Volume 28 Issue 6

June 2014

The Observer

East Valley Astronomy Club

Globular Cluster M22 - APOD June 27, 2005
Jean-Charles Cuillandre

Upcoming Events:

Public Star Party - June 13

Evac Monthly Meeting- June 20

Local Star Party - June 21

Deep Sky Star Party - June 28

Check out all of the upcoming club events in the Calendars on page 9

Inside this Issue:

EVAC This Month

by Claude Haynes

Our summer program for Kids called Explore the Night Sky started off well last Tuesday evening. We had a good mix of parents and kids of all ages. Gordon Rosner gave a presentation on the planets and Galileo, with an emphasis on Jupiter. Afterwards we went to the observatory and saw the planet as Galileo was never able to. I can attest to that because we set up the Galileo-scope to give people a chance to see Jupiter as he saw it. You can see moons, but you have to look hard to find them. It is amazing who much science he was able to do with such simple optics.

This cooperative venture between EVAC, the Maricopa Public Library, and Gilbert Parks and Recreation looks like it will be a lot of fun. This series takes place the third Monday of each month this summer. If you know of kids, grandkids or parents who would like more information about observing and the night sky, encourage them to join us. Thanks to Lisa Hermann, Lynn Young, Dave Coshow and Brook Scofield for helping out.

Our meeting in June is our Solstice Star-B-Q. This year we are adding a swap meet. It is something we

Evac This Month

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haven't done for awhile. We will set up tables and you can display whatever you have brought. Please put a price on each item. EVAC will provide the burgers, hot dogs and drinks. Please share a salad or desert if you can, but do come and have some fun.

Keep looking up Claude

If It's Clear…

by Fulton Wright, Jr. Prescott Astronomy Club

June 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 Monday, June 2, around 9:00 PM, you can see the northern part of the Moon well. Libration tips that part toward us.

On Tuesday, June 3, from 11:06 AM to 12:40 PM, there will be 3 satellite shadows on Jupiter. Jupiter will be up at the time, but so will the Sun, so it will be an observing challenge to even find Jupiter, let alone see any shadows.

On Thursday, June 5, the Moon is at first quarter phase and sets at 12:54 AM (Friday).

On Thursday, June 12, at 7:22 PM (21 minutes before sunset) the full Moon rises, spoiling any chance of seeing faint fuzzies for the night. The terrestrial south-west part of the Moon is tilted toward us by libration.

On Friday, June 13, (if you are lucky), you can watch the Moon occult the open cluster, M 25. Here is the schedule:
07:44 PM Sunset
08:21 PM Moonrise
08:37 PM (approx) Moon starts to occult stars in cluster
08:54 PM (approx) brighter stars are occulted
09:28 PM (approx) cluster covered by Moon (about same diameter)
09:50 PM (approx) brighter stars appear on Moon's narrow dark limb
10:31 PM (approx) cluster is completely uncovered.

On Saturday, June 14, you can see the Moon occult a double star. Stars start to disappear north-celestial east of Mare Imbrium at about 11:48 PM. Reappearance is around 12:22 AM (Sunday) north of craters Atlas and Hercules.

On Monday, June 16, after moonrise (10:50 PM) you can see the southern part of the Moon at its best. Libration tips that part of the Moon toward us.

On Thursday, June 19, the Moon is at third quarter phase and rises at 12:07 AM (Friday).

On Saturday, June 21, at 3:51 AM, the Sun reaches the summer solstice. The days are warm, the nights are short.

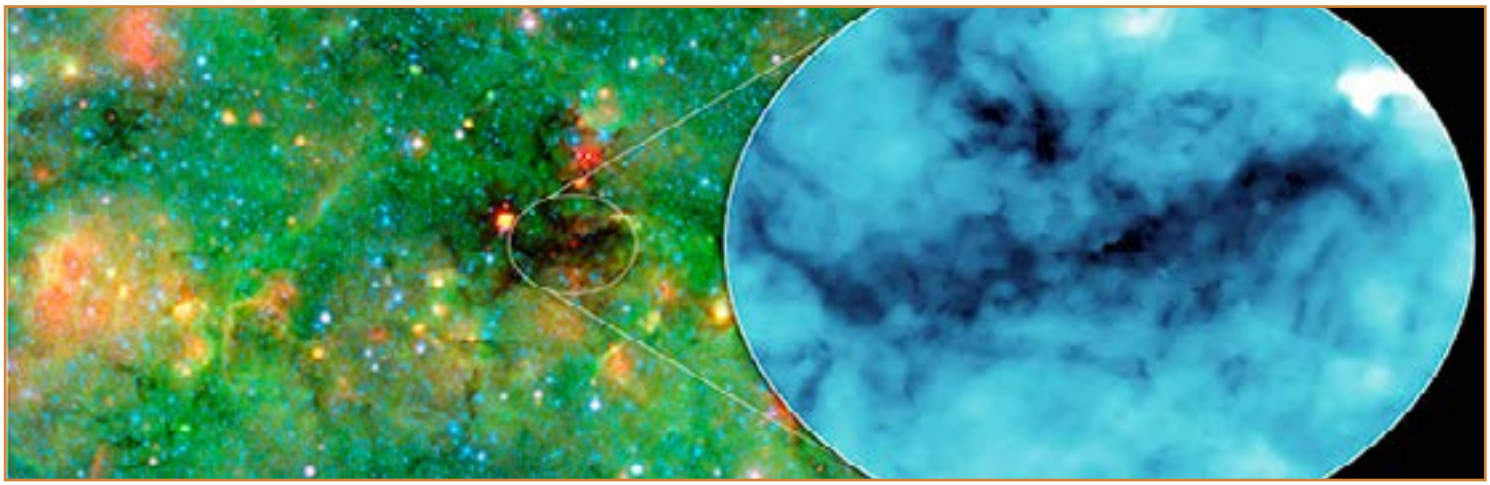
On Tuesday, June 24, between 4 and 5 AM, you can see the thin crescent Moon near Venus with the Pleiades to the upper left, low in the eastern sky. On Thursday, June 26, it is new Moon and you have all night to hunt for faint fuzzies.

Evac Meeting Minutes by Marty Pieczonka

Claude Haynes called the meeting to order at 07:30 PM on May 16. After visitor introductions, Dave Coshow gave a short report on the improvements being made to GRCO. The computer has been upgraded to Windows 8.1 and now uses the latest version of the SKYX. A new security camera is now operational at the observator.y. The 16" Meade Telescope will also be refurbished at the end of July and the observatory will be closed while the telecope is being repaired. Lynn Young described upcoming events for May and June. The Grand Canyon Star Party will be held from Jun 21 thru June 28. A 10" Meade LX200 was auctioned. Claude Haynes gave a presentation on "Road Trip to Mt. Graham" and Gordon Rosner gave a presentation on rocketry covering the types of rockets that have been used to launch payloads into space.

NASA's Space Place

Pitch Black: Cosmic Clumps Cast the Darkest Shadows



May 21, 2014

Astronomers have found cosmic clumps so dark, dense and dusty that they throw the deepest shadows ever recorded. Infrared observations from NASA's Spitzer Space Telescope of these blackest-of-black regions paradoxically light the way to understanding how the brightest stars form.

The clumps represent the darkest portions of a huge, cosmic cloud of gas and dust located about 16,000 light-years away. A new study takes advantage of the shadows cast by these clumps to measure the cloud's structure and mass.

The dusty cloud, results suggest, will likely evolve into one of the most massive young clusters of stars in our galaxy. The densest clumps will blossom into the cluster's biggest, most powerful stars, called O-type stars, the formation of which has long puzzled scientists. These hulking stars have major impacts on their local stellar environments while also helping to create the heavy elements needed for life.

"The map of the structure of the cloud and its dense cores we have made in this study reveals a lot of fine details about the massive star and star cluster formation process," said Michael Butler, a postdoctoral researcher at the University of Zurich in Switzerland and lead author of the study, published in The Astrophysical Journal Letters.

The state-of-the-art map has helped pin down the cloud's mass to the equivalent of 70,000 suns packed into an area spanning about 50 light-years in diameter. The map comes courtesy of Spitzer observing in infrared light, which can more easily penetrate gas and dust than short-wavelength visible light. The effect is similar to that behind the deep red color of sunsets on smoggy days -- longer-wavelength red light more readily reaches our eyes through the haze, which scatters and absorbs shorter-wavelength blue light. In this case, however, the densest pockets of star-forming material within the cloud are so thick with dust that they scatter and block not only visible light, but also almost all background

Pitch Black: Cosmic Clumps Cast the Darkest Shadows

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infrared light.

Observing in infrared lets scientists peer into otherwise inscrutable cosmic clouds and catch the early phases of star and star cluster formation. Typically, Spitzer detects infrared light emitted by young stars still shrouded in their dusty cocoons. For the new study, astronomers instead gauged the amount of background infrared light obscured by the cloud, using these shadows to infer where material had lumped together within the cloud. These blobs of gas and dust will eventually collapse gravitationally to make hundreds of thousands of new stars.

Most stars in the universe, perhaps our sun included, are thought to have formed en masse in these sorts of environments. Clusters of low-mass stars are quite common and well-studied. But clusters giving birth to higher-mass stars, like the cluster described here, are scarce and distant, which makes them harder to examine.

"In this rare kind of cloud, Spitzer has provided us with an important picture of massive star cluster formation caught in its earliest, embryonic stages," said Jonathan Tan, an associate professor of astronomy at the University of Florida, Gainesville, and co-author of the study.

The new findings will also help reveal how O-type stars form. O-type stars shine a brilliant white-blue, possess at least 16 times the sun's mass and have surface temperatures above 54,000 degrees Fahrenheit (30,000 degrees Celsius). These giant stars have a tremendous influence on their local stellar neighborhoods. Their winds and intense radiation blow away material that might draw together to create other stars and planetary systems. O-type stars are short-lived and quickly explode as supernovas, releasing enormous amounts of energy and forging the heavy elements needed to form planets and living organisms.

Researchers are not sure how, in O-type stars, it is possible for material to accumulate on scales of tens to 100 times the mass of our sun without dissipating or breaking down into multiple, smaller stars.

"We still do not have a settled theory or explanation of how these massive stars form," said Tan. "Therefore, detailed measurements of the birth clouds of future massive stars, as we have recorded in this study, are important for guiding new theoretical understanding."

NASA's Jet Propulsion Laboratory, Pasadena, California, manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate, Washington. Science operations are conducted at the Spitzer Science Center at the California Institute of Technology in Pasadena. Spacecraft operations are based at Lockheed Martin Space Systems Company, Littleton, Colorado. Data are archived at the Infrared Science Archive housed at the Infrared Processing and Analysis Center at Caltech. Caltech manages JPL for NASA.

For more information about Spitzer, visit: http://spitzer.caltech.edu or http://www.nasa.gov/spitzer

First Quarter Moon on June 5 at 16:39

*Full Moon on June 13 at 00:11

Last Quarter Moon on June 19 at 14:39

New Moon on June 27 at 04:08

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

Classified Ads

Upcoming Meetings

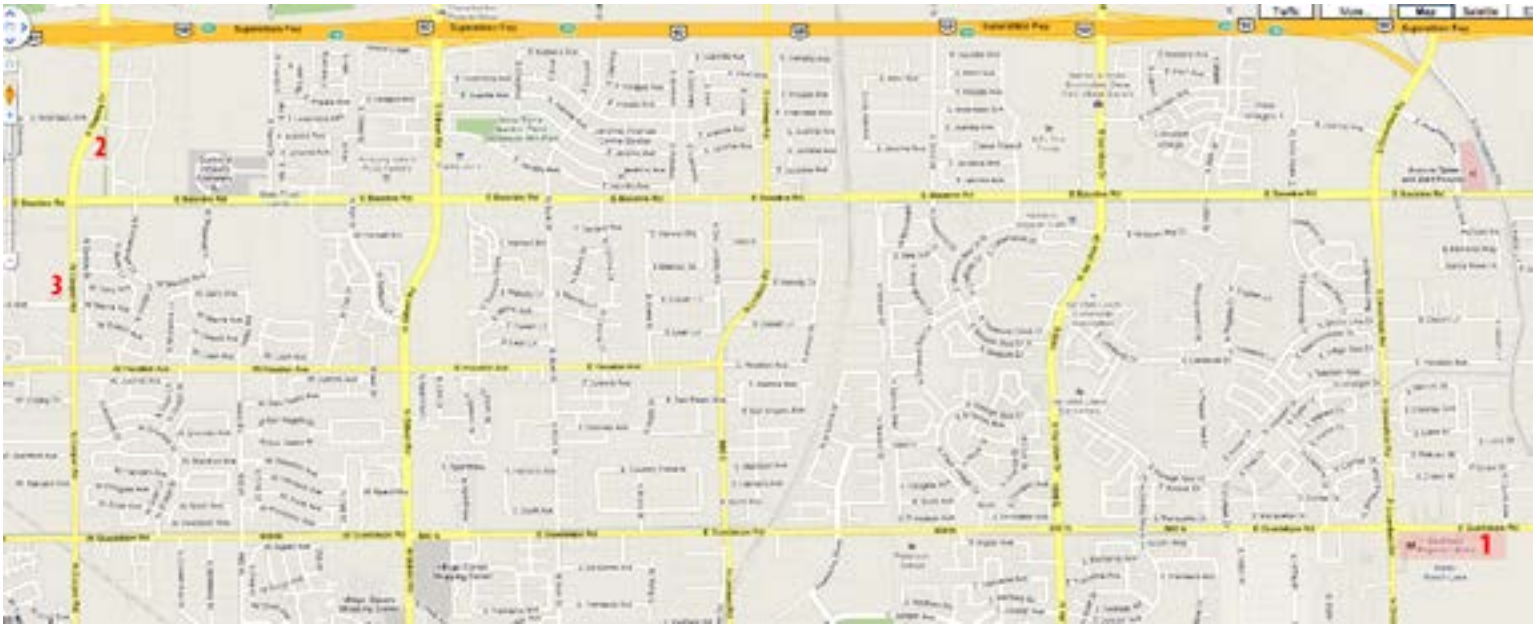
June 20
July 18
August 15
September 19
October 17
November 21
December 19

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

June 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					

June 6 - Life Community Church

June 13 - Riparian Public Star Party/Skywatch

June 16 - Explre the Night Sky

June 20 - General Meeting at SE Library

June 21 - Local Star Party

June 28 - Deep Sky Star Party

July 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		

July 11 - Riparian Public Star Party/Skywatch

July 18 - General Meeting at SE Library

July 19 - Local Star Party

June 16 - Explre the Night Sky

July 26- Deep Sky Star Party

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

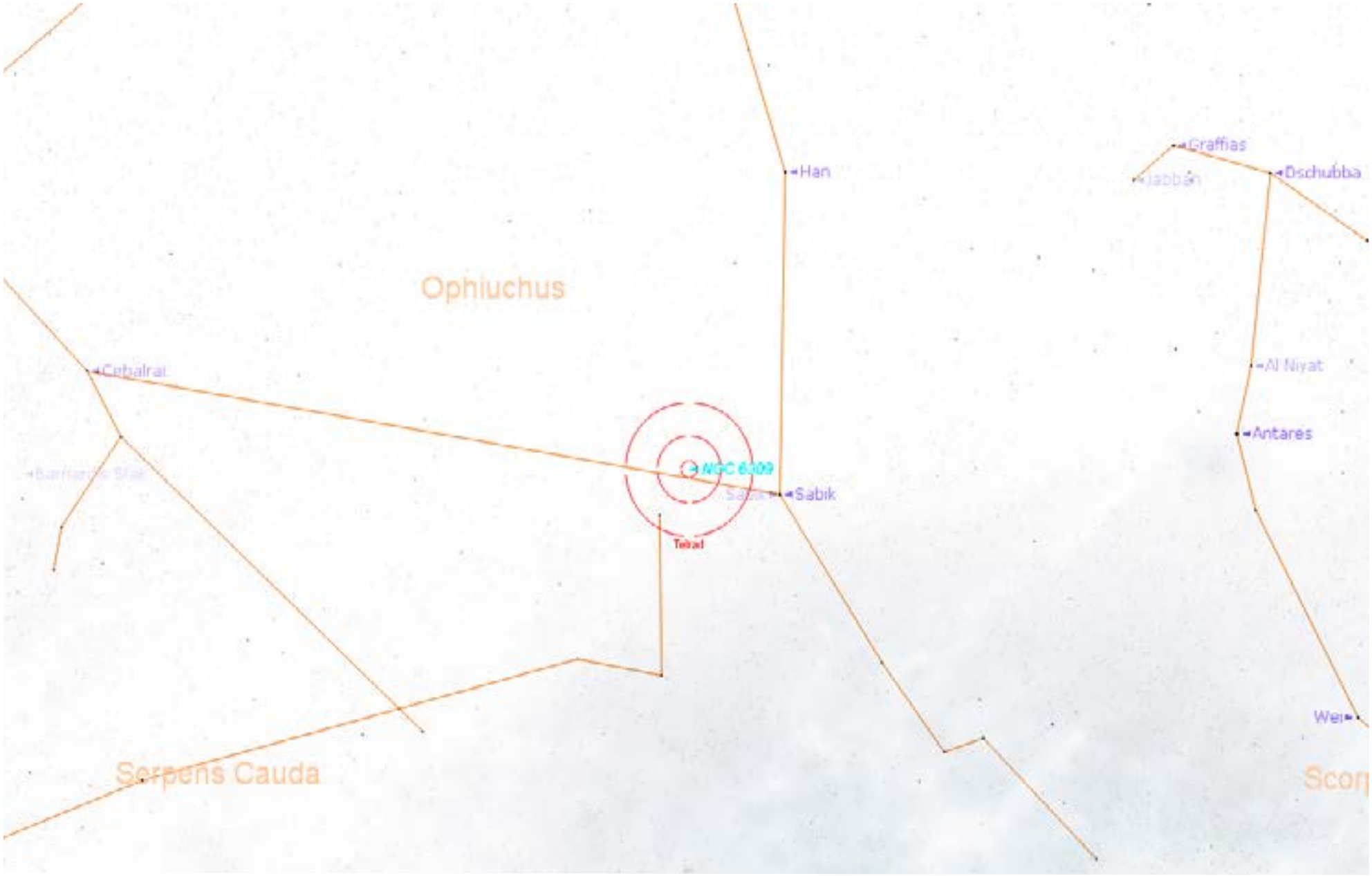
Please describe your astronomy equipment:

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.



NGC 6309 (Box Nebula) Planetary Nebula in Ophiuchus

RA 17h 14m 04.3s DEC -12° 54' 38" Magnitude: 11.6 Size: 20"

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.

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

www.evaconline.org

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