



Desert Sky Observer

Volume 39

Antelope Valley Astronomy Club Newsletter

September 2019

Up-Coming Events

September 13: Club Meeting*

September 21: [Prime Desert Moon Walk](#)

September 28: Dark Sky Star Party

* Monthly meetings are held at the S.A.G.E. Planetarium in Palmdale, the second Friday of each month. 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*

President

Darrell Bennett

On August 3 we had our summer picnic and public star party at Brite Lake in Tehachapi. About 25 members and guests showed up, Matt cooked the hamburgers and hot dogs with a little help from Ann. There was a lot of food and drinks plus some side dishes. And all the time we had the silent auction going on, and there was some great stuff that was donated. So if you didn't come you missed out on some great deals.

Matt and I would like to especially thank Frank Moore for getting the site for the picnic and for putting up the cones and signs. We would also like to thank Rose Moore and Rod Girard for doing the silent auction, and thanks to all the club members who donated to it. After the picnic we all headed over to the parking lot to get ready for the night's star party. There were some high clouds at first but not enough to block out the night sky. As it got darker the public started to come in, there was a nice crescent moon at first, then Jupiter and Saturn came out. I am sure Frank had his scope on his favorite planetary nebula M57, the Ring nebula. As it got later the clouds started to come in, and about 10:30 we were totally wash out. A lot of us pack up and headed for home for the night.

At our last club meeting we had Dr. Aaron Barth from UC Irvin give his presentation on black holes. On Saturday August 17 I went to the Mt. Wilson Talks and Telescopes night. Tim Thompson, who came to the club meeting on June 14 and talked about black holes and was our tour guide on our Mt. Wilson trip for viewing on the 60 inch telescope, gave a talk on Stellar Evolution and Origin of the Elements.

Mt. Wilson has only 3 more talks left this year, September 21, October 19, and November 9, you can find out more at www.MtWilson.edu/lectures. The cost is 25.00 for the lecture and a look thru the 100 inch telescope. On August 24 we had our monthly public star party at Prime Desert Woodlands moon walk. Only 84 people show up for the walk, but I think most of them were at the fair that night. So I would like to thank Phil, Rod and Ellen for bringing out their telescopes to share with the public. Our next dark sky party will be at Mt. Pinos on August 30 and 31, Matt and Rod will be up there on Friday. The next club meeting will be on Friday September 13.

Secretary

Rose Moore

Many thanks to everyone who came out to the summer picnic! Thank you to the cooks and the cleaners! Some observing was done but it was clouded over by mid-late evening.

We have a club meeting on Friday September 13th at 7pm. Rod Girard will continue with his talk on telescopes and observing. October 11th meeting is our annual Business Meeting, please come out to participate!!

Saturday September 21st at 7:30pm is a Prime Desert Woodland Preserve Moon Walk with Jeremy. We'll need members with telescopes for public viewing before and after the walk. Set up time approximately 1hr prior to event. Weather permitting.

On October 5th, Saturday, we have 2 events! We have a Lunar Club Observing event at member Judy Fuentes' home. Please bring out your scopes and enjoy some Lunar observing with Matt and other members! Weather permitting. Our other event is also on Saturday, in Tehachapi at the Tehachapi Municipal Airport, for a public star party. More info coming on both these events.

Our Christmas Party is on Saturday Dec. 7th at 6 pm at Gino's Restaurant in the Lancaster Marketplace. Price for members and their guests will be \$25.00 per person. More info and signups coming.

Rose

Space Place

Spot the Stars of the Summer Triangle

David Prosper

September skies are a showcase for the Summer Triangle, its three stars gleaming directly overhead after sunset. The equinox ushers in the official change of seasons on September 23. Jupiter and Saturn maintain their vigil over the southern horizon, but set earlier each evening, while the terrestrial planets remain hidden.

The bright three points of the Summer Triangle are among the first stars you can see after sunset: Deneb, Vega, and Altair. The Summer Triangle is called an asterism, as it's not an official constellation, but still a striking group of stars. However, the Triangle is the key to spotting multiple constellations! Its three stars are themselves the brightest in their respective constellations: Deneb, in Cygnus the Swan; Vega, in Lyra the Harp; and Altair, in Aquila the Eagle. That alone would be impressive, but the Summer Triangle also contains two small constellations inside its lines, Vulpecula the Fox and Sagitta the Arrow. There is even another small constellation just outside its borders: diminutive Delphinus the Dolphin. The Summer Triangle is huge!

The equinox occurs on September 23, officially ushering in autumn for folks in the Northern Hemisphere and bringing with it longer nights and shorter days, a change many stargazers appreciate. Right before sunrise on the 23rd, look for Deneb - the Summer Triangle's last visible point - flickering right above the western horizon, almost as if saying goodbye to summer.

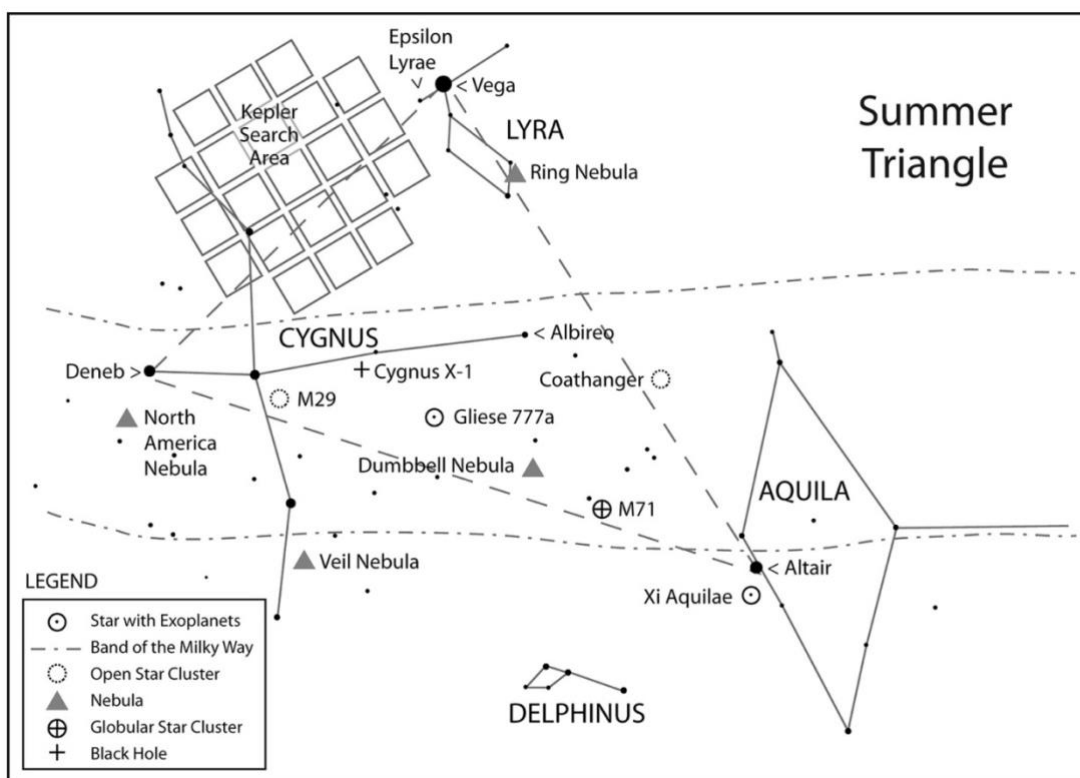
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The Summer Triangle region is home to many important astronomical discoveries. Cygnus X-1, the first confirmed black hole, was initially detected here by x-ray equipment on board a sounding rocket launched in 1964. NASA's Kepler Mission, which revolutionized our understanding of exoplanets, discovered thousands of planet candidates within its initial field of view in Cygnus. The Dumbbell Nebula (M27), the first planetary nebula discovered, was spotted by Charles Messier in the diminutive constellation Vulpecula way back in 1764!

Planet watchers can easily find Jupiter and Saturn shining in the south after sunset, with Jupiter to the right and brighter than Saturn. At the beginning of September, Jupiter sets shortly after midnight, with Saturn following a couple of hours later, around 2:00am. By month's end the gas giant duo are setting noticeably earlier: Jupiter sets right before 10:30pm, with Saturn following just after midnight. Thankfully for planet watchers, earlier fall sunsets help these giant worlds remain in view for a bit longer. The terrestrial planets, Mars, Venus, and Mercury, remain hidden in the Sun's glare for the entire month.

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Caption: Once you spot the Summer Triangle, you can explore the cosmic treasures found in this busy region of the Milky Way. Make sure to “Take a Trip Around the Triangle“ before it sets this fall! Find the full handout at bit.ly/TriangleTrip

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.org to find local clubs, events, and more!

News Headlines

Hawaii Extends Thirty Meter Telescope Permit Amid Protests

In a move intended to de-escalate a standoff between scientists and native Hawaiians blocking the construction of a massive telescope on a mountaintop they believe to be sacred land, Gov. David Ige on Tuesday night rescinded an emergency proclamation that was issued to help remove demonstrators.

<https://n.pr/2zcWpqz>

NASA Gets a Rare Look at a Rocky Exoplanet's Surface

A new study using data from NASA's Spitzer Space Telescope provides a rare glimpse of conditions on the surface of a rocky planet orbiting a star beyond the Sun. The study, published today in the journal Nature, shows that the planet's surface may resemble those of Earth's Moon or Mercury: The planet likely has little to no atmosphere and could be covered in the same cooled volcanic material found in the dark areas of the Moon's surface, called mare.

<https://go.nasa.gov/2ZkdLAe>

MSFC WINS LUNAR LANDER PROGRAM DESPITE OBJECTIONS FROM JSC CONGRESSIONAL SUPPORTERS

NASA's Marshall Space Flight Center will be in charge of developing landers to put humans back on the Moon despite objections from key members of Congress who wanted it assigned to Johnson Space Center (JSC) instead. Marshall is in Alabama; JSC is in Texas. The clash is largely between politicians from those two states who want the jobs and prestige for their constituents.

<https://bit.ly/2Zh0bxv>

Our Galaxy's Black Hole Suddenly Lit Up and Nobody Knows Why

The supermassive black hole that lives at the center of our galaxy has been mysteriously sparkling as of late, and nobody knows the reason. This dark behemoth, known as Sagittarius A* (Sgr A*), is four million times as massive as the Sun. Though no light escapes its boundaries, astronomers can observe the hole's interactions with bright stars or dust clouds that surround it. On the night of May 13, 2019, UCLA astronomer Tuan Do and his colleagues were watching Sgr A* using the Keck Telescope on the summit of Mauna Kea in Hawai'i. In a period of just two hours, they witnessed the black hole become 75 times brighter in the near-infrared band of the light spectrum.

<https://bit.ly/2NkMlnz>

September Sky Data

First Qtr Sep 5 Full Sep 13 Last Qtr Sep 21 New Sep 28



Planet Summary

Mercury passes behind the Sun (Superior Conjunction) on the night of September 3rd/4th so will not be visible this month.

Venus went through superior conjunction on the 14th August. By month's end it will set in the west south-west 30 minutes after sunset but will be very difficult to see due to the fact that the ecliptic is at a shallow angle to the horizon and so Venus will have a very low elevation.

Mars which passes behind the Sun on September 2nd, lies too close to the Sun to be visible. We will have to wait until the end of October to spot it in the pre-dawn sky at the start of its next apparition.

Jupiter can be seen in the south as darkness falls. As the month progresses, its angular size drops from 39 to 36 arc seconds. Jupiter ended its retrograde motion on the 11th of August and so is now moving away from Antares in Scorpius initially lying some 7 degrees up and to its left. Sadly it is heading towards the southernmost part of the ecliptic so, as it appears in the twilight, it will only have an elevation of ~13 degrees.

Saturn crosses the meridian, so is highest in the sky, at around 9pm as September begins. Then, its disk is ~17.6 arc seconds across and its rings - which are still nicely tilted from the line of sight - spanning some 41 arc seconds across. By month's end it will be best seen at around 8 pm when lying just west of south. Sadly, now in Sagittarius and lying on the south-western side of the milky way, it is at the lowest point of the ecliptic and will only reach an elevation of ~14 degrees.

There are no major **meteor-showers** in September, but this is generally a good time of the year for seeing sporadic meteors, which may appear at any time, in any part of the sky.

Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
9/1/2019	08:57	21:18	06:27	19:18
9/5/2019	13:22	23:53	06:29	19:13
9/10/2019	17:35	03:14	06:33	19:06
9/15/2019	20:12	07:50	06:36	18:59
9/20/2019	23:03	12:35	06:40	18:52
9/25/2019	02:57	17:08	06:43	18:45
9/30/2019	08:52	20:23	06:47	18:38

Planet Data

	Sep 1			
	Rise	Transit	Set	Mag
Mercury	06:15	12:47	19:20	-1.5
Venus	06:51	13:15	19:39	-3.4
Mars	06:29	12:57	19:25	2.0
Jupiter	14:09	19:08	00:07	-1.8
Saturn	16:16	21:14	02:12	1.4

	Sep 15			
	Rise	Transit	Set	Mag
Mercury	07:23	13:26	19:29	-0.7
Venus	07:19	13:24	19:29	-3.4
Mars	06:16	12:35	18:53	2.0
Jupiter	13:20	18:18	23:16	-1.7
Saturn	15:20	20:17	01:15	1.5

	Sep 30			
	Rise	Transit	Set	Mag
Mercury	08:20	13:53	19:26	-0.1
Venus	07:48	13:33	19:17	-3.4
Mars	06:03	12:11	18:19	2.0
Jupiter	12:29	17:26	22:24	-1.6
Saturn	14:21	19:19	00:17	1.5

Planet, Sun, and Moon data calculated for local time at Lancaster, CA

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Star Party. The list is sorted by the transit time of the object.

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M26	Open	Sct	18h 45m 18s	-09°23'00"	9.5	15:53	21:30	03:07
NGC6713	Gal	Lyr	18h 50m 44s	+33°57'36"	14.0	13:44	21:36	05:28
NGC6704	Open	Sct	18h 50m 45s	-05°12'18"	9.2	15:47	21:36	03:24
NGC6712	Glob	Sct	18h 53m 04s	-08°42'19"	8.2	15:59	21:38	03:17
M57	P Neb	Lyr	18h 53m 35s	+33°01'44"	9.5	13:51	21:39	05:27
M54	Glob	Sgr	18h 55m 03s	-30°28'47"	8.5	17:10	21:40	02:10
NGC6723	Glob	Sgr	18h 59m 33s	-36°37'54"	7.3	17:41	21:45	01:48
NGC6726	Neb	CrA	19h 01m 39s	-36°53'30"		17:45	21:47	01:49
NGC6729	Neb	CrA	19h 01m 55s	-36°57'30"		17:45	21:47	01:49
NGC6741	P Neb	Aql	19h 02m 37s	-00°26'57"	11.0	15:46	21:48	03:49
NGC6749	Glob	Aql	19h 05m 15s	+01°54'02"	11.1	15:42	21:50	03:58
NGC6751	P Neb	Aql	19h 05m 56s	-05°59'31"	13.0	16:04	21:51	03:37
NGC6760	Glob	Aql	19h 11m 12s	+01°01'50"	9.1	15:51	21:56	04:02
NGC6772	P Neb	Aql	19h 14m 36s	-02°42'24"	14.0	16:04	22:00	03:55
M56	Glob	Lyr	19h 16m 36s	+30°11'02"	9.5	14:26	22:02	05:38
NGC6778	P Neb	Aql	19h 18m 25s	-01°35'48"	13.0	16:05	22:03	04:02
NGC6781	P Neb	Aql	19h 18m 28s	+06°32'20"	12.0	15:43	22:03	04:24
NGC6791	Open	Lyr	19h 20m 53s	+37°46'18"	9.5	13:55	22:06	06:16
NGC6790	P Neb	Aql	19h 22m 57s	+01°30'48"	10.0	16:01	22:08	04:15
NGC6802	Open	Vul	19h 30m 35s	+20°15'42"	8.8	15:15	22:16	05:16
NGC6803	P Neb	Aql	19h 31m 16s	+10°03'23"	11.0	15:46	22:16	04:47
NGC6804	P Neb	Aql	19h 31m 35s	+09°13'31"	12.0	15:49	22:17	04:45
NGC6807	P Neb	Aql	19h 34m 34s	+05°41'03"	14.0	16:01	22:20	04:38
M55	Glob	Sgr	19h 40m 00s	-30°57'44"	7.0	17:57	22:25	02:53
NGC6813	Neb	Vul	19h 40m 22s	+27°18'34"		15:00	22:25	05:50
NGC6819	Open	Cyg	19h 41m 18s	+40°11'12"	7.3	14:03	22:26	06:50
NGC6820	Neb	Vul	19h 42m 28s	+23°05'17"		15:17	22:27	05:38
NGC6823	Open	Vul	19h 43m 09s	+23°18'00"	7.1	15:17	22:28	05:39
NGC6818	P Neb	Sgr	19h 43m 58s	-14°09'10"	10.0	17:05	22:29	03:53
NGC6826	P Neb	Cyg	19h 44m 48s	+50°31'30"	10.0	12:42	22:30	08:18
NGC6822	Gal	Sgr	19h 44m 57s	-14°48'10"	9.0	17:08	22:30	03:52
NGC6833	P Neb	Cyg	19h 49m 47s	+48°57'40"	14.0	13:04	22:35	08:05
NGC6834	Open	Cyg	19h 52m 12s	+29°24'30"	7.8	15:04	22:37	06:10
M71	Glob	Sge	19h 53m 46s	+18°46'42"	8.5	15:43	22:39	05:35
NGC6842	P Neb	Vul	19h 55m 02s	+29°17'20"	14.0	15:08	22:40	06:13
M27	P Neb	Vul	19h 59m 36s	+22°43'15"	7.5	15:36	22:45	05:53
NGC6851	Gal	Tel	20h 03m 34s	-48°17'05"	13.0	20:00	22:49	01:38
NGC6871	Open	Cyg	20h 05m 59s	+35°46'38"	5.2	14:51	22:51	06:51
M75	Glob	Sgr	20h 06m 05s	-21°55'19"	9.5	17:51	22:51	03:51

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC6884	P Neb	Cyg	20h 10m 24s	+46°27'39"	13.0	13:48	22:55	08:02
NGC6879	P Neb	Sge	20h 10m 27s	+16°55'22"	13.0	16:05	22:55	05:46
NGC6881	P Neb	Cyg	20h 10m 52s	+37°24'42"	14.0	14:47	22:56	07:04
NGC6883	Open	Cyg	20h 11m 20s	+35°49'55"	8.0	14:56	22:56	06:57
NGC6888	Neb	Cyg	20h 12m 06s	+38°21'17"		14:44	22:57	07:11
NGC6886	P Neb	Sge	20h 12m 43s	+19°59'22"	12.0	15:58	22:58	05:58
NGC6891	P Neb	Del	20h 15m 09s	+12°42'16"	12.0	16:22	23:00	05:38
NGC6894	P Neb	Cyg	20h 16m 24s	+30°33'55"	14.0	15:24	23:01	06:39
NGC6905	P Neb	Del	20h 22m 23s	+20°06'16"	12.0	16:07	23:07	06:08
M29	Open	Cyg	20h 23m 57s	+38°30'30"	9.0	14:55	23:09	07:23
NGC6914	Neb	Cyg	20h 24m 43s	+42°28'57"		14:32	23:10	07:47
NGC6939	Open	Cep	20h 31m 30s	+60°39'42"	7.8	Circum	23:17	Circum
NGC6934	Glob	Del	20h 34m 11s	+07°24'17"	8.9	16:56	23:19	05:42
NGC6925	Gal	Mic	20h 34m 21s	-31°58'50"	11.3	18:56	23:19	03:43
NGC6940	Open	Vul	20h 34m 26s	+28°17'00"	6.3	15:51	23:19	06:48
NGC6951	Gal	Cep	20h 37m 14s	+66°06'21"	11.1	Circum	23:22	Circum
NGC6960	Neb	Cyg	20h 45m 58s	+30°35'42"		15:53	23:31	07:09
NGC6967	Gal	Aqr	20h 47m 34s	+00°24'42"	14.0	17:29	23:33	05:36
M72	Glob	Aqr	20h 53m 28s	-12°32'14"	10.0	18:10	23:38	05:07
NGC6992	Neb	Cyg	20h 56m 19s	+31°44'36"		15:59	23:41	07:24
NGC6997	Open	Cyg	20h 56m 39s	+44°37'54"	10.0	14:49	23:42	08:34
NGC6995	Neb	Cyg	20h 57m 10s	+31°14'06"		16:02	23:42	07:22
M73	Open	Aqr	20h 58m 56s	-12°38'07"	9.0	18:16	23:44	05:12
NGC7000	Neb	Cyg	20h 59m 18s	+44°31'00"		14:53	23:44	08:36
NGC7008	P Neb	Cyg	21h 00m 33s	+54°32'35"	13.0	12:42	23:46	10:49
NGC7006	Glob	Del	21h 01m 29s	+16°11'15"	10.6	16:58	23:47	06:35
NGC7009	P Neb	Aqr	21h 04m 11s	-11°21'50"	8.0	18:18	23:49	05:21
NGC7026	P Neb	Cyg	21h 06m 19s	+47°51'08"	13.0	14:32	23:51	09:11
NGC7027	P Neb	Cyg	21h 07m 02s	+42°14'10"	10.0	15:16	23:52	08:28
NGC7031	Open	Cyg	21h 07m 12s	+50°52'30"	9.1	13:59	23:52	09:45
NGC7048	P Neb	Cyg	21h 14m 15s	+46°17'18"	11.0	14:54	23:59	09:05
NGC7041	Gal	Ind	21h 16m 32s	-48°21'49"	11.1	21:13	00:02	02:50
NGC7063	Open	Cyg	21h 24m 21s	+36°29'12"	7.0	16:05	00:09	08:13
NGC7076	Neb	Cep	21h 26m 24s	+62°53'33"		Circum	00:11	Circum
M15	Glob	Peg	21h 29m 58s	+12°10'02"	7.5	17:39	00:15	06:51
NGC7086	Open	Cyg	21h 30m 27s	+51°36'00"	8.4	14:13	00:15	10:18
M39	Open	Cyg	21h 31m 42s	+48°25'00"	5.5	14:52	00:17	09:42
M2	Glob	Aqr	21h 33m 27s	-00°49'23"	7.5	18:18	00:18	06:19
NGC7102	Gal	Peg	21h 39m 45s	+06°17'10"	13.1	18:05	00:25	06:45
M30	Glob	Cap	21h 40m 22s	-23°10'45"	8.5	19:30	00:25	05:21
NGC7128	Open	Cyg	21h 43m 57s	+53°42'54"	9.7	13:48	00:29	11:10
NGC7142	Open	Cep	21h 45m 09s	+65°46'30"	9.3	Circum	00:30	Circum
NGC7135	Gal	PsA	21h 49m 46s	-34°52'35"	11.7	20:23	00:35	04:46
NGC7145	Gal	Gru	21h 53m 20s	-47°52'56"	11.2	21:46	00:38	03:31
NGC7166	Gal	Gru	22h 00m 33s	-43°23'23"	11.8	21:20	00:46	04:12

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC7209	Open	Lac	22h 05m 07s	+46°29'00"	6.7	15:43	00:50	09:57
NGC7217	Gal	Peg	22h 07m 52s	+31°21'33"	10.2	17:12	00:53	08:34
NGC7226	Open	Cep	22h 10m 27s	+55°23'54"	9.6	Circum	00:55	Circum
NGC7235	Open	Cep	22h 12m 25s	+57°16'16"	7.7	Circum	00:57	Circum
NGC7245	Open	Lac	22h 15m 11s	+54°20'36"	9.2	14:03	01:00	11:57
NGC7296	Open	Lac	22h 28m 02s	+52°17'18"	10.0	15:00	01:13	11:26
NGC7314	Gal	PsA	22h 35m 46s	-26°03'01"	10.9	20:35	01:21	06:07
NGC7354	P Neb	Cep	22h 40m 20s	+61°17'07"	13.0	Circum	01:25	Circum
NGC7407	Gal	Peg	22h 53m 21s	+32°07'44"	14.0	17:54	01:38	09:22
NGC7412	Gal	Gru	22h 55m 46s	-42°38'30"	11.4	22:10	01:41	05:12
NGC7492	Glob	Aqr	23h 08m 27s	-15°36'41"	11.5	20:34	01:53	07:13
NGC7496	Gal	Gru	23h 09m 47s	-43°25'40"	11.1	22:29	01:55	05:21
NGC7510	Open	Cep	23h 11m 04s	+60°34'15"	7.9	Circum	01:56	Circum
NGC7538	Neb	Cep	23h 13m 38s	+61°30'42"		Circum	01:59	Circum
NGC7531	Gal	Gru	23h 14m 48s	-43°35'58"	11.3	22:35	02:00	05:24
NGC7582	Gal	Gru	23h 18m 23s	-42°22'14"	10.6	22:31	02:03	05:36
NGC7599	Gal	Gru	23h 19m 21s	-42°15'25"	11.4	22:31	02:04	05:37
NGC7635	Neb	Cas	23h 20m 45s	+61°12'42"		Circum	02:06	Circum
M52	Open	Cas	23h 24m 48s	+61°35'36"	8.0	Circum	02:10	Circum
NGC7662	P Neb	And	23h 25m 54s	+42°32'06"	9.0	17:33	02:11	10:49
NGC7679	Gal	Psc	23h 28m 47s	+03°30'41"	12.7	20:02	02:14	08:26
NGC7686	Open	And	23h 30m 07s	+49°08'00"	5.6	16:43	02:15	11:47
NGC7727	Gal	Aqr	23h 39m 54s	-12°17'35"	10.7	20:56	02:25	07:54
NGC7769	Gal	Peg	23h 51m 04s	+20°09'01"	12.1	19:36	02:36	09:37
NGC7788	Open	Cas	23h 56m 46s	+61°23'59"	9.0	Circum	02:42	Circum
NGC7790	Open	Cas	23h 58m 24s	+61°12'30"	8.5	Circum	02:43	Circum
NGC7822	Neb	Cep	00h 03m 36s	+67°09'00"		Circum	02:49	Circum
NGC40	P Neb	Cep	00h 13m 01s	+72°31'19"	11.0	Circum	02:58	Circum
NGC55	Gal	Scl	00h 15m 08s	-39°13'12"	8.0	23:10	03:00	06:50
NGC103	Open	Cas	00h 25m 16s	+61°19'24"	9.8	Circum	03:10	Circum
NGC112	Gal	And	00h 26m 49s	+31°42'12"	14.0	19:30	03:12	10:54
NGC134	Gal	Scl	00h 30m 22s	-33°14'44"	10.1	22:57	03:15	07:34
NGC185	Gal	Cas	00h 38m 58s	+48°20'14"	9.2	18:00	03:24	12:48
NGC210	Gal	Cet	00h 40m 35s	-13°52'24"	10.9	22:01	03:26	08:50
M31	Gal	And	00h 42m 44s	+41°16'08"	4.3	18:58	03:28	11:58
NGC246	P Neb	Cet	00h 47m 03s	-11°52'19"	8.0	22:02	03:32	09:02
NGC288	Glob	Scl	00h 52m 45s	-26°35'01"	8.1	22:54	03:38	08:22
NGC300	Gal	Scl	00h 54m 53s	-37°41'03"	9.0	23:42	03:40	07:38
NGC364	Gal	Cet	01h 04m 41s	-00°48'10"	14.0	21:49	03:50	09:50
NGC381	Open	Cas	01h 08m 19s	+61°35'00"	9.0	Circum	03:53	Circum
NGC428	Gal	Cet	01h 12m 56s	+00°58'55"	11.4	21:53	03:58	10:03
NGC443	Gal	Psc	01h 15m 08s	+33°22'38"	14.0	20:11	04:00	11:50
NGC457	Open	Cas	01h 19m 35s	+58°17'12"	6.4	Circum	04:05	Circum
NGC474	Gal	Psc	01h 20m 07s	+03°24'55"	11.1	21:53	04:05	10:17
NGC488	Gal	Psc	01h 21m 47s	+05°15'23"	10.3	21:50	04:07	10:24

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC524	Gal	Psc	01h 24m 48s	+09°32'21"	10.6	21:41	04:10	10:39
NGC559	Open	Cas	01h 29m 31s	+63°18'24"	9.5	Circum	04:15	Circum
M33	Gal	Tri	01h 33m 51s	+30°39'37"	6.2	20:41	04:19	11:57
NGC615	Gal	Cet	01h 35m 06s	-07°20'26"	11.5	22:37	04:20	10:03
NGC621	Gal	Tri	01h 36m 49s	+35°30'43"	14.0	20:23	04:22	12:21
M76	P Neb	Per	01h 42m 18s	+51°34'15"	12.0	18:25	04:27	14:30
NGC660	Gal	Psc	01h 43m 02s	+13°38'39"	10.8	21:47	04:28	11:09
NGC676	Gal	Psc	01h 48m 57s	+05°54'26"	11.0	22:15	04:34	10:53
NGC688	Gal	Tri	01h 50m 44s	+35°17'04"	13.0	20:38	04:36	12:34
NGC720	Gal	Cet	01h 53m 00s	-13°44'19"	10.2	23:13	04:38	10:03
NGC718	Gal	Psc	01h 53m 13s	+04°11'43"	11.7	22:24	04:38	10:52
NGC741	Gal	Psc	01h 56m 21s	+05°37'43"	11.3	22:23	04:41	10:59
NGC752	Open	And	01h 57m 41s	+37°47'06"	5.7	20:32	04:43	12:53
NGC772	Gal	Ari	01h 59m 20s	+19°00'29"	10.3	21:48	04:44	11:41
NGC864	Gal	Cet	02h 15m 28s	+06°00'07"	11.0	22:41	05:00	11:20
NGC869	Open	Per	02h 19m 00s	+57°07'42"	4.0	Circum	05:04	Circum
NGC895	Gal	Cet	02h 21m 36s	-05°31'17"	11.8	23:19	05:07	10:54
NGC884	Open	Per	02h 22m 18s	+57°08'12"	4.0	Circum	05:07	Circum
NGC896	Neb	Cas	02h 25m 28s	+62°01'09"		Circum	05:10	Circum
NGC931	Gal	Tri	02h 28m 15s	+31°18'40"	14.0	21:33	05:13	12:54
NGC955	Gal	Cet	02h 30m 33s	-01°06'30"	12.0	23:16	05:16	11:15
NGC949	Gal	Tri	02h 30m 49s	+37°08'11"	11.9	21:09	05:16	13:23
NGC956	Open	And	02h 32m 30s	+44°35'37"	9.0	20:25	05:18	14:10
NGC977	Gal	Cet	02h 33m 03s	-10°45'35"	13.0	23:45	05:18	10:51
NGC957	Open	Per	02h 33m 21s	+57°33'36"	7.6	Circum	05:18	Circum
NGC972	Gal	Ari	02h 34m 13s	+29°18'41"	11.3	21:47	05:19	12:52
NGC1017	Gal	Cet	02h 37m 50s	-11°00'39"	14.0	23:50	05:23	10:55
NGC1033	Gal	Cet	02h 40m 16s	-08°46'37"	14.0	23:46	05:25	11:04
NGC1052	Gal	Cet	02h 41m 05s	-08°15'20"	10.6	23:46	05:26	11:06
NGC1065	Gal	Cet	02h 42m 06s	-15°05'31"	14.0	00:06	05:27	10:48
NGC1027	Open	Cas	02h 42m 40s	+61°35'42"	6.7	Circum	05:28	Circum
NGC1092	Gal	Eri	02h 45m 30s	-17°32'33"	14.0	00:17	05:31	10:44
NGC1084	Gal	Eri	02h 46m 00s	-07°34'38"	10.6	23:49	05:31	11:13
NGC1097	Gal	For	02h 46m 19s	-30°16'29"	9.3	01:01	05:31	10:02
NGC1194	Gal	Cet	03h 03m 49s	-01°06'14"	14.0	23:49	05:49	11:49
NGC1171	Gal	Per	03h 03m 59s	+43°23'53"	13.0	21:05	05:49	14:33
NGC1232	Gal	Eri	03h 09m 45s	-20°34'46"	9.9	00:51	05:55	10:59
NGC1261	Glob	Hor	03h 12m 16s	-55°12'57"	8.4	04:46	05:57	07:09
NGC1333	Neb	Per	03h 29m 20s	+31°24'56"		22:33	06:14	13:55
NGC1350	Gal	For	03h 31m 08s	-33°37'43"	10.5	01:59	06:16	10:33
NGC1353	Gal	Eri	03h 32m 03s	-20°49'06"	11.4	01:14	06:17	11:21
NGC1380	Gal	For	03h 36m 28s	-34°58'33"	11.0	02:11	06:21	10:32
NGC1395	Gal	Eri	03h 38m 30s	-23°01'39"	11.0	01:27	06:24	11:20
NGC1427	Gal	For	03h 42m 19s	-35°23'35"	12.0	02:18	06:27	10:36
NGC1421	Gal	Eri	03h 42m 29s	-13°29'19"	11.4	01:02	06:28	11:53

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC1432	Neb	Tau	03h 45m 50s	+24°22'06"		23:16	06:31	13:45
NGC1435	Neb	Tau	03h 46m 10s	+23°45'54"		23:19	06:31	13:44
NGC1453	Gal	Eri	03h 46m 27s	-03°58'11"	11.6	00:39	06:31	12:23
M45	Open	Tau	03h 47m 30s	+24°07'00"	1.6	23:19	06:33	13:46
NGC1489	Gal	Eri	03h 57m 38s	-19°13'02"	14.0	01:34	06:43	11:51
NGC1491	Neb	Per	04h 03m 14s	+51°18'57"		20:50	06:48	16:47
NGC1499	Neb	Per	04h 03m 14s	+36°22'00"		22:45	06:48	14:52
NGC1512	Gal	Hor	04h 03m 54s	-43°20'58"	10.6	03:23	06:49	10:15
NGC1496	Open	Per	04h 04m 32s	+52°39'42"	10.0	20:30	06:50	17:09
NGC1501	P Neb	Cam	04h 06m 59s	+60°55'14"	13.0	Circum	06:52	Circum
NGC1502	Open	Cam	04h 07m 50s	+62°19'54"	5.7	Circum	06:53	Circum
NGC1514	P Neb	Tau	04h 09m 17s	+30°46'33"	10.0	23:16	06:54	14:33
NGC1535	P Neb	Eri	04h 14m 16s	-12°44'22"	10.0	01:32	06:59	12:27
NGC1528	Open	Per	04h 15m 23s	+51°12'54"	6.4	21:03	07:00	16:58
NGC1553	Gal	Dor	04h 16m 10s	-55°46'49"	9.5	06:07	07:01	07:55
NGC1566	Gal	Dor	04h 20m 01s	-54°56'17"	9.4	05:47	07:05	08:23
NGC1545	Open	Per	04h 20m 57s	+50°15'12"	6.2	21:21	07:06	16:51
NGC1579	Neb	Per	04h 30m 14s	+35°16'47"		23:17	07:15	15:13
NGC1582	Open	Per	04h 31m 53s	+43°49'00"	7.0	22:30	07:17	16:04
NGC1647	Open	Tau	04h 45m 55s	+19°06'54"	6.4	00:34	07:31	14:28
NGC1662	Open	Ori	04h 48m 27s	+10°56'12"	6.4	01:01	07:33	14:06
NGC1664	Open	Aur	04h 51m 06s	+43°40'30"	7.6	22:50	07:36	16:22
NGC1724	Open	Aur	05h 03m 32s	+49°29'30"	10.0	22:12	07:49	17:25
NGC1746	Open	Tau	05h 03m 50s	+23°46'12"	6.0	00:36	07:49	15:01
NGC1788	Neb	Ori	05h 06m 53s	-03°20'27"		01:58	07:52	13:46
NGC1778	Open	Aur	05h 08m 04s	+37°01'24"	7.7	23:47	07:53	16:00
NGC1817	Open	Tau	05h 12m 15s	+16°41'24"	7.7	01:08	07:57	14:47
NGC1851	Glob	Col	05h 14m 07s	-40°02'46"	7.3	04:13	07:59	11:45
NGC1857	Open	Aur	05h 20m 05s	+39°19'30"	7.0	23:46	08:05	16:24
NGC1893	Open	Aur	05h 22m 45s	+33°24'42"	7.5	00:18	08:08	15:57
M79	Glob	Lep	05h 24m 11s	-24°31'29"	8.5	03:18	08:09	13:01
M38	Open	Aur	05h 28m 40s	+35°50'54"	7.0	00:13	08:14	16:14
NGC1952	Neb	Tau	05h 34m 32s	+22°00'52"	8.4	01:13	08:20	15:26
NGC1973	Neb	Ori	05h 35m 05s	-04°43'55"		02:30	08:20	14:10
NGC1981	Open	Ori	05h 35m 09s	-04°25'54"	4.6	02:29	08:20	14:11
NGC1977	Neb	Ori	05h 35m 16s	-04°49'15"		02:31	08:20	14:10
M42	D Neb	Ori	05h 35m 16s	-05°23'25"	4.0	02:32	08:20	14:08
NGC1975	Neb	Ori	05h 35m 18s	-04°41'05"		02:30	08:20	14:10
NGC1980	Neb	Ori	05h 35m 25s	-05°54'54"		02:34	08:20	14:07
NGC1993	Gal	Lep	05h 35m 25s	-17°48'55"	14.0	03:08	08:20	13:33
M43	D Neb	Ori	05h 35m 31s	-05°16'03"	9.0	02:32	08:21	14:09
NGC1990	Neb	Ori	05h 36m 13s	-01°12'07"		02:22	08:21	14:21
M36	Open	Aur	05h 36m 18s	+34°08'24"	6.5	00:28	08:21	16:14
NGC1999	Neb	Ori	05h 36m 25s	-06°42'57"		02:37	08:21	14:06
NGC2023	Neb	Ori	05h 41m 38s	-02°15'33"		02:30	08:27	14:23

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC2024	Neb	Ori	05h 41m 42s	-01°51'24"		02:29	08:27	14:24
NGC2022	P Neb	Ori	05h 42m 06s	+09°05'13"	12.0	02:00	08:27	14:55
NGC2064	Neb	Ori	05h 46m 18s	+00°00'21"		02:29	08:31	14:34
NGC2067	Neb	Ori	05h 46m 31s	+00°07'54"		02:28	08:32	14:35
M78	D Neb	Ori	05h 46m 45s	+00°04'48"	8.0	02:29	08:32	14:35
NGC2090	Gal	Col	05h 47m 02s	-34°15'04"	12.0	04:18	08:32	12:46
NGC2071	Neb	Ori	05h 47m 07s	+00°17'39"		02:29	08:32	14:36
NGC2112	Open	Ori	05h 53m 45s	+00°24'36"	9.0	02:35	08:39	14:43

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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.

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- The A.V.A.C. Membership Manual.
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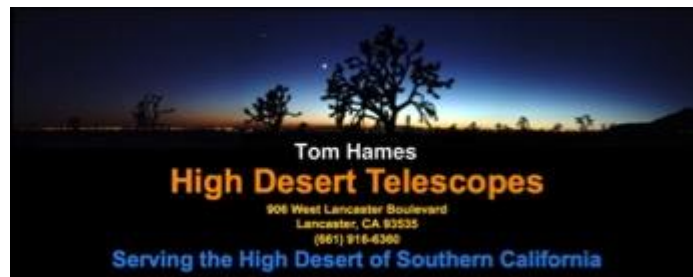


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