

THE OBSERVER



ARP 273

Image Credit & Copyright: Adam Block

From the Desk of the President

by Tom Mozdzen

The AASP star party once again drew in star gazers from around the state with Friday night containing more useable hours than Saturday night. Many thanks to Claude and everyone who helped out. See the report further down in this issue.

Elections are coming during this month's meeting. At the time of publication, we have exactly one volunteer for each position. Voting will go very quickly if none of the positions receive a second volunteer. The slate currently stands as follows:

Executive Office positions:

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

Board Member at Large:

- Claude Haynes
- Henry de Jonge
- Gordon Rosner
- David Hatch
- Jon Koester

The southeast regional library in Gilbert has a 6 week waiting list for patrons who wish to borrow one

UPCOMING EVENTS:

EVAC Star Party - November 3

Public Star Party - November 9

EVAC Star Party - November 10

EVAC Monthly Meeting - November 16

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

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From the Desk of the President

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of three 4.5" dobs that the library has courtesy of EVAC. Our board has decided to provide them with two more 4.5" dobs to see if the wait time can be decreased.

The Christmas party planning is underway. We are looking at the 2nd or 3rd week in December. To simplify venue choices, we may have to pick a day that is not a Friday or a Saturday. Stay tuned.

Rick Sarmento's talk at the October meeting was about the characteristics of the first stars, the details about the current state of the art in modeling their evolution, and the traces and footprints they made during their brief lifetimes. Actual observations can be used to confirm or

modify the assumptions we use in our models of the first stars.

Our November speaker will be [Dr. Danny Jacobs](#) from ASU, and he will be talking about the Hydrogen Epoch Reionization Array (HERA), which is a radio telescope dedicated to observing the large scale structure during and prior to the epoch of reionization. The majority of his talk will focus on the CubeSat effort at ASU, which enables students and professors access to space to perform simple experiments.

See you in November - Tom Mozdzen

EVAC General Meeting Notes for October 2018

by Tom Mozdzen

Tom Mozdzen opened the meeting and welcomed several visitors, some of whom happened to see people going inside and decided to see what the attraction was. Claude informed us that they are still looking for more volunteers for Friday and Saturday evenings at the observatory. 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 128 official members, a very healthy membership total - thank you members! Tom pointed out that the club elections will take place at the November meeting. Since the meeting, we have had one more person raise their hand to be considered for a Board Member at Large position, Jon Koester. See the President's Message on the first page for the current slate of candidates. If you'd like to be considered for a position please let me know before the meeting.

Rick Sarmento was our featured speaker and talked about the research he conducted towards his PhD thesis, in which he defended his thesis last May, and will participate in the upcoming graduation ceremony in December at ASU. Rick described how the first stars (called Population III (3) stars) were different from stars that came afterward, which is that they formed from only H and He and had no other elements to assist in the cooling process that allows a cloud of gas to condense into a star.

He described some of the modeling details and trade offs made such that the simulations could be completed in a matter of weeks or months on today's supercomputers instead of years. These models predict certain properties of the 2nd generation of stars, Population II stars. He then talked about the predictions of what we should expect to observe when looking at groups of the older Carbon Enhanced Metal Poor Stars based upon the simulations. After the meeting several members joined the speaker, Rick, at the Union Grill and Tap at the N.W corner of Higley and Baseline for continued conversation.

Our speaker for November is [Dr. Danny Jacobs](#). From Danny's website, Danny Jacobs performs research focused on the detection and characterization of 21cm fluctuations in the early universe and developing future high-performance radio arrays capable of precision cosmology. He is a co-I of the Hydrogen Epoch of Reionization Array, a ground based precursor to the Cosmic Dawn Mapper, where he serves as Commissioning Scientist. Danny's talk will consist of two parts: 1) 25% of it will be about the Hydrogen Epoch Reionization Array (HERA), which is a radio telescope dedicated to observing the large scale structure during and prior to the epoch of reionization; and 2) 75% will focus on the Star-Planet Activity Research Cubesat (SPARCS), a smallsat UVtelescope scheduled for launch in 2021 to characterize the statistics of flares from M-dwarf stars. He is also the faculty advisor to student cubesat projects, and director of ASU's smallsat ground station.

All Arizona Star Part Review

by Claude Haynes

This year's star party had its good days, but Saturday wasn't one of them. Those who came out early had pretty good skies on Thursday night, and Friday night was beautiful with clear skies and little wind. That changed on Saturday with the wind picking up and some clouds. The wind was high enough so that the model rocketeers decided against launches. This kept the crowd below our usual number, but we still had a great time at the happy hour, raffle and chili dinner. Viewing on Saturday was

Notes from the 2018 AASP

by Tom Mozdzen

I was planning to attend Saturday only, but the weather report indicated that Friday was going to be the better of the two nights, which was unfortunate because that meant one less day for the ground to release the moisture accumulated during the rain earlier in the week. Pierre Schwaar's rule of thumb of three days of hard sunshine after a rain takes you out of dew issues, was not going to be met.

That worked out well because a group of a dozen grad students from ASU were planning on coming out Friday night, along with Bernie Sanden and Frank Kraljic. We arrived mid afternoon, Claude Haynes had set up the canopies over the dinner / beverage location by that time. We set up our scopes toward the south end, just south of Paul Knauth with his 25" telescope.

Before sunset I was able to say a quick hello to Rob Baldwin and A.J. Crayon as I wandered around the field. The potluck dinner had enough food to feed an army – good job to all who brought food – the quality was good and there was plenty left over. I only saw three rocket launches and was a bit disappointed that they didn't launch a few more, but better than nothing.

We viewed a few objects in our own scopes, but spent quite a bit of time over at Paul's telescope. The most interesting object I saw that night was NGC 246, which Bernie Sanden recommended because of how great that planetary nebula looked in a large aperture telescope. Below is a picture found on the internet that pretty well captures what we saw. I completely agree with his assessment, and the nebula sure looked appropriate for the Halloween season.

pretty good for a couple of hours, but the clouds moved in and offered rain about midnight. Trying to keep equipment dry, I left about 11 and made it home to Gilbert before we got showers. A special thank you to all who came out and helped to make it a fun weekend. Sometimes weather gets in the way, but it is always good to get to a dark sky site with friends. So for astronomers, Diamondback and Dodger fans – there's always next year.



(Photo by Jim Misti)

The moisture in the sky and dew on the ground started to diminish the views around 11 pm, but again, this was in terms of Arizona standards, where we come to expect maximum transparency. People in non-desert climates would be thrilled to have the sky we had Friday night.

We packed up Saturday morning, had Frank take a group photo, wished clear skies to those staying for the 2nd night, and headed back towards Phoenix. A great time was had by all.



Tom Mozdzen

The Backyard Astronomer

by Bill Dellinges (November 2018)

Navigating the November Sky

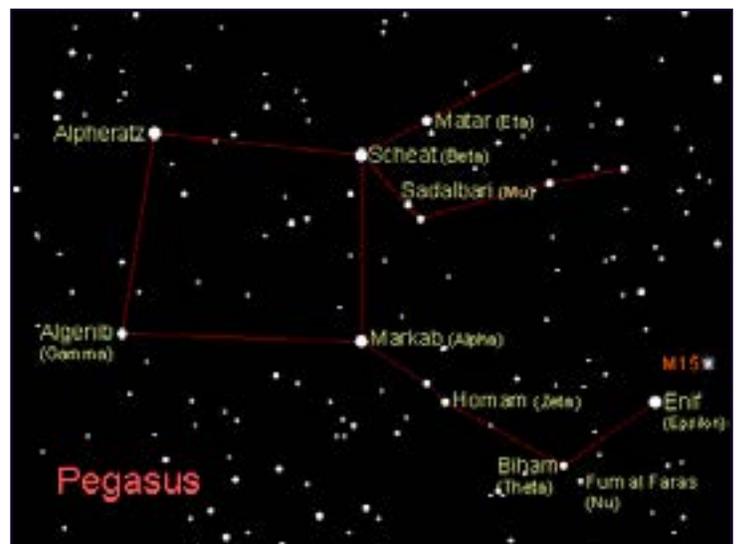
When I step outside to gaze at the night sky, I typically look south. That's always been my *modus operandi*. From that vantage, one can survey the constellations as they pass across the meridian, their highest point during the night. In November you don't see much there! That's because the night sky in that direction at this time of year is filled with the so-called Watery Constellations: Capricornus, Aquarius, Pisces Austrinus, Pisces, and Cetus. They are very dim constellations. In light polluted skies they're darn near invisible. Aside from double stars that are always available no matter where you look, the only showcase deep-sky objects are NGC 7293, a planetary nebula in Aquarius and NGC 253, a galaxy in Sculptor. But if you look up to the zenith, you will see Pegasus the Winged Horse, the primary constellation of the fall season and depicted upside down as seen from mid latitudes. Its torso is formed by four second magnitude stars shaped like a box and appropriately called the Great Square of Pegasus. It should be pointed out the star in the upper left corner of the Square is named Alpheratz and was shared with both Pegasus and Andromeda until the I.A.U. assigned it wholly to Andromeda in 1928 as Alpha Andromedae. So technically, there's no Great Square of Pegasus anymore. Nevertheless, old habits die hard and most stargazers still see it as The Great Square.

While the southern sky this month is devoid of glitter for the most part, there are two bright stars that catch the eye. If you follow a line through the western two stars of the Great Square and extend it south, it takes you to Fomalhaut (magnitude 1.2), the lucida of Pisces Austrinus. Similarly, use the two eastern stars of the Square to travel south to Deneb Kaitos (mag. 2.0) aka Diphda and Beta Ceti. West of Scheat, the upper right star of the Square, one finds a smattering of faint stars representing the galloping legs of the horse. The lower right star of the Square is Markab. The four stars west of it represent the equine's neck and snout. The last two stars of this string are handy in finding M15, an impressive globular star cluster. Just follow a line between Theta Pegasi and Enif northwest about half the distance between them and bingo, there you are.

Remember our friend Alpheratz, the upper left star in the Square? Two sets of three stars of three stars emanate

from it running northeast forming the constellation Andromeda. It looks like a curving "V" lying on its side. Its middle set of stars are Mirach and Mu Andromedae. Conveniently, a line connecting them and extended northwest an equal distance (three degrees) takes you to M31, the Andromeda Galaxy. M31, 2.5 million light years away, is our closest major galactic neighbor. In a dark sky it can be seen with the naked eye as a faint smudge of light. It's a superb sight in a telescopes or binoculars because it's so close to us. To be fair, almost any major galaxy would be impressive if it was that close to us - only about twenty Milky Way diameters away. By the way, astronomers tell us the Milky Way and Andromeda galaxies are on a collision course as M31's spectrum shows a blue shift. It's closing at 68 miles per second (Sidney Wolff). Estimated arrival time – four billion years. The good news is, every second it should look better in your telescope.

When we look west we see that the Summer Triangle is still with us, with Vega, Altair and Deneb blazing away. To the east the precursors of the winter sky, Perseus, Taurus and Auriga peek above the horizon. The latter possesses the northern sky's forth brightest star, Capella. Looking north, the Milky Way rises in the northeast, passes through Auriga and Perseus and over the North Star. From there, it plunges into the northwest skies joining Cygnus, Aquila and Lyra, the three summer constellations that will soon be leaving us. The stars of their Summer Triangle will be giving way to a Winter Hexagon.



Let's Party for November

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'

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

*name: IC 4665
--alt name: ---
--magnitude: 4.2
--size: 70 arc-minutes
--R.A.: 17hr 46min
--dec.: +05deg 43'

*name: NGC 6633 (use wide field)
--alt name: ---
--magnitude: 4.6
--size: 30 arc-minutes
--R.A.: 18hr 27min
--dec.: +06deg 30'

Globular Clusters (about 200,000 dim stars)

*name: M 13
--alt name: Hercules Cluster, NGC 6205
--magnitude: 5.8
--size: 20 arc-minutes
--R.A.: 16hrs 42min
--Dec.: +36deg 28'

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

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-minutes

--R.A.: 1hr 35min

--dec.: +30deg 45'

*Bright Nebulae:

It not a good season for Nebulae

***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 NOVEMBER 7 AT 08:02

FIRST QUARTER MOON ON NOVEMBER 15 AT 06:54

FULL MOON ON NOVEMBER 22 AT 21:39

LAST QUARTER MOON ON NOVEMBER 29 AT 04:19

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-Observing. To subscribe 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



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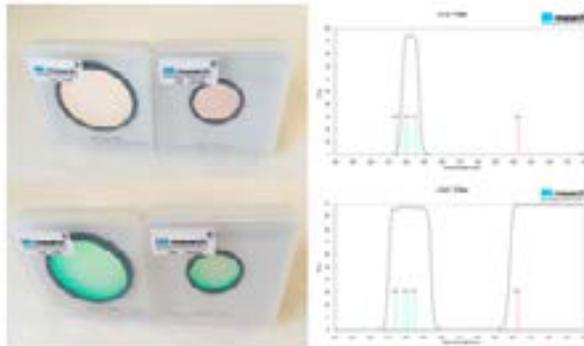
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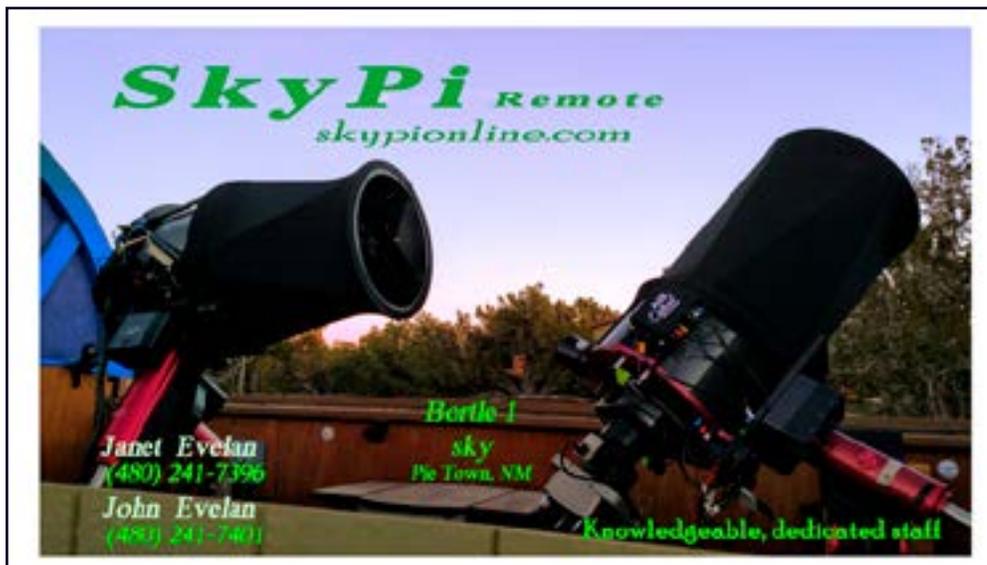
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Upcoming Meetings

November 16, 2018

January 18, 2019

February 15

March 15

April 19

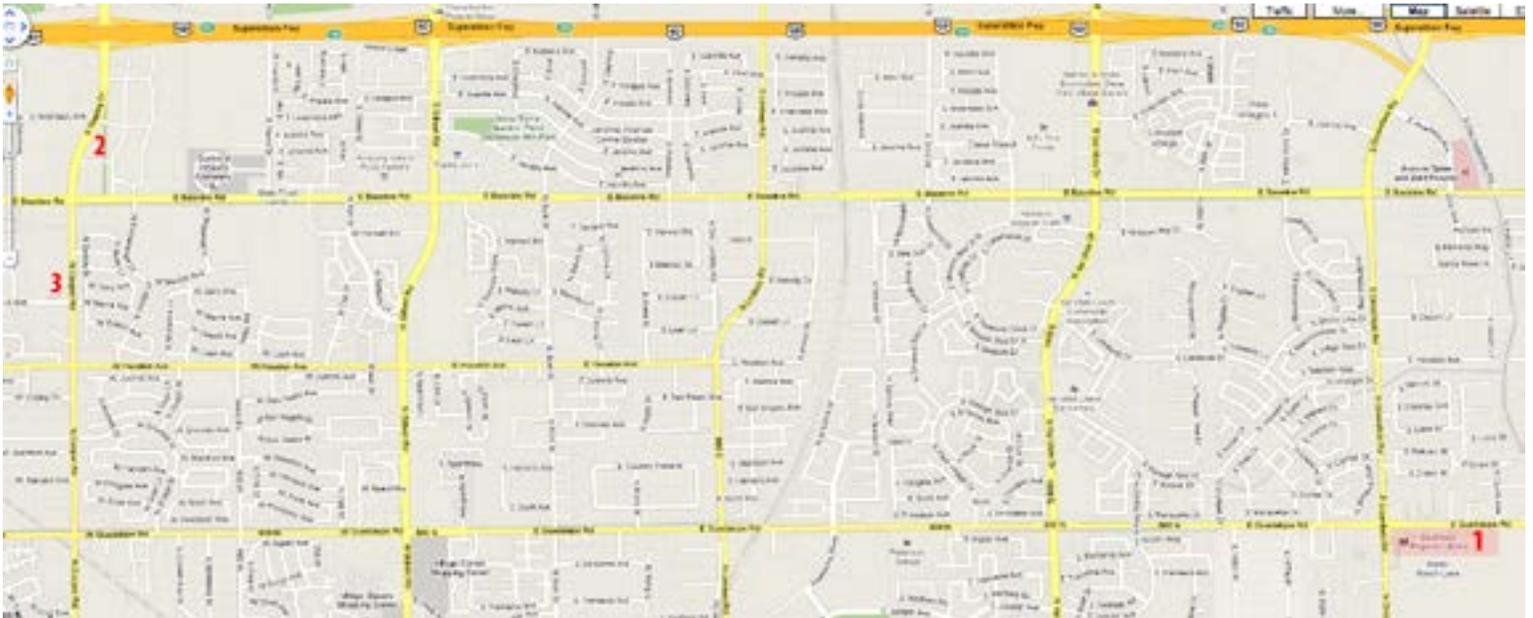
May 17

June 21

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



NOVEMBER 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	30	

November 3 - EVAC Star Party

November 5 - CGCC Star Party

November 7 - Patterson Elementary

November 8 - Skyline School - Bapchule

November 9 - Public Star Party

November 10 - EVAC Star Party

November 15 - JO Combs Middle School

November 16 - EVAC Monthly Meeting

November 27 - Zaharis Elementary School

November 29 - Poston Junior High

December 1 - EVAC Star Party

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 7 - City of Chandler

December 8 - EVAC Star Party

December - EVAC Holiday Party -Date TBD

December 14 - Public Star Party

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:		
<input type="checkbox"/> New Member	<input type="checkbox"/> Renewal	<input type="checkbox"/> 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	
<i>Includes dues for the following year</i>		

Renewal (current members only):
<input type="checkbox"/> \$30.00 Individual <input type="checkbox"/> \$35.00 Family

Name Badges:
<input type="checkbox"/> \$10.00 Each (including postage) Quantity: _____
Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC

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Name: <input style="width: 90%;" type="text"/>	Phone: <input style="width: 90%;" type="text"/>
Address: <input style="width: 90%;" type="text"/>	Email: <input style="width: 90%;" type="text"/>
City, State, Zip: <input style="width: 90%;" type="text"/>	<input type="checkbox"/> Publish email address on website
	URL: <input style="width: 90%;" type="text"/>

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.

<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	
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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@evaonline.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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