



Desert Sky Observer

Volume 39

Antelope Valley Astronomy Club Newsletter

March 2019

Up-Coming Events

March 3: Club Meeting*

March 9: [Lunar Club meeting](#)

March 23: [Prime Desert Moon Walk](#)

March 30: [Messier Marathon](#)

* 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

After a very rainy month and some clear nights, it has been too cold to go out and do some observing. Hopefully March will start to warm up a little. At our February meeting, we had a great art class held by our Tom Hames. First, we thought that we would have left over canvases, but we almost ran short. Everyone had a great a great time; we will try to do it again later this year.

On February 14th, Valentine's Day which was my wedding anniversary, my wife was in Texas so I got to go to the Local Group Astronomy Club meeting in Valencia. It was on a rainy Thursday night. They still had 17 members show up, some of them I already knew from the star party's we had done together. It was a nice meeting and they invited me out for some pizza after the meeting but I had to go home and feed the dogs.

On February 23rd, Jeremy and I gave a beginners class at the SAGE. About 18 people showed up for the class. When I went into the SAGE the sky was clear that was at 1:45, when I left at 4:30 the sky was full of clouds. I thought we would have another clear night out for PDW but it got cloudy. When I got to the PDW Frank was already there, only the second time he has ever gotten there before me. Frank, Rod, Phil and I were the only ones with scopes. We had 56 people attend for the walk. Frank had M42 in his scope and I had Mars in mine. I guess it was a little too cold for Frank because he was walking around in circles like a caged animal to stay warm. It was so cold for him that it was the fastest I have ever seen him put his scope away.

On March 30th we will be having our Messier Marathon at Saddleback Butte State Park. The club will provide hot dogs, hamburgers, water and soda. If you would like to bring a side dish to share, please do. I will have a signup sheet at the next meeting.

Secretary

We will be having a speaker for our March 8th meeting. I just found out from the NASA speaker bureau that a speaker will be coming for a presentation. I do not know the subject matter as yet, as I am waiting to hear back from the speaker. He is Michael Staab, Mission Operations Engineer at JPL. More information to come.

We have a Lunar Club meeting at Judy Fuentes' home on Saturday March 9th, starting at 6pm. Set up time is approximately 30-60 mins prior to event. Weather permitting! The Moon will be up at 6:00 pm and goes down at 8:48pm. This is why we are starting a bit early. The moon will be about 8% illuminated, a waxing crescent. The Sun will be down at 5:55pm.

We have a Prime Desert Moon Walk on Saturday March 23 at 7:30pm. We need members with telescopes for this event. Set up time is approximately 1 hour prior to event. Weather permitting.

Coming up on Saturday March 30th is our annual Messier Marathon at Saddleback State Park. The Sun goes down at 7:12pm. The Moon will be down at the start of the event but will rise at 3:42am on Sunday morning. More information coming as to start time, etc. Come on out even if you don't have a scope, as members are willing to share viewing these wonderful dark sky objects!

We will be doing a trip to the Mt. Wilson 60 inch telescope. I will be reserving a date come March 1st. We will start a sign up sheet at our March meeting. This trip is limited to 25 members. Kids must be 12 and over. The cost will be \$30-\$35 per person, depending on the charge for the added facilities tour prior to observing. We'll know this by the March meeting. Payment will be due by 6 weeks prior to the event as we have to pay in advance. More info coming.

On Saturday April 6th we have a Prime Desert Moon Walk at 8pm. Weather permitting.

Our speaker for our April meeting is Dr. Ralph Bird, a post-doctoral researcher at UCLA. He studies galactic gamma ray sources and searches for gamma-ray and optical emission associated with fast radio bursts. His presentation is 'Our Galaxy Through Gamma Ray Eyes: A View of the Extremes.'

See you there!

Space Place

Springtime Planet Party

David Prosper

March brings longer days for Northern Hemisphere observers, especially by the time of the equinox. Early risers are treated to the majority of the bright planets dancing in the morning skies, with the Moon passing between them at the beginning and end of the month.



Earth from orbit on the March equinox, as viewed by EUMETSAT. Notice how the terminator – the line between day and night - touches both the north and south poles. Additional information can be found at <http://bit.ly/earthequinox> Image credit: NASA/Robert Simmon

The vernal equinox occurs on March 20, marking the official beginning of spring for the Northern Hemisphere. Our Sun shines equally on the Northern and Southern Hemispheres during the moment of equinox, which is why the March and September equinoxes are the only times of the year when the Earth's north and south poles are simultaneously lit by sunlight. Exacting astronomers will note that the length of day and night on the equinox are not precisely equal; the date when they are closest to equal depends on your latitude, and may occur a few days earlier or later than the equinox itself. One complicating factor is that the Sun isn't a point light source, but a disc. Its edge is refracted by our atmosphere as it rises and sets, which adds several minutes of light to every day. The Sun doesn't neatly wink on and off at sunrise and sunset like a light bulb, and so there isn't a perfect split of day and night on the equinox - but it's very close!

Ruddy Mars still shines in the west after sunset. Mars scoots across the early evening skies from Aries towards Taurus and meets the sparkling Pleiades star cluster by month's end.

March opens with the morning planets of Jupiter, Saturn, and Venus spread out over the southeastern horizon before sunrise. A crescent Moon comes very close to Saturn on the 1st and occults the ringed planet during the daytime. Lucky observers may be able to spot Mercury by the end of the month. March 31 opens with a beautiful set of planets and a crescent Moon strung diagonally across the early morning sky. Start with bright Jupiter, almost due south shortly before dawn. Then slide down and east towards Saturn, prominent but not nearly as bright as Jupiter. Continue east to the Moon, and then towards the beacon that is Venus, its gleam piercing through the early morning light. End with a challenge: can you find elusive Mercury above the eastern horizon? Binoculars may be needed to spot the closest planet to the Sun as it will be low and obscured by dawn's encroaching glow. What a way to close out March!

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News Headlines

New Horizons Returns Its Sharpest Views of Ultima Thule

These new images of Ultima Thule – obtained by the telephoto Long-Range Reconnaissance Imager (LORRI) just 6½ minutes before New Horizons' closest approach to the object (officially named 2014 MU69) at 12:33 a.m. EST on Jan. 1 – offer a resolution of about 110 feet (33 meters) per pixel.

<http://pluto.jhuapl.edu/News-Center/News-Article.php?page=20190222>

InSight Is the Newest Mars Weather Service

No matter how cold your winter has been, it's probably not as chilly as Mars. Check for yourself: Starting today, the public can get a daily weather report from NASA's InSight lander.

This public tool includes stats on temperature, wind and air pressure recorded by InSight. Sunday's weather was typical for the lander's location during late northern winter: a high of 2 degrees Fahrenheit (-17 degrees Celsius) and low of -138 degrees Fahrenheit (-95 degrees Celsius), with a top wind speed of 37.8 mph (16.9 m/s) in a southwest direction.

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

Computer reset cancels orbit-raising burn on Israel's moon lander

A computer reset on the Israeli Beresheet lunar lander forced has the postponement of the mission's first engine firing to begin maneuvering closer to the moon, officials said Tuesday.

Mission managers said the robotic lander — seeking to become the first privately-funded spacecraft to reach another planetary body — automatically aborted an orbit-raising maneuver after its on-board computer reset unexpectedly. The engine firing was planned Monday evening, U.S. time.

<https://bit.ly/2Svr0Xm>

Tiny Neptune Moon Spotted by Hubble May Have Broken from Larger Moon

After several years of analysis, a team of planetary scientists using NASA's Hubble Space Telescope has at last come up with an explanation for a mysterious moon around Neptune that they discovered with Hubble in 2013.

The tiny moon, named Hippocamp, is unusually close to a much larger Neptunian moon called Proteus. Normally, a moon like Proteus should have gravitationally swept aside or swallowed the smaller moon while clearing out its orbital path

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

Have Dark Forces Been Messing With the Cosmos?

Axions? Phantom energy? Astrophysicists scramble to patch a hole in the universe, rewriting cosmic history in the process.

There was, you might say, a disturbance in the Force....

....So goes the strange-sounding story being promulgated by a handful of astronomers from Johns Hopkins University. In a bold and speculative leap into the past, the team has posited the existence of this field to explain an astronomical puzzle: the universe seems to be expanding faster than it should be.

<https://www.nytimes.com/2019/02/25/science/cosmos-hubble-dark-energy.html>

March Sky Data

New Mar 4 First Qtr Mar 10 Full Mar 17 Last Qtr Mar 25



Planet Summary

On the first of March, **Mercury** sets some one and a half hours after the Sun shining at magnitude +0.3. During the month, its angular size increases to 10.9 arc seconds but its brightness rapidly reduces and by March 6th, at magnitude 2, will become very difficult to spot in the twilight. Mercury passes between us and the Sun (inferior conjunction) on the 15th.

Venus begins March at a magnitude of -3.6. with its angular size reducing from 16 to 13 arc seconds during the month as it moves away from the Earth. At the same time, its phase increases from 72% to 81%. We have nearly come to the end of its morning apparition as it moves towards superior conjunction (behind the Sun) in August.

Mars, though fading from +1.4 to +1.6 magnitudes during the month, remains prominent in the south western sky after sunset. Its angular size falls from 5.3 arc seconds to 4.7 arc seconds during the month so one will not be able to spot any details on its salmon-pink surface.

Jupiter starts the month rising around 2 a.m. and brightens from magnitude -1.6 to -1.8 as the month progresses while its angular size increases slightly from 36.2 to 39.7 arc seconds. By the end of March, it will lie almost due south as the Sun rises but will only have an elevation of ~14 degrees so atmospheric dispersion will blur its image somewhat.

Saturn, shining with a magnitude of +1.7, rises two and a half hours before the Sun at the start of the month some 2 hours after Jupiter. Its disk is ~16 arc seconds across and its rings - which are still 24 degrees from the line of sight - spanning 35 arc seconds across. It will only have an elevation of ~10 degrees when due south before dawn in a month's time.

There are no major **meteor-showers** in March, but we may see a handful of meteors from the Virginid shower, which is usually active during March and April; they appear to radiate outwards from the constellation of Virgo.

Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
3/1/2019	03:22	13:37	06:23	17:48
3/5/2019	06:03	17:12	06:18	17:51
3/10/2019	09:35	22:52	07:11	18:55
3/15/2019	13:14	02:53	07:04	18:59
3/20/2019	18:57	07:01	06:58	19:03
3/25/2019	n/a	10:10	06:51	19:07
3/31/2019	04:27	15:10	06:43	19:11

Planet Data

Mar 1

	Rise	Transit	Set	Mag
Mercury	07:03	13:09	19:15	0.3
Venus	04:19	09:27	14:35	-3.6
Mars	09:03	15:49	22:35	1.4
Jupiter	01:45	06:43	11:41	-1.6
Saturn	03:35	08:35	13:35	1.7

Mar 15

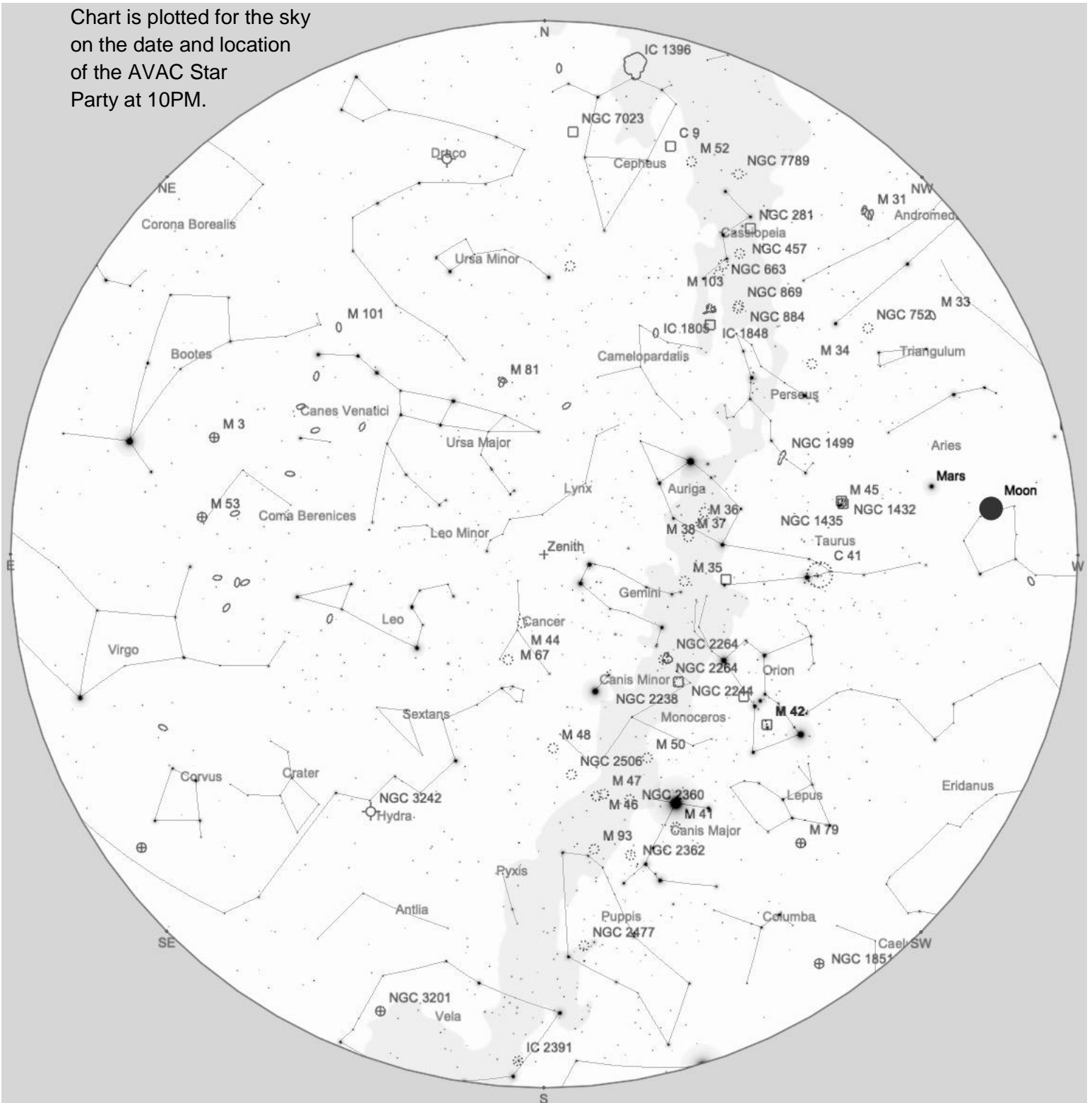
	Rise	Transit	Set	Mag
Mercury	06:49	12:53	18:57	2.9
Venus	05:22	10:40	15:59	-3.5
Mars	09:36	16:31	23:26	1.5
Jupiter	01:56	06:54	11:51	-1.7
Saturn	03:44	08:44	13:45	1.6

Mar 31

	Rise	Transit	Set	Mag
Mercury	05:43	11:31	17:18	1.0
Venus	05:18	10:53	16:27	-3.4
Mars	09:08	16:12	23:15	1.6
Jupiter	00:57	05:54	10:52	-1.8
Saturn	02:44	07:45	12:46	1.6

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

Chart is plotted for the sky on the date and location of the AVAC Star Party at 10PM.



To use the chart, go outside within an hour or so of the time listed and hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge.

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Star Party. Since this month is our Messier Marathon the list is the observing order for the night. You can download the order in Excel format at http://www.avastronomyclub.org/docs/marathon_order.xls or Adobe PDF at http://www.avastronomyclub.org/docs/marathon_order.pdf

Order	Time	M #	NGC	Con	R.A.	Dec	Mag	Type	Comments
1		M 77	1068	CET	2h 43m	0° 1'	8.8	SG	
2		M 74	628	PSC	1h 37m	15° 47'	9.2	S	
3		M 33	598	TRI	1h 34m	30° 39'	5.7	SG	Pinwheel galaxy
4		M 31	224	AND	0h 43m	41° 16'	3.4	SG	Andromeda galaxy
5		M 32	221	AND	0h 43m	40° 52'	8.2	EG	
6		M 110	205	AND	0h 40m	41° 41'	8.0	EG	
7		M 52	7654	CAS	23h 24m	61° 35'	6.9	OC	
8		M 103	581	CAS	1h 33m	60° 42'	7.4	OC	
9		M 76	650	PER	1h 42m	51° 34'	11.5	PN	The Little Dumbell
11		M 34	1039	PER	2h 42m	42° 47'	5.2	OC	
11		M 45		TAU	3h 47m	24° 7'	1.2	OC	Pleiades
12		M 79	1904	LEP	5h 24m	-24° 33'	8.0	GC	
13		M 42	1976	ORI	5h 35m	-5° 27'	4.0	DN	Great Orion nebula
14		M 43	1982	ORI	5h 35m	-5° 16'	9.0	DN	
15		M 78	2068	ORI	5h 47m	0° 3'	8.0	DN	
16		M 1	1952	TAU	5h 34m	22° 1'	8.4	PN	Crab nebula
17		M 35	2168	GEM	6h 09m	24° 20'	5.1	OC	
18		M 37	2099	AUR	5h 52m	32° 33'	5.6	OC	
19		M 36	1960	AUR	5h 36m	34° 8'	6.0	OC	
20		M 38	1912	AUR	5h 29m	35° 50'	6.4	OC	
21		M 41	2287	CMA	6h 47m	-20° 44'	4.5	OC	
22		M 93	2447	PUP	7h 45m	-23° 52'	6.2	OC	
23		M 47	2422	PUP	7h 37m	-14° 30'	4.4	OC	
24		M 46	2437	PUP	7h 42m	-14° 49'	6.1	OC	
25		M 50	2323	MON	7h 03m	-8° 20'	5.9	OC	
26		M 48	2548	HYA	8h 14m	-5° 48'	5.8	OC	
27		M 44	2632	CNC	8h 40m	19° 59'	3.1	OC	Beehive Cluster
28		M 67	2682	CNC	8h 50m	11° 49'	6.9	OC	
29		M 95	3351	LEO	10h 44m	11° 42'	9.7	SG	
30		M 96	3368	LEO	10h 47m	11° 49'	9.2	SG	
31		M 105	3379	LEO	10h 48m	12° 35'	9.3	EG	
32		M 65	3623	LEO	11h 19m	13° 5'	9.3	SG	Leo's triplet
33		M 66	3627	LEO	11h 20m	12° 59'	9.0	SG	Leo's triplet
34		M 81	3031	UMA	9h 56m	69° 4'	6.8	SG	Bodes Galaxy
35		M 82	3034	UMA	9h 56m	69° 41'	8.4	IG	Cigar Galaxy
36		M 97	3587	UMA	11h 15m	55° 1'	11.2	PN	Owl Nebula
37		M 108	3556	UMA	11h 12m	55° 40'	10.0	SG	

Order	Time	M #	NGC	Con	R.A.	Dec	Mag	Type	Comments
38		M 109	3992	UMA	11h 58m	53° 23'	9.8	SG	
39		M 40		UMA	12h 22m	58° 5'	8.0	dbl	
40		M 106	4258	CVN	12h 19m	47° 18'	8.3	SG	
41		M 94	4736	CVN	12h 51m	41° 7'	8.1	SG	
42		M 63	5055	CVN	13h 16m	42° 2'	8.6	SG	Sunflower galaxy
43		M 51	5194	CVN	13h 30m	47° 12'	8.1	SG	Whirlpool galaxy
44		M 101	5457	UMA	14h 03m	54° 21'	7.7	SG	
45		M 102	5457	UMA	14h 03m	54° 21'	7.7	SG	Duplicate of M101
46		M 53	5024	COM	13h 13m	18° 10'	7.7	GC	
47		M 64	4826	COM	12h 57m	21° 41'	8.5	SG	Black eye galaxy
48		M 3	5272	CVN	13h 42m	28° 23'	6.4	GC	
49		M 98	4192	COM	12h 14m	14° 54'	10.1	SG	
50		M 85	4382	COM	12h 25m	18° 11'	9.2	EG	
51		M 99	4254	COM	12h 19m	14° 25'	9.8	SG	Pin Wheel nebula
52		M 100	4321	COM	12h 23m	15° 49'	9.4	SG	
53		M 84	4374	VIR	12h 25m	12° 53'	9.3	EG	
54		M 86	4406	VIR	12h 26m	12° 57'	9.2	EG	
55		M 87	4486	VIR	12h 31m	12° 24'	8.6	EG	
56		M 89	4552	VIR	12h 36m	12° 33'	9.8	EG	
57		M 90	4569	VIR	12h 37m	13° 10'	9.5	SG	
58		M 88	4501	COM	12h 32m	14° 25'	9.5	SG	
59		M 91	4548	COM	12h 35m	14° 30'	10.2	SG	
60		M 58	4579	VIR	12h 38m	11° 49'	9.8	SG	
61		M 59	4621	VIR	12h 42m	11° 39'	9.8	EG	
62		M 60	4649	VIR	12h 44m	11° 33'	8.8	EG	
63		M 49	4472	VIR	12h 30m	8° 0'	8.4	EG	
64		M 61	4303	VIR	12h 22m	4° 28'	9.7	SG	
65		M 104	4594	VIR	12h 40m	-11° 37'	8.3	SG	Sombrero galaxy
66		M 68	4590	HYA	12h 40m	-26° 45'	8.2	GC	
67		M 83	5236	HYA	13h 38m	-29° 52'	7.6	SG	Southern Pinwheel
68		M 5	5904	SER	15h 18m	2° 5'	5.8	GC	
69		M 13	6205	HER	16h 42m	36° 28'	5.9	GC	Hercules Cluster
70		M 92	6341	HER	17h 17m	43° 8'	6.5	GC	
71		M 57	6720	LYR	18h 54m	33° 2'	9.0	PN	Ring nebula
72		M 56	6779	LYR	19h 17m	30° 11'	8.2	GC	
73		M 29	6913	CYG	20h 23m	38° 32'	6.6	OC	
74		M 39	7092	CYG	21h 32m	48° 26'	4.6	OC	
75		M 27	6853	VUL	20h 00m	22° 43'	8.1	PN	Dumbbell nebula
76		M 71	6838	SGE	19h 54m	18° 47'	8.3	GC	
77		M 107	6171	OPH	16h 33m	-13° 3'	8.1	GC	
78		M 10	6254	OPH	16h 57m	-4° 6'	6.6	GC	
79		M 12	6218	OPH	16h 47m	-1° 57'	6.6	GC	
80		M 14	6402	OPH	17h 38m	-3° 15'	7.6	GC	
81		M 9	6333	OPH	17h 19m	-18° 31'	7.9	GC	
82		M 4	6121	SCO	16h 23m	-26° 32'	5.9	GC	

Order	Time	M #	NGC	Con	R.A.	Dec	Mag	Type	Comments
83		M 80	6093	SCO	16h 17m	-22° 59'	7.2	GC	
84		M 19	6273	OPH	17h 03m	-26° 16'	7.2	GC	
85		M 62	6266	OPH	17h 01m	-30° 7'	6.6	GC	
86		M 6	6405	SCO	17h 40m	-32° 13'	4.2	OC	Butterfly cluster
87		M 7	6475	SCO	17h 54m	-34° 49'	3.3	OC	Ptolemy's Cluster
88		M 11	6705	SCT	18h 51m	-6° 16'	5.8	OC	Wild Duck cluster
89		M 26	6694	SGR	18h 45m	-9° 24'	8.0	OC	
90		M 16	6611	SER	18h 19m	-13° 47'	6.0	DN	Eagle nebula
91		M 17	6618	SGR	18h 21m	-16° 11'	7.0	DN	Swan nebula
92		M 18	6613	SGR	18h 20m	-17° 8'	6.9	OC	
93		M 24	6603	SGR	18h 16m	-18° 29'	4.5	OC	
94		M 25		SGR	18h 32m	-19° 15'	4.6	OC	
95		M 23	6494	SGR	17h 57m	-19° 1'	5.5	OC	
96		M 21	6531	SGR	18h 05m	-22° 30'	5.9	OC	
97		M 20	6514	SGR	18h 02m	-23° 2'	8.5	DN	Trifid nebula
98		M 8	6523	SGR	18h 03m	-24° 23'	5.8	DN	Lagoon nebula
99		M 28	6626	SGR	18h 25m	-24° 52'	6.9	GC	
100		M 22	6656	SGR	18h 36m	-23° 54'	5.1	GC	
101		M 69	6637	SGR	18h 31m	-32° 21'	7.7	GC	
102		M 70	6681	SGR	18h 43m	-32° 18'	8.1	GC	
103		M 54	6715	SGR	18h 55m	-30° 29'	7.7	GC	
104		M 55	6809	SGR	19h 40m	-30° 58'	7.0	GC	
105		M 75	6864	SGR	20h 06m	-21° 55'	8.6	GC	
106		M 15	7078	PEG	21h 30m	12° 10'	6.4	GC	
107		M 2	7089	AQR	21h 33m	0° -49'	6.5	GC	
108		M 72	6981	AQR	20h 54m	-12° 32'	9.4	GC	
109		M 73	6994	AQR	20h 58m	-12° 38'		ast	
110		M 30	7099	CAP	21h 40m	-23° 11'	7.5	GC	

A.V.A.C. Information

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...

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

AVAC

**P.O. 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 501(c)(3) Non-Profit Corporation.

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Darrell Bennett
president@avastronomyclub.org

Vice-President:

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

Secretary:

Frank & Rose Moore (661) 972-1953
secretary@avastronomyclub.org

Treasurer:

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

Director of Community Development:

Robert Lynch, Jr.
community@avastronomyclub.org

Appointed Positions

Newsletter Editor:

Steve Trotta (661) 269-5428
dso@avastronomyclub.org

Equipment & Library:

Vacant
library@avastronomyclub.org

Club Historian:

Tom Koonce (661) 943-8200
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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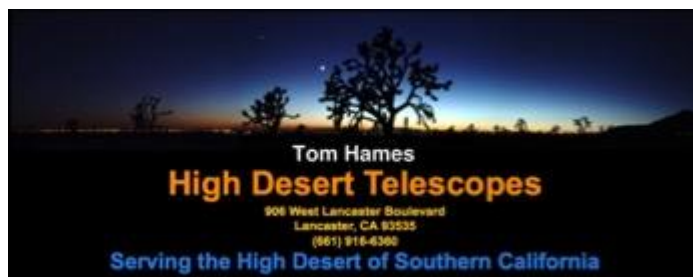


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