



# Desert Sky Observer

Volume 30

Antelope Valley Astronomy Club Newsletter

September 2010

## Up-Coming Events

- September 4: Dark Sky Star Party @ [Mt. Pinos](#)  
September 10: Club Meeting\*  
September 11: Moon Walk @ [Prime Desert Woodlands](#)  
September 13: Board meeting @ [Don's house](#)  
September 18: [International Observer the Moon Night](#)  
September 18-19: P.A.T.S @ [Pasadena Convention Center](#)

\* Monthly meetings are held at the S.A.G.E. Planetarium on the Cactus School campus in Palmdale, the second Friday of each month. The meeting location is at the northeast corner of Avenue R and 20<sup>th</sup> 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

### Don Bryden

It was a memorable trip to Mt. Wilson once again. Sure the sky is getting worse and the light pollution is bad but sixty inches of aperture is still impressive.

Even more impressive was the tour beforehand given by none other than Dave Jurasevich, the superintendent of the observatory. Dave was recently featured in Sky & Telescope for his discovery of the Soap Bubble Nebula. Invisible to the naked eye (even through the most powerful scopes), Dave only noticed the planetary nebula while looking at some long integrations of Ha regions of the Crescent Nebula. He noticed a near-perfect round ghost of a bubble. It turned out to be as yet unknown.

Well, we didn't get to see the nebula but the tour Dave gave was first rate. He showed us the mirror coating lab, the declination room with old clock and worm



PN G75.5+1.7

"Bubble" Nebula in Cygnus - Imaged 7/5/08 by Dave Jurasevich



The 60" in action

drive as well as a number of back rooms not usually offered on the tour to the general public. It doesn't look like they've thrown away anything in 100 years! Dave told us about "Hubble's Chair" well known that it is NOT the actual chair that was in the photo of Hubble observing at the 100" platform though that's the story the general public hears on every tour. Soon the inside joke was to notice what odd little piece of equipment was Hubble's: There was Hubble's hot plate, Hubble's toilet seat, Hubble's Franklin stove. By the time we got around to Hubble's microwave oven and Hubble's cell phone I think we had gone a bit too far!

I think the icing on the cake for the tour was either getting to stand below the 100" and seeing the "layer cake" construction with all the air bubbles or possibly standing near the control panel while Dave rotated the dome. You would swear that the scope and floor were rotating, not you and the dome – until he opened the door and you saw the trees going by.

Hopefully this issue of the DSO will reach you before Labor Day weekend. And I hope you all can join us up at Mt. Pinos for an end of the Summer star party. Come out and look for Matt, Frank, Rose, Karole, Shane, Doug, me and many others who will be camping out all weekend. Most will be up there for Saturday night, some will stay for Sunday and a few will even be up there as early as Friday. Come see the return of the winter constellations if you can stay up late or say so long to the summer ones if you can't. If you've been meaning to get out to Pinos and keep putting it off, now's your chance!



## **Vice President**

### **Doug Drake**

The speaker for our next meeting, September 10, will provide a presentation directly for us; that is, "Amateur Astronomers." Subjects like: "what telescope should we get" and observing the Sun, Moon and planets of our solar system. The speaker (Doug Drake, retired pilot and engineer) is from this area and you just might know him! This presentation is for you and enjoyment of our hobby.

My your skies be clear and unlimited, Doug



## **Director of Community Development**

### **Rose Moore**

Fall is coming! Do you know what that means? It's almost time for our Annual Business Meeting, on Friday October 8th at 7pm. Please come and support your club. Let your 'voice' be heard! At this meeting we vote for officers for the Executive Board for 2011. Think of who you want to run the AVAC and make it a successful club. Or perhaps you are up to the task?

We have a Prime Desert Woodlands Moon Walk with Jeremy on Saturday, Sept. 11th starting at 7:30 pm. Please come out with your telescopes and show the public the night sky! We have been having great turnouts from the public!

September 18th and 19th, Saturday and Sunday, is PATS. The Pacific Astronomy and Telescope Show is held in Pasadena, in the Pasadena Convention Center starting at 9am. Our club will have a booth. If you are interested in attending and helping out at our booth, even for a short time, we'd appreciate it! Please contact me and let me know. PATS will have vendors, speakers, and astronomy presentations. There will be solar telescopes set up outside. Admission is approximately \$20 per day, unless you've purchased a pre-sale ticket. Email me for information. You can check out the website: <http://www.rtmcastronomyexpo.org/PATS.htm>

Many thanks to Luisa Rebull from the Spitzer Space Telescope for being our speaker for our August meeting! I'm sorry I missed the event, but hear it was a wonderful presentation!

Enjoy the end of the summer! Clear skies!

## Extraterrestrial Tidbits (ET) by Jeff Riechmann

### One for the Lunar Club!

The race for the moon was getting hot and heavy. The US space program was still feeling the pains of the Apollo 1 catastrophe that occurred a year and half previous. President Kennedy's words were on everyone's mind - to land a man on the moon and to safely return him to earth before the end of the decade.

The end of the decade was less than a year and half away; not very much time when you're trying to fly an astronaut to the moon, and you don't even have a vehicle ready!

The Soviets recognized that the ball was in their court.

Enter the Zond missions. This was the Soviets lunar program that launched unmanned – or as some would say today – uninhabited probes to loop around the moon and return to earth. These probes were basically Soyuz spacecraft without the orbital module.

On 18 September 1968, the Zond 5 probe loops around behind the moon and later would splash down in the Indian Ocean.

## Product Review by Tom Koonce

### The Complete Sky and Telescope Seven Decade Collection

<http://www.shopatsky.com/product/The-Complete-Sky-and-Telescope-Collection/new-arrivals>  
(\$299. \$249 for limited time)

Rating: 3 out of 5 (5 being best)

I was excited to hear that S&T was producing "The Complete Sky and Telescope Seven Decade Collection" of its excellent magazine. Likely like many of you, I have long been out of shelf space for my collection of back issues and I thought that this might give me easy access to the decades of information and tips for which Sky and Telescope is well known. I have found this to be so, but with a few reservations.

Pros: The collection provides easy access to decades of thoughtful perspective, evolution of scientific theory, and advances in amateur astronomy. Every page and every advertisement is scanned. Having all of this information packaged conveniently together allows contributions by amateurs and astronomical societies to be easily seen, in a way that leafing through hundreds of pounds of back issues never would. The provided text search function works OK, but not great. Each decade is separately packaged in its own DVD hard case, and the collection of 8 data DVDs (including the DVD complete index to the collection) are nicely packaged in a hard cardboard bookshelf case. For each decade there are interesting highlighted articles along the left margin of the main menus that are intriguing, and I spent several enjoyable hours surfing through them. The web-based interface was easy to get used to with two exceptions. The historical revelations on astrophysics and the space program mission photo coverage were fascinating. Eventually, I will provide my entire collection of S&T back issues to the local school system as a valuable resource for the students.

Cons: My primary “negative” is that the scans of the early issues are of a much lower resolution and of a lower contrast than I expected for the cost of this collection. Some pages from early issues are difficult to clearly read because of blurriness. I see this as a basic feature of any collection of scanned magazines and I was looking for scans where text would appear crisp under some level of magnification. Frankly, I am more than moderately disappointed.

Annoyances:

- When pages are "grabbed" at the corners and dragged as if to turn the page, releasing the mouse button does not result in the page being turned. This is not intuitive.
- The zoom feature and scroll feature are annoying to use, requiring mouse clicks sometimes on the page, then sometimes along the top menu. I got used to it, but I would like a zoom preset option where I could establish my own preferred level of zoom.
- The search function did not return all instances of searched text within the magazine. I found instances where photo captions were not searched when I looked for occurrences of names.
- I quickly found an example of a photo "warped" during the scan process and the page making it past the DVD production's QA process. This is disappointing that this obvious error was not caught, since it even makes a pronounced “S” shape along the top margin of the page distorting the image.
- Searched text frequently comes back with many OCR errors, typically with text spread out with spaces between each letter and misspellings. For example, the word "their" was spelled “t i n e i r”. Again, production Quality Assurance evidently did not check what the OCR routine would provide for results to the user.

In conclusion, I find the "Seven Decade Collection" useful and the concept well conceived. But I rate it 3 out of 5 stars because even though it is a convenient resource, it is not of the quality I had come to expect from previous Sky & Telescope publications. I hope that soon there is a version 1.1 which fixes these issues, and that an update is made available quickly to the people who purchase the initial release.

## Space Place

### The Turbulent Tale of a Tiny Galaxy

by Trudy Bell and Dr. Tony Phillips

Next time you hike in the woods, pause at a babbling stream. Watch carefully how the water flows around rocks. After piling up in curved waves on the upstream side, like the bow wave in front of a motorboat, the water speeds around the rock, spilling into a riotous, turbulent wake downstream. Lightweight leaves or grass blades can get trapped in the wake, swirling round and round in little eddy currents that collect debris.

Astronomers have found something similar happening in the turbulent wake of a tiny galaxy that is plunging into a cluster of 1,500 galaxies in the constellation Virgo. In this case, however, instead of collecting grass and leaves, eddy currents in the little galaxy’s tail seem to be gathering gaseous material to make new stars.

“It’s a fascinating case of turbulence [rather than gravity] trapping the gas, allowing it to become dense enough to form stars,” says Janice A. Hester of the California Institute of Technology in Pasadena.



The tell-tale galaxy, designated IC 3418, is only a hundredth the size of the Milky Way and hardly stands out in visible light images of the busy Virgo Cluster. Astronomers realized it was interesting, however, when they looked at it using NASA's Galaxy Evolution Explorer satellite. "Ultraviolet images from the Galaxy Evolution Explorer revealed a long tail filled with clusters of massive, young stars," explains Hester.

Galaxies with spectacular tails have been seen before. Usually they are behemoths—large spiral galaxies colliding with one another in the crowded environment of a busy cluster. Tidal forces during the collision pull gas and stars of all ages out of these massive galaxies to form long tails. But in IC 3418, the tail has just young stars. No old stars.

"The lack of older stars was one tip-off that IC 3418's tail isn't tidal," says Hester. "Something else must be responsible for these stars"

Hester and eight coauthors published their findings in the June 10, 2010, issue of The Astrophysical Journal Letters. The team described the following scenario: IC 3418 is speeding toward the center of the Virgo cluster at 1,000 kilometers per second. The space between cluster galaxies is not empty; it is filled with a gaseous atmosphere of diffuse, hot hydrogen. Thus, like a bicyclist coasting downhill feels wind even on a calm day, IC 3418 experiences "a stiff wind" that sweeps interstellar gas right out of the little galaxy, said Hester—gas that trails far behind its galaxy in a choppy, twisting wake akin to the wake downstream of the rock in the babbling brook. Eddy currents swirling in the turbulent wake trap the gas, allowing it to become dense enough to form stars.



*In the ultraviolet image on the left, from the Galaxy Evolution Explorer, galaxy IC 3418 leaves a turbulent star forming region in its wake. In the visible light image on the right (from the Sloan Digital Sky Survey), the wake with its new stars is not apparent.*

"Astronomers have long debated the importance of gravity vs. turbulence in star formation," Hester noted. "In IC 3418's tail, it's ALL turbulence."

To many astronomers, that's a surprising tale indeed.

See other surprising UV images from the Galaxy Evolution Explorer at <http://www.galex.caltech.edu>.

## News Headlines

### Seeing a Stellar Explosion in 3D

Astronomers using ESO's Very Large Telescope

have for the first time obtained a three-dimensional view of the distribution of the innermost material expelled by a recently exploded star. The original blast was not only powerful, according to the new results. It was also more concentrated in one particular direction. This is a strong indication that the supernova must have been very turbulent, supporting the most recent computer models.

<http://www.spaceref.com/news/viewpr.html?pid=31373>

### Spectrum of young extrasolar planet yields surprising results

Astronomers at the University of Hawaii have measured the temperature of a young gas-giant planet around another star using the W. M. Keck Observatory, and the results are puzzling. They have found that its atmosphere is unlike that of any previously studied extrasolar planet.

<http://www.astronomy.com/asy/default.aspx?c=a&id=10181>

### Jack Horkheimer Passes Away at 72

Amateur astronomy lost one its most iconic figures today. Jack Horkheimer, known to millions as public television's ebullient "Star Gazer," died this afternoon at age 72. The exact cause of death was not disclosed, though he had battled chronic respiratory problems for decades.

<http://www.skyandtelescope.com/news/101194934.html>

### Cosmic Lens Used to Probe Dark Energy for First Time

Astronomers have devised a new method for measuring perhaps the greatest puzzle of our universe -- dark energy. This mysterious force, discovered in 1998, is pushing our universe apart at ever-increasing speeds. For the first time, astronomers using NASA's Hubble Space Telescope were able to take advantage of a giant magnifying lens in space -- a massive cluster of galaxies -- to narrow in on the nature of dark energy. Their calculations, when combined with data from other methods, significantly increase the accuracy of dark energy measurements. This may eventually lead to an explanation of what the elusive phenomenon really is.

[http://www.nasa.gov/mission\\_pages/hubble/news/hubble20100819.html](http://www.nasa.gov/mission_pages/hubble/news/hubble20100819.html)

### A Runaway Star with a Story To Tell

Just five years ago the first hypervelocity star was confirmed, by Warren Brown of the Harvard-Smithsonian Center for Astrophysics. Now about 16 are known. These are stars moving through space so fast, upwards of several hundred kilometers per second, that they will escape the Milky Way's gravity and forever roam the intergalactic void. Their discovery had to wait for very efficient surveys; only about one in 100 million stars is going so fast.

<http://www.skyandtelescope.com/news/100993774.html>

### New Trojan Asteroid Discovered Around Neptune

Astronomers have found a new object in a region of Neptune's orbit, tucked away in a very hard-to-find location, and where no previous object was known to exist. The object, 2008 LC18, is a Trojan asteroid, which refers an asteroid that shares an orbit with a larger planet or moon, but does not collide with it because it orbits around one of the two Lagrangian points of stability. Six other Trojan asteroids have been located around Neptune's L4 region, but this is the first one found in Neptune's L5 region.

<http://www.universetoday.com/71033/new-trojan-asteroid-discovered-around-neptune/#more-71033>

## September Sky Data

**Best time for deep sky observing this month:**  
**September 5 through September 12**

**Mercury** is at inferior conjunction – almost directly in front of the Sun – on September 3rd. But it moves rapidly westwards, reaching its greatest elongation west of the Sun on September 19th, so we have a brief chance to glimpse this elusive little planet in the morning twilight. Mercury will be easiest to see between about Monday 20th and Saturday 25th. Look for it, very low down in the eastern sky, about 6 am.

**Venus** is very low in the south-western sky at sunset, and sets only minutes after the Sun. Despite the brilliance of the “Evening Star”, we’re very unlikely to be able to see it this month.

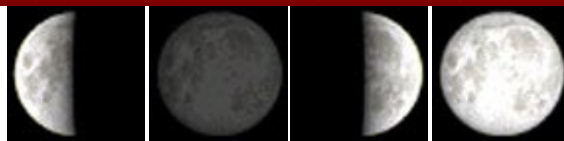
**Mars** is low in the south-western sky at sunset, just a little way above and to the right of Venus. The “Red Planet” currently appears no brighter than a moderately-bright star, so we’re very unlikely to see it.

**Jupiter** is the only planet to be seen in the night sky this month – it’s in opposition (to the Sun) on September 21st. This means Jupiter is at its closest to Earth, when it appears brightest, and in the telescope it appears biggest. Being opposite to the Sun, Jupiter is due south at midnight, when it’s 30 degrees above the horizon. Relative to the stars, Jupiter is moving slowly south-westwards in the constellation of Pisces; but the giant planet appears much brighter than any of the stars.

**Saturn** will be at superior conjunction (almost directly behind the Sun) on October 1st; we won’t be able to see the ringed planet at all this month.

There are no major **meteor-showers** in September, though there are various minor showers producing a few meteors an hour from radiants in Cassiopeia, Auriga, Aquarius and Pisces. 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.

First Qtr Sept 1      Full Sept 8      Last Qtr Sept 14      New Sept 23



## Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
9/1/2010	23:58	14:03	06:29	19:23
9/5/2010	03:15	17:24	06:32	19:18
9/10/2010	09:18	20:24	06:36	19:11
9/15/2010	14:34	-----	06:40	19:04
9/20/2010	17:28	04:18	06:43	18:56
9/25/2010	19:48	08:58	06:47	18:49
9/30/2010	23:51	13:46	06:51	18:42

## Planet Data

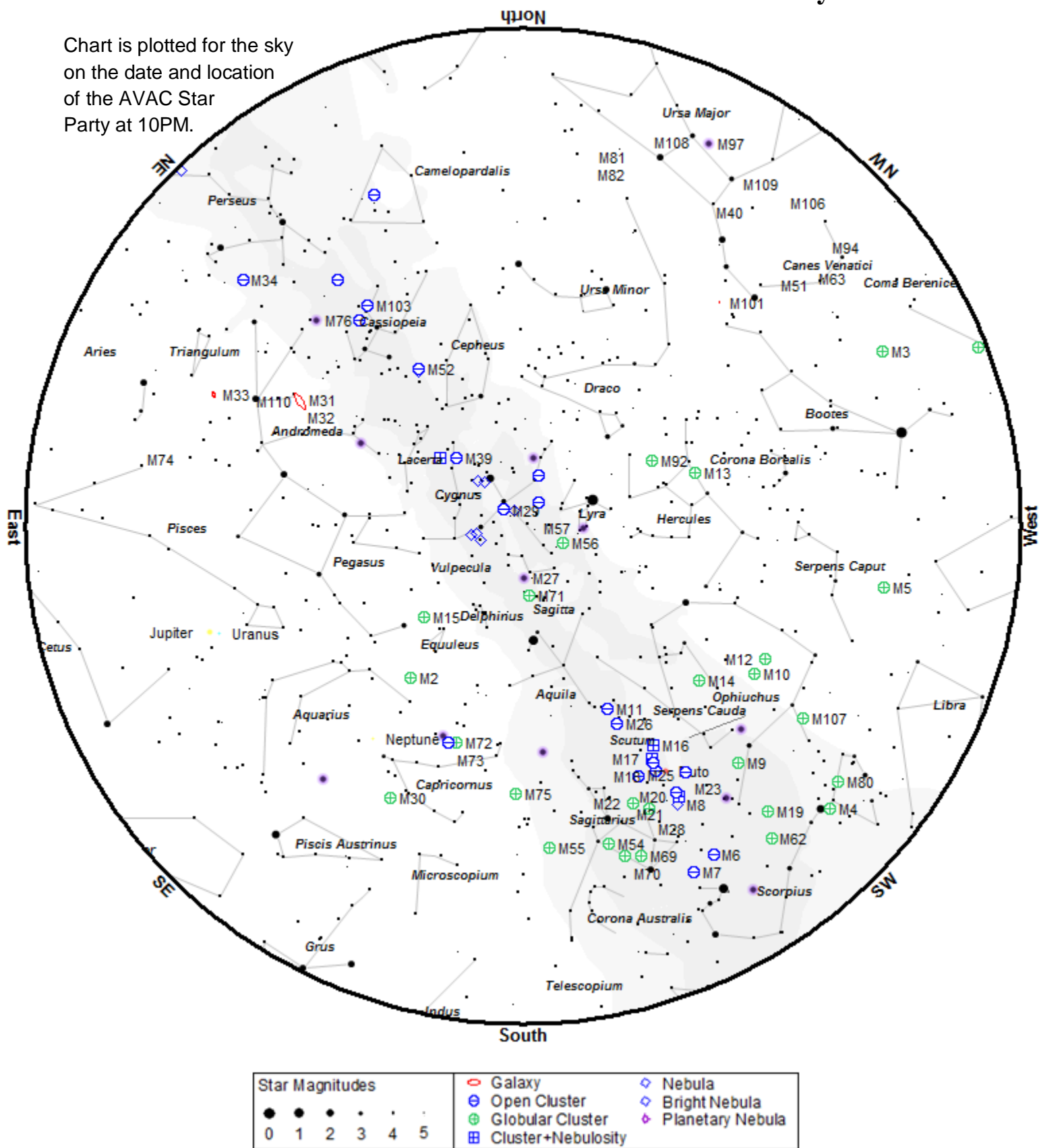
	Sept 1			
	Rise	Transit	Set	Mag
<b>Mercury</b>	06:36	13:02	19:21	4.5
<b>Venus</b>	10:03	15:39	21:15	-4.4
<b>Mars</b>	09:43	15:32	21:20	1.5
<b>Jupiter</b>	20:09	02:17	08:24	-2.9
<b>Saturn</b>	08:17	14:32	20:43	1.0

	Sept 15			
	Rise	Transit	Set	Mag
<b>Mercury</b>	05:10	11:47	18:26	0.2
<b>Venus</b>	10:01	15:22	20:42	-4.5
<b>Mars</b>	09:33	15:12	20:50	1.5
<b>Jupiter</b>	19:10	01:15	07:20	-2.9
<b>Saturn</b>	07:30	13:43	19:53	0.9

	Sept 30			
	Rise	Transit	Set	Mag
<b>Mercury</b>	05:45	12:04	18:26	-1.1
<b>Venus</b>	09:39	14:49	19:57	-4.6
<b>Mars</b>	09:23	14:52	20:19	1.5
<b>Jupiter</b>	18:06	00:09	06:12	-2.9
<b>Saturn</b>	06:40	12:51	18:58	0.9

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. The list is sorted by the best time to observe the object. The difficulty column describes how difficult it is to observe the object from the current location on a perfect night in a 6 inch Newtonian telescope.

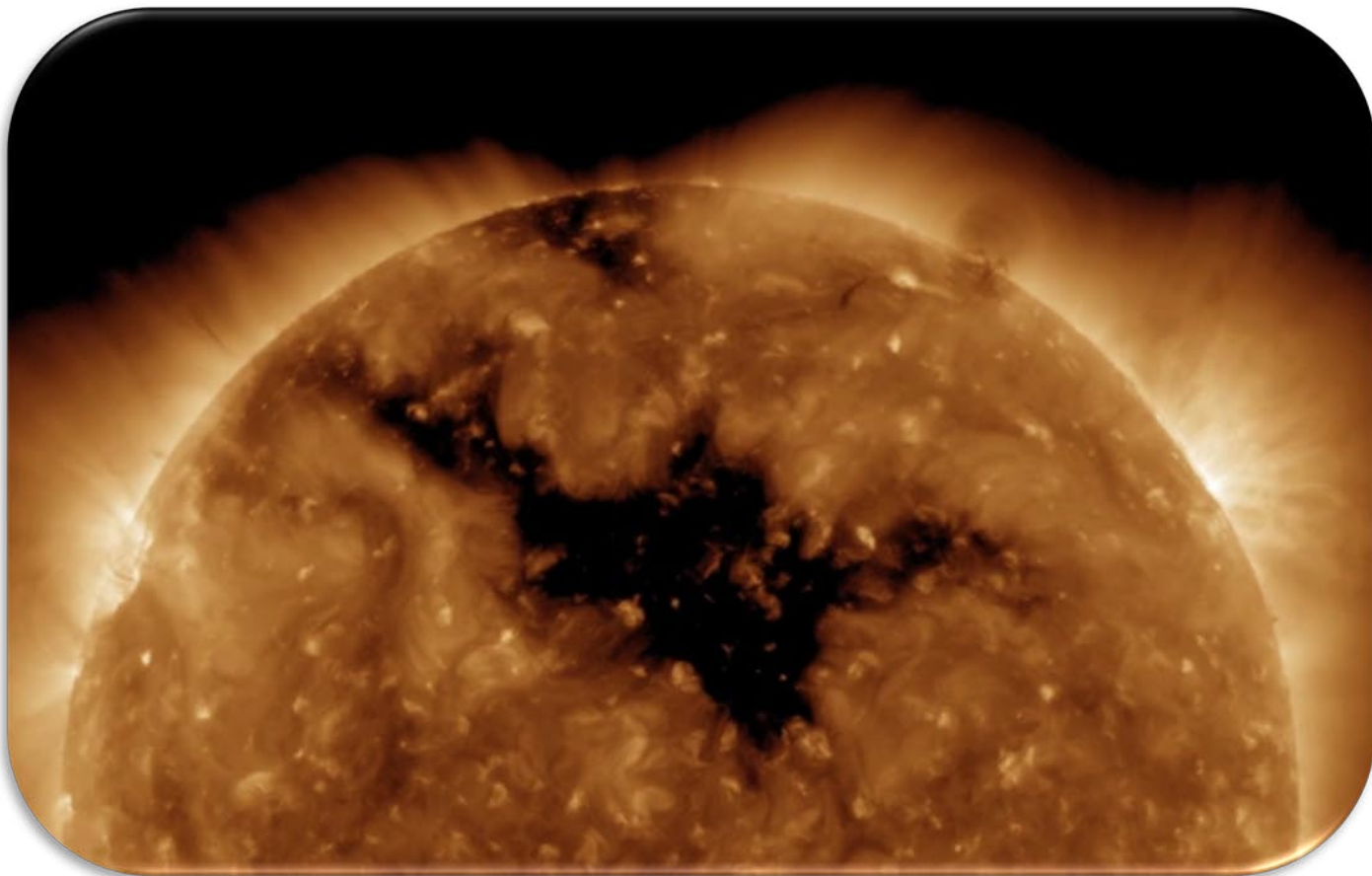
ID	Cls	Mag	Con	RA 2000	Dec 2000	Begin	Best	End	Difficulty
NGC 6322	Open	6.5	Sco	17h18m25.0s	-42°56'00"	20:17	20:35	21:45	easy
NGC 6388	Glob	6.8	Sco	17h36m17.0s	-44°44'06"	20:22	20:40	21:27	detectable
M 62	Glob	6.4	Oph	17h01m13.0s	-30°06'48"	20:23	20:41	21:40	detectable
NGC 6541	Glob	6.3	CrA	18h08m02.0s	-43°42'54"	20:23	20:40	21:45	detectable
M 19	Glob	6.8	Oph	17h02m38.0s	-26°16'06"	20:24	20:42	21:39	detectable
NGC 6383	Open	5.4	Sco	17h34m48.0s	-32°34'00"	20:21	20:43	22:04	easy
M 6	Open	4.6	Sco	17h40m20.0s	-32°15'12"	20:20	20:43	22:22	easy
M 7	Open	3.3	Sco	17h53m51.0s	-34°47'36"	20:23	20:44	22:06	easy
M 9	Glob	7.8	Oph	17h19m12.0s	-18°31'00"	20:27	20:45	21:16	detectable
M 101	Gal	8.4	UMa	14h03m12.4s	+54°20'53"	20:30	20:46	21:43	detectable
M 12	Glob	6.1	Oph	16h47m14.0s	-01°56'48"	20:22	20:45	22:11	easy
M 10	Glob	6.6	Oph	16h57m09.0s	-04°06'00"	20:24	20:46	22:13	detectable
M 14	Glob	7.6	Oph	17h37m36.0s	-03°14'48"	20:24	20:48	22:53	detectable
M 21	Open	7.2	Sgr	18h04m13.0s	-22°29'24"	20:25	20:48	21:19	detectable
M 20	Open	5.2	Sgr	18h02m42.0s	-22°58'18"	20:22	20:48	21:11	easy
M 8	Neb	5.0	Sgr	18h04m02.0s	-24°23'14"	20:20	20:47	23:05	easy
M 13	Glob	5.8	Her	16h41m41.0s	+36°27'36"	20:23	20:48	23:41	easy
M 23	Open	5.9	Sgr	17h57m04.0s	-18°59'06"	20:25	20:48	21:49	detectable
IC 4665	Open	5.3	Oph	17h46m18.0s	+05°43'00"	20:26	20:49	22:48	detectable
M 92	Glob	6.5	Her	17h17m07.0s	+43°08'12"	20:21	20:50	00:19	easy
NGC 6572	PNe	8.0	Oph	18h12m06.4s	+06°51'12"	20:10	20:50	00:04	obvious
M 28	Glob	6.9	Sgr	18h24m33.0s	-24°52'12"	20:23	20:50	20:51	detectable
M 16	Open	6.5	Ser	18h18m48.0s	-13°48'24"	20:18	20:51	22:46	obvious
M 17	Open	7.3	Sgr	18h20m47.0s	-16°10'18"	20:30	20:51	22:22	detectable
M 18	Open	7.5	Sgr	18h19m58.0s	-17°06'06"	20:20	20:51	22:28	easy
M 25	Open	6.2	Sgr	18h31m47.0s	-19°07'00"	20:25	20:52	22:23	detectable
M 22	Glob	5.2	Sgr	18h36m24.0s	-23°54'12"	20:24	20:53	21:30	detectable
NGC 6633	Open	5.6	Oph	18h27m15.0s	+06°30'30"	20:21	20:54	00:18	easy
M 70	Glob	7.8	Sgr	18h43m13.0s	-32°17'30"	20:23	20:54	22:44	detectable
NGC 6543	PNe	8.3	Dra	17h58m33.4s	+66°37'59"	20:13	20:55	02:14	obvious
IC 4756	Open	5.4	Ser	18h39m00.0s	+05°27'00"	20:23	20:56	00:03	easy
M 11	Open	6.1	Sct	18h51m05.0s	-06°16'12"	20:25	21:00	23:42	detectable
M 54	Glob	7.7	Sgr	18h55m03.0s	-30°28'42"	20:27	21:00	22:46	detectable
NGC 6716	Open	7.5	Sgr	18h54m34.0s	-19°54'06"	20:24	21:01	22:39	detectable
M 57	PNe	9.4	Lyr	18h53m35.1s	+33°01'45"	20:18	21:02	01:50	easy
NGC 6723	Glob	6.8	Sgr	18h59m33.0s	-36°37'54"	20:24	21:02	22:48	detectable
M 56	Glob	8.4	Lyr	19h16m36.0s	+30°11'06"	20:24	21:18	01:00	detectable
M 55	Glob	6.3	Sgr	19h40m00.0s	-30°57'42"	20:25	21:41	23:46	detectable

ID	Cls	Mag	Con	RA 2000	Dec 2000	Begin	Best	End	Difficulty
NGC 6818	PNe	10.0	Sgr	19h43m57.8s	-14°09'12"	20:15	21:44	00:10	easy
M 71	Glob	8.4	Sge	19h53m46.0s	+18°46'42"	20:22	21:54	02:07	easy
M 27	PNe	7.3	Vul	19h59m36.3s	+22°43'16"	20:22	22:00	02:18	easy
NGC 6871	Open	5.8	Cyg	20h05m59.0s	+35°46'36"	20:24	22:06	02:25	easy
NGC 6910	Open	7.3	Cyg	20h23m12.0s	+40°46'42"	20:23	22:24	03:02	easy
M 29	Open	7.5	Cyg	20h23m57.0s	+38°30'30"	20:23	22:24	02:52	easy
NGC 7009	PNe	8.3	Aqr	21h04m10.9s	-11°21'48"	20:22	23:04	01:47	obvious
M 15	Glob	6.3	Peg	21h29m58.0s	+12°10'00"	20:27	23:30	03:16	easy
M 39	Open	5.3	Cyg	21h31m48.0s	+48°26'00"	20:23	23:32	04:33	easy
M 2	Glob	6.6	Aqr	21h33m27.0s	-00°49'24"	20:31	23:34	02:56	detectable
M 30	Glob	6.9	Cap	21h40m22.0s	-23°10'42"	22:36	23:41	00:46	detectable
NGC 7160	Open	6.4	Cep	21h53m40.0s	+62°36'12"	20:21	23:53	05:28	obvious
NGC 7243	Open	6.7	Lac	22h15m08.0s	+49°53'54"	20:35	00:16	04:09	detectable
NGC 7293	PNe	6.3	Aqr	22h29m38.5s	-20°50'14"	22:55	00:30	02:04	detectable
M 52	Open	8.2	Cas	23h24m48.0s	+61°35'36"	21:33	01:25	05:05	detectable
NGC 7789	Open	7.5	Cas	23h57m24.0s	+56°42'30"	22:26	01:57	05:11	detectable
NGC 7790	Open	7.2	Cas	23h58m24.0s	+61°12'30"	20:27	01:58	05:29	obvious
NGC 55	Gal	8.5	Scl	00h15m08.4s	-39°13'13"	01:08	02:15	03:18	difficult
M 110	Gal	8.9	And	00h40m22.3s	+41°41'09"	22:57	02:40	05:22	detectable
M 32	Gal	8.9	And	00h42m41.8s	+40°51'58"	22:08	02:42	05:26	easy
M 31	Gal	4.3	And	00h42m44.3s	+41°16'07"	22:04	02:43	05:27	easy
NGC 253	Gal	7.9	Scl	00h47m33.1s	-25°17'20"	00:31	02:47	05:01	detectable
NGC 288	Glob	8.1	Scl	00h52m45.0s	-26°35'00"	01:12	02:52	04:29	difficult
NGC 637	Open	7.3	Cas	01h43m04.0s	+64°02'24"	21:35	03:16	05:33	obvious
NGC 559	Open	7.4	Cas	01h29m31.0s	+63°18'24"	21:24	03:16	05:30	easy
NGC 663	Open	6.4	Cas	01h46m09.0s	+61°14'06"	21:54	03:16	05:30	easy
M 103	Open	6.9	Cas	01h33m23.0s	+60°39'00"	21:35	03:16	05:31	obvious
NGC 457	Open	5.1	Cas	01h19m35.0s	+58°17'12"	21:28	03:16	05:30	obvious
M 76	PNe	10.1	Per	01h42m19.9s	+51°34'31"	23:11	03:15	05:27	detectable
NGC 752	Open	6.6	And	01h57m41.0s	+37°47'06"	23:24	03:15	05:29	challenging
M 33	Gal	6.4	Tri	01h33m50.9s	+30°39'36"	23:43	03:15	05:26	detectable
NGC 869	Open	4.3	Per	02h19m00.0s	+57°07'42"	22:31	04:24	05:32	obvious
NGC 884	Open	4.4	Per	02h22m18.0s	+57°08'12"	22:33	04:27	05:33	obvious
NGC 957	Open	7.2	Per	02h33m21.0s	+57°33'36"	23:04	04:37	05:28	easy
NGC 1027	Open	7.4	Cas	02h42m40.0s	+61°35'42"	00:19	04:42	05:24	detectable
M 34	Open	5.8	Per	02h42m05.0s	+42°45'42"	00:19	04:42	05:28	easy
M 77	Gal	9.7	Cet	02h42m40.8s	-00°00'48"	01:34	04:42	05:26	detectable
NGC 1245	Open	7.7	Per	03h14m42.0s	+47°14'12"	00:08	04:54	05:29	challenging
NGC 1502	Open	4.1	Cam	04h07m50.0s	+62°19'54"	00:04	04:58	05:34	obvious
NGC 1342	Open	7.2	Per	03h31m38.0s	+37°22'36"	01:17	04:57	05:28	easy
NGC 1444	Open	6.4	Per	03h49m25.0s	+52°39'30"	00:10	04:58	05:34	obvious
NGC 1528	Open	6.4	Per	04h15m23.0s	+51°12'54"	00:57	05:00	05:29	easy
M 45	Open	1.5	Tau	03h47m00.0s	+24°07'00"	01:10	05:00	05:33	obvious
NGC 1664	Open	7.2	Aur	04h51m06.0s	+43°40'30"	01:40	05:02	05:29	easy
Hyades	Open	0.8	Tau	04h26m54.0s	+15°52'00"	02:09	05:02	05:30	easy

ID	Cls	Mag	Con	RA 2000	Dec 2000	Begin	Best	End	Difficulty
NGC 1647	Open	6.2	Tau	04h45m55.0s	+19°06'54"	03:10	05:03	05:25	detectable
M 38	Open	6.8	Aur	05h28m40.0s	+35°50'54"	02:55	05:04	05:27	detectable
NGC 1746	Open	6.1	Tau	05h03m50.0s	+23°46'12"	03:20	05:04	05:26	detectable
M 36	Open	6.5	Aur	05h36m18.0s	+34°08'24"	02:37	05:04	05:30	easy
M 37	Open	6.2	Aur	05h52m18.0s	+32°33'12"	02:56	05:05	05:28	easy
M 35	Open	5.6	Gem	06h09m00.0s	+24°21'00"	03:31	05:06	05:27	easy
NGC 2129	Open	7.0	Gem	06h01m07.0s	+23°19'20"	03:25	05:06	05:31	obvious
NGC 2175	Open	6.8	Ori	06h09m39.0s	+20°29'12"	03:50	05:06	05:25	detectable
NGC 2169	Open	7.0	Ori	06h08m24.0s	+13°57'54"	03:56	05:07	05:30	obvious
M 42	Neb	4.0	Ori	05h35m18.0s	-05°23'00"	04:25	05:08	05:31	easy
NGC 2264	Open	4.1	Mon	06h40m58.0s	+09°53'42"	04:39	05:08	05:28	obvious

## Astrophoto of The Month

### Hole in the Sun



Credit: [NASA](#) / [Goddard](#) / [SDO AIA Team](#)

This ominous, dark shape sprawling across the face of the Sun is a coronal hole -- a low density region extending above the surface where the solar magnetic field opens freely into interplanetary space, captured here in extreme ultraviolet light by cameras onboard the Solar Dynamics Observatory. Studied extensively from space since the 1960s in ultraviolet and x-ray light, coronal holes are known to be the source of the high-speed solar wind, atoms and electrons which flow outward along the open magnetic field lines. The solar wind streaming from this coronal hole triggered auroral displays on planet Earth.

## 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/](http://www.avastronomyclub.org/)

The Antelope Valley Astronomy Club, Inc. is a 501(c)(3) Non-Profit Corporation.

The A.V.A.C. is a Sustaining Member of The Astronomical League and the International Dark-Sky Association.

## Board Members

### President:

Don Bryden (661) 270-0627  
[president@avastronomyclub.org](mailto:president@avastronomyclub.org)

### Vice-President:

Doug Drake (661) 433-0672  
[vice-president@avastronomyclub.org](mailto:vice-president@avastronomyclub.org)

### Secretary:

Frank Moore (661) 972-4775  
[secretary@avastronomyclub.org](mailto:secretary@avastronomyclub.org)

### Treasurer:

Virgina Reed (805) 587-6295  
[treasurer@avastronomyclub.org](mailto:treasurer@avastronomyclub.org)

### Director of Community Development:

Rose Moore (661) 972-1953  
[community@avastronomyclub.org](mailto:community@avastronomyclub.org)

## Appointed Positions

### Newsletter Editor:

Steve Trotta (661) 269-5428  
[newsletter@avastronomyclub.org](mailto:newsletter@avastronomyclub.org)

### Equipment & Library:

Karol Barker (661) 940-3312  
[library@avastronomyclub.org](mailto:library@avastronomyclub.org)

### Club Historian:

Tom Koonce (661) 943-8200  
[history@avastronomyclub.org](mailto:history@avastronomyclub.org)

### Webmaster:

Steve Trotta (661) 269-5428  
[webmaster@avastronomyclub.org](mailto:webmaster@avastronomyclub.org)

### Astronomical League Coordinator:

Steve Trotta (661) 269-5428  
[al@avastronomyclub.org](mailto:al@avastronomyclub.org)



## Our Sponsors

Thank you to our sponsors for your generous support!

### Cosmos Level Sponsors



#### **Woodland Hills Camera**

5348 Topanga Canyon Blvd., Woodland Hills  
888-427-8766.

[www.telescopes.net](http://www.telescopes.net)

### Universe Level Sponsors



#### **Riechmann Safety Services**

### Galaxy Level Sponsors



#### ***Al's Vacuum and Sewing***

904 West Lancaster Blvd., Lancaster  
(661) 948-1521