Volume 28 Issue 10

October 2014

The Observer

East Valley Astronomy Club

NGC 253: The Sculptor Galaxy
APOD December 20, 2011 Angus Lau

Upcoming Events:

Astronomy Day - October 4

Public Star Party - October 10

EVAC Monthly Meeting- October 10

Local Star Party - October 18

Partial Solar Eclipse - October 23

All Arizona Star Party - October 24-25

Check out all of the upcoming club events in the Calendars on page 11

Inside this Issue:

EVAC This Month

by Claude Haynes

October is a busy month. We start by celebrating Astronomy Day on October 4. Dave will have the observatory open for solar viewing, and Lynn Young and I are going to head downtown to the Arizona Science Center and advertise the observatory. There are also several school star parties listed on the calendar. We have a dedicated group of members that do show up regularly at these parties, but if you haven't come to a school star party I would really encourage it. They are lots of fun, and you really do have a great impact on student's practical experience with what they learn in class. Check the calendar and see if there is a party close to you.

Special notice for the next meeting – it is October 10 – the second Friday, not the third. It is a joint meeting with Saguaro Astronomy Club. Our speaker is Fred Espenak who writes the Eclipse Page for the NASA website. Because this is also our public lecture night we are going to have Fred speak first. It is especially timely because we have a lunar eclipse on the morning of October 8 and a partial solar eclipse on

Evac This Month

Continued from page 1

October 23. The lunar eclipse is early morning before dawn, but we will have the observatory open to the public on the afternoon of the solar eclipse.
After Fred speaks we will have a short break. Jan is bringing a cake in honor of the 8th anniversary of the opening of the Gilbert Rotary Centennial Observatory. This is something that we should all take pride in. It is a unique facility, and a wonderful public service. Kudos to our volunteers who keep things going.

After the break we will have the business portion of the meeting. The Saguaro club also has business to conduct, so we will break into separate groups. Nominations of officers for 2015 is one topic. If you are interested, or even just curious, give me an email at president@evaconline.org. We have a wonderful group of volunteers who operate the club, and I hope you will consider joining them. We have some positions that are term limited, but I want to encourage anyone who might be interested in any office to consider it.

We end the month with the All Arizona Star Party on October 24 and 25. Join us for a potluck at 5pm on Friday. Jennifer Polakis is helping to collect some great raffle prizes. Meet in the tent at 4pm on Saturday for our annual Temperance Union Happy Hour. The raffle is at 4:30 and Chili Dinner is at 5pm. The Hospitality Tent is open for coffee and snacks later in the evening, and is a great place to take a break and swap stories. It is always a fun time. Details and a map are on the website. We always need some help in transporting supplies and setting up. Let me know if you can assist.

Keep looking up

Claude

If It's Clear…

by Fulton Wright, Jr. Prescott Astronomy Club

October 2014

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 arc-minutes in diameter. All times are Mountain Standard Time.

On Wednesday, October 1, the Moon is at first quarter phase and sets at midnight.

On the evening of Tuesday, October 7, after midnight (Wednesday) there is a total eclipse of the Moon. Here is the schedule:
01:19 AM Moon enters penumbra (unobservable).
02:17 AM Moon enters umbra (partial phase starts).
03:27 AM Moon completely in umbra (total phase starts).
04:25 AM Moon starts to exit umbra (total phase ends).
05:34 AM Moon leaves umbra (partial phase ends).
06:30 AM Sun rises.
06:34 AM Moon leaves penumbra (unobservable for several reasons).
06:41 AM Moon sets.

This, of course, is the night of the full Moon, but you can hunt for faint fuzzies during the total phase of the eclipse.

On Thursday, October 9, at 10:10 PM, the Moon occults 31 Arietis, a magnitude 5, very close double star. The star should disappear in two equal steps, only 0.2 seconds apart. The reappearance at the dark limb of the Moon at 10:54 PM should be even faster.

On Wednesday, October 15, at 4:14 AM, the Moon occults the magnitude 3.6 star Lambda Geminorum. The star reappears from the dark limb of the Moon at 5:44 AM. Tonight the Moon is at third quarter phase and rises at 12:05 AM (Thursday).

On Sunday, October 19, comet C/2013 A1 (Sliding Spring) and Mars have a close encounter. Not only do they appear close, they are actually near each other in space (82,000 miles at closest). When they rise at 11:27 AM, they are only 1.5 arc-minutes apart, but we can't see them because it is daylight. By the time it is dark, about 7:00 PM, they are 1/3

If It's Clear...

Continued from page 2

degree apart. Mars will be magnitude 1 while the comet will be somewhere between magnitude 8 and 10. (Predicting comet brightness is a risky business.) Look for the comet to the right of the planet (non-inverting telescope).

On the night of Tuesday, October 21, after midnight (Wednesday) you can watch some events with Jupiter's moons. Here is the schedule:
01:08 AM Jupiter rises.
02:23 AM Io and Europa pass about 1 arc-second from each other.
02:37 AM Io's shadow falls on Jupiter.
03:46 AM Io moves in front of Jupiter.
04:10 AM Io is just north of the Great Red Spot.
04:52 AM Io's shadow leaves Jupiter.
06:03 AM Io moves from in front of Jupiter.
06:41 AM Sunrise.

On Thursday, October 23, there is a partial eclipse of the Sun. In Prescott it starts about 2:19 PM, is maximum about 3:39 (less than 50% covered), and ends about 4:43 PM. NEVER LOOK AT THE PARTIALLY ECLIPSED SUN DIRECTLY. See the October issues of Sky & Telescope (p. 52) or Astronomy (p. 54) for viewing suggestions. (My favorite is a #14 welder's glass.) This, of course, is the date of the new Moon and you have all night to hunt for faint fuzzies.

On the night of Thursday, October 23, after midnight (Friday) about 1:25 AM, you can see Io pass completely in front of Ganymede.

On Thursday, October 30, the Moon is at first quarter phase. It should look exactly half illuminated at 7:49 PM and set at midnight.

On the night of Friday, October 31, after midnight (Saturday), you can see some events with Jupiter's moons. Here is the schedule:
12:34 AM Jupiter rises with Ganymede's shadow on it.
01:13 AM Io moves slightly behind Ganymede.
02:13 AM Ganymede's shadow leaves Jupiter.
02:23 AM Callisto's shadow falls on Jupiter.
03:38 AM Ganymede moves in front of Jupiter.
04:51 AM Io moves slightly behind Callisto.

The Backyard Astronomer

by Bill Dellinges (October 2014)

Goodbye Summer!

I won't miss the heat, humidity, or the bugs. Good riddance! Now let's get our lives back and get down to some observing under humane conditions. We salute the departing Summer Triangle which surprisingly is still with us, just west of the meridian. This asterism has a couple of interesting things about it. If you accept that Lyra the Lyre was from time to time over the millennia an eagle or vulture (Vega is from the Arabic "Swooping Vulture/Eagle") then we have three birds comprising the Summer Triangle – Lyra the Vulture, Cygnus the Swan and Aquila the Eagle.

Another interesting point about this asterism is that of the three brightest stars in each of those constellations, Deneb appears to be the faintest but is intrinsically the brightest! Let's see why. In order of apparent magnitude we have Vega at 0.03 (distance 25 LY), Altair at 0.76 (16 LY), and Deneb at 1.2 (3,200 LY). But measured on the absolute magnitude scale where we place all stars at a distance of 10 parsecs or 32.6 light years so we may see how bright they really are, Vega then registers a magnitude 0.6, Altair 2.2 and Deneb a -8.7! Deneb is truly a stellar blow torch, 250,000 times more luminous than the Sun. A white supergiant, Deneb is 200 times the diameter of the Sun and 20 times its mass. If Earth orbited Deneb, it would have to do so 400 times farther from the Sun than it is now in order for earthlings to survive.

Let's take a short tour through this area of sky. M27 in Vulpecula is the brightest and most impressive of the planetary nebulae. The 8th magnitude Dumbbell Nebula is 1,400 light years away and clearly displays an asymmetrical shape of its namesake in an 11 inch telescope at 90x. Nearby is an overlooked globular cluster, M71 in Sagitta. Though closer than the famous M13 in Hercules, M71 is much dimmer but still an interesting sight in an 11inch at 233x. Only a fraction of its stars are resolved, leaving

The Backyard Astronomer

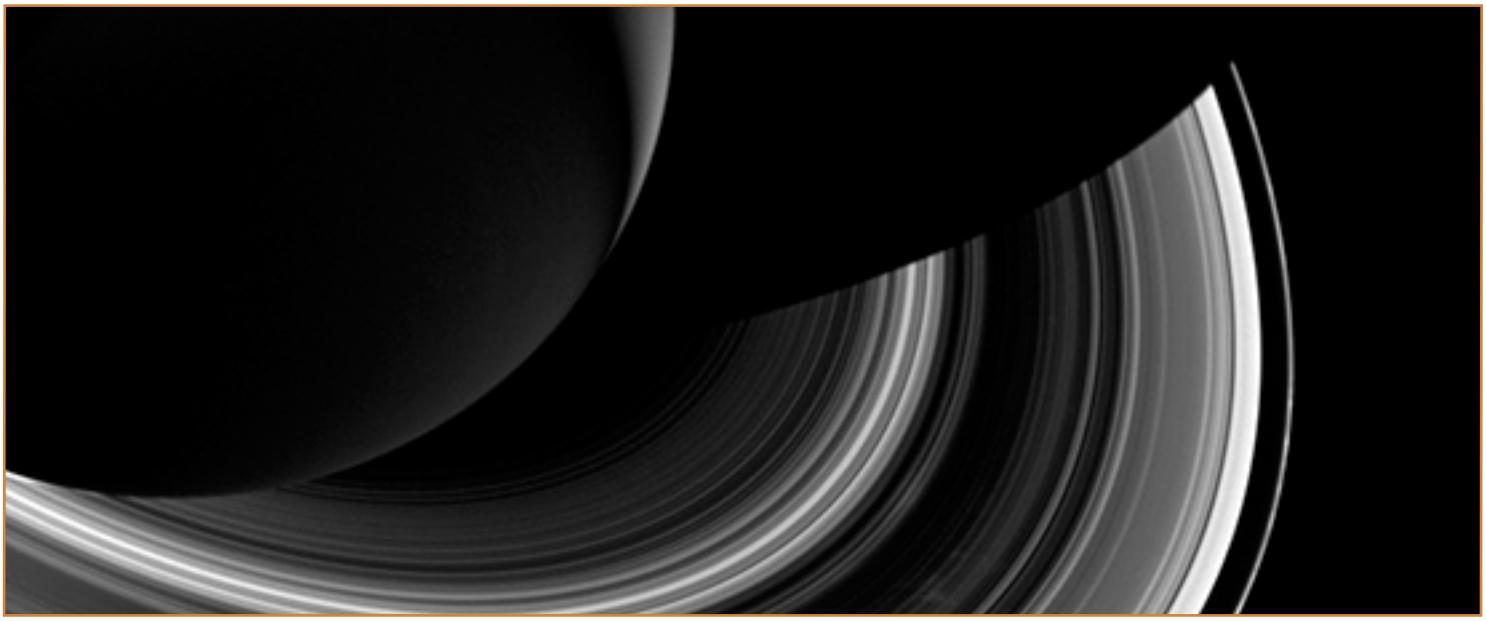
Continued from page 3

behind an unresolved fog of light. If you feel let down by this anemic globular cluster you can hop a short distance northeast to M15 in Pegasus. It's one of the finest globular star clusters in the sky. Neptune is well placed in Aquarius currently. Discovered in 1846, it's now the 8th and most distant planet from the sun following the demotion of Pluto by the I.A.U. in 2006. Almost any power will show it as a non stellar object. Neptune is currently 2.7 billion miles away and appears only 2.4 arc seconds in diameter. The 11 inch at 280x displayed a ghostly small blue-green disk. In this session, a faint 13.5 magnitude speck was sighted near the disk which matched the position of Triton, the planet's largest moon, at S&T's Triton Tracker utility. As you gaze at Neptune, consider its light took 4 hours to get to you at the speed of light.

How about a couple of surprises to close out the night? Put your scope on Delta Lyrae using a low power eyepiece. You will be rewarded with a lovely sparse open cluster and white and red optical double star, Delta 1 and 2. This small grouping of stars is called Stephenson 1. Lastly, aim your scope at NGC 6543, the Cat's Eye nebula in Draco. It's always a crowd pleaser but I send you there on another mission. It's top secret. About 1 degree southwest of 6543 is the beautiful, unique triple star Bird 3 (aka BRD3, 17h 52m +67 degrees). It's not often you see a triple star with the three stars in a straight line! Hello autumn! (Don't blink or you'll miss it!).

NASA's Space Place

Bright Clumps in Saturn Ring Now Mysteriously Scarce



September 8, 2014

Compared to the age of the solar system -- about four-and-a-half billion years -- a couple of decades are next to nothing. Some planetary locales change little over many millions of years, so for scientists who study the planets, any object that evolves on such a short interval makes for a tempting target for study. And so it is with the ever-changing rings of Saturn.

Case in point: Saturn's narrow, chaotic and clumpy F ring. A recent NASA-funded study compared the F ring's appearance in six years of observations by the Cassini mission to its appearance during the Saturn flybys of NASA's Voyager mission, 30 years earlier. The study team found that, while the overall number of clumps in the F ring remained the same, the number of exceptionally bright clumps of material plummeted during that time. While the Voyagers saw two or three bright clumps in any given observation, Cassini spied only two of the features during a six-year period. What physical processes, they wondered, could cause only the brightest of these features to decline sharply?

While a variety of features in Saturn's many rings display marked changes over multiple years, the F ring seems to change on a scale of days, and even hours. Trying to work out what is responsible for the ring's tumultuous behavior is a major goal for ring scientists working on Cassini.

"Saturn's F ring looks fundamentally different from the time of Voyager to the Cassini era," said Robert French of the SETI Institute in Mountain View, California, who led the study along with SETI Principal Investigator Mark Showalter. "It makes for an irresistible mystery for us to investigate."

The researchers hypothesize that the brightest clumps in the F ring are caused by repeated impacts into its core by small moonlets up to about 3 miles (5 kilometers) wide, whose paths around Saturn lie close to the ring and cross into it every orbit. They propose that the diminishing number of bright clumps results from a drop in the number of these little moonlets between the Voyager and Cassini eras.

As for what might have caused the moonlets to become scarce, the team has a suspect: Saturn's moon Prometheus. The F ring encircles the planet at a special location, near a place called the Roche limit -- get any closer to Saturn than this, and tidal forces from the planet's gravity tear apart smaller bodies. "Material at this distance from Saturn can't decide whether it wants to remain as a ring or coalesce to form a moon," French said. Prometheus orbits just inside the F ring, and adds to the pandemonium by stirring up the ring particles, sometimes leading to the creation of moonlets, and sometimes leading to their destruction.

Every 17 years, the orbit of Prometheus aligns with the orbit of the F ring in such a way that its influence is particularly strong. The study team thinks this periodic alignment might spur the creation of many new moonlets. The moonlets would then crash repeatedly through the F ring, like cars in a Hollywood high-speed chase, creating bright clumps as they smash across lanes of ring material. Fewer clumps would be created as time goes by, because the moonlets themselves are eventually destroyed by all the crashes.

As with any good scientific hypothesis, the researchers offer a way to test their ideas. It happens that the Voyager encounters with Saturn occurred a few years after the 1975 alignment between Prometheus and the F ring, and Cassini was present for the 2009 alignment. If the moon's periodic influence is indeed responsible for creating new moonlets, then the researchers expect that Cassini

Bright Clumps in Saturn Ring Now Mysteriously Scarce

Continued from page 5

then the researchers expect that Cassini would see the F ring return to a Voyager-like number of bright clumps in the next couple of years.

"Cassini's continued presence at Saturn gives us an interesting opportunity to test this prediction," said Linda Spilker, Cassini project scientist at NASA's Jet Propulsion Laboratory in Pasadena, California, who was not involved in the study. "Whatever the result, we're certain to learn something valuable about how rings, as well as planets and moons, form and evolve."

The study by French and colleagues was published in the online edition of the Journal Icarus on July 15, 2014.

NASA's Jet Propulsion Laboratory manages the Voyager and Cassini-Huygens missions for NASA's Science Mission Directorate at NASA Headquarters in Washington.

More information about Cassini is available at:

http://www.nasa.gov/cassini

http://saturn.jpl.nasa.gov

First Quarter Moon on October 1 at 15:33

***Full Moon on October 8 at 06:51**

Last Quarter Moon on October 15 at 15:12

New Moon on October 23 at 17:57

October 24-25 Hovater Rd. Airfield

Friday - Potluck at 05:00 PM

Saturday

Temperance Union Happy Hour at 04:00 PM

Raffle at 04:30 PM

Chile Dinner at 05:00 PM

Dinner is 5$ and the raffle ticketts are 1$,each or 6 for 5$

Please observe dark sky etiquette. Minimize extra light, and if you will be leaving early, please park closer to the exit.

Check the EVAC website for details.

Looking for that perfect weekend activity?

Why not resolve to getting involved?

Contact Dave Coshow to join the staff at GRCO

Email: grco@evaconline.org

Business For Sale

Successful astronomy-related manufacturing business for sale, currently doing business in Northern Arizona. Popular astronomy brand with great reputation and strong international sales.

Please call for more information.

(702) 823-8087 ask for Robert.

Upcoming Meetings

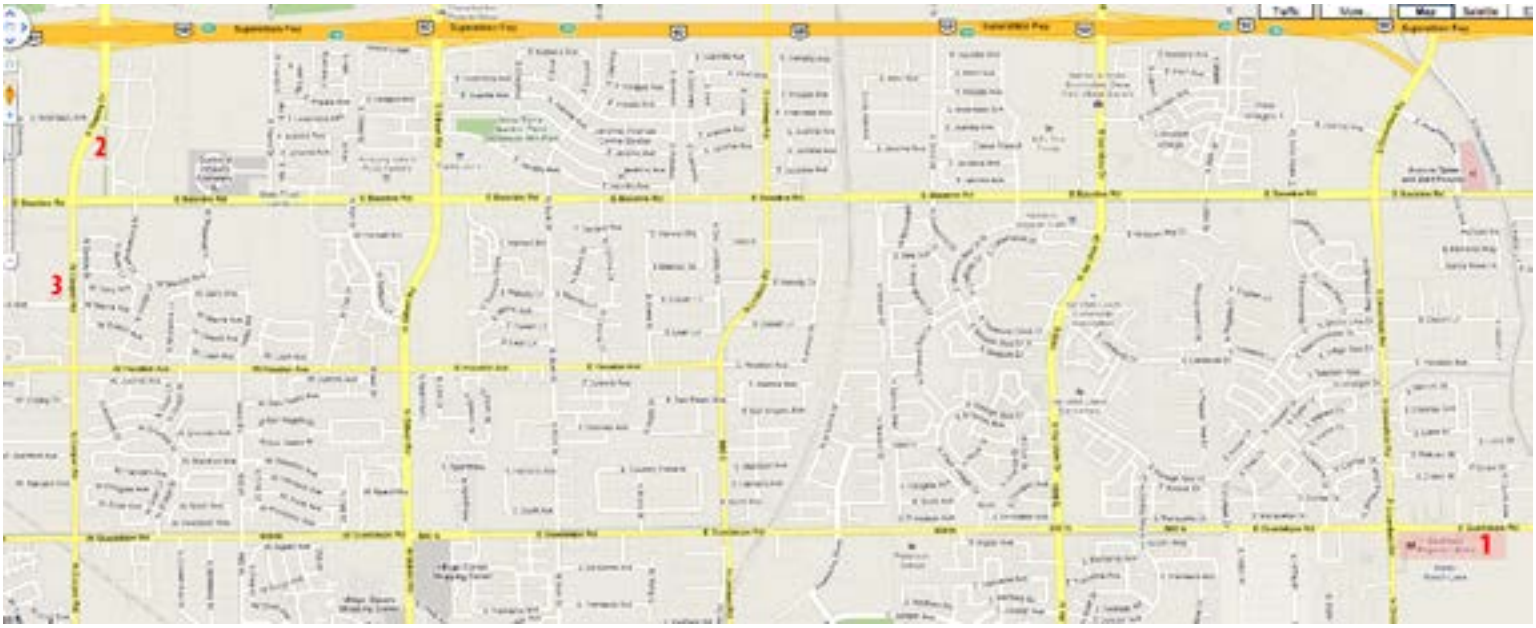
October 10
November 21
December 19
January 16
February 20
March 20
April 17

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.

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

October 2014

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	

Oct 4 - Astronomy Day at Az Science Center

Oct 8 - Total Lunar Eclipse

Oct 10- Riparian Public Star Party/Skywatch

Oct 10 - Joint Meeting with Saguaro Astronomy Club

Oct 18- Local Star Party/ 2nd Annual LibraryCon

Oct 23 - Partial Solar Eclipse

Oct 24 - All Arizona Star Party

Oct 25 - All Arizona Star Party

Oct 29 - CGCC Star Party

Oct 30 - Shepherd Jr High

November 2014

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

Nov 14- Riparian Public Star Party/Skywatch

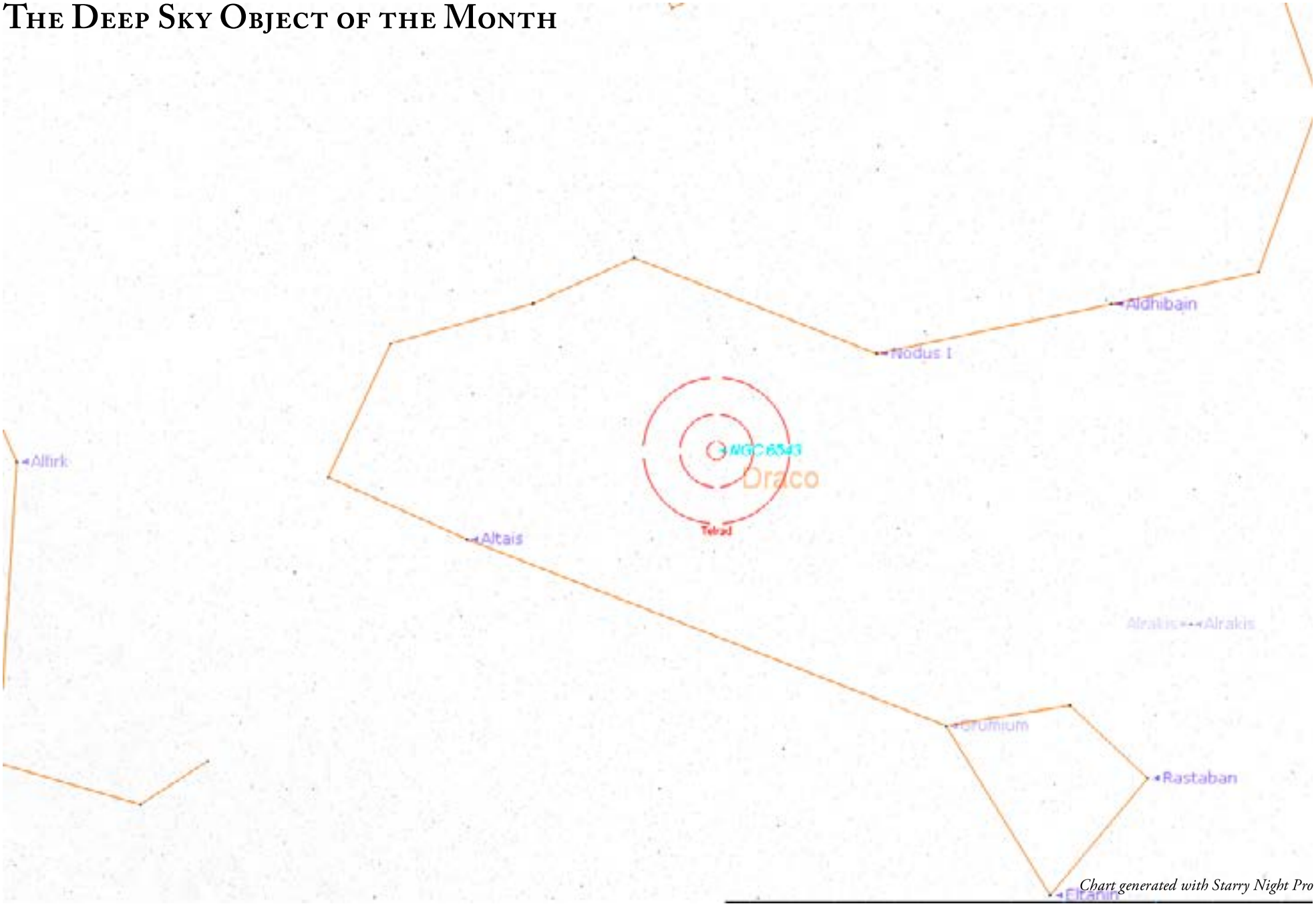
Nov 15 - Local Star Party

Nov 17 - Zaharis Elementary School

Nov 19 - Arcadia Neighborhood Learning Ctr

Nov 21 - EVAC Monthly Meeting

Nov 22- Deep Sky Star Party



NGC 6543 (Cat's Eye Nebula) Planetary Nebula in Draco

RA 17h 58m 33.4s DEC +66° 37' 59" Magnitude: 8.3 Size: 22"

East Valley Astronomy Club -- 2013 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):

☐ **$30.00 Individual** January through March

☐ **$35.00 Family** January through March

☐ **$22.50 Individual** April through June

☐ **$26.25 Family** April through June

☐ **$15.00 Individual** July through September

☐ **$17.50 Family** July through September

☐ **$37.50 Individual** October through December

☐ **$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: ☐

☐ Publish email address on website

City, State, Zip: ☐ 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):

☐ General Observing ☐ Cosmology

☐ Lunar Observing ☐ Telescope Making

☐ Planetary Observing ☐ Astrophotography

☐ Deep Sky Observing ☐ 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.evaconline.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.

The Observer is the official publication of the East Valley Astronomy Club. It is published monthly and made available electronically as an Adobe PDF document the first week of the month. Printed copies are available at the monthly meeting. Mailed copies are available to members for a slight surcharge to offset printing and mailing expenses.

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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www.evaconline.org

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