Volume 32 Issue 12

December 2018

The Observer

The Double Cluster
Image Credit & Copyright: Neil Fleming

Upcoming Events:

EVAC Star Party - December 1

EVAC Star Party -December 8

EVAC Holiday Party - December 20

Check out all of the upcoming club events in the Calendars on page 12.

Inside this Issue:

From the Desk of the President

by Tom Mozdzen

December has arrived and with it a date for our Christmas party (instead of our regular monthly meeting). Janet has secured a date, location, and caterer: Thursday Dec 20th, 6 pm at our regular monthly meeting place (Shakespeare room) and the Corporate Caterers of Phoenix will be providing the salad, an enchilada bake, and dessert for our meal.

Club Members are welcome to attend the Christmas party with their spouse or family members. If you are not a club member already, this would be a great time to take the plunge and join. If you are planning to attend, please RSVP to Janet, so we order enough food.

We will also raffle off a few gift cards to add some excitement to the party and we are asking attendees, voluntarily, to bring a non-perishable food item that we will donate to a local food bank.

Help is still needed with decorations, music, photos for the running slide show, etc. Please contact Janet if you would like to help jan-pog48@gmail.com .

The Southeast Regional Library is a very busy place in December as

From the Desk of the President

Continued from page 1

they are featuring their Riparian after dark program on Fridays and Saturdays in December (7th & 8th, 14th & 15th, and 21st & 22nd) so no public star party this month as there is no room for parking nor telescopes.

GRCO will be extremely busy with extra-long lines. We can use extra people to talk astronomy with the people who are waiting in line to get a view through the telescope. So please stop by as your assistance will be greatly appreciated.

December also brings up EVAC election results. We had a last minute entrant into the race for board member. The Executive officers were elected by approving a motion from the floor, but since there were 6 contestants for 5 board member positions a vote was conducted during the break. The final results are as follows:

Executive Office positions:

- President – Tom Mozdzen
- Vice President – Rob Baldwin
- Treasurer – Brooks Scofield
- Secretary – Tom Polakis

Board Members at Large 1 yr Term:

- Claude Haynes
- Henry de Jonge
- Gordon Rosner

2 yr Term:

- David Hatch
- Derek Youngson

We thank our outgoing Treasurer Lana Young and our outgoing Secretary Ken Rowe for their service and welcome our long-time club members, David Hatch and Derek Youngson to board member positions, Tom Polakis to the position of Secretary, and Brooks Scofield to the position of Treasurer.

Our November speaker was Dr. Danny Jacobs who talked about his work with the Hydrogen Epoch Reionization Array (HERA). HERA is a radio telescope dedicated to observing the large-scale structure during and prior to the epoch of reionization, and a second topic – CubeSats which is a method to do science with low cost space access with involvement from students.

I will be the January speaker, talking about the EDGES project (Experiment to Detect the Global 21-cm Epoch of Reionization (EoR) Signature). This project has the same end goal as HERA but with a different approach – a single antenna as opposed to an array of antennas like HERA. I'm also in the final stages of publishing a paper in the Monthly Notices of the Royal Astronomical Society (MNRAS) on the measurement of the Galactic foreground radiation in the 50 to 100 MHz frequency range. The foreground needs to be well known when trying to detect the EoR signature. I'll also be presenting those results in January 2019 at the American Astronomical Society (AAS) in Seattle. It is a short seven minute talk, so I will present it to EVAC in the member presentation section during the February meeting.

See you at the Christmas party - Tom Mozdzen

EVAC General Meeting Notes for November 2018

by Tom Mozdzen

Tom Mozdzen opened the meeting and welcomed several visitors. Current board members and officers were recognized. Claude mentioned that the Park's program, Riparian after Dark, draws big crowds and that there will be no room for our public star party this month. In addition, the lines at GRCO will be long and that we could use extra people to drop by and help out – even chatting with people waiting in line would be welcome. Contact Claude if you can help out. He also reported that we now own a GRCO web page titled: "Gilbert Rotary Centennial Observatory – GRCO". Note, there is a similar FB page without the – GRCO, which is stale and non-functional. We are trying to have that page removed, so be sure to go to the active site with the – GRCO at the end. Lana Young reported that we are keeping within our monthly budget and that we have 130 official members and that 13 have begun paying dues for 2019.

Janet Evelan gave us an update about the Christmas Party. It will take place on Thursday Dec 20th, 6 pm at our regular monthly meeting place (Shakespeare room) and the Corporate Caterers of Phoenix will be providing the salad, an enchilada bake, and desert for our meal. Club Members are welcome to attend the Christmas party

EVAC General Meeting Notes for November 2018 EVAC

Continued from page 2

with their spouse or family members. If you are planning to attend, please RSVP to Janet, so we order enough food. We are asking attendees, voluntarily, to bring a non-perishable food item that we will donate to a local food bank. Please contact Janet if you would like to help out in any way (janpog48@gmail.com).

Elections were held and a last-minute candidate for a board position surfaced, necessitating an actual vote. Results are as follows:

Executive Office positions:

- President – Tom Mozdzen
- Vice President – Rob Baldwin
- Treasurer – Brooks Scofield
- Secretary – Tom Polakis

Board Members at Large 1 yr Term:

- Claude Haynes
- Henry de Jonge
- Gordon Rosner

2 yr Term:

- David Hatch
- Derek Youngson

For member presentations, Tom Polakis treated us to a talk Titled "Old Moon, Asteroid 4078, and New Comet." Using an extreme contrast stretch, Tom was able to capture a 1.2% illuminated moon, titled "old moon", as it was on its way to becoming a new moon. He then showed us a graphic of the position and orbit of Minor Planet 4078 Polakis in the solar system and the results of capturing its light curve over a three night period which indicated a rotational period of 4.82 hours. The comet was discovered by Brian Skiff in 1983 and named after Tom. Conditions were opportune for Tom's home observatory to be ready to record the light curve at the same time that the position of the asteroid was favorable to make the readings. Lastly, a new comet was just reported by Don Machholz the previous week, which was his 12th comet discovery using visual means. It was 40 years and 2 months after making his 1st comet discovery.

Dr. Danny Jacobs spoke about research which is focused on the detection and characterization of 21cm fluctuations in the early universe and about developing future high-performance radio arrays capable of precision cosmology, namely HERA (Hydrogen Epoch of Reionization Array), which is a ground-based precursor to the Cosmic Dawn Intensity Mapper (CDIM). CDIM is a NASA Probe-class Mission Study currently under study and is designed to be a near-IR survey instrument optimized for Cosmic Dawn and reionization sciences, answering critical questions on how and when galaxies and quasars first formed, the history of metal build-up, and the history and topology of reionization, among other questions. He also spoke about the Star-Planet Activity Research Cubesat (SPARCS), which is a smallsat UV telescope scheduled for launch in 2021 to characterize the statistics of flares from M-dwarf stars.

The meeting was adjourned at 9:30 pm.

The Backyard Astronomer

by Bill Dellinges (December 2018)

Interesting New Objects that I Tripped upon this year

During stargazing sessions, I'm often looking at old favorite showcase objects. So, it's always a thrill when I run across something new or unique. Below I list six objects that made my heart beat a little faster this year.

January 24, 2018: **The False Pleiades**. Somewhere I read about a group of stars resembling the Pleiades located between Polaris and Gamma Cephei. I thought, what? Sure enough, I found the group quickly with my 7x42 binoculars. In the binoculars' eight - degree field, there were about a dozen stars scattered over five degrees, the brightest about 4th magnitude. If I used a little imagination, I could form some of them into the familiar "Little Dipper" shape of the Pleiades. This grouping can be found in Sky Atlas 2000 (chart 3), Sky and Telescope Pocket Atlas (chart 71) and the Bright Star Atlas (chart 2). Best seen from November to January.

January 24, 2018: **The Stingray and more.** This is an asterism in Taurus featured in Matt Wedel's Binocular Highlights column in the January issue of Sky and Telescope magazine (S&T). I can't say I saw it as stingray but binoculars. The Stingray stars are due south of Zeta Tauri

Continued from page 3

and its brightest members include 111, 115, and 119 Tauri. This grouping is also known as Collinder 65 (Cr 65). I happened to pan southeast and ran into another gaggle of stars, still technically in Taurus, which included 131, 133, 134 and 137 Tauri. Sliding a couple degrees northeast I hit yet another binocular field full of stars. These included 69, 73, 74 Orionis, Xi Orionis and Io and behold, NGC 2169, the "37" cluster. Yes, I'm now in Orion's elbow! These three large stellar associations can be found 2/3 of the way along a line running east from Aldebaran to Pollux. They are truly a cornucopia of diamonds in the sky.

February 7, 2018: **NGC 1664**. This is an open star cluster in Auriga. I saw a photo of it in Reader's Gallery in the January Astronomy magazine. I was fascinated by its shape and felt I had to track it down and see it for myself. Its stars took on a unique swirl form. One observer referred to it as the "Kite Cluster." The cluster is a tad dim at 90x in my 11" SCT. Increasing the power to 233x brightened up the stars (though reducing the field of course). To see its image, Google NGC 1664 in Auriga. Most links show the image, but the link to observing.skyhound includes lines showing the Kite shape.

May 7, 2018: **Rinnan's Run**. I first read about this asterism in an article written by Jerry Oltion in the May issue of S&T, page 27. This chain of stars in Sextans is reminiscent of Kemble's Cascade in Camelopardalis, but with slightly dimmer stars and without the payoff of an open star cluster at its terminus (NGC 1502). Nevertheless, I found it intriguing. Like Kemble's Cascade, it "runs" about three degrees in length starting at 35 Sextantis and continuing southeast to 36 Sextantis. Binoculars are required to see its full length in one field, which means the stars will appear somewhat dim. To fully appreciate their beauty, use a telescope at low power and pan along the meandering gems.

September 10, 2018: **Saturn's moon Enceladus**. Earlier in the year I was having trouble identifying Saturn's faint moon (magnitude 11.7) Enceladus in my 11" SCT. Titan, Tethys, Dione and Rhea had been no problem. While visiting Lowell Observatory last September, the 24" Clark refractor was fortuitously aimed at the ringed planet. When my turn came to peer into the telescope, I counted five moons and memorized their positions. Checking the S&T Saturn's Moons Tool later at home, I confirmed that I had indeed observed the elusive Enceladus. Next, I'll have to go after Iapetus which varies in magnitude from 10.2 to 11.9 due to its two-toned albedo that ranges from 50% to 3% and is seen brightest when observed west of the planet ("West is best").

September 15, 2018: **Comet Giacobini-Zinner/M-35**. I first found this 7th magnitude comet in Cassiopeia on August 11th in my 28x100 binoculars. Its predicted path would put it "in" the open star cluster M-35 in Gemini on September 15th. I was waiting! At 3 a.m. I put the 28x100's on M-35. No comet. But there was a fuzzy object next to the cluster. Nope, that was NGC 2158, a faint cluster near M-35 but much more distant. Closer inspection revealed a very small nebulous object amongst its stars. Could that be it? I inserted 55x eyepieces in the binoculars and could see that it was indeed a comet, with a faint tail pointing away from the direction of the Sun. While I was disappointed in how small the comet was, I was still excited about seeing something I've never seen before - a comet "within" one of my favorite star clusters.

I wonder what new celestial wonders await me in 2019?

Let's Party for December

Astronomical objects for public (and private) star parties, arranged by type.

by Fulton Wright, Jr. Prescott Astronomy Club

Flashy, deep-sky objects, visible in the middle of the month, at the end of astronomical twilight, 7:10 PM this month, (when it really gets dark). This list customized for Prescott, Arizona, should work well anywhere in the state, and be usable anywhere in the old 48 states.

Double Stars (2 or 3 stars, close together)

*name: Beta Cygni
--alt name: Albireo, SAO 87301
--magnitudes 3.4 (yellow) & 4.7 (blue)
--separation: 35 arc-seconds
--R.A.: 19hr 31min
--dec.: +27deg 58'

*name: Epsilon Lyrae
--alt name: Double-Double, SAO 67310 & 67315
--magnitudes: 5.0 & 6.1, 5.3 & 5.4
--separation: 2 arc-seconds, 2.5 arc-seconds
--R.A.: 18hr 44min
--dec.: +39deg 40'

*name: Gamma Andromedae
--alt name: Almach, SAO 37734
--magnitudes: 2.2, 5.0
--separation: 10 arc-seconds
--R.A.: 2hrs 05min
--dec.: 42deg 45'

*name: 70 Ophiuchi
--alt name: SAO 123107
--magnitudes: 4.0, 6.0
--separation: 7 arc-seconds
--R.A.: 18hrs 06min
--Dec.: +02deg 30'

Open Clusters (about 50 bright stars)

*name: Double Cluster
--alt name: NGC 869 & 884, h & Chi Persei, Caldwell 14
--magnitude: 5.3, 6.1
--size: 18, 18 arc-minutes
--R.A.: 2hr 22min
--dec.: +57deg 10'

NGC 663 (Caldwell 10)
Mag.: 7.1
Size: 14 arc-min
R.A.: 01hr 47min
Dec.: +61deg 20'

NGC 457 (Owl cluster, Caldwell 13)
Mag.: 6.4
Size: 20 arc-min
R.A.: 01hr 21min
Dec.: +58deg 28'

*name: Collinder 399
--alt name: Coat-hanger
--magnitude: 3.6
--size: 90 arc-minutes
--R.A.: 19hr 25min
--dec.: +20deg 11'

Globular Clusters (about 200,000 dim stars)

*name: M 15
--alt name: NGC 7078
--magnitude: 6.2
--size: 18 arc-minutes
--R.A.: 21hrs 31min
--dec.: +12deg 15'

M 2 (NGC 7089)
Mag.: 6.5
Size: 16 arc-min
R.A.: 21hrs 34min
Dec.: -00deg 44'

M 71 (NGC 6838)
Mag.: 8.2
Size: 3.3 arc-min
R.A.: 19hrs 55min
Dec.: +18deg 50'

Bright/Diffuse Nebulae (Gas and dust lit by a nearby star.)

NGC 6888 (Flaming star nebula, Caldwell 27) (dim)
Mag.: 7.4
Size: 20 x 10 arc-min
R.A.: 20hrs 13min
Dec.: +38deg 28'

Let's Party for September

Continued from page 4

Galaxies (about 200,000,000 very dim and distant stars)

*name M 31, M 32, M 110
--alt name: (NGC 224, Andromeda Galaxy), NGC 221, NGC 205
--magnitude: 3.3, 7.9, 8.1
--size: 180 x 70, 8 x 5, 16 x 10 arc-minutes
--R.A.: 0hr 44min
--dec.: +41deg 22'

*name: M 33
--alt name: Pinwheel Galaxy, NGC 598
--magnitude: 5.8
--size: 60 x 35 arc-miniutes
--R.A.: 1hr 35min
--dec.: +30deg 45'

NGC 2403 (Caldwell 7)
Mag.: 8.2
Size: 20 x 10 arc-min
R.A.: 07hrs 39min
Dec.: 65deg 34'

***Planetary Nebulae:

*name: M 57
--alt name: NGC 6720, Ring Nebula
--magnitude: 8.8
--size 1.4 x 1.1 arc-minutes
--R.A.: 18hr 54min
--dec.: +33deg 02'

*name: NGC 6543
--alt name: Cat's Eye Nebula, Caldwell 6
--magnitude: 8.1
--size: 0.4 arc-minutes
--R.A.: 17hrs 59min
--Dec.: +66deg 38'

*name: NGC 6826
--alt name: Caldwell 15, Blinking Planetary Nebula
--magnitude: 8.9
--size: 2.1 arc-minutes
--R.A.: 19hr 45min
--dec.: +50deg 31'

New Moon on December 7 at 00:20

First Quarter Moon on December 15 at 04:49

Full Moon on December 22 at 10:48

Last Quarter Moon on December 29 at 02:34

Find Out What's Happening – Join EVAC-Announce List

If you would like to receive email announcements about EVAC meetings and activities please join the EVAC–Announce mailing list. Click on the link below to subscribe. Enter your full email address in the box titled User Options and press OK. You will receive a confirmation email. Your privacy is respected by EVAC and we will never sell your email address, or use it for non-club relevant solicitations. This mailing list is designed for communication from EVAC, and does not enable users to respond to the message. If you wish to contact club officers, please use the list on the Contact-Us tab. To subscribe to the EVAC–Announce mail group click: http://www.freelists.org/list/evac-announce. To unsubscribe use the same link, enter your email address and select Unsubscribe from the "Choose An Action" list. Another list that may be of interest is AZ-Observering. To subcribe click http://www.freelists.org/list/az-observing.

EVAC also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To join: EVAC Facebook Group.

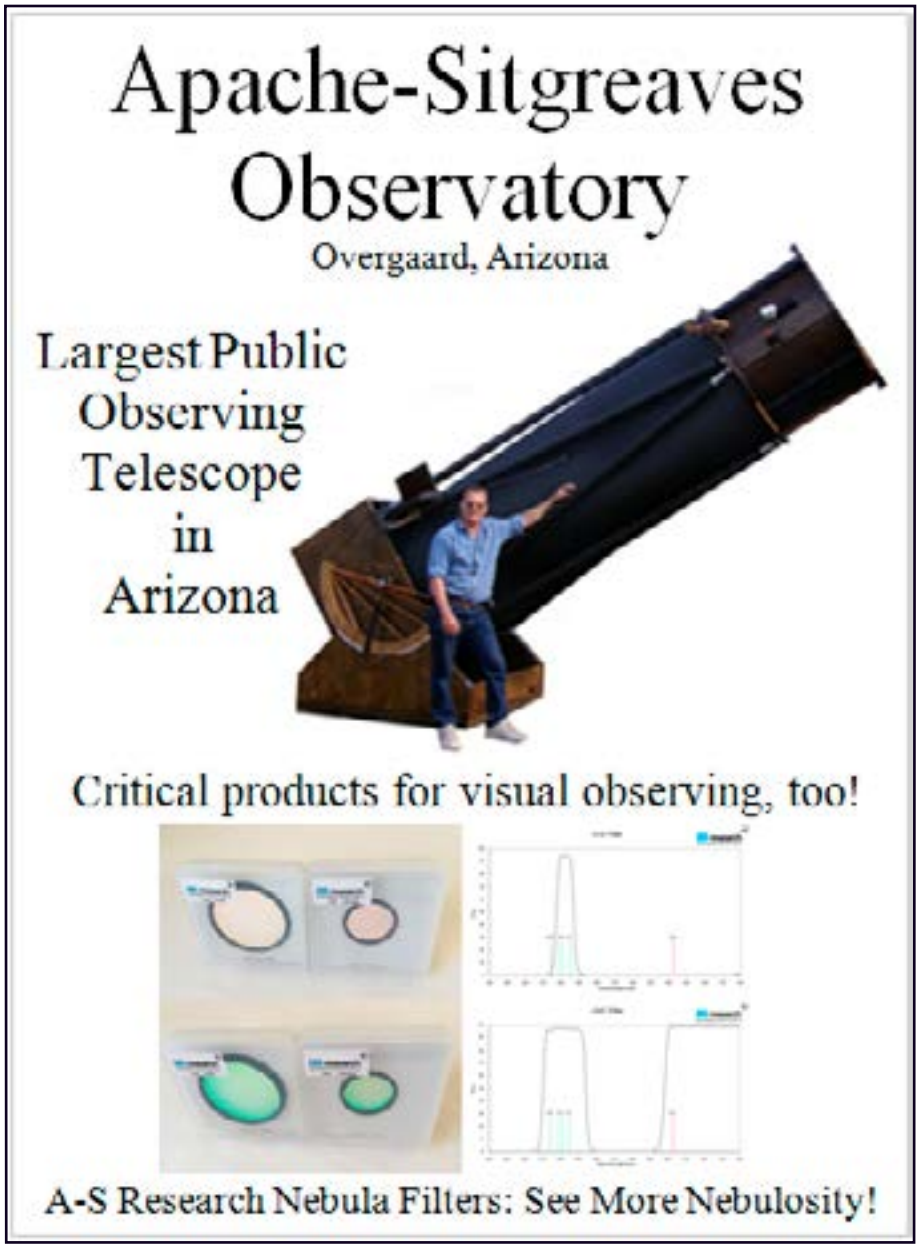
The Gilbert Rotary Centennial Observatory (GRCO) also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To visit, please click on Gilbert Rotary Centennial Observatory - GRCO.

Looking for that perfect weekend activity?

Why not resolve to getting involved?

Contact Claude Haynes to join the staff at GRCO

Email: grco@evaconline.org



Classified Ads

The darkest, most Pristine, sky in the continental U.S. !

At the site: Bathroom facilities, running water, 5 pads w110v, wifi, acres of grassy camp sights.

From the site: Very Large Array 42mi e, The Astronomical Lyceum 55mi e, MRO Observator 80mi e

IC 405

Insight Observatory
16" ATEO 1 Telescope

SkyPi Remote Observatory

Moving Sale:

I have the following items for sale:

. SBIG A-08 Adaptive Optics System - $100
. Televue Paracorr - $150
. 8 1/2 inch dovetail plate - $ 30
. Meade F3.3 focal reducer - $ 30
. Celestron 2" Star Diagonal - $ 35
. Toshiba 12" Security Monitor - $ 25
. Imperex Video capture card - $ 10
. 2" camera adapter - $ 5

Marty Pieczonka - webmaster@evaconline.org

Upcoming Meetings

January 18, 2019

February 15

March 15

April 19

May 17

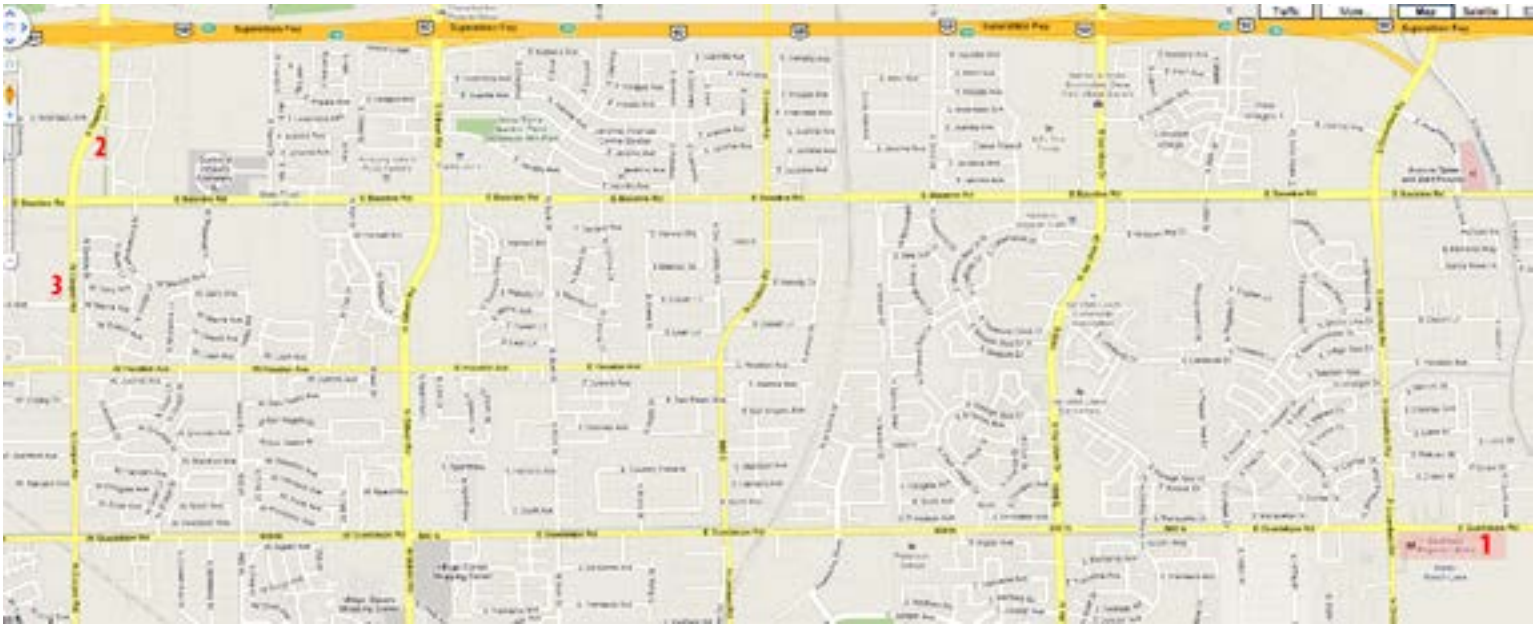
June 21

July 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.

Visitors are always welcome!



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

December 2018

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

December 1 - EVAC Star Party

December 7 - City of Chandler

December 8 - EVAC Star Party

December 13 - Smith Junior High

December 20 - EVAC Holiday Party

January 2019

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**		

January 5 - EVAC Star Party

January 11 - Public Star Party

January 17 - Fulton Elementary

January 5 - EVAC Monthly Meeting

January 23 - San Tan Elementary

January 26 - EVAC Star Party

January 31 - Carlson Elementary

East Valley Astronomy Club -- 2018 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

☐ **$15.00 Individual** July through September

☐ **$17.50 Family** July through September

☐ **$22.50 Individual** April through June

☐ **$26.25 Family** April through June

☐ **$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: ☐

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.

☐ General Observing ☐ Cosmology

☐ Lunar Observing ☐ Telescope Making

☐ Planetary Observing ☐ Astrophotography

☐ Deep Sky Observing ☐ Other

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. 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

East Valley Astronomy Club
PO Box 2202
Mesa, Az. 85214-2202