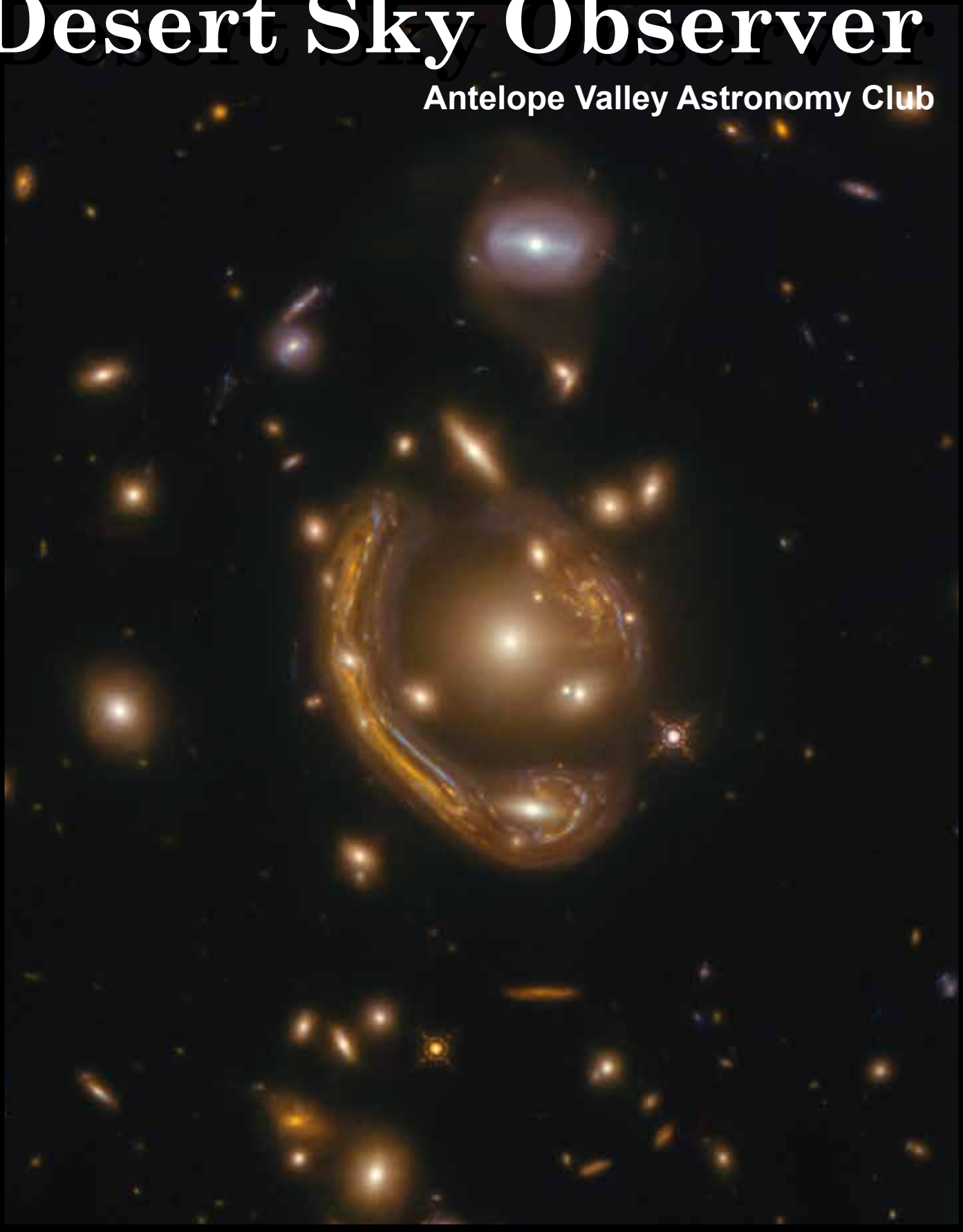
Volume 43.11 November 2023

Desert Sky Observer

Antelope Valley Astronomy Club



Upcoming Events

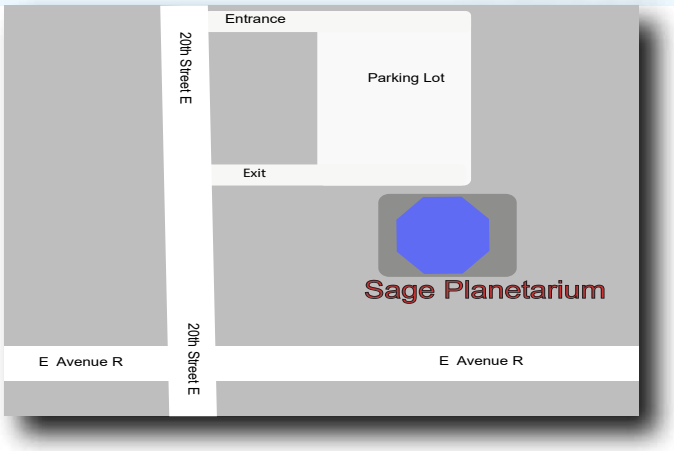
November 3: College of the Canyons- Fall Star party
November 5: Daylight Saving Time **ENDS**
November 10: Club Meeting
November 18: Moonwalk @PDW 5:00 PM

Every clear night: Personal Star Party

AVAC Calendar

December 9: Moonwalk @ PDW (No Telescopes)
5:00 pm - 6:30 PM
December 9: Christmas Party 6-9:30 PM

January 12: Club Meeting/ Space Painting



Board Members

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president@avastronomyclub.org

Vice-President: Navin Arjuna 661-789-7927
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Secretary: Rose Moore (661) 972-1953
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Treasurer: Rod Girard (661) 803-7838
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Appointed Positions

Newsletter Editor: Phil Wriedt (661) 917-4874
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Equipment & Library:
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Club Historian: vacant
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Webmaster: Steve Trotta (661) 269-5428
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www.avastronomyclub.org
ANTELOPE VALLEY
ASTRONOMY CLUB, INC.

Monthly Meetings

Monthly meetings are held at the **S.A.G.E. Planetarium** in Palmdale, the second Friday of each month except December. The meeting location is at the northeast corner of Avenue R and 20th Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium.*

Membership

Membership in the Antelope Valley Astronomy Club is open to any individual or family.

The Club has three categories of membership.

- Family membership at $30.00 per year.
- Individual membership at $25.00 per year.
- Junior membership at $15.00 per year.

Membership entitles you to ...

- The Desert Sky Observer -- monthly newsletter
- The Reflector -- the publication of the Astronomical League.
- The AVAC Membership Manual.
- To borrow club equipment, books, videos, and other items.

AVAC
PO Box 8545
Lancaster, CA 93539-8545

Visit the Antelope Valley Astronomy Club website at www.avastronomyclub.org/.

www.avastronomyclub.org

The Antelope Valley Astronomy Club, Inc. is a 26 USC §503(c)(3) California Non-Profit Corporation.

The AVAC is a Sustaining Member of The Astronomical League and the International Dark-Sky Association

President's Message

By Phil Wriedt

Hi There!

On October 13th we had our annual Business Meeting. The election for the new Board was held, and the results were as follows: Phillip Wriedt, President; Matt Leone, Vice-President; Rose Moore, Secretary; Rod Girard, Treasurer; Christian Amaya, Director of Community Development (a relatively new member who wanted to do something for the Club).

We had a Moonwalk on October 28th at Prime Desert Woodland. Earlier in the day Jeremy did his Scary Science demo in the PDW Center earlier in the day. I got there late for me, and there were already five telescopes setup. Jeremy counted 37 of the public braving the cold during the walk. Jupiter was a just a few degrees under the Moon making it somewhat hard to see, but nobody complained. It was a cloudless almost windless night and just plain cold.

On November 3rd, the College of the Canyons will host a Star Party. The Moon won't rise until almost 11PM so it will be a dark night. This is a great way to meet the public and meet other amateur astronomers. Bring your telescope or come and listen to the speaker. Rose will send more information by email.

On November 18th the last Moonwalk of the year will be held. Sunset will be at 4:46 pm, so the Moonwalk will start about 5:20 pm. Saturn, Jupiter, Uranus and Neptune will be up as will the 34% Moon, which will set about 10pm. Please come and bring your telescope.

As usual our December meeting will take the form of a Christmas Party on Saturday December 9th. More information will be related to you at the November Meeting and by email. See you there.

Keep Looking Up, Phil

On The Cover

Please note: North is 67.0° right of vertical RA: 2h 20' 57.59" DEC: -38° 33' 4.27" (Fornax)

The narrow galaxy elegantly curving around its spherical companion in this image is a fantastic example of a truly strange and very rare phenomenon. This image, taken with the NASA/ESA Hubble Space Telescope, depicts GAL-CLUS-022058s, located in the southern hemisphere constellation of Fornax (The Furnace). GAL-CLUS-022058s is the largest and one of the most complete Einstein rings ever discovered in our Universe. The object has been nicknamed by the Principal Investigator and his team who are studying this Einstein ring as the "Molten Ring", which alludes to its appearance and host constellation.

First theorised to exist by Einstein in his general theory of relativity, this object's unusual shape can be explained by a process called gravitational lensing, which causes light shining from far away to be bent and pulled by the gravity of an object between its source and the observer. In this case, the light from the background galaxy has been distorted into the curve we see by the gravity of the galaxy cluster sitting in front of it. The near exact alignment of the background galaxy with the central elliptical galaxy of the cluster, seen in the middle of this image, has warped and magnified the image of the background galaxy around itself into an almost perfect ring. The gravity from other galaxies in the cluster is soon to cause additional distortions.

From the Secretary

By Rose Moore

Members:

A reminder for those that want to attend the club Christmas Party: the date is Saturday December 9th at 6pm, ending about 9:30pm. The event will be at Gino's Restaurant in the Lancaster Market Place, and will be a buffet. We are still taking sign ups, and you can pay any time up to Nov. 25th. Cost is $30 per person, $15 per child 12 and under. You may pay at the next meeting November 10th, or pay via the link (http://www.avastronomyclub.org/christmas) on our website via PayPal, or you may mail in a payment by check only, to our club's post office address. Mail to: AVAC, P.O. Box 8545, Lancaster, CA 93539. If you want to attend, please make sure to let me know so I can put you on the list! We will be having a raffle after dinner. If any questions, please email me.

Upcoming events for November are: 1) we have the College of the Canyons (Canyon Country) Fall Star Party on Friday November 3, at 6-9:30pm, further info is coming in an email; 2) our club meeting on Friday November 10th at 7pm; 3) and a Prime Desert Moon Walk on Saturday November 18th at 5:30pm. Please come on out and support your club!

As of this time we do not have a dark sky star party scheduled for November. If there is any change, the information will be sent out. Also remember there is no club meeting for December.

We will be having another astronomy paint class for January's meeting, with Sue Leone! More information to be coming!

Clear skies, Rose

Photos by: Darrell Bennett October 14, 2023
Annual Solar Eclipse from Bulverde, Texas

For Sale

Oculus Quest Meta Headset with 256 GB and hand controllers in a black carrying case. It also includes a cable that goes from a PC to a slot in the headset. Price: $250 for everything. This includes a headset charging unit and connection for a cell phone. It has been rarely used. It was bought in April of this year. Contact Duane Lewis by email only for further info: Duane Lewis <gurba1826@gmail.com>

On The Cover ... continued

Objects like these are the ideal laboratory in which to research galaxies too faint and distant to otherwise see.

Credit:
ESA/Hubble & NASA, S. Jha Acknowledgement: L. Shatz

Spy the Seventh Planet, Uranus

by Liz Kruesi, Astronomy Society of the Pacific, NASA Night Sky Network

Uranus hosts 13 faint rings, 11 of which are visible in this JWST image. The planet was 19.67 times the Earth-Sun distance from our planet (1.83 billion miles) when JWST captured exposures through two near-Infrared filters on February 6, 2023. The white region in the right side of Uranus is one of the planet's polar caps. This icy world orbits the Sun differently from the rest of the solar system's planets – Uranus rolls along on its side. [NASA, ESA, CSA, STScI; Image Processing: Joseph DePasquale (STScI)]

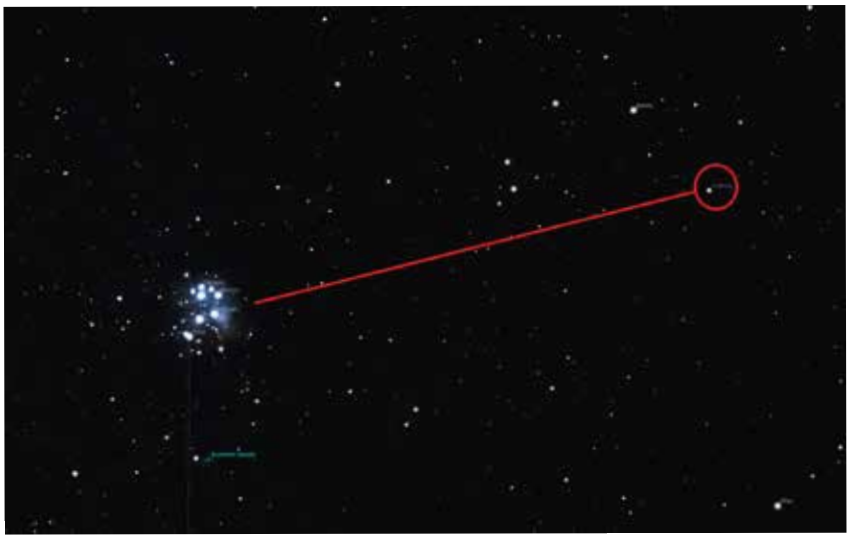
You might be familiar with Saturn as the solar system's ringed planet, with its enormous amount of dust and ice bits circling the giant planet. But Uranus, the next planet out from the Sun hosts an impressive ring system as well. The seventh planet was the first discovered telescopically instead of with unaided eyes, and it was astronomer extraordinaire William Herschel who discovered Uranus March 13, 1781. Nearly two centuries passed before an infrared telescope aboard a military cargo aircraft revealed the planet had rings in 1977.

Since that discovery, multiple observatories have revealed more details of Uranus and its ring system. Most recently, the NASA-led JWST space observatory captured the planet and its rings in detail. This recent image combines just 12 minutes of exposure in two filters to reveal 11 of the planet's 13 rings. Even some of the planet's atmospheric features are visible in this image. Even with advanced imaging like that from JWST, much of Uranus remains a mystery, including why it orbits the Sun on its side. This is because only one spacecraft has ever visited this planet: NASA's Voyager 2, which flew by the distant planet in the mid-1980s.

Planetary scientists are hoping to change that soon, though. Scientists recommended in a report released last year from the National Academies of Sciences, Engineering, and Medicine that

Additional Skywatching Resources

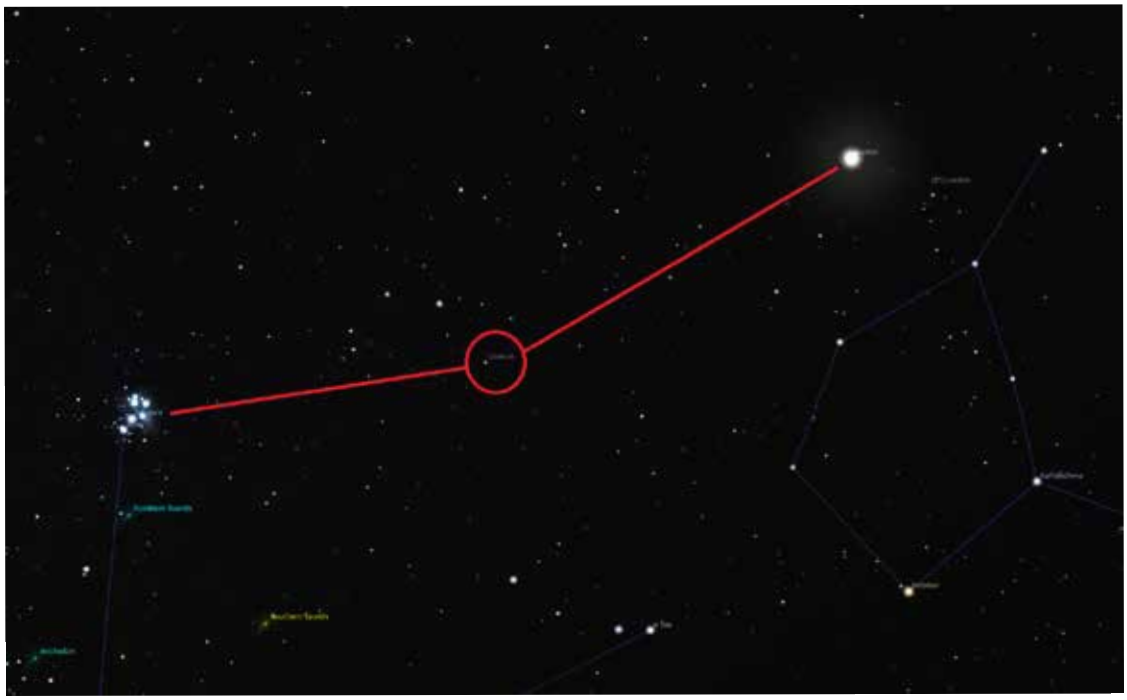
Plan your skywatching with help from our planner page, featuring daily stargazing tips courtesy EarthSky monthly sky maps, and videos from NASA/JPL. You can even find out how to spot the International Space Station! Both Astronomy and Sky and Telescope magazines offer regular stargazing guides to readers, both in print and online. Want to join a group of folks for a star party? Find clubs and astronomy events near you, and may you have clear skies!



Sky map picturing M45 and Uranus, Stellarium

Uranus be the focus on the next big planetary science spacecraft mission. Such a large-scale mission would gain insight into this icy giant planet and the similar solar system planet, Neptune.

If you want to catch a view of Uranus with your own eyes, now is prime time to view it. This ice giant planet lies perfectly positioned in mid-November, at so-called "opposition," when its position in its orbit places it on the other side of the Sun from Earth. That location means our star's light reflects off Uranus' icy atmosphere, and the planet appears as its brightest.



Sky map picturing M45, Uranus and Jupiter, Stellarium

To find it, look overhead just after midnight on November 13. Uranus will lie about halfway between the brilliant planet Jupiter and the diffuse glow of the Pleiades star cluster (M45). While Uranus may look like a bright blinking star in the night sky, its blue-green hue gives aways its identity. Binoculars or a telescope will improve the view.

For more about this oddball planet, visit NASA's Uranus page: https://science.nasa.gov/uranus/facts/

Space News

News from around the Net

A Message From Humankind - Send Your Name To Europa

NASA's Message in a Bottle campaign invites people around the world to sign their names to a poem written by the U.S. Poet Laureate Ada Limón. The poem connects the two water worlds — Earth, yearning to reach out and understand what makes a world habitable, and Europa, waiting with secrets yet to be explored. The campaign is a special collaboration, uniting art and science, by NASA, the U.S. Poet Laureate, and the Library of Congress. . . . (continued at https://europa.nasa.gov/message-in-a-bottle/check-in/)

Oh No! Nasa Can't Seem To Get The Lid Off Its Priceless Asteroid Sample

NASA is in a bit of a pickle with its container of dirt from asteroid Bennu, delivered to Earth in September after an epic seven-year mission. They know there's a nice, juicy haul of asteroid in there – but they are having trouble getting the Touch-and-Go Sample Acquisition Mechanism, or TAGSAM, container open. It's just sealed too well. The problem is that the TAGSAM needs to be opened in a special glovebox designed to minimize Earth contamination. Scientists want to study the sample in as pristine a state as can be managed; . . (continued at https://www.sciencealert.com/oh-no-nasa-cant-seem-to-get-the-lid-off-its-priceless-asteroid-sample)

What's Inside The Carina Pillars? Massive Protostars And Newly Forming Planets

Star-forming nebulae are busy places. Unfortunately, clouds of gas and dust usually hide the action. To cut through the dust in one such region, a team of astronomers used the Atacama Large Millimeter Array (ALMA). They peered inside the Pillars of the Carina Nebula and studied molecular outflows (or jets) emanating from objects in this famous star-birth nursery. Ph.D. student Geovanni Cortes-Rangel of the Instituto de Radioastronomía y Astrophysíca in Mexico, along with other team members from Mexico and Japan, wanted to know more about the action inside those pillars. . . .(continued at https://phys.org/news/2023-10-carina-pillars-massive-protostars-newly.html)

Uranus Aurora Discovery Offers Clues To Habitable Icy Worlds

The presence of an infrared aurora on the cold, outer planet of Uranus has been confirmed for the first time by University of Leicester astronomers. The discovery could shed light on the mysteries behind the magnetic fields of the planets of our solar system, and even on whether distant worlds might support life. The team of scientists, supported by the Science and Technology Facilities Council (STFC), have obtained the first measurements of the infrared (IR) aurora at Uranus since investigations began in 1992. While the ultraviolet (UV) aurorae of Uranus has been observed since 1986, . (continued at https://phys.org/news/2023-10-uranus-aurora-discovery-clues-habitable.html)

Largest-Ever Computer Simulation Of The Universe

Using one of the most powerful supercomputers in the world, astronomers have carried out the largest ever cosmological simulations. Known as Flamingo, the simulations trace the growth of the large-scale structure of the universe over 13.75 billion years. By comparing the simulations to actual observations, scientists hope to learn about the fundamental properties of the universe that govern its long-term behavior. . . . (continued at https://skyandtelescope.org/astronomy-news/largest-ever-computer-simulation-of-the-universe/)

Space News

News from around the Net

Ghost-Like Galaxy Defies Dark Matter Model

Astronomers have discovered a ghost-like galaxy twice as large as our own Milky Way but no more massive than the puny Small Magellanic Cloud, our galaxy's dwarf satellite. Since the new galaxy's stars are spread out over a huge volume, it's invisible to most telescopes, like a Halloween specter. The origin of Nube (Spanish for "cloud"), as astronomers are calling the new find, may challenge popular ideas about the nature of dark matter. . . . . (continued at https://skyandtelescope.org/astronomy-news/cosmology/ghost-like-galaxy-defies-dark-matter-model/)

JWST Sees Four Exoplanets In A Single System

When the JWST activated its penetrating infrared eyes in July 2022, it faced a massive wish-list of targets compiled by an eager international astronomy community. Distant, early galaxies, nascent planets forming in dusty disks, and the end of the universe's dark ages and its first light were on the list. But exoplanets were also on the list, and there were thousands of them beckoning to be studied. But one distant solar system stood out: HR 8799, a system about 133 light-years away. Why this system over others? 15 years ago astronomers discovered three exoplanets orbiting the star. Not long after they announced a fourth, ... (continued at https://phys.org/news/2023-10-jwst-exoplanets.html)

Want To Find Life? Compare A Planet To Its Neighbors

With thousands of known exoplanets and tens of thousands likely to be discovered in the coming decades, it could be only a matter of time before we discover a planet with life. The trick is proving it. So far the focus has been on observing the atmospheric composition of exoplanets, looking for molecular biosignatures that would indicate the presence of life. But this can be difficult since many of the molecules produced by life on Earth could also be produced by geologic processes. A new study argues that a better approach would be to compare the atmospheric composition of a potentially habitable world with those of other planets in the star system. . . . (continued at https://www.universetoday.com/163962/want-to-find-life-compare-a-planet-to-its-neighbors/)

Asteroid Dust Found At Chicxulub Crater Confirms Cause Of Dinosaurs' Extinction

Some 66 million years ago, a city-size asteroid barreled through Earth's atmosphere and slammed into the shallow waters off the Yucatán Peninsula in the Gulf of Mexico. The cosmic artillery strike gouged a 125-mile-wide (200 km) crater in Earth surface, lofting plumes of vaporized rock and debris into the air that globally blocked out views of the Sun for years or decades. After the initial blast, the reduced sunlight caused Earth's surface temperature to plummet by as much as 50 degrees Fahrenheit (28 degrees Celsius), aiding in a mass extinction that killed 75 percent of life on Earth.. . . (continued at https://www.astronomy.com/science/asteroid-dust-found-at-chicxulub-crater-confirms-cause-of-dinosaurs-extinction/)

Solar Maximum Will Arrive Sooner And Last Longer Than Previously Expected, Say Scientists

The sun will reach the peak of its current activity cycle in 2024, one year earlier than previous estimates, according to experts at NOAA's Space Weather Prediction Center (SWPC). The revised prediction now places Solar Cycle 25's peak of activity known as "solar maximum" between January and October 2024 according to a NOAA statement. The peak will be earlier, stronger and last longer than estimates made in 2019. The solar cycle describes an approximately 11-year period of solar activity driven by the sun's magnetic field and indicated by the frequency and intensity of visible sunspots on the surface . . .(continued at https://www.space.com/solar-maximum-expected-2024-new-predictions-suggest)

Dark Sky Observing Sites

The Chuchupate parking lot is a half a mile beyond the Mt Pinos ranger station (on some maps The Chuchupate Ranger Sta.), the parking lot is also called Frazier Mountain trailhead.

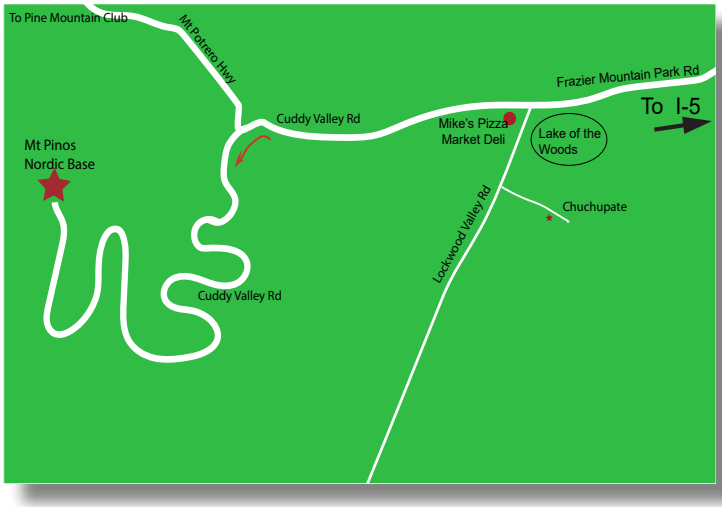
To get there, take the Frazier Mountain Park RD east about 7 miles from I-5, to Lake Of The Woods, Turn left on Lockwood Valley Rd. (If you see Mike's Pizza on your left you missed the turn) In less than a mile there is a road to the left, go past the ranger station, the parking lot is on the right. The Club gathers in the upper end of the lot. The Elevation is 5430 feet. There is a vault toilet.

The Red Cliffs Natural Area is part of **Red Rock Canyon State Park** is a day use area and is not for use by the public after dark. The Club gets a special permit for a star party and pays a fee.

To get there: Take the CA-14 north 25 miles past Mojave. You will see giant red cliffs on the right side and a small sign that says "Red Cliffs Natural Area" and a dirt road. (If you see the large sign for the Ricardo campground, you drove a mile too far). Follow the road to the large parking lot (that hasn't been graded in a long time). Elevation is 2410 feet. There is a vault toilet.

Mt Pinos is a parking lot at 8350 feet for the "Mt Pinos Nordic Base." There is a vault toilet 300 yds to the east in the Chula Vista campground.

To get there: From I-5, get off at Frazier Mountain Park Rd and drive west about 7 miles to Mike's Pizza/ Market Deli at Lockwood Valley Rd. Keep on the main roadway (don't turn left to go to Chuchupate). Continue past Mike's Pizza on Cuddy Valley Rd (the road's new name) about 5 miles. Continue straight (do not turn right on to Mil Potrero Hwy) for another 8 1/2 miles to the parking area.
Note: The entire drive from I-5 is uphill.



Solar System Summary

The **Sun** moves from the western edge of Libra and lands on the western edge of Ophiuchus at the end of the month.

The Planets

Mercury begins the month in the evening twilight climbing away from the Sun, achieving a 20° elongation on the 27th

Venus still prominent in the morning sky. Starting the month at mag -4.33 near the western edge of Virgo, diving back toward the Sun, ending the month near Spica at -4.17.

Mars stuck in the evening twilight just too close to the Sun to be seen. After the 19th conjunction, Mars is stuck in the morning twilight, still to close to the Sun to be seen.

Jupiter spends the month barely moving in retrograde in southern Aries. On the 25th the 90% waxing Moon is 2½° north.

Saturn resumes prograde motion on the 5th in central Aquarius at mag 0.7. The 1st quarter Moon passes almost 3° south on the morning of the 20th.

Uranus continues its retrograde motion in eastern Aries at mag 5.7. On the 26th the almost full Moon passes 2.5° north.

Neptune is moving west on the edge of southern Pisces at 7.8. On the 22nd the 71% waxing Moon passes less than 1.5° to the south.

Dwarf Planets

134340 Pluto spends the month on the eastern edge of Sagittarius moving east at mag 14.4 just south of M75.

1 Ceres spends the month in Libra (mag 8.5), heading east in conjunction with the Sun on about November 20th ending the month on the edge of Scorpius.

2 Pallas at mag 9.4 continues moving east in Virgo. As the month progresses it falls toward the Sun in the morning twilight.

3 Juno at mag 10.1, moves east from central Sextans, coming to rest in southern Leo at month's end.

4 Vesta at mag 7.6, spends the month in retrograde from Gemini moving back to Orion's club at mag 6.9.

Moon Phases

First Qtr Nov 20 | Full Nov 27 | Third Qtr Nov 5 | New Nov 13

Sun and Moon Rise and Set*

Date	Moonrise	Moonset	Sunrise	Sunset
11/1/2023	20:56	11:28	07:13	17:58
11/5/2023	23.54	13:22	07:17	17:55
11/10/2023	03:41	15:26	06:21	16:51
11/15/2023	09:02	18:32	06:26	16:47
11/20/2023	13:03	00:13	06:31	16:45
11/25/2023	15:32	04:47	06:36	16:43
11/30/2023	19:49	10:01	06:41	16:42

Planet Data*

November 1

	Rise	Transit	Set	Mag	Phase%
Mercury	07:53	13:07	18:20	-0.72	99.6
Venus	03:32	09:45	15:57	-4.32	55.3
Mars	07:39	12:56	18:13	1.52	99.9
Jupiter	18:02	00:42	07:27	-2.92	100.
Saturn	14:55	20:21	01:50	0.70	99.8

November 15

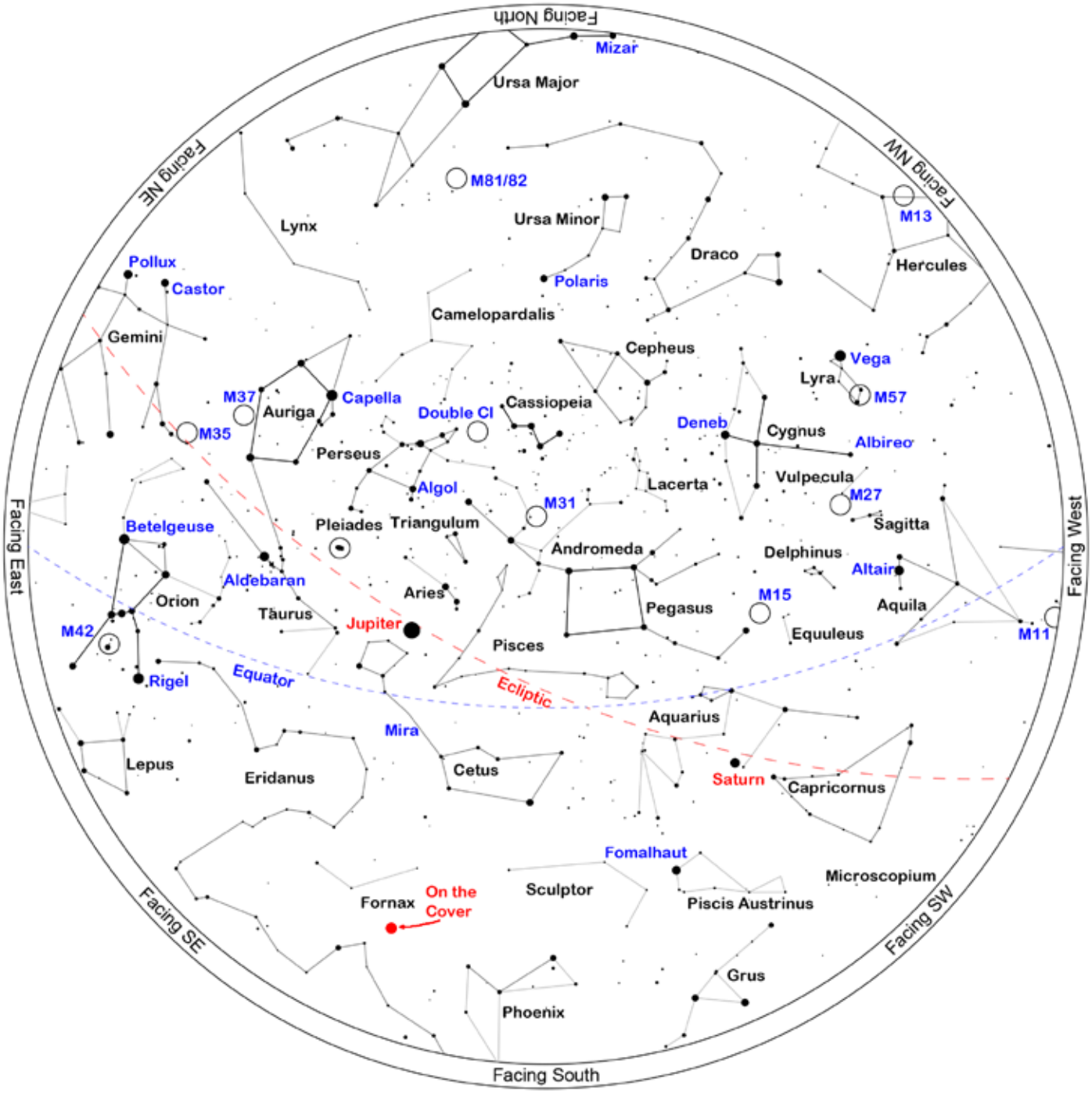
	Rise	Transit	Set	Mag	Phase%
Mercury	07:46	12:39	12:39	-0.43	90.7
Venus	02:49	08:47	08:47	-4.25	61.7
Mars	06:32	11:40	11:40	1.44	100.
Jupiter	16:01	22:40	22:40	-2.90	99.9
Saturn	13:01	18:26	18:26	0.77	99.8

November 30

	Rise	Transit	Set	Mag	Phase%
Mercury	08:26	13:11	17:56	-0.43	71.2
Venus	03:11	08:52	14:33	-4.18	67.7
Mars	06:25	11:25	16:26	1.42	99.9
Jupiter	14:57	21:34	04:15	-2.84	99.7
Saturn	12:03	17:29	22:56	0.83	99.7

*All time mentioned are local and approximate.
*Sun, Moon and Planetary date based on Quartz Hill, CA

Sky Chart



Location: Set from geolocation service
Latitude: 34° 39' N, longitude: 118° 10' W
Time: 2023 November 11, 21:00 (UTC -08:00)

Powered by: Heavens-Above.com

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Deep Sky Star Party or the Saturday nearest the New Moon, in this case November 11, 2023. The list is sorted by the transit time of the object.

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M21	NGC6531	Open	Sgr	18h 04m 13s	-22° 29.3'	7.0	09:39	14:36	19:33
NGC6530		Open	Sgr	18h 04m 31s	-24° 21.5'	4.6	09:46	14:36	19:26
NGC6528		Globular	Sgr	18h 04m 50s	-30° 03.3'	9.5	10:07	14:37	19:06
IC4684		Neb	Sgr	18h 09m 08s	-23° 26.1'		09:48	14:41	19:34
IC4685		Neb	Sgr	18h 09m 18s	-23° 59.2'		09:50	14:41	19:32
Barnard303	B303	DkNeb	Sgr	18h 09m 28s	-23° 59.0'		09:50	14:41	19:33
IC1274		Neb	Sgr	18h 09m 51s	-23° 38.8'		09:49	14:42	19:34
IC1275		Neb	Sgr	18h 10m 07s	-23° 45.7'		09:50	14:42	19:34
NGC6572		P Neb	Oph	18h 12m 06s	+06° 51.2'	9.0	08:22	14:44	21:06
NGC6567		P Neb	Sgr	18h 13m 45s	-19° 04.5'	12.0	09:38	14:45	19:53
IC4701		Neb	Sgr	18h 16m 36s	-16° 38.0'		09:33	14:48	20:04
Barnard93	B93	DkNeb	Sgr	18h 16m 53s	-18° 03.0'		09:38	14:49	19:59
IC1284		Neb	Sgr	18h 17m 39s	-19° 40.3'		09:44	14:49	19:55
M24	Small Sagittarius Star Cloud	Open	Sgr	18h 18m 26s	-18° 24.3'	4.5	09:40	14:50	20:00
M16	Eagle Nebula	Open+D Neb	Ser	18h 18m 48s	-13° 48.3'	6.5	09:27	14:51	20:14
M18	Black Swan,	Open	Sgr	18h 19m 58s	-17° 06.1'	8.0	09:38	14:52	20:06
M17	Horseshoe Nebula	Open+D Neb	Sgr	18h 20m 47s	-16° 10.3'	7.0	09:36	14:53	20:09
HR6923	39 Dra,	Mult	Dra	18h 23m 54s	+58° 48.0'	5.0	Circ	14:56	Circ
M28	NGC6626	Globular	Sgr	18h 24m 33s	-24° 52.1'	8.5	10:08	14:56	19:45
Barnard95	B95	DkNeb	Sct	18h 25m 35s	-11° 44.0'		09:28	14:57	20:27
Barnard97	B97	DkNeb	Sct	18h 29m 05s	-09° 55.0'		09:26	15:01	20:36
Abell44		P Neb	Sgr	18h 30m 11s	-16° 45.4'	12.6	09:47	15:02	20:17
NGC6637		Globular	Sgr	18h 31m 23s	-32° 20.8'	7.7	10:43	15:03	19:23
IC1287		Neb	Sct	18h 31m 26s	-10° 47.7'		09:31	15:03	20:36
M25	M25	Open	Sgr	18h 31m 42s	-19° 07.0'	6.5	09:56	15:03	20:11
IC4725		Open	Sgr	18h 31m 48s	-19° 06.7'	4.6	09:56	15:04	20:11
NGC6642		Globular	Sgr	18h 31m 54s	-23° 28.5'	8.8	10:10	15:04	19:57
NGC6644		P Neb	Sgr	18h 32m 35s	-25° 07.7'	12.0	10:17	15:04	19:52
NGC6647		Open	Sgr	18h 32m 49s	-17° 13.6'	8.0	09:51	15:05	20:18
IC4732		P Neb	Sgr	18h 33m 55s	-22° 38.6'	13.0	10:10	15:06	20:02
NGC6656	Crackerjack Cluster	Globular	Sgr	18h 36m 24s	-23° 54.2'	5.1	10:16	15:08	20:00
IC4756		Open	Ser	18h 38m 54s	+05° 27.0'	5.0	08:53	15:11	21:29
NGC6681		Globular	Sgr	18h 43m 12s	-32° 17.4'	8.1	10:55	15:15	19:35
NGC6694		Open	Sct	18h 45m 18s	-09° 23.0'	8.0	09:40	15:17	20:54
IC4776		P Neb	Sgr	18h 45m 51s	-33° 20.5'	12.0	11:02	15:18	19:33
M11	Wild Duck Cluster	Open	Sct	18h 51m 05s	-06° 16.1'	7.0	09:37	15:23	21:08

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M57	Ring Nebula	P Neb	Lyr	18h 53m 35s	+33° 01.7'	9.5	07:35	15:25	23:16
Barnard117	B117	DkNeb	Sct	18h 53m 43s	-07° 24.0'		09:43	15:25	21:08
NGC6715		Globular	Sgr	18h 55m 03s	-30° 28.7'	7.7	10:59	15:27	19:54
NGC6717	III-143	Globular	Sgr	18h 55m 06s	-22° 42.0'	9.2	10:31	15:27	20:23
Barnard122	B122	DkNeb	Sct	18h 56m 48s	-04° 45.0'		09:39	15:29	21:18
Barnard123	B123	DkNeb	Sct	18h 57m 39s	-04° 43.0'		09:40	15:29	21:19
NGC6723		Globular	Sgr	18h 59m 33s	-36° 37.9'	7.3	11:31	15:31	19:31
Barnard128	B128	DkNeb	Aql	19h 01m 40s	-04° 34.0'		09:43	15:33	21:23
NGC6729	C68	BrNeb	CrA	19h 01m 54s	-36° 57.0'		11:35	15:34	19:32
NGC6749		Globular	Aql	19h 05m 15s	+01° 54.0'	11.1	09:29	15:37	21:45
Barnard329	B329	DkNeb	Aql	19h 06m 59s	+03° 11.0'		09:27	15:39	21:50
NGC6760		Globular	Aql	19h 11m 12s	+01° 01.8'	9.1	09:37	15:43	21:49
Abell56		P Neb	Aql	19h 13m 07s	+02° 52.8'	12.4	09:34	15:45	21:56
NGC6772		P Neb	Aql	19h 14m 36s	-02° 42.4'	14.0	09:51	15:46	21:42
Barnard138	B138	DkNeb	Aql	19h 16m 00s	+00° 13.0'		09:44	15:48	21:51
M56	NGC6779	Globular	Lyr	19h 16m 36s	+30° 11.0'	9.5	08:10	15:48	23:27
NGC6778		P Neb	Aql	19h 18m 25s	-01° 35.7'	13.0	09:52	15:50	21:48
Abell61		P Neb	Cyg	19h 19m 10s	+46° 14.5'	13.0	06:40	15:51	01:02
Barnard140	B140	DkNeb	Aql	19h 19m 49s	+05° 13.0'		09:34	15:52	22:09
NGC6790		P Neb	Aql	19h 22m 57s	+01° 30.8'	10.0	09:48	15:55	22:02
NGC6803		P Neb	Aql	19h 31m 16s	+10° 03.3'	11.0	09:32	16:03	22:34
NGC6804		P Neb	Aql	19h 31m 35s	+09° 13.5'	12.0	09:35	16:03	22:32
Abell62		P Neb	Aql	19h 33m 18s	+10° 37.0'	13.0	09:32	16:05	22:38
NGC6807		P Neb	Aql	19h 34m 34s	+05° 41.0'	14.0	09:48	16:06	22:25
M55	NGC6809	Globular	Sgr	19h 40m 00s	-30° 57.7'	7.0	11:46	16:12	20:37
NGC6813		Neb	Vul	19h 40m 22s	+27° 18.5'		08:45	16:12	23:39
NGC6820		Neb	Vul	19h 42m 28s	+23° 05.2'		09:02	16:14	23:26
Barnard338	B338	DkNeb	Aql	19h 43m 02s	+07° 27.0'		09:51	16:15	22:38
NGC6818	Little Gem	P Neb	Sgr	19h 43m 58s	-14° 09.1'	10.0	10:53	16:16	21:38
NGC6826	Blinking Planetary	P Neb	Cyg	19h 44m 48s	+50° 31.0'	8.8	06:20	16:17	02:13
Abell65		P Neb	Sgr	19h 46m 34s	-23° 08.2'	13.1	11:24	16:18	21:13
NGC6838		Globular	Sge	19h 53m 46s	+18° 46.6'	8.3	09:28	16:25	23:23
NGC6842		P Neb	Vul	19h 55m 02s	+29° 17.3'	14.0	08:52	16:27	00:02
HR7619	Psi Cyg, 24 Cyg	Mult	Cyg	19h 55m 38s	+52° 26.3'	4.9	06:00	16:27	02:54
Abell66		P Neb	Sgr	19h 57m 32s	-21° 36.6'	14.1	11:30	16:29	21:29
Barnard144	Fish on the platter nebula	DkNeb	Cyg	19h 58m 00s	+35° 20.0'		08:28	16:30	00:31
NGC6853	Apple Core Nebula	P Neb	Vul	19h 59m 36s	+22° 43.2'	8.1	09:21	16:31	23:42
NGC6857		Neb	Cyg	20h 02m 48s	+33° 31.4'	11.4	08:42	16:35	00:27

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
IC4954		Neb	Vul	20h 04m 45s	+29° 15.1'		09:02	16:36	00:11
M75	NGC6864	Globular	Sgr	20h 06m 05s	-21° 55.3'	9.5	11:39	16:38	21:36
Barnard342		DkNeb	Cyg	20h 09m 30s	+41° 12.0'		08:08	16:41	01:15
NGC6885	20 Vulpeculae Cluster	Open	Vul	20h 12m 00s	+26° 29.0'	5.9	09:20	16:44	00:08
NGC6891		P Neb	Del	20h 15m 09s	+12° 42.2'	12.0	10:08	16:47	23:26
NGC6894		P Neb	Cyg	20h 16m 24s	+30° 33.9'	14.0	09:08	16:48	00:28
IC4997		P Neb	Sge	20h 20m 09s	+16° 43.9'	12.0	10:01	16:52	23:43
Barnard345	B345	DkNeb	Cyg	20h 21m 00s	+46° 33.0'		07:39	16:53	02:06
NGC6913	Cooling Tower	Open	Cyg	20h 23m 57s	+38° 30.5'	6.6	08:38	16:56	01:13
Abell70		P Neb	Aql	20h 31m 33s	-07° 05.3'	14.3	11:20	17:03	22:46
NGC6940		Open	Vul	20h 34m 26s	+28° 17.0'	6.3	09:35	17:06	00:37
NGC6960	Filamentary Nebula	Neb	Cyg	20h 45m 58s	+30° 35.6'		09:38	17:18	00:58
IC5068		Neb	Cyg	20h 50m 29s	+42° 28.6'		08:40	17:22	02:04
IC5070	Pelican Nebula	Neb	Cyg	20h 51m 00s	+44° 24.1'		08:27	17:23	02:19
NGC6979		Neb	Cyg	20h 51m 00s	+32° 09.0'	11.0	09:36	17:23	01:09
NGC6981		Globular	Aqr	20h 53m 28s	-12° 32.2'	9.4	11:58	17:25	22:53
IC5076		Neb	Cyg	20h 55m 33s	+47° 23.7'		08:06	17:27	02:49
IC1340		Neb	Cyg	20h 56m 08s	+31° 02.8'		09:46	17:28	01:10
NGC6992	Cirrus Nebula	Neb	Cyg	20h 56m 19s	+31° 44.6'		09:43	17:28	01:13
NGC6996		Open	Cyg	20h 56m 30s	+44° 38.0'	10.0	08:31	17:28	02:26
NGC6997		Open	Cyg	20h 56m 39s	+44° 37.9'	10.0	08:31	17:28	02:26
NGC7000	Gulf of Mexico	BrNeb	Cyg	20h 58m 48s	+44° 20.0'		08:35	17:31	02:26
M73	NGC6994	Open+Aster-ism	Aqr	20h 58m 56s	-12° 38.1'	9.0	12:03	17:31	22:58
NGC7006	C42	Globular	Del	21h 01m 30s	+16° 11.0'	10.6	10:44	17:33	00:22
NGC7009	Saturn Nebula	P Neb	Aqr	21h 04m 12s	-11° 22.0'	8.0	12:05	17:36	23:07
NGC7027		P Neb	Cyg	21h 07m 02s	+42° 14.1'	10.0	08:58	17:39	02:19
Barnard151	B151	DkNeb	Cep	21h 08m 13s	+56° 19.0'		Circ	17:40	Circ
IC1369		Open	Cyg	21h 12m 09s	+47° 46.1'	6.8	08:19	17:44	03:09
Barnard153	B153	DkNeb	Cep	21h 21m 03s	+56° 26.0'		Circ	17:53	Circ
NGC7076		Neb	Cep	21h 26m 24s	+62° 53.5'		Circ	17:58	Circ
NGC7078	Great Pegasus Cluster	Globular	Peg	21h 29m 58s	+12° 10.0'	6.4	11:25	18:02	00:39
M39	NGC7092	Open	Cyg	21h 31m 42s	+48° 25.0'	5.5	08:32	18:03	03:35
M2	NGC7089	Globular	Aqr	21h 33m 27s	-00° 49.3'	7.5	12:05	18:05	00:06
NGC7090		Galaxy	Ind	21h 36m 28s	-54° 33.4'	11.0	16:56	18:08	19:20
IC1396	Elephant Trunk	Open	Cep	21h 38m 58s	+57° 29.3'	3.5	Circ	18:11	Circ
NGC7099		Globular	Cap	21h 40m 22s	-23° 10.7'	7.5	13:18	18:12	23:06
NGC7128		Open	Cyg	21h 43m 57s	+53° 42.9'	9.7	07:19	18:16	05:13
NGC7142		Open	Cep	21h 45m 09s	+65° 46.5'	9.3	Circ	18:17	Circ
NGC7139		P Neb	Cep	21h 46m 08s	+63° 47.5'	13.3	Circ	18:18	Circ

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
IC5146	Cocoon Nebula	Open	Cyg	21h 53m 29s	+47° 16.0'	7.2	09:05	18:25	03:45
IC1434		Open	Lac	22h 10m 42s	+52° 51.0'	9.0	08:07	18:42	05:18
NGC7245		Open	Lac	22h 15m 11s	+54° 20.6'	9.2	07:27	18:47	06:07
NGC7232		Galaxy	Gru	22h 15m 38s	-45° 51.0'	13.0	15:44	18:47	21:51
NGC7261		Open	Cep	22h 20m 06s	+58° 03.0'	8.4	Circ	18:52	Circ
NGC7293	C63,Helix Nebula	P Neb	Aqr	22h 29m 36s	-20° 48.0'	7.3	13:59	19:01	00:03
NGC7380		Open	Cep	22h 47m 21s	+58° 07.9'	7.2	Circ	19:19	Circ
C9	Cave Nebula	BrNeb	Cep	22h 56m 48s	+62° 37.0'		Circ	19:29	Circ
IC1470		Neb	Cep	23h 05m 10s	+60° 14.6'		Circ	19:37	Circ
NGC7492		Globular	Aqr	23h 08m 27s	-15° 36.6'	11.5	14:22	19:40	00:59
HR8872	34 Cep,	Triple	Cep	23h 18m 38s	+68° 06.6'	4.8	Circ	19:50	Circ
IC5308		Galaxy	Gru	23h 19m 21s	-42° 15.4'	12.0	16:22	19:51	23:20
M52	The Scorpion	Open	Cas	23h 24m 48s	+61° 35.6'	8.0	Circ	19:57	Circ
NGC7662	Blue Snowball	P Neb	And	23h 25m 54s	+42° 33.0'	8.3	11:15	19:58	04:40
NGC7686		Open	And	23h 30m 07s	+49° 08.0'	5.6	10:22	20:02	05:41
IC5332		Galaxy	Scl	23h 34m 27s	-36° 06.0'	10.6	16:03	20:06	00:09
NGC7785		Galaxy	Psc	23h 55m 19s	+05° 54.9'	11.6	14:08	20:27	02:46
HR9071	Sig Cas	Triple	Cas	23h 59m 01s	+55° 45.3'	4.9	Circ	20:31	Circ
NGC7822		Neb	Cep	00h 03m 36s	+67° 09.0'		Circ	20:35	Circ
NGC55	C72	S Gal	Scl	00h 14m 54s	-39° 11.0'	7.9	17:00	20:47	00:34
NGC129		Open	Cas	00h 30m 00s	+60° 13.1'	6.5	Circ	21:02	Circ
NGC133		Open	Cas	00h 31m 19s	+63° 21.0'	9.0	Circ	21:03	Circ
NGC146		Open	Cas	00h 33m 03s	+63° 18.0'	9.1	Circ	21:05	Circ
NGC147	C17	E Gal	Cas	00h 33m 12s	+48° 30.0'	9.3	11:32	21:05	06:37
NGC190		Galaxy	Psc	00h 38m 55s	+07° 03.7'	14.0	14:48	21:11	03:33
M110	Sat. of Andromeda Galaxy	Galaxy	And	00h 40m 22s	+41° 41.1'	8.9	12:35	21:12	05:49
M32	Sat Of Andromeda Galaxy	Galaxy	And	00h 42m 42s	+40° 51.9'	9.1	12:43	21:14	05:46
M31	Andromeda Galaxy	Galaxy	And	00h 42m 44s	+41° 16.1'	4.3	12:40	21:14	05:49

And - Andromeda
Ant - Antlia
Aps - Apus
Aql - Aquila
Aqr - Aquarius
Ara - Ara
Ari - Aries
Aur - Auriga
Boo - Bootes
Cae - Caelum
Cam - Camelopardis
Cap - Capricornus
Car - Carina
Cas - Cassiopeia
Cen - Centaurus
Cep - Cepheus
Cet - Cetus
Cha - Chamaeleon
Cir - Circinus
CMa - Canis Major
CMi - Canis Minor
Cnc - Cancer
Col - Columba
Com - Coma Berenices
CrA - Corona Australis
CrB - Corona Borealis
Crt - Crater
Cru - Crux
Crv - Corvus
CVn - Canes Venatici
Cyg - Cygnus
Del - Delphinus
Dor - Dorado
Dra - Draco
Equ - Equuleus
Eri - Eridanus
For - Fornax
Gem - Gemini
Gru - Grus
Her - Hercules
Hor - Horologium
Hya - Hydra
Hyi - Hydrus
Ind - Indus
Lac - Lacerta
Leo - Leo
Lep - Lepus
Lib - Libra
LMi - Leo Minor
Lup - Lupus
Lyn - Lynx
Lyr - Lyra
Men - Mensa
Mic - Microscopium
Mon - Monoceros
Mus - Musca
Nor - Norma
Oct - Octans
Oph - Ophiuchus
Ori - Orion
Pav - Pavo
Peg - Pegasus
Per - Perseus
Phe - Phoenix
Pic - Pictor
PsA - Pisces Austrinus
Psc - Pisces
Pup - Puppis
Pyx - Pyxis
Ret - Reticulum
Scl - Sculptor
Sco - Scorpius
Sct - Scutum
Ser - Serpens
Sex - Sextans
Sge - Sagitta
Sgr - Sagittarius
Tau - Taurus
Tel - Telescopium
TrA - Triangulum Australe
Tri - Triangulum
Tuc - Tucana
UMa - Ursa Major
UMi - Ursa Minor
Vel - Vela
Vir - Virgo
Vol - Volans
Vul - Vulpecula

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