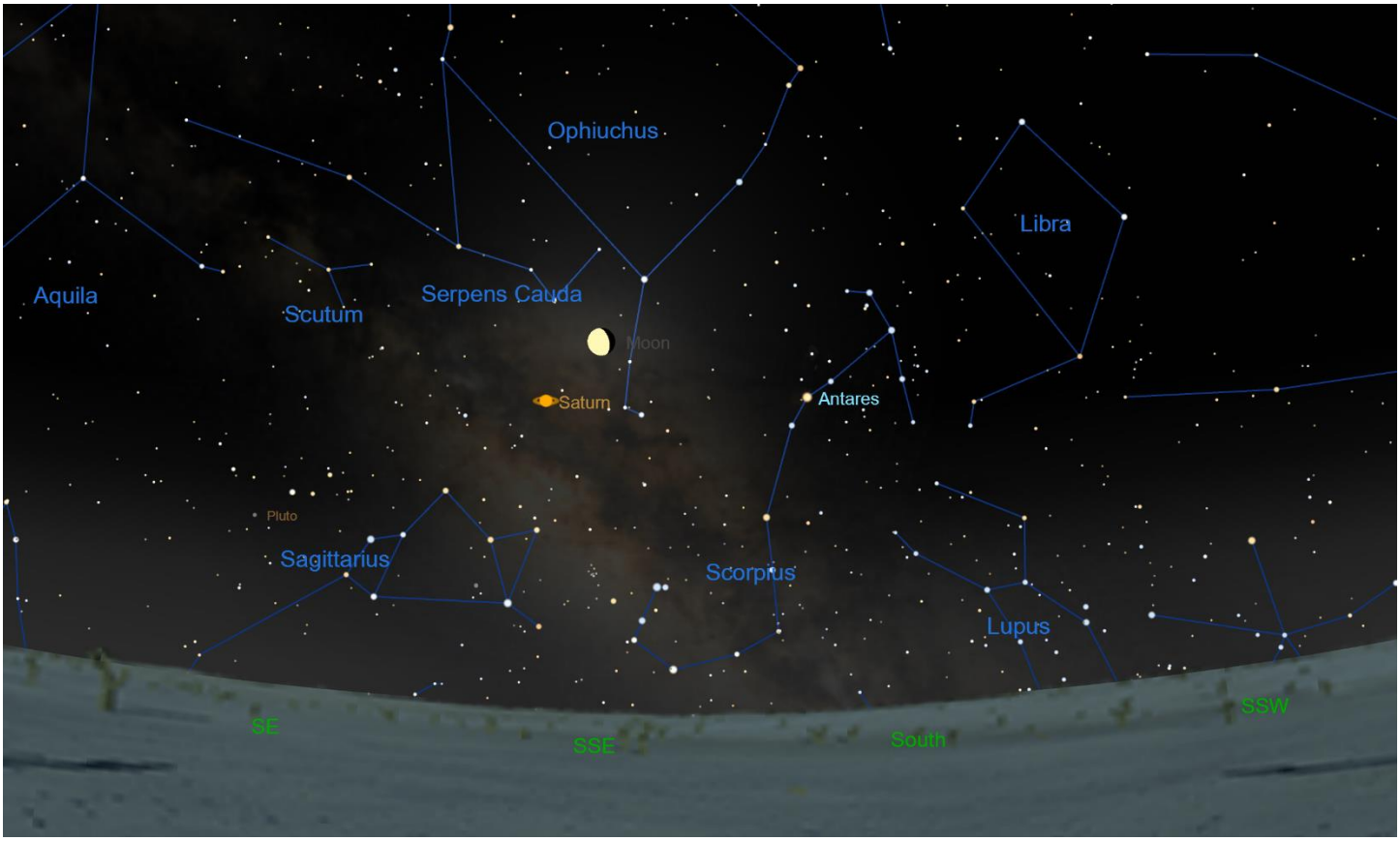
Neptune lies very low in the east at dawn. Southern hemisphere observers have a more favorable view due to the angle of ecliptic.

The dwarf planet **Pluto** is fairly high in the sky in northwestern Sagittarius during morning twilight.

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



Mercury and Mars in the western sky after sunset on April 1, 2017.



Saturn rises in the southeast well after midnight in mid-April 2017. The planet lies in western Sagittarius and retrogrades (moves westward) from April 6 until mid-June.

Asteroids

Asteroids **16 Psyche** and **29 Amphitrite** are located in southern Leo just this month. The ninth- and tenth-magnitude asteroids are just northeast of Rho Leonis on April 1st and are less than one half of a degree apart. A 9.5-magnitude star lies between the two asteroids. Psyche heads northwestward and Amphitrite westward and then southeastward through Leo as April unfolds. Asteroids brighter than magnitude +11.0 that reach opposition this month include 105 Artemis (magnitude +10.5) on April 3rd, **416 Vaticana** (magnitude +10.9) on April 8th, **63 Ausonia** (magnitude +10.1) on April 11th, **230 Athamantis** (magnitude +10.6) on April 13th, and 12 Victoria (magnitude +9.8) on April 19th. The eleventh-magnitude asteroid **105 Artemis** may occult an 8.9-magnitude star in Virgo for as much as 10 seconds on the morning of April 11th from parts of Arizona, Nevada, Utah, **Idaho**, Montana, and western Canada. Click on http://www.asteroidoccultation.com/2017_04_si.htm for further information on these and other asteroid occultations taking place this month. See http://www.curtrenz.com/asteroids.html for additional current information on asteroids.

Comets

Comet 41P/Tuttle-Giacobini-Kresák may reach fifth magnitude this month as it passes through Draco and Hercules. The periodic comet comes closest to the Earth on April 1st and reaches perihelion on April 13th. Visit http://cometchasing.skyhound.com/ and http://www.aerith.net/comet/weekly/current.html for information on this month's comets.

Meteors

The Lyrid meteor shower peaks on the morning of April 22nd during a waning crescent Moon. A typical zenithal hourly rate is about 20 meteors per hour but short outbursts have occurred occasionally. The radiant lies between the Keystone of Hercules and Lyra. For more on this year's Lyrids, see http://earthsky.org/?p=158735 and http://www.skyandtelescope.com/astronomy-news/meteor-showers-in-2017/

Carbon Star

Notable carbon star for April: V Hydrae (Hydra) Right Ascension: $10^h\ 51^m\ 37.25661^s$ Declination: −21° 15′ 00.3245″

ISS

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://nineplanets.org/

A free star map for April can be downloaded at http://www.skymaps.com/downloads.html and http://www.telescope.com/content.jsp?pageName=Monthly-Star-Chart

The Deep Sky

The fifth-magnitude G-type main-sequence star 61 Virginis - http://www.solstation.com/stars/61vir2co.jpg - is a sun-like star at a distance of 28 light years. It hosts three exoplanets and is visible to the naked-eye.

The famous eclipsing variable star Algol (Beta Persei) is at a minimum, decreasing in magnitude from 2.1 to 3.4, on April 1st, 4th, 7th, 9th, 12th, 15th, 18th, 21st, 24th, 27th, and 29th. For more on Algol, see http://stars.astro.illinois.edu/sow/Algol.html and http://www.solstation.com/stars2/algol3.htm

Information pertaining to observing some of the more prominent Messier galaxies can be found at http://www.cloudynights.com/topic/358295-how-to-locate-some-of-the-major-messier-galaxies-and-helpful-advice-for-novice-amateur-astronomers/

Deep-sky object list generators can be found at http://www.virtualcolony.com/sac/ and http://tonightssky.com/MainPage.php

Notable carbon star for April: V Hydrae (Hydra)

One hundred deep-sky objects for April: NGC 4024, NGC 4027 (Corvus); NGC 3511, NGC 3513, NGC 3672, NGC 3887, NGC 3892, NGC 3955, NGC 3962, NGC 3981 (Crater); NGC 3091, NGC 3109, NGC 3145, NGC 3203, NGC 3242, NGC 3309, NGC 3585, NGC 3621, NGC 3717, NGC 3904, NGC 3936 (Hydra); M65, M66, M95, M96, M105, NGC 3098, NGC 3162, NGC 3177, NGC 3185, NGC 3190, NGC 3226, NGC 3227, NGC 3300, NGC 3346, NGC 3367, NGC 3377, NGC 3384, NGC 3389, NGC 3412, NGC 3437, NGC 3489, NGC 3495, NGC 3507, NGC 3521, NGC 3593, NGC 3607, NGC 3608, NGC 3626, NGC 3628, NGC 3630, NGC 3640, NGC 3646, NGC 3655, NGC 3681, NGC 3684, NGC 3686, NGC 3691, NGC 3810, NGC 3842, NGC 3872, NGC 3900, NGC 4008 (Leo); NGC 3245, NGC 3254, NGC 3277, NGC 3294, NGC 3344, NGC 3414, NGC 3432, NGC 3486, NGC 3504 (Leo Minor); NGC 2990, NGC 3044, NGC 3055, NGC 3115, NGC 3156, NGC 3166, NGC 3169, NGC 3246, NGC 3423 (Sextans); IC 750, M97, M108, M109, NGC 3079, NGC 3184, NGC 3198, NGC 3310, NGC 3359, NGC 3610, NGC 3665, NGC 3675, NGC 3738, NGC 3877, NGC 3898, NGC 3941, NGC 3953, NGC 3998, NGC 4026 (Ursa Major)

Top ten deep-sky objects for April: M65, M66, M95, M96, M97, M105, M108, NGC 3115, NGC 3242, NGC 3628

Top ten binocular deep-sky objects for April: M65, M66, M95, M96, M97, M105, M108, M109, NGC 3115, NGC 3242

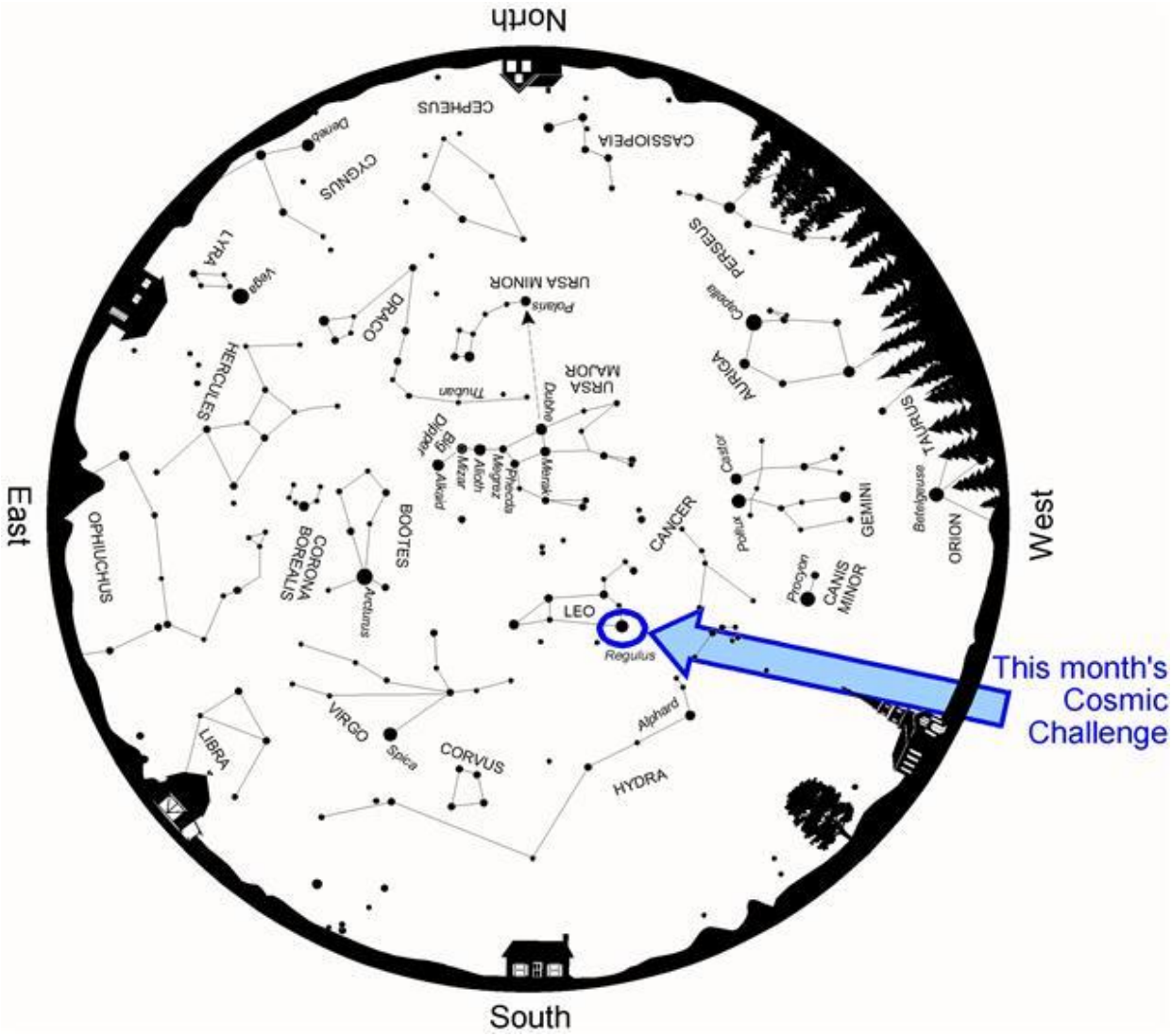
The objects listed above are located between 10:00 and 12:00 hours of right ascension

Challenge deep-sky object for April: Leo I (Leo) is a dwarf spheroidal galaxy in the constellation Leo. At about 820,000 light-years distant, it is a member of the Local Group of galaxies and is thought to be one of the most distant satellites of the Milky Way galaxy. Right Ascension: $10^h\ 08^m\ 27.4^s$ Declination: +12° 18′ 27″ see the next page for more information.

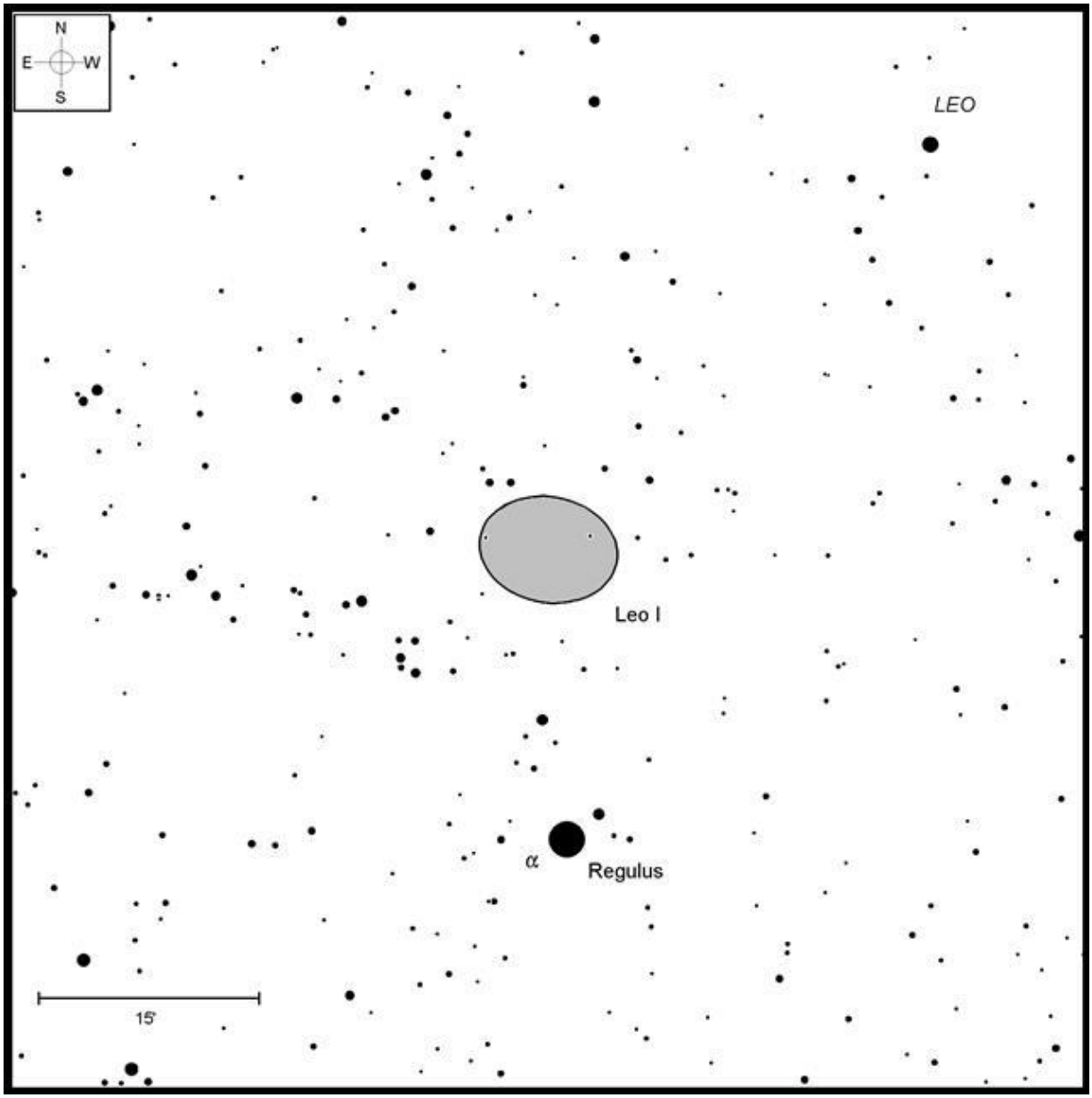
Leo I Image Credit: By Scott Anttila Anttler - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=2027958

Cosmic Challenge

Seven decades ago, while scanning a Palomar Sky Survey plate of the area around brilliant Regulus in Leo the Lion, astronomers Robert Harrington (no relation) and A.G. Wilson noticed a faint blur of light just 1/2° north of the star. They may have thought at first that the glow was just an internal lens flare caused by stray starlight, but it soon became apparent that they had discovered something very real.



Above: Spring star map showing the location of this month's Cosmic Challenge.
Credit: *Map adapted from* ***Star Watch*** *by Phil Harrington*



Above: Finder chart for this month's Cosmic Challenge.
Credit: *Chart adapted from* ***Cosmic Challenge*** *by Phil Harrington*
Click on the chart to open a printable PDF version in a new window

Today, we know their find as Leo I, one of many dim dwarf spheroidal galaxies orbiting the Milky Way. Leo I has a total mass equivalent to only about 20 million solar masses. That's a drop in the galactic bucket compared to the Milky Way, which is comparable to about 600 million solar masses.

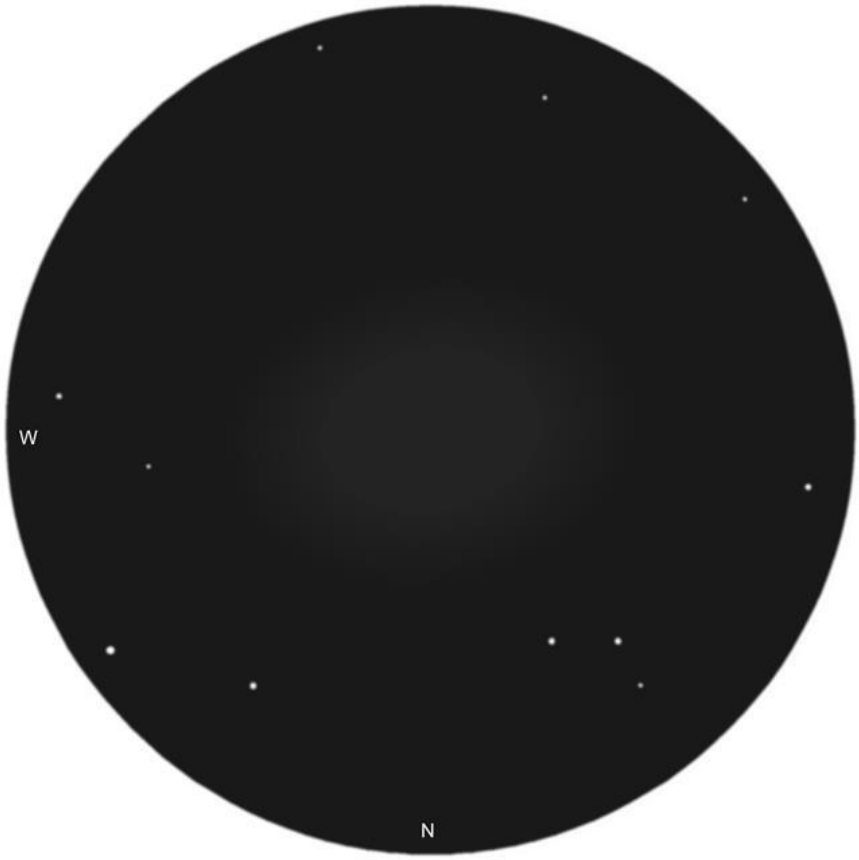
Dwarf spheroidal galaxies are something of an enigma. Like elliptical galaxies, they show very little evidence of nebulosity or star formation. As with many dwarf galaxies, the stars in Leo I contain a very small proportion of heavy elements; that is, elements heavier than hydrogen and helium. That tells us the stars are very old, since heavier elements are in abundance in young stars. Dwarf galaxies do, however, contain unusually high amounts of dark matter. Indeed, pound for pound, dwarf spheroidal galaxies have more dark matter than any other type of galaxy in the universe.

A study conducted by Jaroslaw Klimentowski of the Nicolaus Copernicus Astronomical Center in Warsaw, Poland, and colleagues entitled "Tidal Evolution Of Disky Dwarf Galaxies In The Milky Way Potential: The Formation Of Dwarf Spheroidals," Jaroslaw Klimentowski, Ewa L. Lokas, Stelios Kazantzidis, Lucio Mayer, and Gary A. Mamon [Mon.Not.Roy.Astron.Soc. 397 (2009)] suggests that dwarf spheroidal galaxies begin life embedded in halos of dark matter. Over time, the dwarf galaxies orbit around and pass near or through the larger galaxies to which they are gravitationally bound. During each close passage, the dwarfs are stripped of some of their original mass, including star-forming nebulosity. While these kamikaze maneuvers have stripped away the clouds of interstellar matter, the dark matter halo appears to remain largely unaffected.

There are two dwarf spheroidal galaxies within the constellation of Leo, appropriately dubbed Leo I and Leo II. Finding Leo I is no problem at all. Simply point toward Regulus and look 20' due north.
What's that, you don't see it? I'm not surprised. Although Leo I shines at an integrated magnitude of 10, its surface brightness is closer to 15th. That depressing number coupled with the blinding glare from Regulus is enough to hide Leo I from view. In fact, it did for all the classical observers, such as Messier, Méchain, and the Herschels.

Spotting Leo I successfully takes a little planning. First, switch to a high enough magnification so that Regulus can be moved out of the field. Avoid the temptation to use too high a power, however, since the galaxy's soft glow is easily dispersed into the background. Leo I spans about 10', so its span appears to extend about 1/4 of the way back toward Regulus.

Keep in mind that after you aim at Regulus, your "observing eye" will no longer be fully dark adapted. Therefore, aim toward Regulus with your other eye and shift it out of the field before switching back. Now, compare the view with my sketch below. Can you see the pair of 12th-magnitude stars just off the northeastern edge of the galaxy, as well as the triangle of 12th-magnitudes off its northwest? Position them toward the edge of the field, and then slowly sweep back and forth for the galaxy's vague oval glow. Remember, it will appear quite large in the field.



Above: Leo I as sketched through the author's 18-inch (457cm) reflector.

I have that the best eyepiece through my 18-inch (457-cm) reflector for Leo I is a 10-mm Tele Vue Radian. The combination yields 206x with a real field of view of approximately 17'. Although Leo I fills a good part of the view, there is still enough open sky around the edge to identify the galaxy. While you are ferreting out Leo I, keep an eye out for IC 591, a small spiral galaxy just 15' to the west. Look for a tiny, dim smudge just west of a very faint field star. Using the right eyepiece and knowing the field will help you add this dwarf spheroidal to your list of conquered challenges with comparative ease. But don't get too cocky. Spotting its sibling, Leo II is an even greater challenge. But we will leave that for a future column.
Have a favorite challenge object of your own? I'd love to hear about it, as well as how you did with this month's test.

Contact me through my web site or post to this month's discussion forum.

Until next month, remember that half of the fun is the thrill of the chase. Game on!

What It's Like on a TRAPPIST-1 Planet

By Marcus Woo

With seven Earth-sized planets that could harbor liquid water on their rocky, solid surfaces, the TRAPPIST-1 planetary system might feel familiar. Yet the system, recently studied by NASA's Spitzer Space Telescope, is unmistakably alien: compact enough to fit inside Mercury's orbit, and surrounds an ultra-cool dwarf star—not much bigger than Jupiter and much cooler than the sun.

If you stood on one of these worlds, the sky overhead would look quite different from our own. Depending on which planet you're on, the star would appear several times bigger than the sun. You would feel its warmth, but because it shines stronger in the infrared, it would appear disproportionately dim.

"It would be a sort of an orangish-salmon color—basically close to the color of a low-wattage light bulb," says Robert Hurt, a visualization scientist for Caltech/IPAC, a NASA partner. Due to the lack of blue light from the star, the sky would be bathed in a pastel, orange hue.

But that's only if you're on the light side of the planet. Because the worlds are so close to their star, they're tidally locked so that the same side faces the star at all times, like how the Man on the Moon always watches Earth. If you're on the planet's dark side, you'd be enveloped in perpetual darkness—maybe a good thing if you're an avid stargazer.

If you're on some of the farther planets, though, the dark side might be too cold to survive. But on some of the inner planets, the dark side may be the only comfortable place, as the light side might be inhospitably hot.

On any of the middle planets, the light side would offer a dramatic view of the inner planets as crescents, appearing even bigger than the moon on closest approach. The planets only take a few days to orbit TRAPPIST-1, so from most planets, you can enjoy eclipses multiple times a week (they'd be more like transits, though, since they wouldn't cover the whole star).

Looking away from the star on the dark side, you would see the outer-most planets in their full illuminated glory. They would be so close—only a few times the Earth-moon distance—that you could see continents, clouds, and other surface features.

The constellations in the background would appear as if someone had bumped into them, jostling the stars—a perspective skewed by the 40-light-years between TRAPPIST-1 and Earth. Orion's belt is no longer aligned. One of his shoulders is lowered. And, with the help of binoculars, you might even spot the sun as an inconspicuous yellow star: far, faint, but familiar.

Want to teach kids about exoplanets? Go to the NASA Space Place and see our video called, "Searching for other planets like ours": https://spaceplace.nasa.gov/exoplanet-snap/

This artist's concept allows us to imagine what it would be like to stand on the surface of the exoplanet TRAPPIST-1f, located in the TRAPPIST-1 system in the constellation Aquarius. Credit: NASA/JPL-Caltech/T. Pyle (IPAC

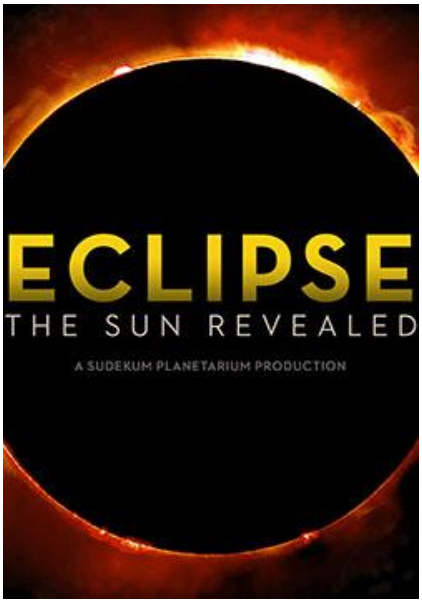
Centennial Observatory and Faulkner Planetarium

Herrett Telescope CSI Centennial Observatory

Event	Place	Date	Time	Admission
Monthly Free Star Party	Centennial Observatory	Saturday, April 8th, 2017	9:00 PM to midnight	FREE
Astronomy Talk: "Lights All Askew in the Heavens: Gravitational Lenses"	Faulkner Planetarium	Wednesday, April 26th, 2017	7:45 to 8:45 PM	Adults: $2.50 Children (7-17) & CSI students: $1.50 Ages 0-6: FREE
Astronomy Talk Night Telescope Viewing	Centennial Observatory	Wednesday, April 26th, 2017	8:45 to 10:45 PM	Free with Astronomy Talk admission
International Astronomy Day Solar Viewing	Centennial Observatory	Saturday, April 29th, 2017	11:00 AM to 4:00 PM	FREE
International Astronomy Day Nighttime Telescope Viewing	Centennial Observatory	Saturday, April 29th, 2017	9:00 PM to midnight	FREE

Faulkner Planetarium Show Times

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



The moon's orbit around Earth is elliptical. At perigee — its closest approach — the moon comes as close as 225,623 miles (363,104 kilometers). At apogee — the farthest away it gets — the moon is 252,088 miles (405,696 km) from Earth. On average, the distance from Earth to the moon is about 238,855 miles (384,400 km). However, the moon is moving away from Earth at a rate of about 1.5 inches (3.81 cm) per year.

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.