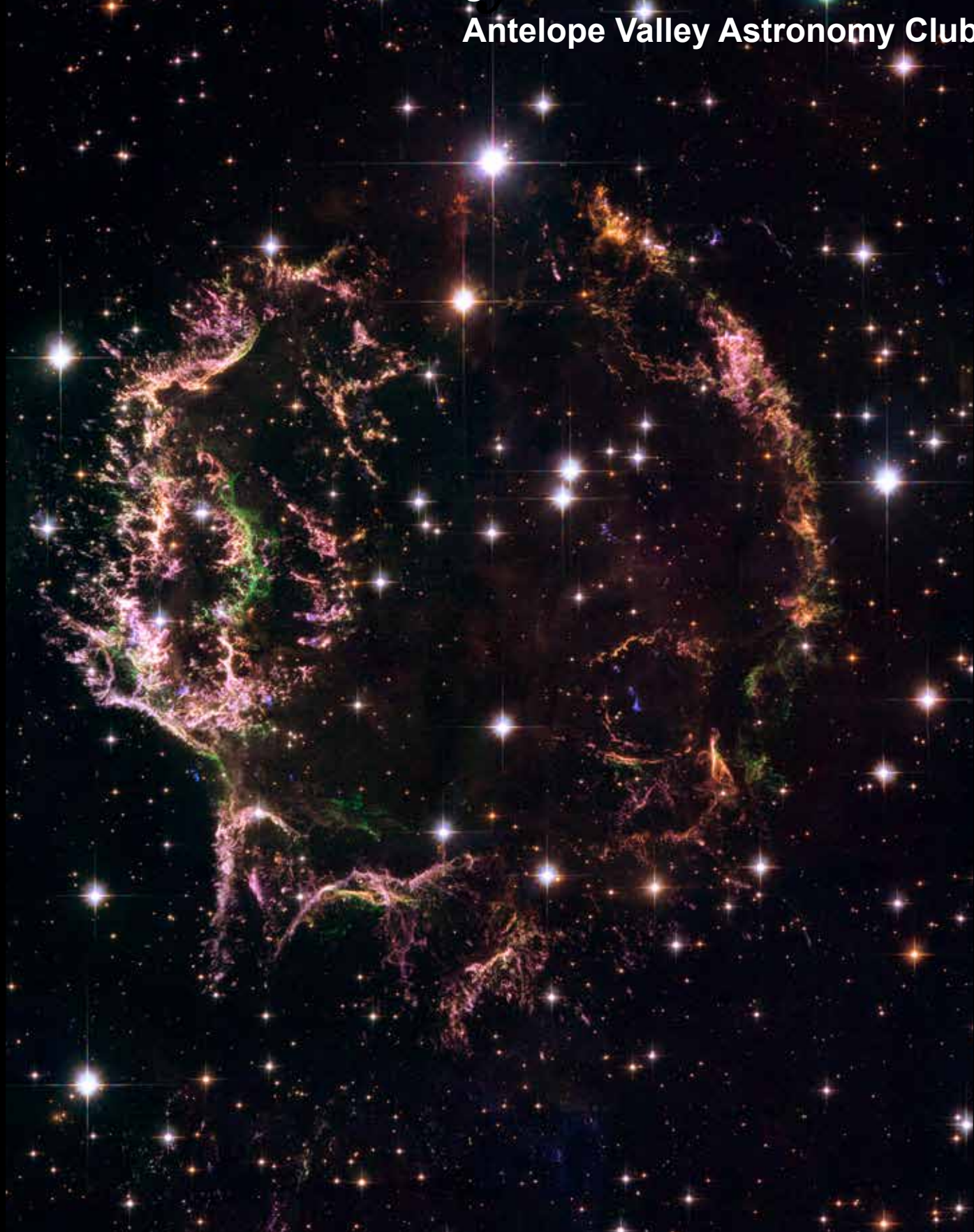


Volume 41.8

August 2021

Desert Sky Observer

Antelope Valley Astronomy Club



Upcoming Events

August 7: DSSP -- Mt Pinos
August 7: Moon Walk @ PDW
August 12: Perseids meteor shower
August 13: Club Meeting -- At SAGE Planetarium
(Mask Required)

Every clear night: Personal Star Party

September 4: DSSP- Chuchupate
September 10: Club Meeting
September 11: Lunar Club @ Judy's
September 25: Moon Walk @ PDW
October 2: DSSP -- Red Cliffs
October 8: Club Meeting
October 23: Moon Walk @ PDW



AVAC Calendar

Board Members

President: Darrell Bennett (661) 220-0122
president@avastronomyclub.org

Vice-President: Matt Leone (661) 713-1894
vice-president@avastronomyclub.org

Secretary: Rose Moore (661) 972-1953
secretary@avastronomyclub.org

Treasurer: Rod Girard (661) 803-7838
treasurer@avastronomyclub.org

Appointed Positions

Newsletter Editor: Phil Wriedt (661) 917-4874
dso@avastronomyclub.org

Equipment & Library:
John Van Evera 661-754-1819
library@avastronomyclub.org

Club Historian: vacant
history@avastronomyclub.org

Webmaster: Steve Trotta (661) 269-5428
webmaster@avastronomyclub.org

Astronomical League Coordinator:
Frank Moore (661) 972-4775
al@avastronomyclub.org



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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/.

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

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



www.avastronomyclub.org

President's Message

By Darrell Bennett

Hello Everyone,

I have great news! On August 13th we will be having our regular Club Meeting at the S.A.G.E. Planetarium in Palmdale, at 7:00pm. The only requirement is that everyone MUST wear a mask while indoors at all times, vaccinated or not. There will be a guest speaker on Zoom followed by Jeremy's Planetarium show. Come on by and say hello to everyone.

On July 24th we were back at the Prime Desert Woodlands for the Moon Walk. After 14 months of not being there, it felt good to be back. Even with the high winds and it being overcast, we did get a chance to see Venus.

For being away for a long time, we did have 75 people that came to this event. Our next Moon Walk will be on August 7th at 8:00pm. This is the same night of our Deep Sky Party at Mt. Pinos. If you don't want to go to Mt. Pinos, then come out to the Moon Walk.

I would like to thank all the Club members who came out and helped at Prime Desert Woodlands. I hope to see all of you at the next Moon Walk and the Club Meeting.

Until then keep looking up

On The Cover

A new image taken with the NASA/ESA Hubble Space Telescope provides a detailed look at the tattered remains of a supernova explosion known as Cassiopeia A (Cas A). It is the youngest known remnant from a supernova explosion in the Milky Way. The new Hubble image shows the complex and intricate structure of the star's shattered fragments.

Credit:

NASA, ESA, and the Hubble Heritage (STScI/AURA)-ESA/Hubble Collaboration. Acknowledgement: Robert A. Fesen (Dartmouth College, USA) and James Long (ESA/Hubble)

Release date: 29 August 2006,

From the Secretary

By Rose Moore

We had Dr. Daniel Barth for our July Zoom meeting, and he spoke on the 'Moons of Jupiter'. A big thank you to Dr. Barth for his presentation! If anyone is interested in his astronomy education handout, let me know, and I'll send the link. It's about 300+ pages long, and is free!

We will finally be back in the SAGE Planetarium for our meetings this month! Our first meeting is Friday August 13th at 7pm. VP Matt is working on a speaker for the meeting. Further info to follow. *If attending the meeting at the SAGE, please be aware that all persons entering the building MUST wear a mask, per the Palmdale School District and LA County guidelines.

We have a dark sky star party on Saturday August 7th at Mt. Pinos. There will be an email a few days before with any reminders on the event. Weather permitting. Our DSSP for September will be on Saturday Sept. 4th and will be at Chuchupate.

We also have a Prime Desert Woodland Moon Walk also on Saturday August 7th at 8pm. For those who can't make it up to Mt. Pinos, consider bringing your telescope to PDW for the Moon Walk. Weather permitting.

Many thanks to those who attended our first PDW since February of 2020! Attendees were Darrell, Kurtiss and LeRae, Phil, Rod, Rose, and Jeremy. The sky was very clouded over, but a few people were able to get a peek through the telescopes or Phil's bins. We had 76 from the public attending the event.

Come on out and support your club! We can not be successful without your input and participation!

Rose



July 24, 2021 Moonwalk before all the clouds and people arrived

Corner the Great Square of Pegasus

by David Prosper, NASA Night Sky Network

The Summer Triangle may be the most famous seasonal star pattern, but during early August evenings another geometrically-themed asterism rises: the Great Square of Pegasus. This asterism's name is a bit misleading: while three of its stars - Scheat, Markab, and Algenib - are indeed found in the constellation of the winged horse Pegasus, its fourth star, Alpheratz, is the brightest star in the constellation Andromeda!

August evenings are an excellent time to look for the Great Square, as it will be rising in the east after sunset. If not obvious at first, wait for this star pattern to rise a bit above the murky air, and remember that depending on your point of view, it may appear more like a diamond than a square. Look for it below the Summer Triangle, or to the southeast of nearby Cassiopeia at this time. As the Great Square rises in prominence during autumn evenings, it becomes a handy guidepost to finding more constellations, including some of the dimmer members of the Zodiac: Aries, Pisces, Aquarius, and Capricornus. Like the Summer Triangle, the Great Square of Pegasus is also huge, but Pegasus itself is even larger; out of the 88 constellations, Pegasus is 7th in size, and feels larger as the stars in its neighboring constellations are much dimmer.

There are many notable deep-sky objects found within the stars of Pegasus - ranging from easily spotted to expert level targets - making it a great constellation to revisit as your observing skills improve. Notable objects include the densely-packed stars of globular cluster M15, a great first target. The potential "Milky Way look-alike" galaxy NGC 7331 is a fun target for more advanced observers, and expert observers can hop nearby to try to tease out the much dimmer interacting galaxies of Stephan's Quintet. A fascinating (but extremely difficult to observe) object is a gravitationally-lensed quasar famously known as the Einstein Cross. Pegasus has quite a storied history in the field of exoplanet research: 51 Pegasi was the first Sun-like star discovered to be host to a planet outside our solar system, now officially named Dimidium.

While observing Pegasus and its surroundings, keep your eyes relaxed and ready to catch some Perseids, too! August 2021 promises an excellent showing of this annual meteor shower. The crescent Moon sets early on the evening of the shower's peak on August 11-12, but you can spot stray Perseids most of the month. If you trace the path of these meteors, you'll find they originate from one point in Perseus - their radiant. Giant planets Jupiter and Saturn will be up all evening as well. Look south - they easily stand out as the brightest objects in the faint constellations Aquarius and Capricornus.

Pegasus truly holds some fantastic astronomical treasures! Continue your exploration of the stars of Pegasus and beyond with NASA at [nasa.gov](https://www.nasa.gov).

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While the stars of the Great Square of Pegasus are not as bright as those of the Summer Triangle, they still stand out compared to their neighbors, and make a great foundation for exploring this area of the night sky. Note that the brightness of the stars near the horizon is exaggerated in this picture



Stephan's Quintet is one of the most famous deep-sky objects in Pegasus. First discovered in 1877, it contains the first galaxy group discovered (which includes 4 of the 5 galaxies making up the Quintet) – and has been studied extensively ever since. One day this group will merge into one supergalaxy! While famous, these galaxies are hard to spot in all but the largest backyard telescopes – but are a favorite target of astrophotographers. Take a virtual flyby of these galaxies with a tour created from Hubble data at: bit.ly/quintetflyby
Credit: NASA, ESA, and G. Bacon, J. DePasquale, F. Summers, and Z. Levay (STScI)

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Space News

News from around the Net

Tail Without A Comet: The Dusty Remains Of Comet ATLAS

Comet ATLAS fragmented just before its closest approach to the Sun last year, leaving its former tail trailing through space in the form of wispy clouds of dust and charged particles. The disintegration was observed by the Hubble Space Telescope in April 2020, but more recently the ESA spacecraft Solar Orbiter has flown close to the tail remnants in the course of its ongoing mission. ... (continued at <https://www.sciencedaily.com/releases/2021/07/210719120338.htm>)



Did Static Electricity -- Not Gus Grissom - Blow The Hatch Of The Liberty Bell 7 Spacecraft?

The myth that a pioneering astronaut lost his nerve at the end of his first journey to space 60 years ago — which led to the loss of his spacecraft and his near drowning — stains the history of U.S. human spaceflight. On July 21, 1961, the U.S. launched its second human into space, advancing Project Mercury . . . (continued at <https://astronomy.com/news/2021/07/did-static-electricity-blow-the-hatch-of-liberty-bell-7>)



Superbit: A Low-Cost Balloon-Borne Telescope To Rival Hubble

Astronomers and engineers are building a new kind of astronomical telescope. SuperBIT flies above 99.5% of the Earth's atmosphere, carried by a helium balloon the size of a football stadium. The telescope will make its operational debut next April and when deployed should obtain high-resolution images rivaling those of the Hubble Space Telescope. . . . (continued at <https://www.sciencedaily.com/releases/2021/07/210721102429.htm>)



NASA's Hubble Space Telescope Is Back In Action

It has been a difficult past few weeks for NASA's famous Hubble Space Telescope, but on Saturday, July 17th, engineers announced that the switch to the backup computer system was successful, and that Hubble is once again operational. "Hubble is an icon, giving us incredible insight into the cosmos over the past three decades, . . . (continued at <https://skyandtelescope.org/astronomy-news/nasas-hubble-space-telescope-is-back-in-action/>)



Astronomers Detect Potential Moon-Forming Disk Around An Exoplanet

Astronomers have made the first clear detection of a dusty disk surrounding an exoplanet, which could eventually go on to form moons. For the first time, astronomers have clearly detected a dusty disk around a young giant planet that may go on to form moons. The results appear in the July 20th [Astrophysical Journal Letters](#). Disks of gas and dust left over from stellar formation can create circumstellar disks, shrouding a newborn star in planet-making potential. . . . (continued at <https://skyandtelescope.org/astronomy-news/astronomers-detect-potential-moon-forming-disk-around-an-exoplanet/>)



Lost & Found: Milky Way-Size "Orphan Cloud"

Astronomers have found a giant gas cloud, likely stripped from its parent galaxy long ago, in a cluster 330 million light-years away. Ten billion Suns' worth of gas are hanging in space in the form of a cloud almost 6 million light-years across. Bigger than the Milky Way, this "orphan cloud" was probably torn long ago from the galaxy it once called home. Astronomers discovered this cloud in 2017 by the deep-red emission of its ionized hydrogen, hanging in the Leo Cluster (Abell 1367) roughly 330 million light-years away. (continued at <https://skyandtelescope.org/astronomy-news/lost-found-milky-way-size-orphan-cloud/>)



Space News

News from around the Net

Perseid Meteor Shower 2021: All You Need To Know

In the Northern Hemisphere, we rank the August Perseids as our all-time favorite meteor shower. The Perseids take place during the lazy, hazy days of northern summer, when many families are on vacation. And what could be more luxurious than taking a siesta from the heat of the day and watching this summertime classic in the cool of night? Plus, 2021 is an excellent year for this shower! . . . (continued at <https://earthsky.org/astronomy-essentials/everything-you-need-to-know-perseid-meteor-shower/>)



NASA Selects SpaceX For Mission To Jupiter Moon Europa

NASA on Friday said it had selected SpaceX to launch a planned voyage to Jupiter's icy moon Europa, a huge win for Elon Musk's company as it sets its sights deeper into the solar system. The Europa Clipper mission will launch in October 2024 on a Falcon Heavy rocket from the Kennedy Space Center in Florida, with the total contract worth \$178 million. The mission was previously supposed to take off on NASA's own Space Launch System (SLS) rocket, . . . (continued at <https://phys.org/news/2021-07-nasa-spacex-mission-jupiter-moon.html>)



How to see the 2021 Perseid meteor shower

Every August the Perseid meteor shower provides a spectacular display in the night sky and in 2021, if skies are clear, we should get a decent show. Generally, the Perseid meteor shower occurs every year between 17 July and 24 August, with the exception of the peak period 8-16 August, and a sharp peak typically seen around 11-13 August. . . . (continued at <https://www.skyatnightmagazine.com/advice/skills/perseid-meteor-shower-how-to-see-it/>)



Observing The Night Side Of Venus Is Actually Pretty Tricky

Observing the dark side of planets is hard. In the visible spectrum, they are almost unobservable, while in the infrared some heat signatures may come through, but not enough to help see what is going on in a planet's atmosphere. Now a team from the University of Tokyo think they've developed a way to monitor weather patterns on the night side of one of the most difficult planets of all – Venus. . . . (continued at <https://www.universetoday.com/151951/observing-the-night-side-of-venus-is-actually-pretty-tricky/>)



Hubble Finds First Evidence Of Water Vapor On Jupiter's Moon Ganymede

For the first time, astronomers have uncovered evidence of water vapor in the atmosphere of Jupiter's moon Ganymede. This water vapor forms when ice from the moon's surface sublimates—that is, turns from solid to gas. Scientists used new and archival datasets from NASA's Hubble Space Telescope to make the discovery, published in the journal Nature Astronomy. . . . (continued at <https://phys.org/news/2021-07-hubble-evidence-vapor-jupiter-moon.html>)



When The Sun Dies, Earth's Magnetosphere Won't Provide Protection Any More

The Earth's magnetic field is an under appreciated wonder of the natural world. It protects our atmosphere, provides some of the most breathtaking scenery when it creates auroras, and allows people to navigate from one side of the world to the other. Unfortunately, it won't be able to save us from the death of the Sun though. At least that's the finding of some new research by Dr. Dimitri Veras of the University of Warwick and Dr. Aline Vidotto of Trinity College Dublin. . . . (continued at <https://www.universetoday.com/151966/when-the-sun-dies-earths-magnetosphere-wont-provide-protection-any-more/>)



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.

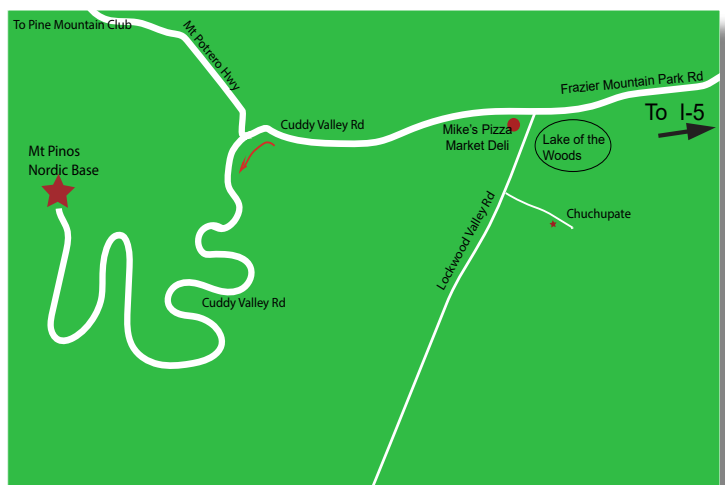
To get there: Take the CA-14 north 25 miles past Mojave. You will see giant red cliffs on the right side and a small sign that says "Red Cliffs Natural Area" and a dirt road. (If you see the large sign for the Ricardo campground, you drove a mile too far). Follow the road to the large parking lot (that 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.



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Planet Summary

The **Sun** starts August in Cancer and crosses into Leo by the middle of the month.

Mercury starts the month at superior conjunction and begins its evening journey away from the Sun. Just after sunset on the 18th, Mars will be in conjunction with a separation of $0^{\circ}4'19''$. Mercury at mag -0.47 Mars at 1.82. At the end of the month it's 23° east of the Sun.

Venus's elongation from the Sun increases from 25° to 33° during July. On the 13th it passes just 0.5° from Mars, with Venus outshining Mars by a factor of 200. The waxing crescent Moon passes 3° north of the pair on the 11th. Venus passes just 1° north of Regulus on the 21st.

Mars is literally fading into the sunset as it heads toward its October conjunction with the Sun. The conjunction with Mercury (see above) occurs less than 10° above the horizon at sunset.

Jupiter continues its retrograde motion chasing Saturn, among the stars of western Aquarius. Opposition is achieved on the 20th, when it is 33 light-minutes (4.01 au) from Earth, at mag -2.9 with a $49.1''$ disk. The Moon passes 4° to the south on the 22nd.

Saturn spends the month moving retrograde among the stars of Capricorn achieving opposition on the 2nd at mag +0.2 some 74 light-minutes (8.9 au) from Earth. The rings are tilted 18° with the northern hemisphere on display. On the 20th the 97% waxing Moon passes 5° to the south.

Uranus continues moving east in central Aries for the next several months at mag 5.7. The waning Moon zips by 2° to the south on the morning of the 28th.

Neptune will spend the month almost stationary in northeast Aquarius at mag 7.8. The 95% waning Moon will pass 4° south after midnight of the 24th.

Pluto spends the month slowing moving west in Sagittarius at mag 14.3.

Moon Phases



First Qtr
Aug 30

Full
Aug 22

Third Qtr
Aug 15

New
Aug 8

Sun and Moon Rise and Set*

Date	Moonrise	Moonset	Sunrise	Sunset
8/1/2021	00:31	14:28	06:03	19:54
8/5/2021	03:08	18:13	06:06	19:50
8/10/2021	08:12	21:30	06:09	19:54
8/15/2021	13:44	23:15	06:13	19:40
8/20/2021	18:54	04:02	06:17	19:34
8/25/2021	21:36	09:25	06:20	19:27
8/30/2021	23:14	14:14	06:24	19:21

Planet Data*

August 1

	Rise	Transit	Set	Mag	Phase%
Mercury	06:01	13:02	20:02	-1.96	99.7
Venus	08:44	15:09	21:34	-3.95	81.8
Mars	07:51	14:27	21:03	1.84	98.6
Jupiter	20:50	02:16	07:46	-2.85	99.8
Saturn	19:51	01:00	06:12	0.18	100

August 15

	Rise	Transit	Set	Mag	Phase%
Mercury	07:20	13:52	20:23	-0.63	89.6
Venus	09:09	15:15	21:19	-3.98	77.8
Mars	07:39	14:05	20:31	1.82	99.1
Jupiter	19:50	01:14	06:42	-2.87	99.9
Saturn	18:52	00:00	05:12	0.23	99.9

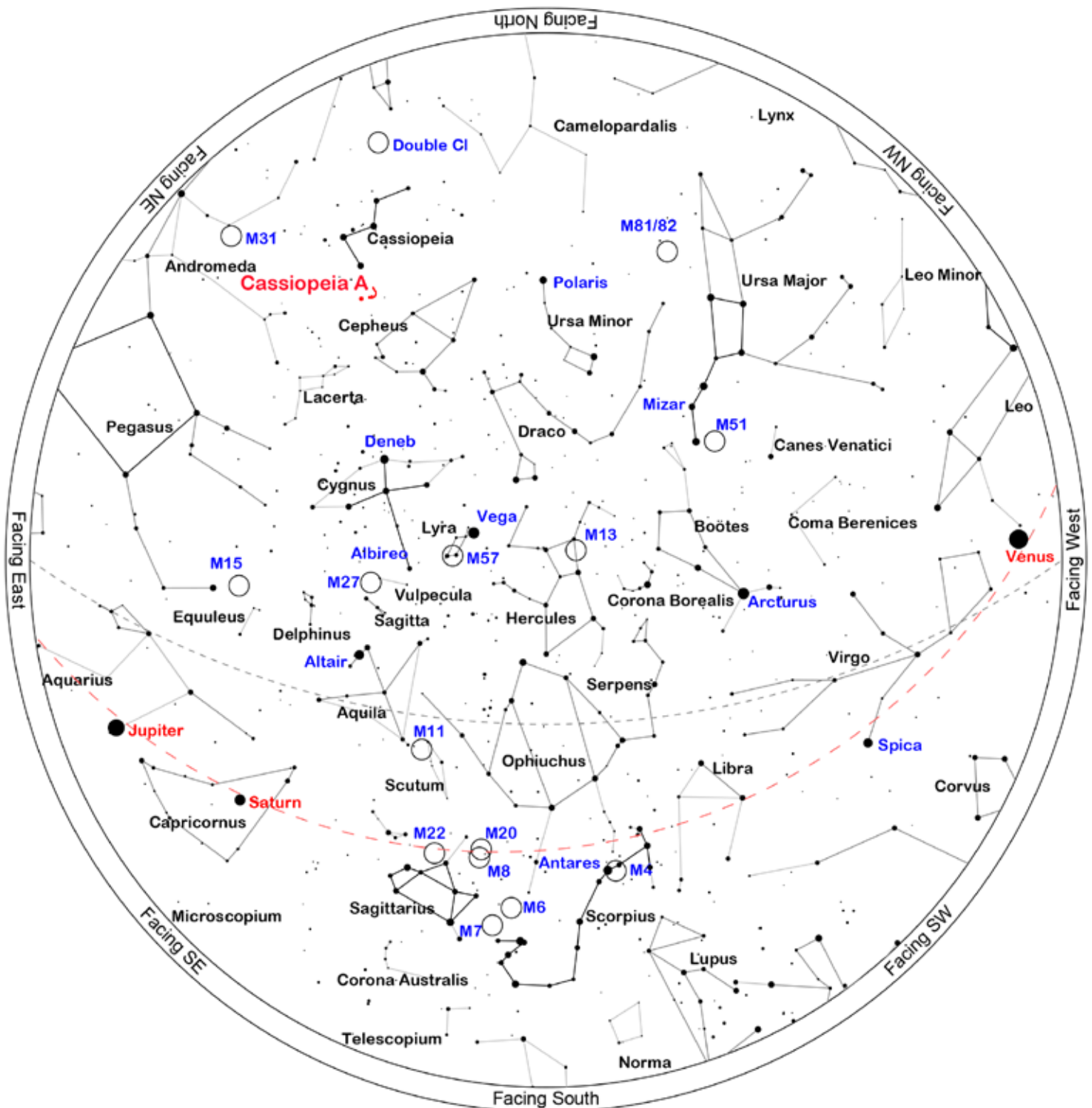
August 30

	Rise	Transit	Set	Mag	Phase%
Mercury	08:17	14:18	20:18	-0.05	74.8
Venus	09:35	15:19	21:02	-4.03	73.14
Mars	07:26	13:41	19:57	1.79	99.6
Jupiter	18:46	00:08	05:34	-2.87	99.1
Saturn	17:50	22:57	04:08	0.30	99.9.

*All time mentioned are local

*Sun, Moon and Planetary date based on Quartz Hill, CA

Sky Chart



Location: Palmdale, CA 93551

Latitude: 34° 36' N, longitude: 118° 11' W

Time: 2021 August 7, 21:00 (UTC -07:00)

Powered by: Heavens-Above.com

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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 August 7, 2021. The list is sorted by the transit time of the object.

ID	Type		RA	Dec	Mag	Rise	Transit	Set
M5	Globular	Ser	15h 18m 33s	+02° 04.9'	7.0	13:03	19:12	01:20
Barnard228	DkNeb	Lup	15h 44m 00s	-34° 30.0'		15:27	19:37	23:47
IC4593	P Neb	Her	16h 11m 44s	+12° 04.3'	11.0	13:28	20:05	02:42
IC4592	Neb	Sco	16h 11m 59s	-19° 27.4'		14:59	20:05	01:11
M80	Globular	Sco	16h 17m 03s	-22° 58.5'	8.5	15:16	20:10	01:05
IC4601	Neb	Sco	16h 20m 18s	-20° 04.9'		15:09	20:13	01:18
Abell38	P Neb	Sco	16h 23m 17s	-31° 44.9'	11.7	15:55	20:16	00:38
M4	Globular	Sco	16h 23m 35s	-26° 31.5'	7.5	15:35	20:17	00:59
M4	Globular	Sco	16h 23m 35s	-26° 31.5'	7.5	15:35	20:17	00:59
IC4603	Neb	Oph	16h 25m 24s	-24° 28.0'		15:29	20:18	01:08
IC4604	Neb	Oph	16h 25m 33s	-23° 26.5'		15:26	20:19	01:12
NGC6124	Open	Sco	16h 25m 36s	-40° 40.0'	5.8	16:41	20:19	23:57
Abell39	P Neb	Her	16h 27m 33s	+27° 54.5'	12.9	12:51	20:21	03:50
IC4605	Neb	Sco	16h 30m 12s	-25° 06.8'		15:36	20:23	01:10
NGC6153	P Neb	Sco	16h 31m 31s	-40° 15.2'	12.0	16:44	20:25	00:05
NGC6181	Galaxy	Her	16h 32m 21s	+19° 49.5'	11.9	13:24	20:25	03:27
NGC6171	Globular	Oph	16h 32m 32s	-13° 03.1'	8.1	15:00	20:26	01:51
NGC6178	Open	Sco	16h 35m 47s	-45° 38.6'	7.2	17:25	20:29	23:33
NGC6193	Open	Ara	16h 41m 18s	-48° 46.0'	5.2	17:58	20:34	23:11
NGC6205	Globular	Her	16h 41m 41s	+36° 27.5'	5.9	12:27	20:35	04:42
M13	Globular	Her	16h 41m 41s	+36° 27.5'	7.0	12:27	20:35	04:42
NGC6210	P Neb	Her	16h 44m 30s	+23° 48.0'	9.0	13:23	20:38	03:52
Barnard44a	DkNeb	Sco	16h 44m 45s	-40° 20.0'		16:58	20:38	00:18
NGC6204	Open	Ara	16h 46m 09s	-47° 01.0'	8.2	17:46	20:39	23:32
M12	Globular	Oph	16h 47m 14s	-01° 56.8'	8.0	14:43	20:40	02:38
NGC6231	Open	Sco	16h 54m 00s	-41° 48.0'	2.6	17:16	20:47	00:18
IC4628	Neb	Sco	16h 56m 58s	-40° 27.3'		17:11	20:50	00:29
NGC6254	Globular	Oph	16h 57m 09s	-04° 05.9'	6.6	14:59	20:50	02:42
Barnard47	DkNeb	Oph	16h 59m 42s	-22° 38.0'		15:57	20:53	01:49
M62	Globular	Oph	17h 01m 13s	-30° 06.7'	8.0	16:26	20:54	01:23
NGC6273	Globular	Oph	17h 02m 38s	-26° 16.0'	7.2	16:13	20:56	01:39
M19	Globular	Oph	17h 02m 38s	-26° 16.0'	8.5	16:13	20:56	01:39
Barnard51	DkNeb	Oph	17h 04m 44s	-22° 15.0'		16:01	20:58	01:55
IC4637	P Neb	Sco	17h 05m 10s	-40° 53.1'	14.0	17:22	20:58	00:35
Barnard56	DkNeb	Sco	17h 08m 48s	-32° 05.0'		16:42	21:02	01:22
Barnard59	DkNeb	Oph	17h 11m 23s	-27° 29.0'		16:26	21:04	01:43

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ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC6302	P Neb	Sco	17h 13m 42s	-37° 06.0'	9.6	17:10	21:07	01:04
Barnard251	DkNeb	Oph	17h 13m 48s	-20° 09.0'		16:03	21:07	02:11
Barnard63	DkNeb	Oph	17h 16m 00s	-21° 28.0'		16:09	21:09	02:09
M92	Globular	Her	17h 17m 07s	+43° 08.1'	7.5	12:23	21:10	05:58
M9	Globular	Oph	17h 19m 12s	-18° 31.0'	9.0	16:03	21:12	02:21
NGC6326	P Neb	Ara	17h 20m 46s	-51° 45.2'	12.0	19:12	21:14	23:15
Barnard256	DkNeb	Oph	17h 22m 12s	-28° 49.0'		16:42	21:15	01:49
Barnard67a	DkNeb	Oph	17h 22m 30s	-21° 53.0'		16:17	21:16	02:14
Barnard71	DkNeb	Oph	17h 23m 02s	-24° 00.0'		16:25	21:16	02:07
NGC6357	Neb	Sco	17h 24m 43s	-34° 12.1'		17:07	21:18	01:29
IC4651	Open	Ara	17h 24m 52s	-49° 56.5'	6.9	18:54	21:18	23:42
Abell41	P Neb	Ser	17h 29m 04s	-15° 13.3'	13.9	16:03	21:22	02:41
Abell42	P Neb	Oph	17h 31m 31s	-08° 19.1'	14.6	15:45	21:25	03:04
Barnard78	DkNeb	Oph	17h 32m 00s	-25° 35.0'		16:40	21:25	02:11
NGC6388	Globular	Sco	17h 36m 17s	-44° 44.1'	6.9	18:18	21:29	00:41
M14	Globular	Oph	17h 37m 36s	-03° 14.7'	9.5	15:37	21:31	03:24
Barnard276	DkNeb	Oph	17h 39m 39s	-19° 49.0'		16:28	21:33	02:38
NGC6405	Open	Sco	17h 40m 20s	-32° 15.2'	4.2	17:14	21:33	01:53
M6	Open	Sco	17h 40m 20s	-32° 15.2'	4.5	17:14	21:33	01:53
NGC6397	Globular	Ara	17h 40m 42s	-53° 40.0'	5.6	20:04	21:34	23:03
NGC6426	Globular	Oph	17h 44m 55s	+03° 10.1'	11.2	15:26	21:38	03:50
Barnard83a	DkNeb	Sgr	17h 45m 18s	-20° 00.0'		16:34	21:38	02:43
IC4665	Open	Oph	17h 46m 30s	+05° 39.0'	4.2	15:21	21:40	03:58
NGC6445	P Neb	Sgr	17h 49m 15s	-20° 00.6'	13.0	16:38	21:42	02:47
NGC6503	Galaxy	Dra	17h 49m 27s	+70° 08.6'	10.2	Circum	21:43	Circum
NGC6441	Globular	Sco	17h 50m 13s	-37° 03.0'	7.4	17:46	21:43	01:41
Barnard283	DkNeb	Sco	17h 51m 00s	-33° 52.0'		17:32	21:44	01:57
Barnard285	DkNeb	Ser	17h 51m 32s	-12° 52.0'		16:18	21:45	03:11
M7	Open	Sco	17h 53m 51s	-34° 47.6'	3.5	17:39	21:47	01:55
IC4670	Neb	Sgr	17h 55m 07s	-21° 44.6'		16:49	21:48	02:47
NGC6501	Galaxy	Her	17h 56m 04s	+18° 22.3'	12.3	14:53	21:49	04:46
M23	Open	Sgr	17h 57m 04s	-18° 59.1'	6.0	16:42	21:50	02:58
NGC6543	P Neb	Dra	17h 58m 36s	+66° 38.0'	8.1	Circum	21:52	Circum
NGC6496	Globular	Sco	17h 59m 04s	-44° 16.0'	9.2	18:38	21:52	01:07
Barnard291	DkNeb	Sgr	17h 59m 43s	-33° 53.0'		17:40	21:53	02:05
Barnard292	DkNeb	Sgr	18h 00m 34s	-33° 20.0'		17:39	21:54	02:09
Barnard293	DkNeb	Sgr	18h 01m 12s	-35° 20.0'		17:48	21:54	02:00
M20	Open+D Neb	Sgr	18h 02m 42s	-22° 58.2'	5.0	17:01	21:56	02:50
M8	Open+D Neb	Sgr	18h 03m 41s	-24° 22.7'	5.0	17:07	21:57	02:47
Barnard295	DkNeb	Sgr	18h 04m 05s	-31° 09.0'		17:33	21:57	02:21

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ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M21	Open	Sgr	18h 04m 13s	-22° 29.3'	7.0	17:01	21:57	02:54
NGC6530	Open	Sgr	18h 04m 31s	-24° 21.5'	4.6	17:08	21:58	02:47
NGC6528	Globular	Sgr	18h 04m 50s	-30° 03.3'	9.5	17:29	21:58	02:27
IC4684	Neb	Sgr	18h 09m 08s	-23° 26.1'		17:09	22:02	02:55
IC4685	Neb	Sgr	18h 09m 18s	-23° 59.2'		17:11	22:02	02:53
Barnard303	DkNeb	Sgr	18h 09m 28s	-23° 59.0'		17:11	22:03	02:54
IC1274	Neb	Sgr	18h 09m 51s	-23° 38.8'		17:11	22:03	02:55
IC1275	Neb	Sgr	18h 10m 07s	-23° 45.7'		17:11	22:03	02:55
NGC6572	P Neb	Oph	18h 12m 06s	+06° 51.2'	9.0	15:43	22:05	04:27
NGC6567	P Neb	Sgr	18h 13m 45s	-19° 04.5'	12.0	16:59	22:07	03:14
IC4701	Neb	Sgr	18h 16m 36s	-16° 38.0'		16:55	22:10	03:25
Barnard93	DkNeb	Sgr	18h 16m 53s	-18° 03.0'		16:59	22:10	03:21
IC1284	Neb	Sgr	18h 17m 39s	-19° 40.3'		17:05	22:11	03:16
M24	Open	Sgr	18h 18m 26s	-18° 24.3'	4.5	17:02	22:12	03:21
M16	Open+D Neb	Ser	18h 18m 48s	-13° 48.3'	6.5	16:48	22:12	03:35
Barnard308	DkNeb	Sgr	18h 19m 08s	-22° 14.0'		17:15	22:12	03:09
M18	Open	Sgr	18h 19m 58s	-17° 06.1'	8.0	16:59	22:13	03:27
M17	Open+D Neb	Sgr	18h 20m 47s	-16° 10.3'	7.0	16:57	22:14	03:30
HR6923	Mult	Dra	18h 23m 54s	+58° 48.0'	5.0	Circum	22:17	Circum
NGC6626	Globular	Sgr	18h 24m 33s	-24° 52.1'	6.9	17:30	22:18	03:06
M28	Globular	Sgr	18h 24m 33s	-24° 52.1'	8.5	17:30	22:18	03:06
Barnard95	DkNeb	Sct	18h 25m 35s	-11° 44.0'		16:49	22:19	03:48
Barnard97	DkNeb	Sct	18h 29m 05s	-09° 55.0'		16:47	22:22	03:57
Abell44	P Neb	Sgr	18h 30m 11s	-16° 45.4'	12.6	17:09	22:23	03:38
NGC6637	Globular	Sgr	18h 31m 23s	-32° 20.8'	7.7	18:05	22:24	02:44
IC1287	Neb	Sct	18h 31m 26s	-10° 47.7'		16:52	22:25	03:57
M25	Open	Sgr	18h 31m 42s	-19° 07.0'	6.5	17:18	22:25	03:32
IC4725	Open	Sgr	18h 31m 48s	-19° 06.7'	4.6	17:18	22:25	03:32
NGC6642	Globular	Sgr	18h 31m 54s	-23° 28.5'	8.8	17:32	22:25	03:18
NGC6644	P Neb	Sgr	18h 32m 35s	-25° 07.7'	12.0	17:39	22:26	03:13
NGC6647	Open	Sgr	18h 32m 49s	-17° 13.6'	8.0	17:13	22:26	03:39
IC4732	P Neb	Sgr	18h 33m 55s	-22° 38.6'	13.0	17:31	22:27	03:23
M22	Globular	Sgr	18h 36m 24s	-23° 54.2'	6.5	17:38	22:29	03:21
NGC6656	Globular	Sgr	18h 36m 24s	-23° 54.2'	5.1	17:38	22:29	03:21
IC4756	Open	Ser	18h 38m 54s	+05° 27.0'	5.0	16:14	22:32	04:50
NGC6681	Globular	Sgr	18h 43m 12s	-32° 17.4'	8.1	18:17	22:36	02:56
NGC6694	Open	Sct	18h 45m 18s	-09° 23.0'	8.0	17:02	22:38	04:15
IC4776	P Neb	Sgr	18h 45m 51s	-33° 20.5'	12.0	18:24	22:39	02:54
Barnard318	DkNeb	Sct	18h 49m 42s	-06° 23.0'		16:58	22:43	04:28

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ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M11	Open	Sct	18h 51m 05s	-06° 16.1'	7.0	16:59	22:44	04:29
M57	P Neb	Lyr	18h 53m 35s	+33° 01.7'	9.5	14:55	22:47	06:38
Barnard117	DkNeb	Sct	18h 53m 43s	-07° 24.0'		17:05	22:47	04:29
NGC6715	Globular	Sgr	18h 55m 03s	-30° 28.7'	7.7	18:21	22:48	03:15
NGC6717	Globular	Sgr	18h 55m 06s	-22° 42.0'	9.2	17:53	22:48	03:44
Barnard122	DkNeb	Sct	18h 56m 48s	-04° 45.0'		17:00	22:50	04:39
NGC6723	Globular	Sgr	18h 59m 33s	-36° 37.9'	7.3	18:53	22:53	02:52
Barnard128	DkNeb	Aql	19h 01m 40s	-04° 34.0'		17:05	22:55	04:45
NGC6729	BrNeb	CrA	19h 01m 54s	-36° 57.0'		18:57	22:55	02:53
Barnard326	DkNeb	Aql	19h 03m 00s	-00° 23.0'		16:54	22:56	04:58
NGC6749	Globular	Aql	19h 05m 15s	+01° 54.0'	11.1	16:50	22:58	05:06
Barnard329	DkNeb	Aql	19h 06m 59s	+03° 11.0'		16:48	23:00	05:12
NGC6760	Globular	Aql	19h 11m 12s	+01° 01.8'	9.1	16:59	23:04	05:10
Abell56	P Neb	Aql	19h 13m 07s	+02° 52.8'	12.4	16:55	23:06	05:17
NGC6772	P Neb	Aql	19h 14m 36s	-02° 42.4'	14.0	17:12	23:08	05:03
Barnard138	DkNeb	Aql	19h 16m 00s	+00° 13.0'		17:06	23:09	05:12
M56	Globular	Lyr	19h 16m 36s	+30° 11.0'	9.5	15:31	23:10	06:49
NGC6778	P Neb	Aql	19h 18m 25s	-01° 35.7'	13.0	17:13	23:11	05:10
Abell61	P Neb	Cyg	19h 19m 10s	+46° 14.5'	13.0	14:00	23:12	08:24
Barnard140	DkNeb	Aql	19h 19m 49s	+05° 13.0'		16:56	23:13	05:30
NGC6790	P Neb	Aql	19h 22m 57s	+01° 30.8'	10.0	17:09	23:16	05:23
NGC6803	P Neb	Aql	19h 31m 16s	+10° 03.3'	11.0	16:53	23:24	05:56
NGC6804	P Neb	Aql	19h 31m 35s	+09° 13.5'	12.0	16:56	23:25	05:53
Abell62	P Neb	Aql	19h 33m 18s	+10° 37.0'	13.0	16:54	23:26	05:59
NGC6807	P Neb	Aql	19h 34m 34s	+05° 41.0'	14.0	17:09	23:28	05:46
NGC6809	Globular	Sgr	19h 40m 00s	-30° 57.7'	7.0	19:08	23:33	03:58
M55	Globular	Sgr	19h 40m 00s	-30° 57.7'	7.0	19:08	23:33	03:58
NGC6813	Neb	Vul	19h 40m 22s	+27° 18.5'		16:06	23:33	07:01
NGC6820	Neb	Vul	19h 42m 28s	+23° 05.2'		16:23	23:36	06:48
Barnard338	DkNeb	Aql	19h 43m 02s	+07° 27.0'		17:12	23:36	06:00
NGC6818	P Neb	Sgr	19h 43m 58s	-14° 09.1'	10.0	18:15	23:37	05:00
NGC6826	P Neb	Cyg	19h 44m 48s	+50° 31.0'	8.8	13:39	23:38	09:36
Abell65	P Neb	Sgr	19h 46m 34s	-23° 08.2'	13.1	18:46	23:40	04:34
NGC6838	Globular	Sge	19h 53m 46s	+18° 46.6'	8.3	16:49	23:47	06:45
NGC6842	P Neb	Vul	19h 55m 02s	+29° 17.3'	14.0	16:13	23:48	07:23
HR7619	Mult	Cyg	19h 55m 38s	+52° 26.3'	4.9	13:19	23:49	10:19
Abell66	P Neb	Sgr	19h 57m 32s	-21° 36.6'	14.1	18:51	23:51	04:50
M27	P Neb	Vul	19h 59m 36s	+22° 43.2'	7.5	16:42	23:53	07:04
M75	Globular	Sgr	20h 06m 05s	-21° 55.3'	9.5	19:01	23:59	04:57

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