



Temecula Valley Astronomer

The monthly newsletter of the Temecula Valley Astronomers April 2024

**Events: General Meeting,
Monday, April 1, 2024, at the
Ronald H. Roberts Temecula
Library, Room B, 30600 Pauba
Rd, and/or ZOOM, at 6:00 PM.**

- IFI & Gallery by Clark Williams
- Refreshments by Chuck Dyson
- **Speakers:**
Arjun Kumar – Europa Clipper
John Garrett - Eclipse
- **Star Parties at South Coast Winery
every Friday evening.**
- **For upcoming school Star Parties
check the Calendar on the web
page.**

WHAT'S INSIDE THIS MONTH:

Cosmic Comments

by President Emeritus Mark Baker

Looking Up Redux

compiled by Clark Williams

Random Thought – SYZYGY

by Chuck Dyson

Another Look

by Dave Phelps

NASA Night Sky Notes

by Kat Troche

Send newsletter submissions to Sharon
Smith <sas19502000@yahoo.com> by the
20th of the month for the next month's
issue.

Solar eclipse – April 8, 2024



General information:

Subscription to the TVA is included in the annual \$25 membership (regular members) donation (\$9 student; \$35 family).

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Cosmic Comments – April 2024

By Mark Baker

A point of discussion at a recent Star Party involved the seasons we experience here on Earth... I love these dialogs, as they are teaching moments for us all!!!

Let's start with Earth's orbit... it is referred to as an ellipse, so most people have this radical "egg shape" in mind. In reality, it is only a 3% ellipse, however... what does that mean?? If I drew one, you would argue it is a circle, as the variance from one is pretty much imperceptible...but it does make a difference!! Earth is closest to the Sun in January, or aphelion... but wait a minute, why is it colder then??

This leads right into the next talking point... the axial tilt of Earth, which is 23 degrees. In January, the Earth is closest to the Sun, BUT the Southern Hemisphere bears the brunt of that exposure, not the Northern Hemisphere... this partially explains why the potential for high summer temperatures, large deserts, and rainforests are in the Southern Hemisphere and why winter is colder in the Northern. In July, the Earth is farthest from the Sun, or perihelion, and this is when the Northern Hemisphere benefits from the axial tilt with milder summers. Those living near the "Tropics" experience the fullness of the seasons more than elsewhere on the planet. However, if you want 3 weeks of sunlight and/or darkness during the year, then you need to be at the "Circles", Arctic or Antarctic... the combination of the two principles provide us with the seasons we have grown to enjoy and appreciate!!!

Once these generalities are grasped, they usually want to turn to the topic of Weather...yes, orbit and tilt contribute to local and regional weather activity, but the atmosphere and other factors are sooo dynamic that we get weather more in spite of the astronomical conditions than because of them. We will therefore save Meteorology for another day...



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My point in all this is that without TVA, such discussions wouldn't be possible, and most are missing from today's schools...and I hope you all get to a party to inspire our communities and younglings to Look Up and wonder. Thanks for all you do...

Clear, Dark Skies my Friends...



Looking Up Redux – April 2024

Compiled by Clark Williams

from these sources:

SeaSky.org

Wikipedia.com

in-the-sky.org

The American Meteor Society, Ltd.

cometwatch.co.uk

NASA.gov

TVA App (2.0.1296)

FullAndNewMoon App (2.0)

Starry Night Pro Plus 7 (7.6.3.1373)

SkySafari 6 Pro (6.1.1)

Stellarium (0.18.2)

timeanddate.com/astronomy

<https://www.fourmilab.ch/earthview/pacalc.html>



ALL TIMES ARE LOCAL PACIFIC TIME (PST / PDT) UNLESS NOTED OTHERWISE

Times are given in 24-hour time as: (hh is hours, mm minutes, ss seconds)

hh:mm:ss or hhmmss

hhmm+ (time of the next day)

hhmm- (time of the previous day)

hhmm (seconds not shown)

yyyymmddThhmmss (Full date as: year month day Time separator hours minutes seconds)

Moon Phases for the month by date:

Tuesday the 23rd @1650 FULL in VIRGO

Monday the 1st @1555 THIRD QTR in SAGITTARIUS

Monday the 8th @1122 NEW in PISCES

Monday the 15th @1214 First QTR in GEMINI

Apogee comes on 2024-04-20 @ **0210** – 405,624 km (252,458 mi)

Perigee comes on 2024-04-07 @ **1754** – 358,848 km (221,616 mi)

2024 has: (12) new moons, (12) 1st Qtr moons, (13) Full moons, (12) 3rd Qtr moons

(1) Blue moon and (0) Black moons

Daylight Savings: Starts: 2024-Mar-12 : Ends: 2024-Nov-05 (traditional) CA keeps PDT year-round



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Luna: Luna is waning gibbous on the first of the month, in Last Quarter. Luna is rising at **0145**, transiting at **0631** and setting by **1116**. Luna by the 15th is First Quarter, rising at **1152** and transiting at **1923** setting at **0247+**. By the-end-of-the-month Luna is waning gibbous, rising at **0126** transiting at **0624** and setting by **1121**.

Highlights: (distilled from: [SeaSky.org](https://www.seasky.org) and Clark's planetary Orrey program[s])

April 8 - New Moon. The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 18:22 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

April 8 - Total Solar Eclipse. A total solar eclipse occurs when the moon completely blocks the Sun, revealing the Sun's beautiful outer atmosphere known as the corona. This is a rare, once-in-a-lifetime event for viewers in the United States. The last total solar eclipse visible in the continental United States occurred in 2017 and the next one will not take place until 2045. The path of totality will begin in the Pacific Ocean and move across parts of Mexico and the eastern United States and Nova Scotia. The total eclipse will be visible in parts of Texas, Arkansas, Missouri, Illinois, Indiana, Kentucky, Ohio, Pennsylvania, New York, Vermont, New Hampshire, and Maine. (NASA Map and Eclipse Information)

April 22, 23 - Lyrids Meteor Shower. The Lyrids is an average shower, usually producing about 20 meteors per hour at its peak. It is produced by dust particles left behind by comet C/1861 G1 Thatcher, which was discovered in 1861. The shower runs annually from April 16-25. It peaks this year on the night of the night of the 22nd and morning of the 23rd. These meteors can sometimes produce bright dust trails that last for several seconds. Unfortunately the glare of the full moon will block out all but the brightest meteors this year. But if you are patient, you may still be able to catch a few good ones. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Lyra, but can appear anywhere in the sky.

April 23 - Full Moon. The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 23:50 UTC. This full moon was known by early Native American tribes as the Pink Moon because it marked the appearance of the moss pink, or wild ground phlox, which is one of the first spring flowers. This moon has also been known as the Sprouting Grass Moon, the Growing Moon, and the Egg Moon. Many coastal tribes called it the Fish Moon because this was the time that the shad swam upstream to spawn.



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Algol minima: (All times Pacific Time)

04/01/2024	1841
04/04/2024	1530
04/07/2024	1220
04/10/2024	0909
04/13/2024	0558
04/16/2024	0247
04/18/2024	2336
04/21/2024	2026
04/24/2024	1715
04/27/2024	1404
04/30/2024	1053



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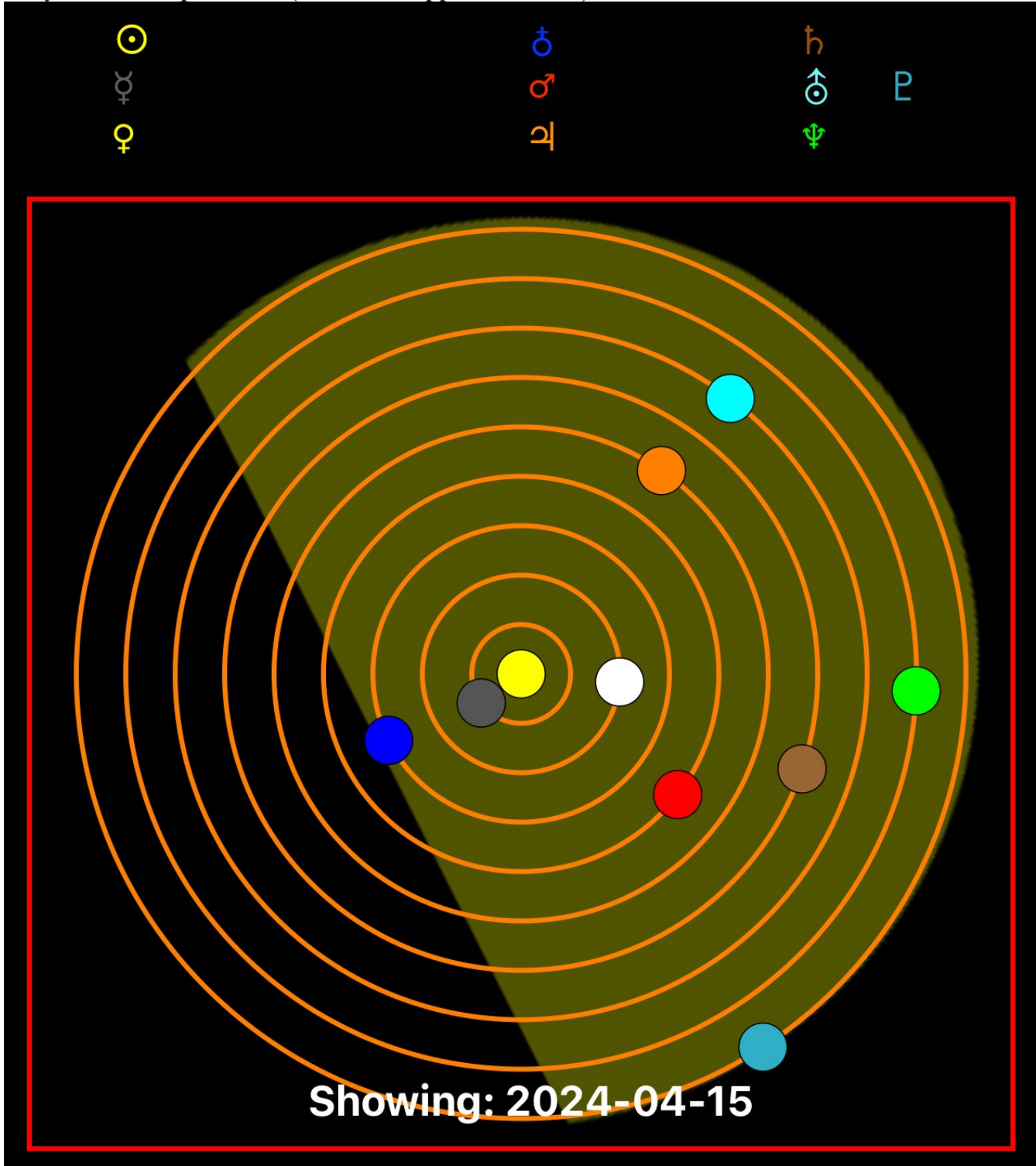


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Planets:

Planetary Positions April 2024: (from TVA App iOS version)





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- **Mercury:** Mercury is an evening object in the beginning of the month, rising at **0703**, transiting at **1342** and sets at **2021**. Mercury by the 15th is barely a morning object rising at **0556** with the Sun rising at **0617**. Mercury transits at **1221** and sets at **1846**. By the 30th Mercury is truly a morning object rising at **0504**, transiting at **1118** and setting at **1733**.
- **Venus:** Is the Morning Star on the first of the month, rising at **0559** transiting at **1153** and setting by **1748**. Venus is 95% illuminated and has an apparent magnitude of -3.89. By the 15th Venus is still the Morning Star, rising at **0549**, transiting at **1202** and setting at **1815**. By end of month the Morning Star rises at **0539**, transits at **1211** and sets at **1844**.
- **Mars:** Mars is a morning object on the first of the month. Mars rises at **0509**, transits at **1045** and sets at **1621**. On April 11th at **0420** there will be a nice conjunction between Mars and Saturn. They are both low on the horizon 4°56' with Mars at azimuth 101°40'. By mid-month Mars rises at **0444**, transits at **1031** and sets by **1618**. End-of-month finds the Warrior rising at **0415**, transiting at **1014** and setting by **1614**.
- **Jupiter:** Jupiter is an evening object on the first of the month rising at **0820**, transiting at **1507** and setting at **2154**. By the 15th Jove rises at **0735**, transits at **1424** and sets by **2114**. Come the end-of-month Jupiter rises at **0647**, transits at **1339** and sets by **2031**. Jupiter is approaching the sun from our perspective and moving into daylight.
- **Saturn:** Saturn is a morning object on the first of the month. Saturn rises at **0528**, transits at **1109** and sets at **1649**. On the 11th of April at about **0420** Saturn and Mars will be in conjunction. They are both low on the horizon (4°49') and are about 37' apart. Saturn is at azimuth 102°17'. Saturn by mid month rises at **0437**, transits at **1019** and sets by **1601**. By the end-of-the-month Saturn as a morning object rises at **0342**, transits at **0928** sets by **1509**.
- **Uranus:** On the first of the month Uranus is an evening object, having risen at **0828** it transits at **1519** and does not set until **2210**. By the ides Uranus rises at **0738**, transits by **1427** and sets by **2119**. End-of-month finds Uranus rises at **0639**, transits at **1332** and sets by **2024**.
- **Neptune:** The beginning of the month finds Neptune as a morning object, rising at **0604**, transiting at **1200** and setting by **1757**. By the 15th Neptune is rising at **0510**, transiting at **1107** and setting by **1704**. By the end of the month Neptune is again a morning object rising at **0412**, transits at **1010** and sets by **1608**.
- **Pluto:** Pluto on the first of the month is a morning object rising at **0328**, transiting at **0826** and setting by **1324**. Pluto's apparent magnitude is 14.51 so it is a little difficult to see. By mid-month Pluto is rising at **0234**, transiting at **0732** and setting by **1230**. By the 30th Pluto is a morning object and rises at **0135**, transits at **0633** and sets by **1131**.

Asteroids:

- Still a dearth of asteroids. I searched for asteroids in 2024 with a reasonable magnitude; say less than or equal to +10 in April there is nothing except the regulars: Juno, Vesta, Hebe, Eros and Herculina. So consult your local planetarium software or try: <https://www.asteroids.near.com/year?year=2024>

Meteors:

- Lyrids Meteor Shower. (see Highlights above)



Comets: come in various classifications:

- 1) Short Period comets – further broken down into:
 - Halley Type: The Halley Types are believed to come from the Kuiper Belt and have periods in excess of 20-years.
 - Jupiter Type: The Jupiter types have a period less than or equal to 20-years.
 - Short period comets April have a near circular orbit or an elliptical orbit. The latter being far more common.
- 2) Long Period comets – thought to originate from the Oort cloud these comets have periods of over 200 years and have random inclinations around the celestial sphere.

12P/Pons–Brooks is a periodic comet with an orbital period of 71 years. Comets with an orbital period of 20 to 200 years are referred to as Halley-type comets. It is one of the brightest known periodic comets, reaching an absolute visual magnitude of about 5 in its approach to perihelion. Comet Pons-Brooks was definitely discovered at Marseilles Observatory in July 1812 by Jean-Louis Pons, and on its next appearance in 1883 by William Robert Brooks. There are ancient records of comets that may have been 12P/Pons–Brooks. The next perihelion passage is 21 April 2024, with closest approach to Earth being 1.55 AU (232 million km) on 2 June 2024. The comet is expected to brighten to about apparent magnitude 4.5. The comet nucleus is estimated to be around 30 km in diameter assuming it was not producing too much dust and gas during the 2020 photometry. 12P/Pons–Brooks may be the parent body of the weak December κ -Draconids meteor shower that is active from about November 29 to December 13. (Wikipedia)



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Deep Sky:

Notes:

L/Z abbreviation for ALT/AZ

R/D abbreviation for Right Ascension/Declination

α is right ascension

δ is declination

In each case, unless otherwise noted, you should look for the following on or about the 15th Day of April 2024 at 2100 PDT and you will have about 20 minutes of viewing time total.

Lets take a look at some favorite objects (at least for me):

- o NGC 3242:

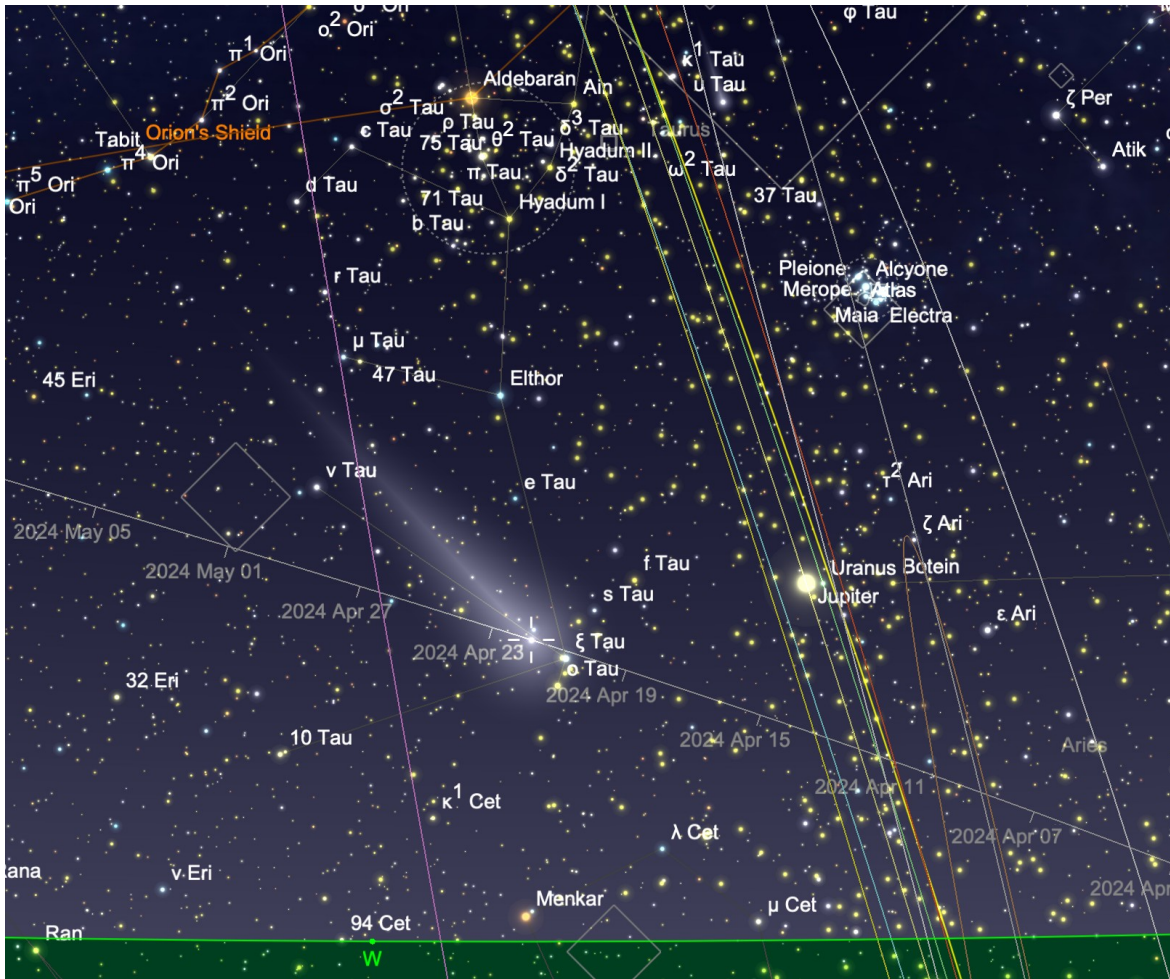


Illustration 1
Curriculum C



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An Eclipse and a comet in the same month!. (Wikipedia)

April is great for both viewing and imaging. Spend some time outside with your scope. Spring is here.

For now – Keep looking up.



RANDOM THOUGHT April 2024

By Chuck Dyson

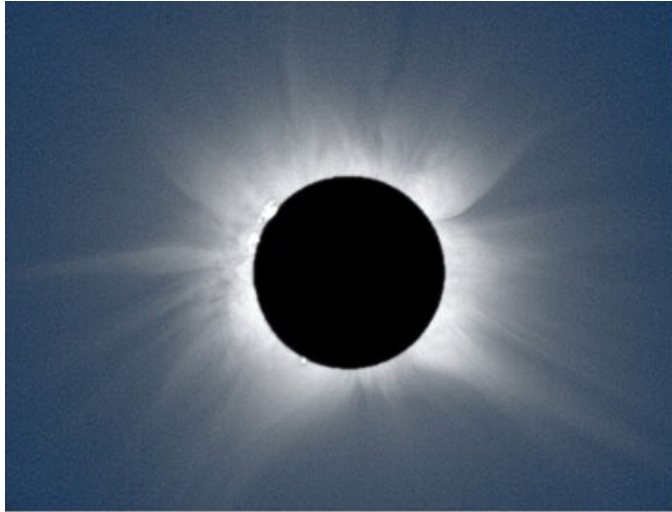
SYZYGY

SYZYGY in addition to being derived from the Greek word meaning to yoke together, as in a yoke of oxen, is used in astronomy to signify three celestial objects that are on the same plane and in line with each other. For us earthlings that means a solar eclipse when the Moon is between the Earth and Sun, new Moon, or the Earth is between the Sun and the full Moon, lunar eclipse.

As we are about to have the last solar eclipse visible from the lower 48 until August 23, 2044 I thought it would be fun to take a little look into the history of eclipses in different cultures and what some of the belief systems associated with eclipses are.

For the last 4.4 billion years, or so, there have been eclipses; but, unfortunately for us the reptiles and dinosaurs were terrible record keepers and it is only for the last 5,000 years or so that we have real indications that humans observed and reacted to eclipse events.

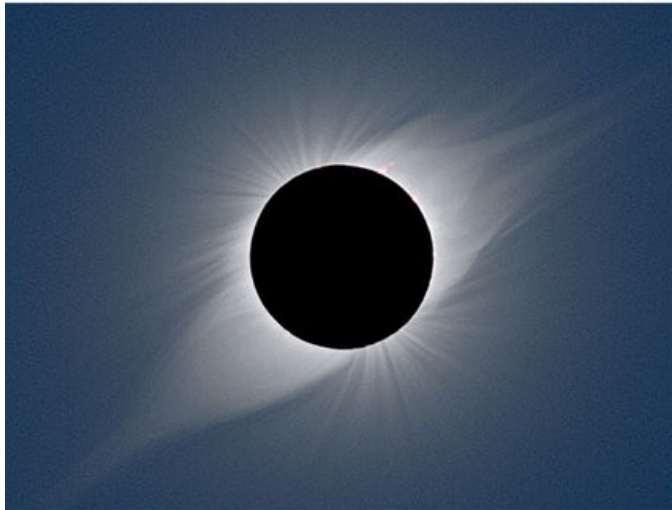
One of if not the earliest eclipse events recorded is thought to be the Loughcrew Megalithic petroglyph at the entrance of the burial chamber of a great Irish lord. Computer eclipse programs predict there was a total solar eclipse in the area on November 30, 3340 B.C.E. (Before Common Era). One of the reasons this particular petroglyph is thought to represent an eclipse is there are the partially cremated remains of fifty people at the foot of it as an offering to the gods. However, these people may have also been sacrificed in order to accompany this lord into the afterlife so there is some doubt as to the meaning of this particular petroglyph. See figure #!.Figure #1



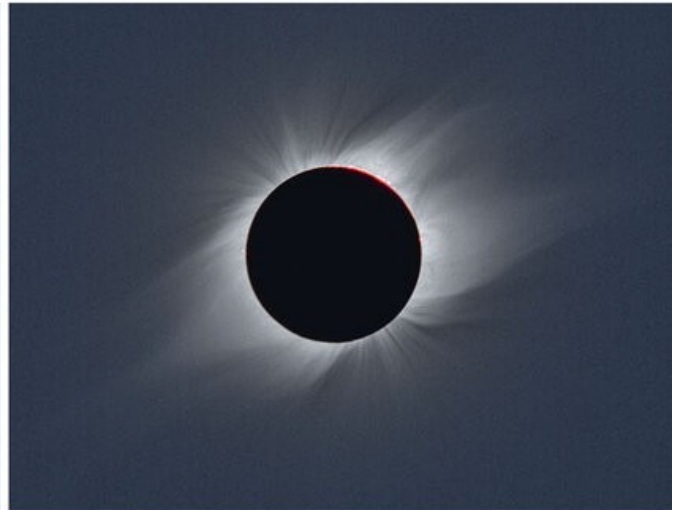
(a) solar maximum corona (1990)



(b) corona during descending phase (1994)



(c) solar minimum corona (1995)



(d) corona during ascending phase (1998)



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Chaco Canyon in New Mexico was a major cite for the pueblo Indian culture that flourished from 800 C.E. to 1300 C.E. and in the Chaco Canyon petroglyphs there is one that both archeologists and astronomers feel could be a depiction of a complete solar eclipse See figure #2.



Figure #2

Both the Loughcrew and the Chaco Canyon petroglyphs show swirls around the main eclipse figure and as most of the photographs of the corona during eclipses show different types of streamers depending on what part of the solar cycle the eclipse occurs in they show no swirls of corona material (see figure #3)



Figure #3

and this makes both petroglyphs just a little hard to explain. However, during periods of solar maximum, periods of peak sunspot production, the solar magnetic field is stronger than usual and this reduces the number of cosmic rays, very high energy particles that are produced outside our solar system, and this reduces the amount of carbon 14, the radioactive carbon that is used to date plant and animal remains, that is taken up by plants and animals in that particular year. Computer based eclipse programs have identified a total eclipse over Chaco canyon in 1097 and the carbon 14 content of the tree rings for that year were low in carbon 14 indicating a year of solar maximum. During periods of solar maximum the sun is much more likely to have a Coronal Mass Ejection (CME) and these CME's can and do form large glowing rings of ionized solar material. Observers of an eclipse in 1860 and 2012 have observed this rare event. See figure #4.

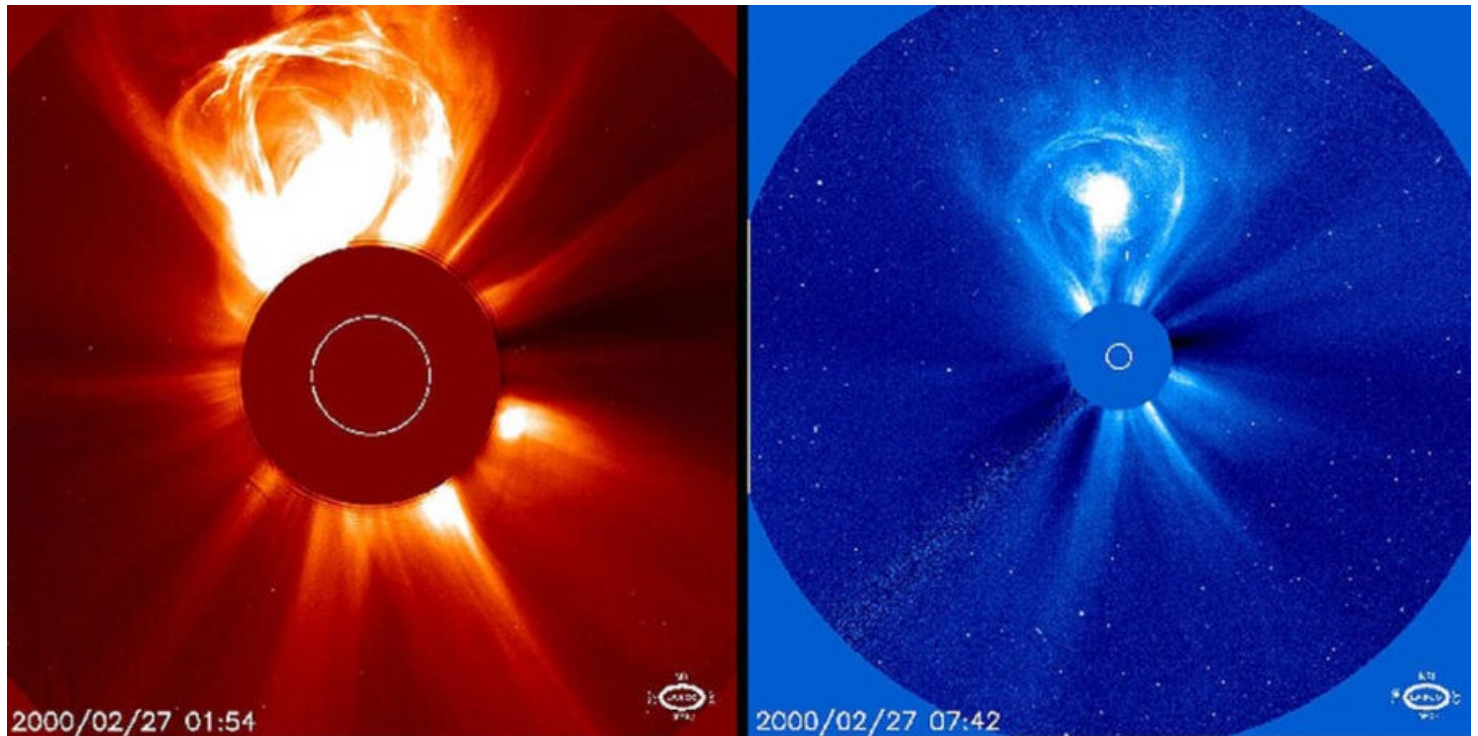


Figure #4

This confirmation of the phenomenon depicted in both the Loughcrew and the Chaco Canyon events does at least make it probable that the petroglyphs depict eclipses.

In China 1200 B.C.E. there were four well recorded total solar eclipses. The astronomers were very precise as to their locations the date and time of the eclipse, the date and time as per Chinese calendar and day time the eclipse occurred (Note: in 1200 B.C.E. the Chinese astronomers were using melting wax candles as their time clocks; so, times are not to the minute). The problem with the eclipse reports is that when modern astronomers went to verify the eclipses by running our eclipse computer programs back to the dates indicated the eclipses were confirmed but not at the location of the Chinese astronomers. If there had been only one eclipse recorded the reason for the discrepancy in location would be a tough question to answer but with four observations all having the same offset the answer was relatively simple to work out. When the earth was formed the length of a day was about ten hours but thanks to the gravitational effect of the Moon we are today at 23hr 59sec 59.998sec, and still slowing down, for the length of our day. By adding in a 47 thousand of a second correction factor for the length of a day the Chinese astronomers and the four eclipses were reunited in location. By studying eclipses astronomers have also gained insight into the dynamics of the Earth's rotation.

The Aztec eclipse experience. The Aztec astronomers were primarily interested in planting times (it is now thought that there were up to two million hungry Aztecs in the Basin of Mexico, what is now the Mexico City area) and the movement of Venus. The biggest event of all occurred every 52 years when the Aztec ritual and civil calendars would overlap and if the Pleiades star cluster did not go across the sky smoothly, and serenely during this time it would indicate that the gods were angry and the empire would be destroyed; so the Aztec astronomers always observed and recorded this event. It appears that to the Aztec eclipses were random events of no great importance plus the Aztec's didn't date, to any of their calendars

when these eclipses occurred so it is hard to tie the eclipse events to any civil activity, like a human sacrifice to the gods. At this time, archeologists do not really understand how the Aztec viewed and reacted to eclipses.

On the other hand, it is not really possible to discuss the history of eclipses and not mention the Maya and their observations. The Maya were the only civilization in the Americas to have a written language and thanks to some of their surviving text, called codex, archeologists and astronomers do not have to guess at what the temple carvings mean. Their meaning can be read in the accompanying script what is being depicted. It appears that all civilizations that relied on farming for their food source built or had observing areas where they could identify the winter solstice, spring is coming, and the spring equinox, start planting now, and the fall equinox, start harvesting now. The Maya went beyond the simple observing of repeating celestial events by making and recording enough events to predict the rising of planets, especially Venus, and even to predict some solar eclipses.

Unlike the previous petroglyphs mentioned the Mayan wall painting of an eclipse leaves little doubt as to what is happening. See Figure #5.



Figure #5

In the center of the glyph is the round symbol of K'in, the Sun. In back of K'in are the butterfly wings that represent the sky and the sky is both light and dark indicating the eclipse. Above the butterfly wings is the star bar that tells us that stars were seen during this event and, yes, you will see stars too if you go to a total eclipse. The giant serpent at the bottom of the painting is thought, by some, to be a representation of



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the planet Venus eating the sun. No matter what the serpent must be stopped. If the serpent is overpowering the Sun noise will scare it away, if the Sun has fallen asleep and this allows the serpent to eat it noise will wake the Sun and he will then fight off the serpent. Making noise to save the Sun during an eclipse is a multi-cultural phenomenon.

Even today Mayan women know that the eclipse will cause birth defects in their unborn child and they will place an obsidian stone in their mouths or over their stomach to ward off the evil effects of the eclipse. All Mayan know that if you look at the eclipse directly it will cause birds to come and try and peck your eyes out; so, buckets of water are placed on the ground and the eclipse is only viewed by reflection.

The belief systems of what humans must do during an eclipse to save the Sun and protect oneself from the evil that accompanies the event is a fascinating study of us.

CHEERS

CHUCK

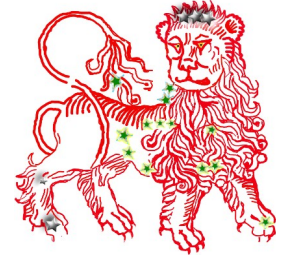
April 2024 Another Look Dave Phelps

Leo and Leo Minor

New Moon April 8 @1121, Full Pink moon the 23rd @ 1648.

In Old English it is the Moon after Yule and also the Snow moon

Native American names include the Breaking ice Moon, Broken Snowshoe Moon, Budding Moon, When the Ducks come back Moon and when the Geese lay eggs Moon. In different parts of the continent we find the Sucker Moon, Sugar Maker Moon and in the Dakota's, When the Streams are Navigable Moon. The Celts have Hare Moon and Growing Moon.



April 6, lunar occultation of Saturn visible from Antarctica.

April 8 Total Solar Eclipse visible in the US

April 9, lunar occultation of Venus visible from Florida

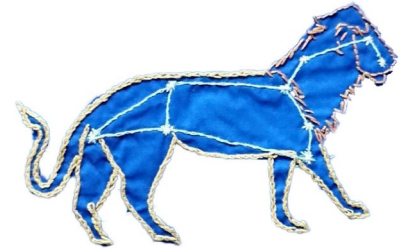
In Spanish its León y León Menor, in German Löwe und Kleiner Löwe.

In French its Lion et Petit Lion, Italian Leone e Leone Minore and in

Greek Its Λιοντάρι και μικρότερο λιοντάρι or Liontári kai mikrótero liontári.

<https://ras.ac.uk/media/932>

This incredible image is an embroidery created by Professor Shirin Haque, Professor in Astronomy at the Department of Physics at the University of the West Indies on the island of Trinidad and Tobago. The embroidery was done to celebrate the naming of HD 96063 (host star) and HD 96063b (exoplanet) as Dingolay and Ramajay. Her website is found on: Prof. Shirin Haque | The Department of Physics (uwi.edu)



Leo Minor was created by the Polish astronomer Johannes Hevelius in 1687 and included it in his *Catalogus Stellarum Fixarum*. The constellation's name means "the smaller lion" in Latin. Hevelius created the constellation from 18 stars between the larger constellations Leo and Ursa Major.

In 1870, the English astronomer Richard A. Proctor renamed the constellation "Leaena", or the Lioness, in an attempt to shorten constellation names to make them easier to manage on star charts, but sadly, we have no lady lion constellation anymore.

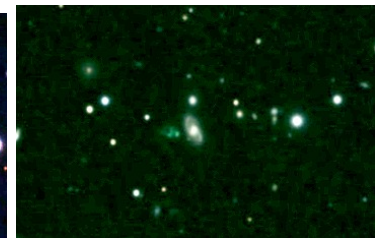
Le Petit Lion contains two formally named stars. Those approved by the International Astronomical Union (IAU) are Illyrian- HD 82886 and Praecipua aka 46 Leonis Minoris. The Illyrians are a Balan people now inhabiting Albania.

Illyrian has a planet named Arber, the original name for the Albanians

Leo Minor has at this counting nine exoplanet systems, three of which are HD 87883, HD 82886 (G0D), and Kelt-3 (F2D).

Hanny Van Arkel is a Dutch schoolteacher who in 2007 noticed an unusual object in an image from the Hubble. The image was of

IC2497, an 11th magnitude spiral in Leo Minor about 4×4 arcmins in size.





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Hanny was studying I2497, when she discovered her Voorwerp as part of a project developed by Galaxy Zoo, a citizen/scientist program. Amateurs were assigned objects imaged by Hubble and studied the objects to determine classification and characteristics. Lars Zetterlund [https://www.flickr.com/search/?text=hanny's voorwerp](https://www.flickr.com/search/?text=hanny's%20voorwerp)

Hanny's Voorwerp is a quasar ionization echo. I have several links below help you search for understanding.

https://en.wikipedia.org/wiki/Hanny's_Voorwerp#/media/File:Hs-2011-01-d-print.jpg

https://en.wikipedia.org/wiki/Hanny's_Voorwerp%23/media/File:Hs-2011-01-d-print.jpg and

<https://www.zooniverse.org/projects/zookeeper/galaxy-zoo/about/research> and

Read more about Galaxy Zoo at: <https://www.zooniverse.org/projects/zookeeper/galaxy-zoo/about/research> and

<https://www.zooniverse.org/>

Check here for more images of quasar ionization echos or Vorwerpjes:

https://en.wikipedia.org/wiki/Hanny's_Voorwerp#/media/File:Extended_Gas_In_Active_Galaxies.jpg

I used the image by Gary Imm <https://www.astrobin.com/2efji6/?q=voorwerp> because I was looking for something close to what you will see visually. IC 2497's magnitude is in the 11's and the Voorwerp is around 17. But if you look at I2497 telescopically you will see a galaxy with an active nucleus hiding a black hole about 10 million times the size of our sun. When the black hole was going crazy and created the Voorwerp, its size was 10 trillion times the size of our sun and just think, we are get to look at it.



Going from the sublime to the sublime, Arp 107 is a pair of interacting galaxies in the process of merging. They have an apparent magnitude of 14.6. [https://www.flickr.com/search/?text=arp 107](https://www.flickr.com/search/?text=arp%20107)

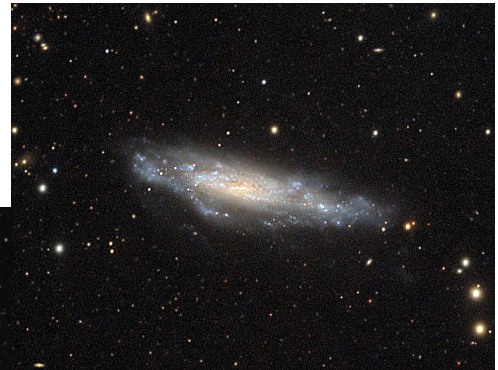
NGC 3432, sometimes known as the Knitting Needle Galaxy, lies 3 degrees southeast of the star 38 Leonis Minoris. It appears almost edge-on and can be observed in amateur telescopes. Its about 11th mag.

NGC 3003 is a barred spiral. It is 5.8 arc minutes in size and is about 12th magnitude, as you will see, its almost edge- on. <https://www.astrobin.com/search/?q=ngc+3003>

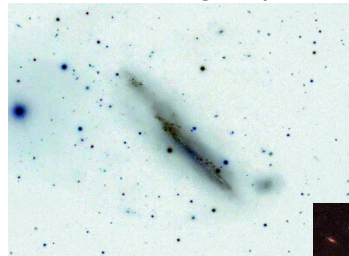
NGC 3344 is a spiral galaxy seen face-on. It is approximately 25 million light years distant and 7.1x6.5 arc minutes in size. Its about 10th mag.

<https://www.astrobin.com/search/?q=ngc+3344>

NGC 3504 is an 11th mag. barred spiral. It is a starburst galaxy, a region of massive star formation observed in the galaxy in recent years, one in 1998 and another in 2001. The other galaxy is 3512.

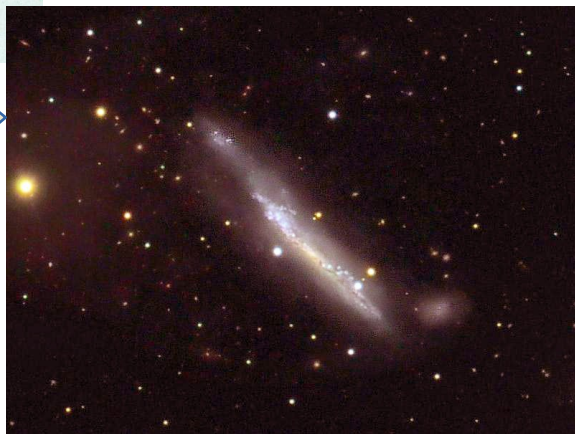


formation. Two supernovae were another in 2001. The other galaxy



Mantrap Catalog

Arp 206 is NGC 3432/UGC 5983. 3432 is an intriguing object well worth additional study. We



NGC 3504

galaxy because it is being disturbed by its UGC 5983, that blot at the bottom right of the part of the focus this month... faint, dwarf in this one because the two are interacting. Be

call it a starburst neighbor, dwarf galaxy two images. U5983 is galaxies. We are lucky



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sure to study 3432 for bright variable outbursts, knots of star formation and, of course, its tail. 3462 is in the 11th magnitude, but work hard to pick up U5983. By the way, a rule of thumb is that a 12.5 inch telescope can find every NGC object. <https://images.mantrapskies.com/search?designation=arp+206>

<https://www.astrobin.com/search/?q=ngc+3432>

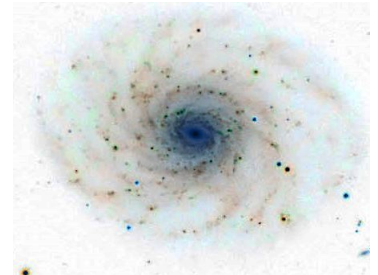
U5983 is 17th magnitude. All things being equal and average, your 30" F/5 Dobsonian will just barely reach 17th magnitude.

If you take an image of these guys, please let me know. Thanks, Dave

NGC 3486 is a nice almost appearing face-on galaxy. It is in the 10th magnitude range. I

inverted the image to show the extended spiral arms and the bright specs of star

formation, areas you can pick up. <https://images.mantrapskies.com/catalog/NGC/NGC3486/index.htm>



<https://images.mantrapskies.com/search?designation=ngc+2859>

NGC 2859 is a little small, with an apparent magnitude in the 11's and about 4'x4'. It is

described as a barred lenticular galaxy but its big deal is its ring.

NGC 3158, 59, 63 is a group in the northern part of LMi. It is found by looking at the apex of an equilateral triangle with Beta LMi and 21 Lmi.

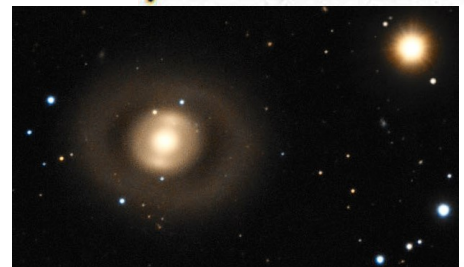
You will need some glass for this grouping, 3158 is in the 13th and the others

exist around the 14th. 3160 is an odd galaxy, probably do to a collision and

possible merging. 3163,59 and 31 seem to be grouped together and close in

images will show them surrounded by a ring and a tail on 3159.

<https://images.mantrapskies.com/search?designation=ngc+3158>



The proper names of stars in Leo that have been officially approved by the International Astronomical Union (IAU) are:

Adhafera—Arabic- Lock of hair,

Algieba-Arabic Al jeb-bah- the forehead ,

Alterf- Arabic-the Glance.

Let it be noted that many of the Arabic names are for stars in their particular constellation of Leo, which stretched from Virgo through to Gemini.

Chertan – Ribs

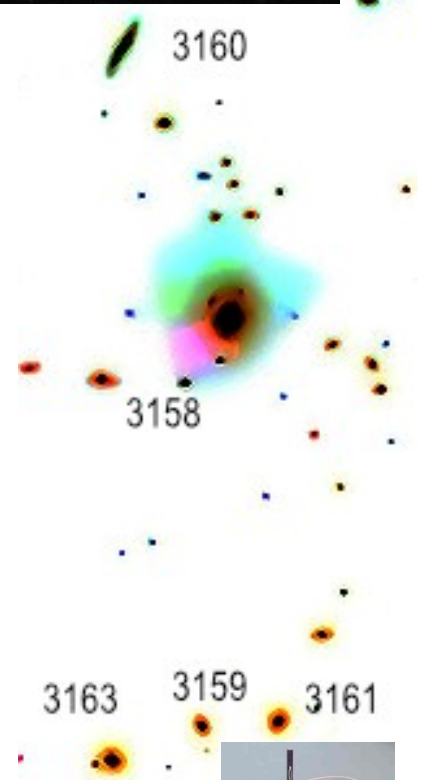
Denebola-*Deneb Alased* -tail of the Lion,

Formosa, Formosa is the historical name of Taiwan used in the 17th century, meaning beautiful in Portuguese.

Subra- right knee, and

Zosma-girdle.

Regulus-Prince or Little King,



There are over 50 exoplanetary systems in Leo, several named.

Sagarmatha-HD 100777-is the Nepali name of Mt. Everest and the exoplanet revolving it was named as Laligurans, the Nepali name of the flower Rhododendron.

The star HD 99109 is named Shama. The name was selected in the NameExoWorlds campaign by Pakistan, during the 100th anniversary of the IAU. Shama is an Urdu literary term meaning a small lamp or flame. The exoplanet companion is called Perwana, meaning 'moth' in Urdu, alluding to the eternal love of an object circling a source of light.

Dingolay means to dance, twist and turn in elaborate movements, symbolizing the culture and language of the ancestors of the people of Trinidad and Tobago. Ramajay means to sing and make music in a Steelpan. The Steelpan is a musical instrument invented in Trinidad and Tobago. Steelpan musicians are called Pannists, image off of the Internet. Noquisi is the Cherokee for star, Rasalas is the northern star of the lion's head. Noquisi and Awohali come from the Cherokee language, meaning "star" and "eagle," respectively. These are the first that a star or exoplanet has officially carried a name in



the indigenous language of a North American people.

<https://www.flickr.com/search/?text=Leo I galaxy> Tom Wildoner

Leo I is 11.2 magnitude and is one of the most distant satellites of the Milky Way galaxy. It was discovered in 1950 on plates from the *Palomar Observatory Sky Survey*, taken with the 48-inch Schmidt camera. I found it rather easily in my 17.5. You will need to put Regulus outside the field of your eyepiece. This technique was used by OCA's own Barbara Toy and her team to observe Sirius B. Leo I could be the youngest dwarf

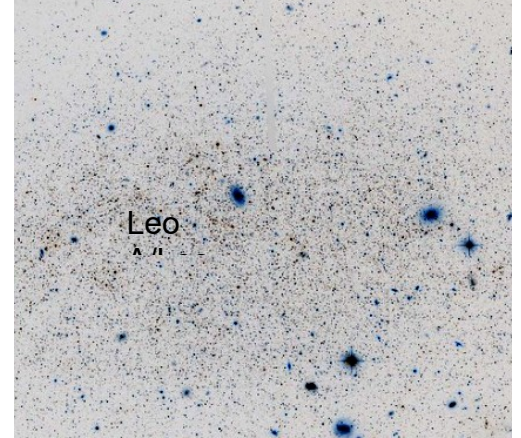


spheroidal satellite galaxy of the Milky Way. Just look at that image, ain't it pretty.

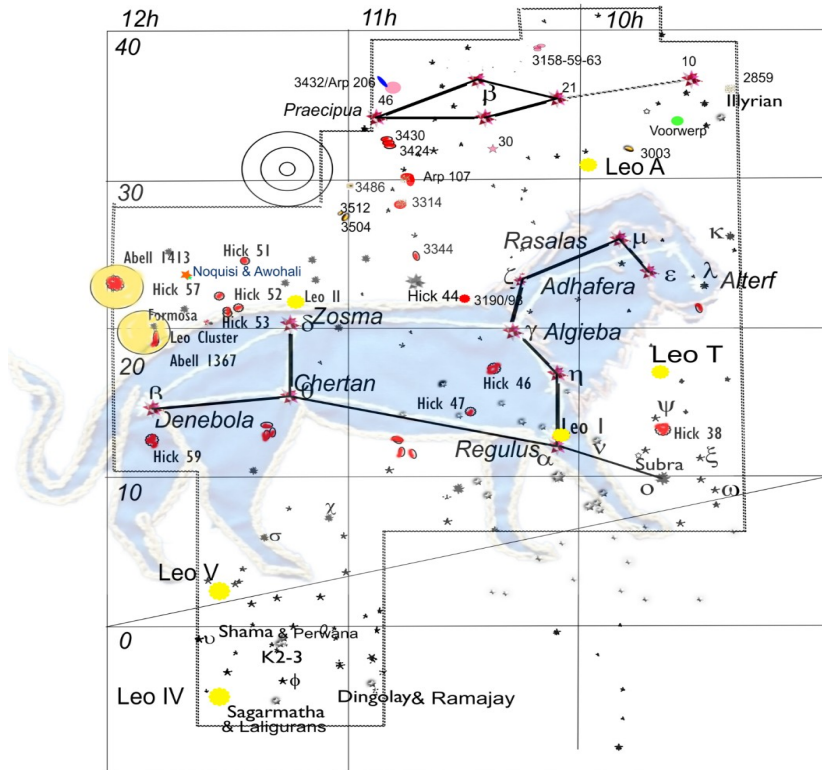
<https://www.flickr.com/search/?text=Leo II galaxy>

Leo II will be harder. It is smaller and dimmer but still

find-able. Last I read, Leo II and apparently most dwarf galaxies have very high stellar masses but relatively low stellar counts. Professionals are positing they are the best source to study Brown dwarfs and the enigmatic Dark Matter. **The circles on the chart represent 1°, 2.5°s and 5°s.**



The other dwarf galaxies in Leo are challenging to unobtainable to most of our amateur telescopes. When you get an opportunity to use some big glass under a dark sky, try them out.



Leo III, also known as Leo A, is mag 12 but I never searched for it. It is also metal poor and irregular. Leo III is a see through galaxy.

I couldn't find any amateur images of Leo III, Leo VI, Leo V and Leo T. You will find an image of Leo III taken by Subaru. Leo IV and V are down near the southern tip of Leo under his rear paws. Leo IV is a dwarf discovered in 2006 by the Sloan Digital Sky Survey. It has an approximately round shape.

<https://apod.nasa.gov/apod/ap041110.html>. Also look at this image by Judy Schmidt on flickr. <https://www.flickr.com/search/?text=Leo III galaxy> a Hubble image amateur processed by Judy Schmidt

<http://resonaances.blogspot.com/2016/>

Leo IV and Leo V are two of the smallest and faintest satellites of the Milky Way. When dark matter is discussed in reference to these two galaxies, its because each galaxy shines with only about 10 or 15 thousand times the luminosity of our sun but have masses of of 1.5 million in the case of Leo IV and 330,000 in the case of Leo V. I have a Hubble image of IV but V is apparently made of unobservableium.



Best I could do is get you is a finder

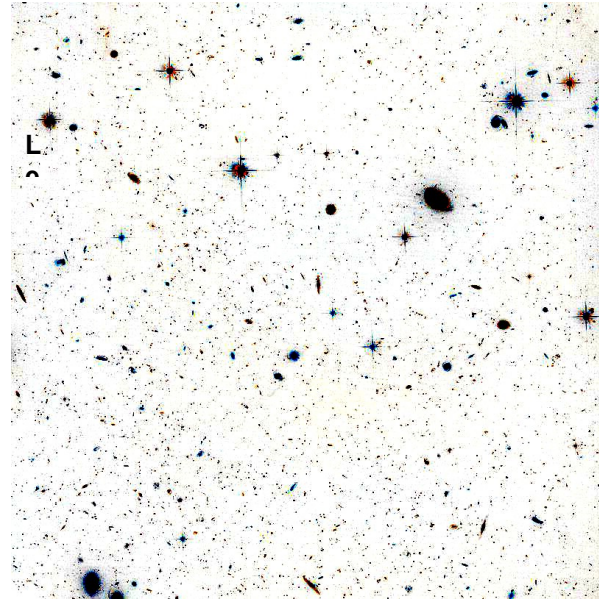
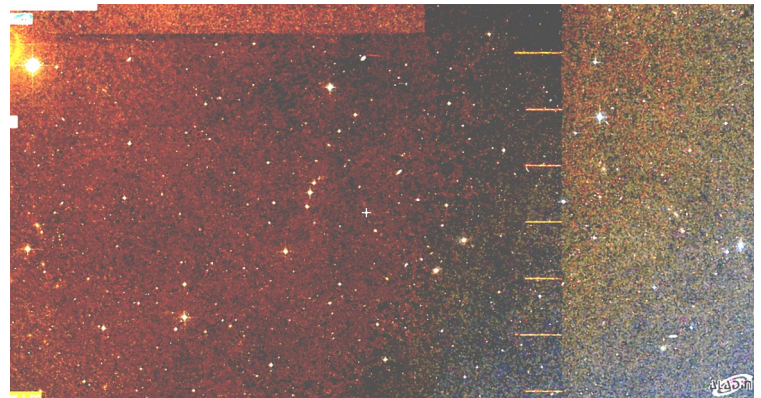
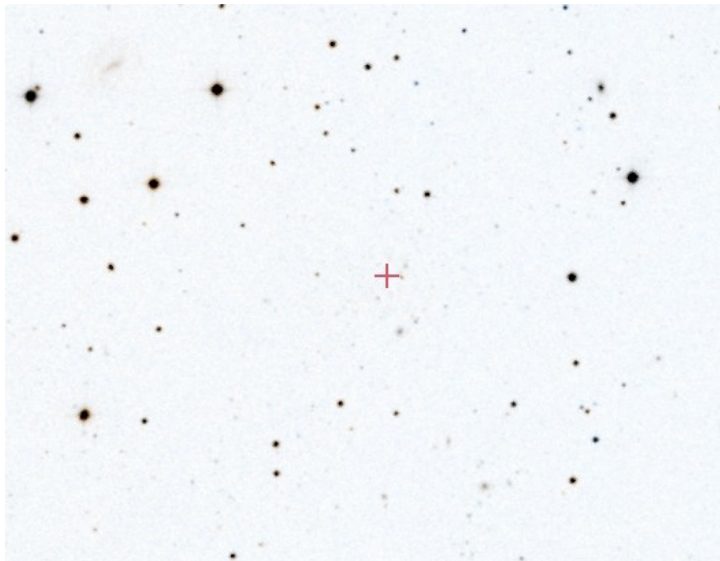


image from Simbad.

I went to the Sloan Digital Sky Survey to see this guy but all I got is the same basic finder chart I got from Simbad. Overall magnitude is less than 16. I went into the Sloan image as far as I could, but still could not pull anything identifiable from the background.

These two guys are only a few degrees from each other, so theoretically they could be partners. A least one survey suggests a bridge between the two. Both images have been manipulated.

Much like VI and V, faint, sparse and metal poor, Leo T is found under Leo's nose. It was discovered by Sloan. This is not much more than a finders chart. Its probably less than 16th. Once again, T has a mass to light ratio of about 140, making it another prime candidate for dark matter. <http://simbad.u-strasbg.fr/simbad/sim-basic?Ident=NAME+Leo+V>



<https://simbad.u-strasbg.fr/simbad/sim-id?Ident=Leo+T&NbIdent=1&Radius=2&Radius.unit=arcmin&submit=submit+id>

This reverse image of Leo T is from Simbad. I was pleasantly surprised to fine enough information in the image to bring it out. The galaxy, which isn't apparent on the original image is Leda 87165. Leda is the Lyon-Meudon Extragalactic Database, the data from Leda was used to create the PGC catalog.

More info at Wikipedia - https://en.wikipedia.org/wiki/Lyon-Meudon_Extragalactic_Database

Dark Skys Dave



This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Participate in Eclipse Science

By Kat Troche

April is NASA's Citizen Science Month, and there is no shortage of projects available. Here are some [citizen science projects](#) that you can participate in on April 8th, on and off the path of totality right from your smartphone!



Eclipse Soundscapes, ARISA Lab / NASA

Eclipse Soundscapes

Eclipse Soundscapes will compare data from a 1932 study on how eclipses affect wildlife – in this case, crickets. There are a number of ways you can participate, both on and off the path. NOTE: you must be 13 and older to submit data. Participants 18+ can apply to receive the free Data Collector kit. Learn more at: eclipsesoundscapes.org/

GLOBE Eclipse

Folks that participated in the **GLOBE Eclipse** 2017 will be glad to see that their eclipse data portal is now open! With the GLOBE Observer smartphone app, you can measure air temperature and clouds during the eclipse, contributing data to the GLOBE program from anywhere you are. Learn more at: observer.globe.gov/



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HamSCI, The University of Scranton / NASA

HamSCI

HamSCI stands for **Ham Radio Science Citizen Investigation**. HamSCI has been actively engaged in scientific data collection for both the October 14, 2023, annular solar eclipse and the upcoming April 8, 2024, total eclipse. Two major activities that HamSCI will be involved in around the solar events will be the **Solar Eclipse QSO Party (SEQP)** and the **Gladstone Signal Spotting Challenge (GSSC)** which are part of the HamSCI Festivals of Eclipse Ionospheric Science. Learn more about these experiments and others at: hamsci.org/eclipse



SunSketcher™

SunSketcher, Western Kentucky University / NASA

SunSketcher

If you're traveling to totality, help the **SunSketcher** team measure the oblateness, or shape, of the Sun during the eclipse by timing the flashes of Baily's Beads. You will need a smartphone with a working camera for this, along with something to hold the phone in place - don't forget a spare battery! NOTE: The app will need to run from five minutes *before* the eclipse



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starts until the end of the eclipse. Any additional phone use will result in Sun Sketcher data loss. Learn more at: sunsketcher.org/

Don't stop at the eclipse - NASA has citizen science projects you can do all year long – from [cloud spotting on Mars](#) to [hunting for distant planets](#)! By contributing to these research efforts, you can help NASA make new discoveries and scientific breakthroughs, resulting in a better understanding of the world around us, from the critters on the ground, to the stars in our sky.

We'll be highlighting other citizen science projects with our mid-month article on the [Night Sky Network](#) page, but we want to wish all you eclipse chasers out there a very happy, and safe solar eclipse! For last minute activities, check out Night Sky Network's [Solar Eclipse Resources section](#)!



The TVA is a member club of [The Astronomical League](#)