

THE OBSERVER

East Valley Astronomy Club

From the Desk of the President by Steven Aggas

Hello Everyone! Monsoon season is over! Finally!

The All Arizona Star Party is in the planning stages and is scheduled for October 28 and 29, 2011, the Friday and Saturday after the New Moon.

The moon is only 2 days old on 10/28 and should set fairly early (and slightly later the next night). The location is the same as last year: the 'Antennae Site'. It's located a couple of miles south of I-10 at the Hovatter Road exit #53, about 90 miles west of Phoenix. Complete directions and maps are on the EVAC web site. Cooler, dryer air is finally here...

Nominations for next year's officers and board members occur at the October meeting with elections during the November meeting. Since

there are several positions available I thought I'd mention them: president, vice president, treasurer, and maybe a spot on the board of directors, and of course, someone to take on the meeting refreshments job. We'll have the complete list to show at the upcoming meeting. I encourage everyone to consider helping the club by participating in one of these positions thereby creating the meetings and events you want to see.

At our upcoming General Assembly meeting in September we will have Mr. David Hatch presenting an on the SLOOH Space Camera! Please join us September 16th to hear about how you can use an automated telescope from the comfort of your own home!

The Backyard Astronomer

An Inn, an Observatory & a Telescope Shop by Bill Dellinges

I'm not crazy about weddings - less so when unnecessary travel is involved. Why would a couple, who live nearby and whose friends and family also live nearby, want to get married at a remote site 450 miles away (Paradise Gardens, Oceanside, Calif.), requiring fifty guests to drive or fly to said site?

But wait! Oceanside, California?

Hold on cowboy. Isn't that where Oceanside Photo and Telescopes is?

And couldn't we make a minor detour via Julian, where the Observer's Inn, an astronomy bed and breakfast, is located? And isn't that only 20 miles from Mt. Palomar Observatory? Count me in baby!

First stop, one night at the Observer's Inn B&B (www.observersinn.com),

about one mile outside Julian, California, at an elevation of 4,500 feet. We were met by owner Mike Leigh, a friendly fellow who has run the astronomical inn since the mid '90's. We were shown to a nicely appointed room, one of two bedrooms in the guesthouse adjacent to his home. A guest from New Zealand was staying in the other room.

Mike gave us the introductory general layout of his facility and plan for the night's observation in his 19x23 foot roll-off roof observatory. The session would be one hour, from 9-10pm (we went beyond that a little bit). Mike charges \$10 per person for the observing sessions in addition to the \$160 a room rate. Guests are also welcome to bring

UPCOMING EVENTS:

Public Star Party - September 9

General Meeting - September 16

Local Star Party - September 17

Deep Sky Observing Night - September 24

Check out all of the upcoming club events in the Calendars on page 8

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The Backyard Astronomer

Continued from page 1 their own telescopes and use one of three cement pads around the observatory all night at no cost. The observatory is equipped with Meade 12" and 16" LX200's, and a venerable non-computerized Celestron C-14. Looking at the old beast brought a smile to my face as its sand cast fork arms reminded me of my 1979 C-14. But the tube was white, not orange. Mike said he changed it because he wasn't fond of orange. So he found a piece of white formica to wrap around the OTA and added a Celestron decal onto that.

The bride and groom had the temerity of ignoring what phase the moon would be during their wedding, thus we were stuck with a waxing gibbous moon. Bummer.

Nevertheless, we soldiered on through strong moonlight to view Saturn, the moon, Albireo, S Cephei (carbon star), M13, 17, 51, 57, 82 and 92. The moonlight prevented me from accessing the darkness of the sky at this site, but I suspect it's pretty dark considering his location and the fact that the fourth annual Julian Starfest star party was held nearby (August 25-28, 2011).

At 9:00 the next morning, Mike and his wife Carolyn served a nice gourmet breakfast for us. Being early risers and coffee hounds however, my wife and I had already raided a coffeehouse in town.

As we left that morning, we noted that from a viewpoint near Mike's house we could just detect the domes of Mount Palomar Observatory, some 20 miles away as the crow flies. An hour later we were there.

It had been 27 years since our last visit and things looked pretty much the same. No new observatories – no doubt due to the notorious light pollution from Los Angeles and San Diego. Aside from seeing the large classic dome and the

famous 200" Hale telescope through a public gallery window, there's not a whole lot to see. The 18" and 48" Schmidt telescopes are not

open to the public. But there is a visitor's center, small gift shop, and picnic area next to the parking lot.

Resting on the ground next to the observatory is an

interesting item - a 14 ton cement replica of the 200" mirror used for weight and balance testing of the Hale telescope before its mirror arrived. The Hale telescope was named after astronomer George Ellery Hale (1868-1938), brainchild behind

establishing a series of record breaking large telescopes such as the Yerkes 40" refractor (1897), Mount Wilson 60" (1908) and 100" Hooker reflectors (1918), and the 200" Hale telescope at Mount Palomar (boy, talk about aperture fever!). Unfortunately, he did not live to see his 200" completed in 1948. The leviathan would be the world's largest telescope for 28 years until 1976 when the Russians produced a 238" monster.

By a happy coincidence, the hotel where the wedding party stayed was about one mile from

Oceanside Photo and Telescopes. I dropped in for a visit the first chance I had. I was like a kid in a candy store. OPT has more telescopes on display than any other store I'd been in with the possible exception of Stellar Vision in Tucson. I was in heaven! I cruised up and down rows of Celestron, Meade, Orion, Takahashi, Stellarvue, Vixen, and Televue telescopes. There were mounts of all varieties, binoculars, eyepieces, and miscellaneous accessories. The piece de resistance on display had to be a Planewave CDK 17" (\$22,000) on a Chronos mount (\$25,000). Me like.

Amateur astronomers today truly live in a great era. There were no telescope stores like this when I sought out my first telescope in 1955. Hey, maybe that niece of ours didn't pick such a bad spot to get married after all!



The observatory at Observer's Inn in Julian, Ca.



The 200" Hale Telescope at Mount Palomar Observatory



The author and his bride at Mount Palomar Observatory

Stellar Clusters, Part Two

by Henry De Jonge IV

In this second part we examine super star clusters, globular clusters and some general properties of clusters.

Super star clusters

Super star clusters, (or starburst clusters) are very large open clusters associated with rich molecular cloud environments and are regions of great star birth and activity. It is generally assumed that they require exceptionally dense and massive clouds to begin with and are usually considered to be quite young clusters. These large star clusters typically have masses in the 10's of thousands solar masses, diameters of about 3-6 parsecs, and can contain thousands of large, luminous, O types stars. Their ages are usually in the range of a million years old, and they can potentially have total masses in the range of up to a million solar masses which would make them embryonic globular clusters. One example of these is in dwarf galaxy Henize 2-10, which is about 9 Mpc distant and has a mass equivalent of several hundred thousand solar masses.

Other examples of super star clusters are NGC 3603 and R136 which contain extremely massive stars, (150 solar masses or more) that are thought to be only 1-2 million years old. These are very young and compact super clusters which contain stars of unusually high mass, (the average star forms with a mass of about 1/2 solar mass).

Super star cluster Westerlund 1 is pictured below and is located in the Milky Way. Westerlund 1 contains hundreds of very massive and bright O and B type stars. It is estimated that this super star cluster probably contains no less than 100,000 solar masses and all of its stars are located within a



Super Star Cluster Westerlund 1, located in Southern constellation Ara

region less than 6 light-years across. Westerlund 1 appears to be one of the most massive compact young clusters yet identified in the Milky Way Galaxy. Perhaps it is even a young galactic cluster in the process of formation?

Globular Clusters

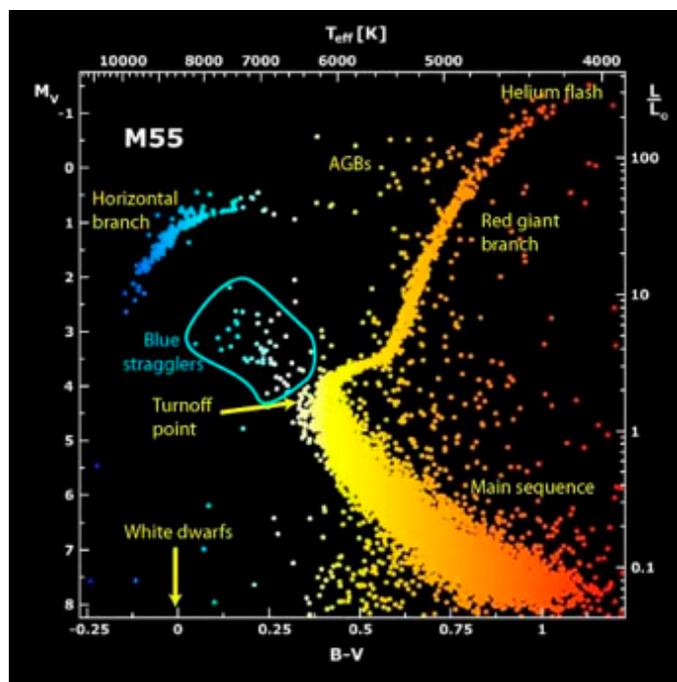
A globular cluster, (GC) is a gravitationally bound, usually spherically shaped,



not have much of a nighttime sky like we know it due to the great number and close proximity of the core stars. Their diameter ranges from a few tens of light years to a few hundreds of light years. The stars in GC usually are more tightly bound than stars in open clusters and will tend to stay gravitationally bound throughout their lives. There is also usually much less gas and dust in GC than in open clusters so that they have little new star formation within them. GC are therefore usually older than open clusters and are often considered to be fossil remnants of the early Universe as well as possible structural components of galaxy building. Some GC in the Milky Way

are thought to be captured dwarf spheroidal galaxies.

GC are usually found in the halo and bulge of the Milky Way with a concentration towards the galactic center and with orbits that are highly eccentric. Most GC in the Milky Way lie



HR plot for GC M55

in the galactic halo around our galactic center. Their orbits tend to be highly elliptical with periods of hundreds of millions of years. A GC that lies in the galactic disk is called a disk globular and they represent only about 20% of known GC. They tend to orbit in more circular orbits and are more metal rich than halo GC. The halo GC can be divided into 2 groups called "old halo" clusters and "young halo" clusters. Bulge GC that lie in the more central parts of the Galaxy are also metal rich and often are similar to solar abundances. Our galaxy has about 150-200 globular clusters.

GC consists of a mix of stars of various masses and are thought to have evolved

Continued on page 4

Stellar Clusters, Part Two

Continued from page 3

from the same cloud at about the same time. If we assume that the stars are all the same distance from us we can measure their color and apparent magnitude, plot this on an HR diagram, (assuming there is a constant difference between the apparent and absolute magnitude according to the GC distance), and use this to estimate the GC distance from us by comparing this plot to a standard HR diagram where the main sequence will plot in the correct place only if the distance is right.

The HR plot can also reveal the approximate age of the GC. This is because over its lifetime the brightest stars within the GC exhaust their H and become red giants. As time passes this happens with fainter, (smaller mass) stars. By noting when the stars of the GC begin to drift off the main sequence and turn into red giants, (the turn off point) we can determine the approximate age of the GC, (usually at least 10 billion years old or older).

In general the stars in a GC are metal poor indicating they are very old stars which formed early in the history of the universe, typically Pop II stars. It is thought that the oldest GC formed early on in the Universe and are 12-13 billion years old. They are thought to be basic building blocks of galaxy formation.

GC are seen about most large galaxies. The extremely large elliptical galaxy M87 contains several thousand GC! It is thought that many GC also contain relatively large BH, (up to thousands of solar masses) in their center. For example it is now known that some GC, (like cluster MGG 11) contain medium size BH in their center, (a few hundreds to a thousand solar masses)

Historically GC have helped with measuring cosmic distances. For example often they contain stars called RR Lyrae stars, variable stars of which we can determine the intrinsic brightness of, thereby providing a distance scale similar to Cepheids.

Many GC are fairly well known to amateur astronomers. M2 is a GC of over 100,000 stars which spans over 150 ly and is about 50,000 ly distant. M55 is another GC of about 100,000 stars, 20,000 ly distant, and spans about 10 ly in diameter. A rather large GC is called Omega Centauri, (NGC 5139) which is only 17,000 ly distant, about 150 ly in diameter, and contains about 10 million solar masses. Its age is estimated to be 12B years. The stars in this GC are packed very tightly so that it is difficult to image individual stars from Earth. Omega Centauri is the most luminous and massive GC in the Milky Way and can be seen with the unaided eye. One example of a very distant GC in our own galaxy is GC NGC 2419 which lies beyond the galactic disk at about 300,000 light years.

One unusual type of star that was found in older compact GC, (as an example in M3, a GC of about 500,000 stars, 30,000 ly distant) called a blue straggler is a star that has not evolved off the main sequence as most of the stars in an older GC have. These stars were very puzzling, how could such a young, hot, star be formed in such an old cluster? It

now appears that the best explanation is that these stars are the result of a stellar merger or mass exchange from a binary companion that provides more H fuel for the star to remain on the main sequence longer than usual. Is there a correlation between the locations of these stars and the mass distribution of the GC? Are there a higher percentage of blue stragglers in clusters with larger numbers of binaries?

Recently there has been some discussion on a GC variant called an extended GC. There have been a few of these seen in M31, (like M31 WFS C1, C2, and C3) and they are like regular GC except that they are many times larger in diameter than the usual GC yet many times less dense. They can be hundreds of light years in diameter and hundreds of times less dense. Perhaps they contain a massive amount of dark matter that helps bind them as a group? They have not been detected yet in the Milky Way or in other galaxies. More time and observational data will help determine their nature.

General properties of clusters

There is a definite lack of data and theory that describes the stellar populations of clusters, (particularly the globular clusters) in terms of star mass distribution and total mass of the cluster. When spectroscopic data is had one can make some reasonable estimates of these parameters. One theory attempts to use the total brightness of the cluster to determine these parameters. However it is usually only the brightest members of the cluster that are imaged and/or measured thus giving us far too few data points. Questions like how many of the members are binary, or how many have been ejected, are still unanswered. It is not always true for example that the lightest members are the most prone to become ejected.

A new theory attempts to determine these parameters, (especially total mass) by studying the largest mass members and extrapolating. There does appear to be a relationship between the mass of a cluster and its highest mass star. High mass stars greater than 8-10 solar masses that will eventually go SN usually form in clusters having a total mass of over 100 solar masses and so far, (as of 2010) stars approaching 150 solar masses, (the generally accepted maximum mass of a star) have been detected in 2 Milky way clusters both exceeding 10,000 solar masses. These largest stars would likely be in the youngest and most massive stellar clusters. It has also been shown that generally the youngest and highest mass clusters are the most compact clusters, however these are only spatially resolved in our galaxy and close satellites.

Since the stars in a cluster are thought to be formed from the same massive cloud, (or fragments of a massive complex), the differences in evolution amongst the stars in a cluster are usually assumed to derive solely from their initial masses. From a cloud it is generally assumed that reasonable star formation efficiency is only about 10%. Most stars and star clusters form from such humble beginnings.

Conclusions and the future

There are still many questions regarding

*Continued on page 12
The Observer*

September Guest Speaker: David Hatch

Our guest speaker for the September meeting is our own Properties Director, David Hatch.

David was born and raised in the Phoenix-Mesa area, and began his interest in astronomy some 35 years ago.

Active in scouting as a youth, some of his favorite scouting activities were full-moon night hikes around Arizona. He was lucky enough to have a scoutmaster who had an interest in the night sky also, and he would point out constellations during the hikes. David's favorite night hike was hiking to Weaver's Needle in the Superstition Mountains, where his scoutmaster brought along a small refractor to view the night sky, and that is where David had his first views of Saturn and the Orion nebula.

Even today, one of his favorite places to go observing is down Peralta Road, into the base of the Superstition Mountains.

David has been a member of EVAC since 2005, and is also active in astronomy outreach at schools, and at public star parties. There is nothing like the *Wow Factor* from someone looking through a telescope for the first or second time. David hopes he can get some young man or young lady interested in astronomy like he was, some 35 years ago.

Image great objects - in your pajamas - from the comfort of your own home with Slooh remote telescopes. David will show how you can take command of the Slooh telescopes too. Slooh is a remote telescope service that can be viewed - live - over the Internet. Slooh telescopes are located on top of Caldera de Taburiente, a dormant volcano 7,900 feet in elevation on the Island of Tenerife, Canary Islands, off the coast of Spain, and another telescope is located in La Dehesa,



Chile. David will also show some of his best images taken with the Slooh telescopes.

High on the mountaintops of the Canary Islands, located on top of Caldera de Taburiente, on the Island of Tenerife, and also on top of another dormant volcano on the Island of La Palma, there is an International collection of telescopes ranging in sizes from 14 inches, to 34 feet in diameter.

Over the past 10 months, David has developed an interest in these rather large, interesting telescopes, ranging from about \$75,000 to nearly \$180,000,000 dollars to build. David will show and tell what he knows about these telescopes, and will also show some amazing images taken from these telescopes.

☾ **FIRST QUARTER MOON ON SEPTEMBER 4 AT 10:39**

● **FULL MOON ON SEPTEMBER 12 AT 02:27**

☾ **LAST QUARTER MOON ON SEPTEMBER 20 AT 06:39**

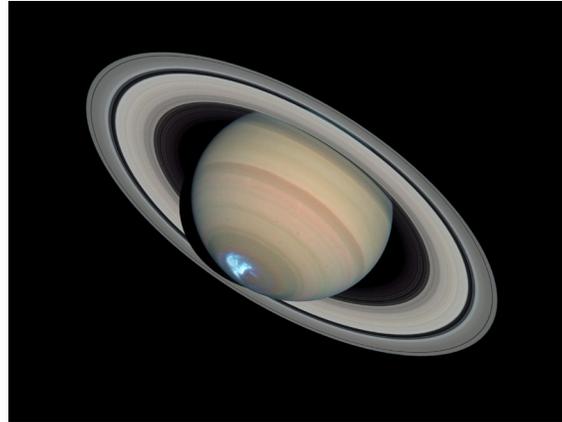
○ **NEW MOON ON SEPTEMBER 27 AT 04:09**

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Upcoming Meetings

September 16

October 21

November 18

December 16

January 20

February 17

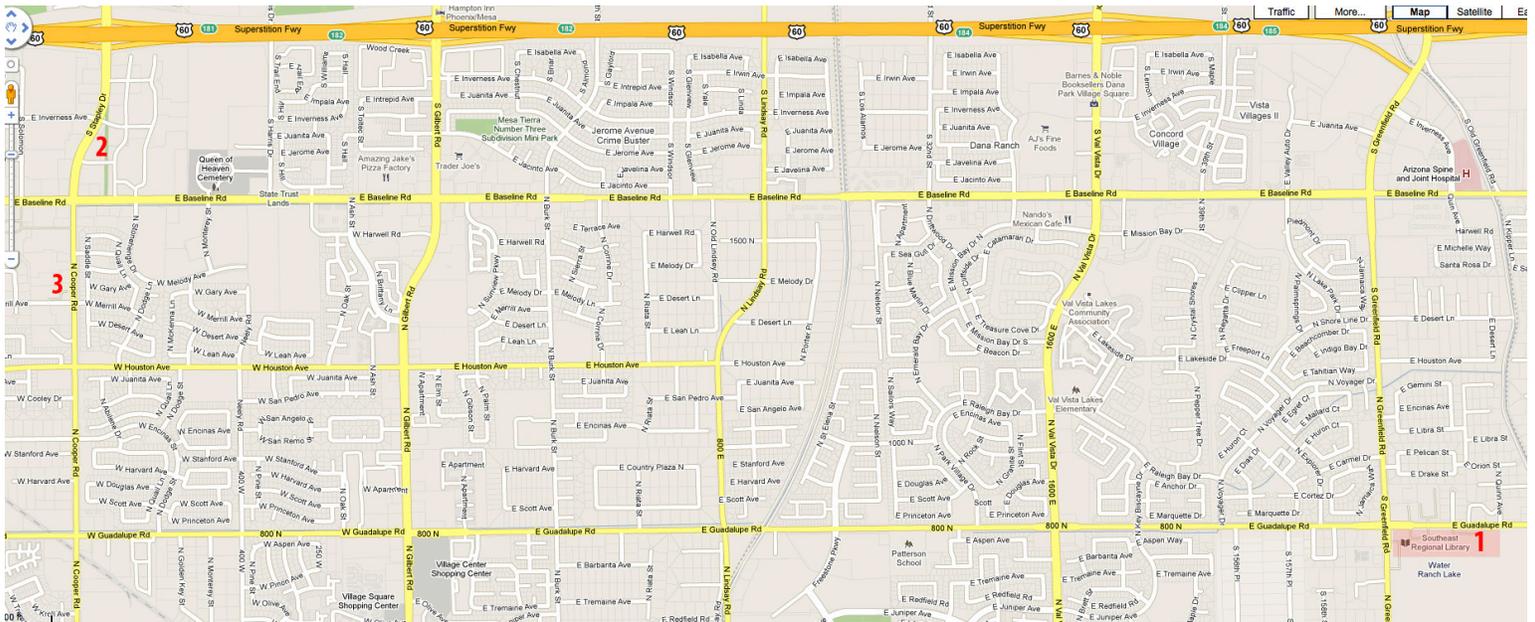
The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30 pm.

All are welcome to attend the pre-meeting dinner at 5:30 pm. We meet at Old Country Buffet, located at 1855 S. Stapley Drive in Mesa. The restaurant is in the plaza on the northeast corner of Stapley and Baseline Roads, just south of US60.

Likewise, all are invited to meet for coffee and more astro talk after the meeting at Denny's on Cooper (Stapley), between Baseline and Guadalupe Roads.

Visitors are always welcome!



2

Old Country Buffet
1855 S. Stapley Drive
Mesa, Az. 85204

1

Southeast Regional Library
775 N. Greenfield Road
Gilbert, Az. 85234



3

Denny's
1368 N. Cooper
Gilbert, Az. 85233



SEPTEMBER 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

September 9 - Public Star Party & SkyWatch at Riparian Preserve

September 16 - General Meeting at SE Library

September 17 - Local Star Party at Boyce Thompson Arboretum

September 20 - Edu Prize Elementary School Star Party

September 24 - Deep Sky Observing Night. Head out to your favorite dark sky site and observe!

September 27 - Girl Scout Troop #512 Star Party

September 29 - Dobson Academy Star Party

September 30 - Arizona Museum of Natural History Star Party

OCTOBER 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

October 1 - Deep Sky Observing Night. Head out to your favorite dark sky site and observe!

October 6 - Playa del Rey Elementary School Party

October 14 - Public Star Party & SkyWatch at Riparian Preserve

October 21 - General Meeting at SE Library

October 22 - Local Star Party at Boyce Thompson

October 22 - Cub Scout Pack #446 Star Party

October 28-30 - All Arizona Star Party

East Valley Astronomy Club -- 2011 Membership Form

Please complete this form and return it to the club Treasurer at the next meeting or mail it to EVAC, PO Box 2202, Mesa, Az, 85214-2202. Please include a check or money order made payable to EVAC for the appropriate amount.

IMPORTANT: All memberships expire on December 31 of each year.

Select one of the following:

- New Member
 Renewal
 Change of Address

New Member Dues (dues are prorated, select according to the month you are joining the club):

- | | |
|---|---|
| <input type="checkbox"/> \$30.00 Individual January through March | <input type="checkbox"/> \$22.50 Individual April through June |
| <input type="checkbox"/> \$35.00 Family January through March | <input type="checkbox"/> \$26.25 Family April through June |
| <input type="checkbox"/> \$15.00 Individual July through September | <input type="checkbox"/> \$37.50 Individual October through December |
| <input type="checkbox"/> \$17.50 Family July through September | <input type="checkbox"/> \$43.75 Family October through December |
- Includes dues for the following year*

Renewal (current members only):

- \$30.00 Individual**
 \$35.00 Family

Name Badges:

- \$10.00** Each (including postage) Quantity: _____

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC

- Payment was remitted separately using PayPal
 Payment was remitted separately using my financial institution's online bill payment feature

Name:

Phone:

Address:

Email:

City, State, Zip:

Publish email address on website
 URL:

How would you like to receive your monthly newsletter? (choose one option):

- Electronic delivery (PDF) *Included with membership*
 US Mail **Please add \$10 to the total payment**

Areas of Interest (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> General Observing | <input type="checkbox"/> Cosmology |
| <input type="checkbox"/> Lunar Observing | <input type="checkbox"/> Telescope Making |
| <input type="checkbox"/> Planetary Observing | <input type="checkbox"/> Astrophotography |
| <input type="checkbox"/> Deep Sky Observing | <input type="checkbox"/> Other |

Please describe your astronomy equipment:

Would you be interested in attending a beginner's workshop? Yes No

How did you discover East Valley Astronomy Club?

PO Box 2202
Mesa, AZ 85214-2202
www.evaonline.org

All members are required to have a liability release form (waiver) on file. Please complete one and forward to the Treasurer with your membership application or renewal.

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as “EVAC”) I hereby affirm that I and my family agree to hold EVAC harmless from any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), which may directly or indirectly be connected to EVAC and/or my presence on the premises of any EVAC Star Party and related areas.

I further agree to indemnify any party indicated above should such party suffer any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), caused directly or indirectly by my negligent or intentional acts, or failure to act, or if such acts or failures to act are directly or indirectly caused by any person in my family or associates while participating in an EVAC Star Party.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance.

EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Please print name here

Date

Please sign name here

**PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org**

Solar System Size Surprise

by Dr. Tony Phillips

News flash: You may be closer to interstellar space than you previously thought.

A team of researchers led by Tom Krimigis of the Johns Hopkins University Applied Physics Laboratory announced the finding in the June 2011 issue of *Nature*. The complicated title of their article, "Zero outward flow velocity for plasma in a heliosheath transition layer," belies a simple conclusion: The solar system appears to be a billion or more kilometers

smaller than earlier estimates.

The recalculation is prompted by data from NASA's Voyager 1 probe, now 18 billion kilometers from Earth. Voyagers 1 and 2 were designed and built and are managed by NASA's Jet Propulsion Laboratory. Aging but active, the spacecraft

have been traveling toward the stars since 1977 on a heroic mission to leave the solar system and find out what lies beyond.

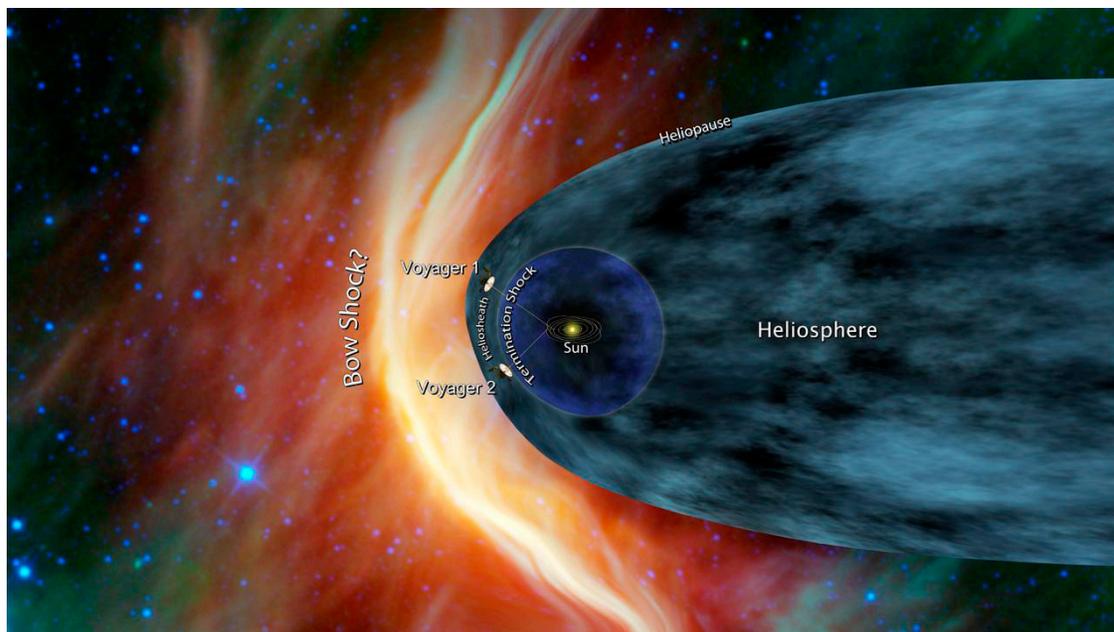
To accomplish their task, the Voyagers must penetrate the outer walls of the heliosphere, a great bubble of plasma and magnetism blown in space by the solar wind. The heliosphere is so big, it contains all the planets, comets, and asteroids that orbit the sun. Indeed many astronomers hold that the heliosphere defines the boundaries of the solar system. Inside it is "home." Outside lies the Milky Way. For 30+ years, the spacecraft have been hurtling toward the transition zone. Voyager 1 is closing in.

Much of Voyager 1's long journey has been uneventful. Last year, however, things began to change. In June 2010, Voyager 1 beamed back a startling number: zero. That's the outward velocity of the solar wind where the probe is now.

"This is the first sign that the frontier is upon us," says Krimigis.

Previously, researchers thought the crossing was still years and billions of kilometers away, but a new analysis gave them second thoughts. Krimigis and colleagues combined Voyager data with previously unpublished measurements from the Cassini spacecraft. Cassini, on a mission to study Saturn, is nowhere near the edge of the solar system, but one of its

instruments can detect atoms streaming into our solar system from the outside. Comparing data from the two locations, the team concluded that the edge of the heliosphere lies somewhere between 16 to 23 billion kilometers



This artist's concept shows NASA's two Voyager spacecraft exploring a turbulent region of space known as the heliosheath, the outer shell of the bubble of charged particles around our sun. Image credit: NASA/JPL-Caltech

from the sun, with a best estimate of approximately 18 billion kilometers.

Because Voyager 1 is already nearly 18 billion kilometers out, it could cross into interstellar space at any time—maybe even as you are reading this article.

"How close are we?" wonders Ed Stone, Caltech professor and principal investigator of the Voyager project since the beginning. "We don't know, but Voyager 1 speeds outward a billion miles every three years, so we may not have long to wait."

Stay tuned for the crossing.

For more about the missions of Voyager 1 and 2, see <http://voyager.jpl.nasa.gov/>. Another Voyager project scientist, Merav Opher, is the guest on the newest Space Place Live cartoon interview show for kids at <http://spaceplace.nasa.gov/space-place-live>.

If It's Clear...

by *Fulton Wright, Jr.*

Prescott Astronomy Club

SEPTEMBER 2011

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is 1/2 degree or 30 arcminutes in diameter. All times are Mountain Standard Time.

All month you should be able to see comet C/2009 P1 (Garradd) with binoculars or a small (3 inch) telescope. See Astronomy magazine, September 2011, p. 42 for help locating this 7th magnitude object.

On Saturday, September 3, around sunset (6:54 PM), you can see a magnitude 2.3 star, Delta Scorpii, just above the north pole of the Moon. Use a medium (6 inch) telescope because the sky won't be very dark yet.

On Sunday, September 4, the Moon is at first quarter phase and sets at 11:38 PM.

On Friday, September 9, about 5:30 AM, you can see Mercury and Regulus within 1 degree of each other. With binoculars

look low in the east.

On Sunday, September 11, at 6:08 PM (34 minutes before sunset), the full Moon rises, spoiling any chance of hunting for faint fuzzies for the night.

On Sunday, September 18, you can watch an entire transit of Io in front of Jupiter. From 9:50 PM to midnight Io's shadow will be on the planet. From 10:47 PM to 12:55 AM (Monday) Io will be in front of the planet.

On Tuesday, September 20, at 11:55 PM, the last quarter Moon rises.

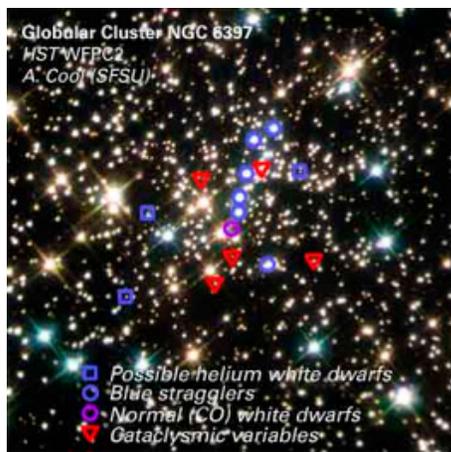
On Thursday, September 22, you can watch an entire transit of Europa in front of Jupiter. From 9:44 PM to 12:13 AM (Friday) Europa's shadow will be on the planet. From 11:33 PM to 1:53 AM (Friday) Europa will be in front of the planet.

On Monday, September 26, it is new Moon so you have all night to hunt for faint fuzzies.

Stellar Clusters, Part Two

Continued from page 4

clusters that need to be understood. In



Stellar Variety in GC NGC 6397

most cases there is still no method or even enough data collection that gives us a clear understanding of the various types of stars contained within clusters and their distribution. It is also far from understood how the mass of the cluster is distributed among its member stars. How the effects of individual star properties influence

the cluster, (like magnetic fields, winds, mass loss, etc)?

The understanding of clusters like associations and open clusters will help in understanding stellar origins and evolution while the understanding of GC will help in understanding the origins and properties of galaxies and our Universe. As we have seen GC have been crucial in helping to establish cosmic distance relationships.

We have also seen that the lines of separation between associations, open clusters, and globular clusters are sometimes blurred and can be more continuous than discrete, although they may clearly have their unique differences, especially in age. More observations of all types of clusters and correla-

tions with theory in the future will solidify our understanding of stars, their creation, their groupings, relationships, and their evolution. In the meantime we continue to enjoy the beauty and variety of these stellar clusters.

	OPEN (GALACTIC) CLUSTERS	GLOBULAR CLUSTERS
Morphology	Loose, irregular collections of stars	Dense, spherically symmetric distribution of stars
Membership	$\sim 10^2$ stars, plus gas	$\sim 10^5 - 10^6$ stars, no gas
Distribution	restricted to galactic plane	roughly spherical distribution around Milky Way
H-R Diagram	<p>— all show main sequence — wide variety of turn-off points</p>	<p>— all show short main sequence — all have very similar turn-off points</p>

Summary of Cluster properties

2012 Club Officer Elections

Any club is only as good as its members... and the East Valley Astronomy Club has some pretty fantastic members.

The club's bylaws require us to elect officers in November for the following year. We are primarily looking for members who are interested in filling the positions being vacated because of term limits, but any member may throw his or her hat in the ring for any elected position.

The election process, fully articulated in the EVAC Constitution & Bylaws (available online), is quite simple:

Officers and Board Members shall serve a period of one (1) year and/or until their successors are elected. No member shall be eligible for more than two (2) consecutive terms in the same office.

Nominations for Officer or Board positions shall be opened at the October general meeting and shall be publicized in the club newsletter and on the club website prior to the November general meeting. Nominations will be closed with the start of elections at the November general meeting.

Any member may nominate another member-in-good-

standing for office, provided prior consent of the nominee has been given. The Secretary and/or Treasurer shall validate qualification of the nominees.

Officers and Board Members shall be elected by a simple majority of the General Assembly present at the November general meeting. Voting will be done by secret ballot. Single nominees for office may be affirmed to the position by a majority yes vote taken by a show of hands. All ballots, if any, shall be saved until the installation of officers at the January general meeting, and a committee of volunteers will do the ballot counting. In the case of a tie, a special run-off election at the December general meeting shall determine the election.

If you want to contribute to the operation of EVAC, please contact Steven Aggas, EVAC president, to let him know which position is of interest. Steven will then present his slate of volunteers at the next meeting. If more than one person is interested in any position there will be a vote.

Is this the year you give back to the club?

2012 East Valley Astronomy Club Slate

Executive Officers

	<u>Current</u>	<u>2012</u>
President:	Steven Aggas	Open
Vice President:	Steven Aggas (Acting VP)	Open
Treasurer:	Silvio Jaconelli (Term-Limited)	Open
Secretary:	Claude Haynes	Open

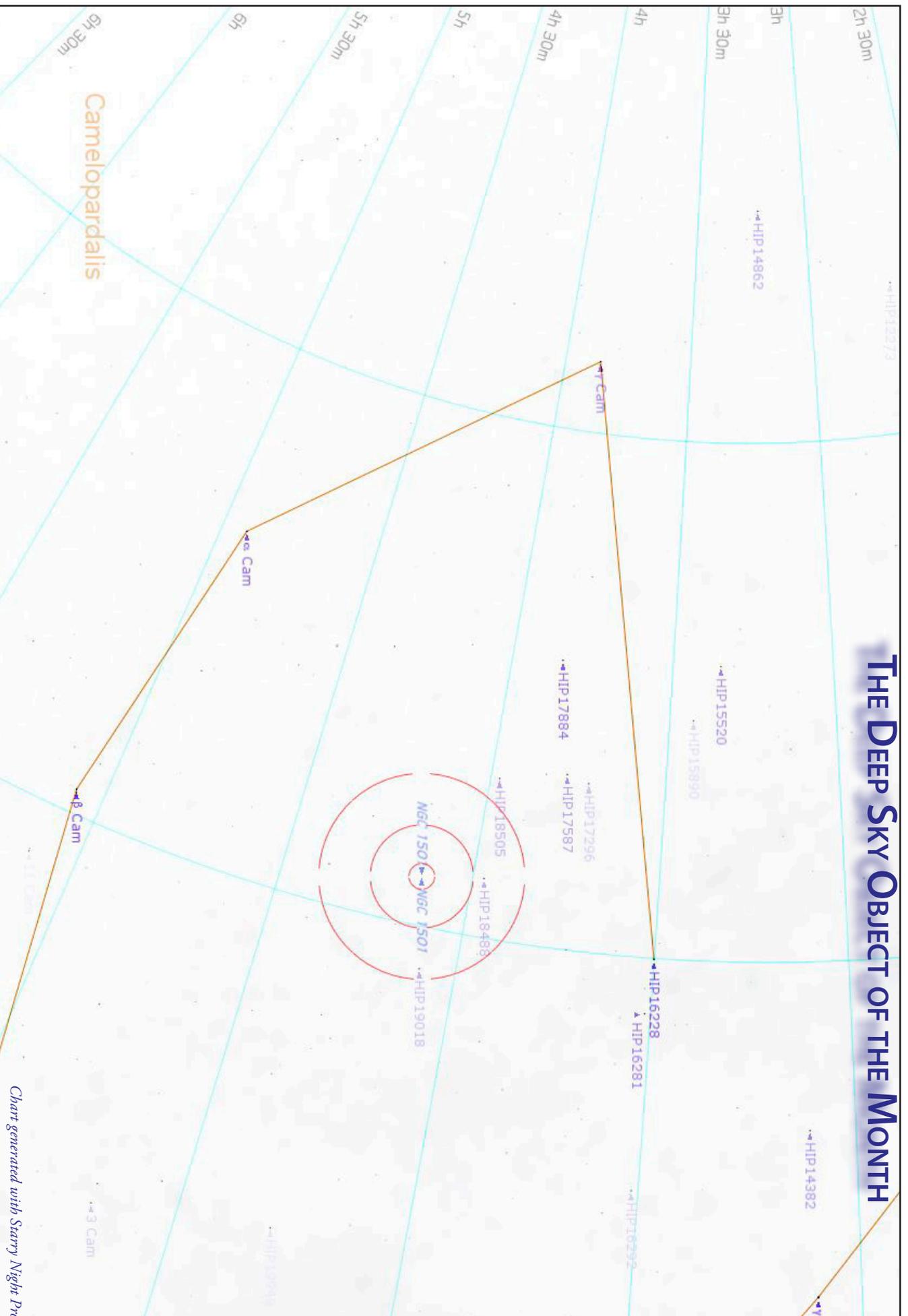
Board of Directors

<u>Current</u>	<u>2012</u>
Marty Pieczonka	Marty Pieczonka
Dave Coshow	Dave Coshow
Brad Geisler	Brad Geisler
Ray Heinle (Term-Limited)	David Hatch
Ed Thomas	Open

Administrative Officers

	<u>Current</u>	<u>2012</u>
Events Coordinator:	Lynn Young	Lynn Young
Property Director:	David Hatch	David Hatch
Membership:	Les Wagner	Les Wagner
Newsletter Editor:	Peter Argenziano	Peter Argenziano
Webmaster:	Marty Pieczonka	Marty Pieczonka
Observatory Manager:	Martin Thompson	Martin Thompson

THE DEEP SKY OBJECT OF THE MONTH



NGC 1501 (PK 144-6.1) Planetary Nebula in Camelopardalis

RA: 04h 06m 59.2s Dec: +60° 55' 14" Size: 56" Magnitude: 12.0



As one of the many benefits to becoming an East Valley Astronomy Club member, we have an 8 inch Dobsonian reflector with eyepieces available for monthly check-out to current EVAC members. Have any questions, or interested?

**Call or see David Hatch, EVAC Properties Manager
480-433-4217**



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Please send your contributions, tips, suggestions and comments to the Editor at: news@evaconline.org Contributions may be edited. The views and opinions expressed in this newsletter do not necessarily represent those of the East Valley Astronomy Club, the publisher or editor.

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The East Valley Astronomy Club is a 501(c)(3) nonprofit charitable organization.

www.evaconline.org

East Valley Astronomy Club
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President: Steven Aggas

Vice President: Steven Aggas (acting)

Secretary: Claude Haynes

Treasurer: Silvio Jaconelli

Board of Directors: Marty Pieczonka, Dave Coshow, Ray Heinle, Ed Thomas & Brad Geisler

Events Coordinator: Lynn Young

Property Director: David Hatch

Refreshments: Mort Hanlon

Observing Program Coordinator: Marty Pieczonka

AL Representative: David Douglass

Membership: Les Wagner

Newsletter Editor: Peter Argenziano

Webmaster: Marty Pieczonka

SkyWatch Coordinator: Claude Haynes

Observatory Manager: Martin Thompson