

THE OBSERVER



NGC 7635: The Bubble Nebula
Image Credit & Copyright: Larry Van Vleet

From the Desk of the President

by Tom Mozdzen

The All Arizona Star Party (AASP) is upon us - Friday and Saturday nights, Oct 5th and 6th. The details can be found [here](#). Remember that if you plan to drive back home in the middle of the night, please park near the entrance as to minimize disturbance. Also, please drive as slow as a snail (under 5 mph). Tires kick up dust which can get onto our mirrors as well as into the air and our lungs.

October is also the time of year to line up a slate of officers and board members to run the club in 2019. If you would like to volunteer your time to the club, you may nominate yourself to the following

Executive Office positions:

- President
- Vice President
- Treasurer
- Secretary

Or one of 5 board member-at-large positions

- Board member 1
- Board member 2
- Board member 3
- Board member 4
- Board member 5

These are the 9 positions which may cast votes for motions made at board meetings. If you are interested and can devote a little bit of time to club matters, we could use your help. If you would like to help

UPCOMING EVENTS:

All-Arizona Star Party - October 5-6

Public Star Party - October 12

EVAC Monthly Meeting - October 19

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

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From the Desk of the President

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out in a position other than those mentioned above, please contact me or any current officer or board member before the October meeting where we will do our best to flesh out a slate of board members and executive officers so that we can vote in the November meeting.

Lynn Young can also use an assistant to help carry the Outreach Load. Please throw your hat into the ring to help in this very important aspect of EVAC, and send a note to either Lynn or myself.

I'm pleased to announce that we will have no monthly meeting conflicts with Saguario Astronomy Club (SAC) in 2019. This year was unusual in that we had 2 months with meetings on the same day, but that will not happen in 2019.

I'm scheduled to be the featured speaker at the Phoenix Astronomical Society on Thursday Oct 4th. I'll be talking about the studies I did for my PhD thesis as well as recent results from our group on determining when the first stars formed by detecting small temperature differences in the Cosmic Microwave Background (CMB) in the low frequency radio range (50 to 190 MHz). The project was called "EDGES" and a google search of "EDGES" and "First Stars" will bring up a wealth of information.

Hope to see you at the AASP,

Tom Mozdzen

EVAC General Meeting Notes for September 2018

by Kenneth Rowe

Our GRCO observatory needs volunteers, please consider helping out, you don't need to be an expert astronomer!

Claude Haynes discussed the All Arizona Star Party which is being held on October 5th and 6th at Hovatter Airfield. For more information visit:

http://evaonline.org/aasp_2018.htm

Tom Polakis gave an excellent presentation and provided fantastic images of the 4 planets from Picket Post and also Comet 21P/Giacobini-Zinner, Veil Nebula and the North America Nebula (NGC 7000) from his backyard observatory.

Bruce Kosaveach the Philanthropy Manager from Lowell Observatory gave a presentation about the upcoming changes at Lowell. They will be building the Giovale Open Deck Observatory, and a new visitor center which will include a roof top Dark Sky Planetarium and the

Lowell Universe Theatre. For more information visit: <https://lowell.edu/>.

Dr. Stephen Levine the DCT Commissioning Scientist from Lowell gave a presentation on the "Challenges of Commissioning the New Discovery Telescope". He provided great insight into the challenges of building the thin meniscus 4.3-meter Discovery Channel Telescope (DCT) which weighs in at 135 tons and cost \$53 million to build. First light was in April 2012, the telescope is being used for great science and currently includes 5 instruments, and provides 300 nights of viewing.

For more information visit: <https://lowell.edu/research/research-facilities/4-3-meter-dct/>

The next EVAC meeting is on Friday, October 19th.

We look forward to seeing everyone!

Five Must-See Double Stars for October

For a long time, I didn't give a hoot about double stars. But in recent years I've grown to appreciate the realm of double stars, which bring great joy to my stargazing nights. One might ask what's so interesting about two "dots" next to one another? Well, keep in mind they're really two suns orbiting around their center of masses. How cool is that? Somewhere in the universe there is a planet orbiting a star in a double star system and their inhabitants are seeing two "suns" in their sky. Imagine the consequences of that. What would be the rising and setting times of the two stars? What distances and angular sizes are the stars as seen from the planet? Would there ever be a time when it was dark enough to sleep or stargaze? But I digress.

Many rewards await the double star observer. First is the challenge of splitting the pair apart. Some are easy, some aren't. It depends on their angular separation - how far apart they are. A pair only one or two arc seconds (") apart may be too "tight" to resolve into two stars. A pair separated by a generous 34", like Albireo in Cygnus, can be split in 10x binoculars. Resolving double stars can also be complicated if the secondary star is much dimmer than the primary. In that case, more magnification than normal may be necessary. Often the two stars are different colors, which is always a special treat; a hot blue star might be orbiting a cooler orange or red giant! Some doubles can be seen to move partially in their orbit around their primary, such as 70 Ophiuchi (period 88 years) and Porrima in Virgo (169 years). And double stars don't stop at just two stars; there are multiple star systems involving up to a dozen stars or more.

With the above brief primer, I present five wonderful double stars for October. Note the convention of a listing: 1) AB = Primary and secondary components. 2) apparent magnitudes of each. 3) Separation in arc seconds. 4) Position angle (B's direction in degrees from A with north up, east 90°, south 180°, west 270°, etc.). 5) Spectral types of A and B if known. If B also has a companion, it will be shown as AxBC. Their Smithsonian Astrophysical Observatory (SAO) number is provided for use in GoTo telescopes.

Beta Cygni (Albireo): AB 3.1, 5.1, 34.4", 54°, K3II, B8V. Albireo may be the most stunning double star in the northern

heavens. The pair are a scintillating yellow and blue color. A neat trick of the trade to enhance these colors is to view them slightly out of focus. Albireo's wide separation and brilliant colors make it a favorite double star to share with the public. There's some dispute as to whether Albireo is a true double because of the vast distance between the components (equal to fifty-five solar systems and a period on the order of 100,000 years). However, since both stars show a similar distance and proper motion, Albireo is considered a double star (for now). SAO 87301.

Gamma Delphini: AB 4.4, 5.2, 9.4", 268°, G5IV, F8V. An 85mm refractor will easily split this yellow and white pair at 60x. In the same low power field below Gamma is Struve 2725, a dimmer and tighter double star. SAO 106475.

8 Lacertae: This quintet is like a small star cluster! It can be fun trying to identify which stars are the C, D, and E components. But if you're not in the mood for a homework assignment, just enjoy gazing at this little beehive. AB 5.7, 6.4, 22.4", 186°, B1V, B2V. AC 5.7, 10.4, 48.6", 169°. AD 5.7, 9.1, 82", 144°. AE 5.7, 7.3, 336", 240°. SAO 72509.

Gamma Andromedae (Almach): AxBC 2.3, 5.0, 9.6", 63°, K2III, B8V. BC 5.0, 6.3, 0.4", 103°. The AB stars are a very pretty yellow and blue pair. You will be excused if you can't split the extremely tight (0.4") BC pair. SAO 37734.

Iota Cassiopeiae: AB 4.6, 6.8, 2.8", 230°, A5Vp, F5. AC 4.6, 9.0, 7.3", 114°, G4V. This triple star can be challenging. You'll want it to be as high in the sky as possible with good seeing conditions. With said conditions, an 11" at 200x will nicely break up the threesome. SAO 12298.

I hope you'll enjoy observing these little beauties. Did I mention over half the stars in the universe are double stars? So, if you decide to explore other stellar couples, you'll have plenty to choose from.

Let's Party for October

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: 70 Ophiuchus

--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'

*name: M 23 (use wide field)

--alt name: NGC 6494

--magnitude: 5.5

--size: 29 arc-minutes

--R.A.: 17hr 58min

--dec.: -18deg 59'

Globular Clusters (about 200,000 dim stars)

*name: M 22

--alt name: NGC 6656

--magnitude: 5.1

--size: 32 arc-minutes

--R.A.: 18hr 38min

--dec.: -23deg 53'

*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 12

--alt name: NGC 6218

--magnitude: 6.7

--size: 3.5 arc-minutes

--R.A.: 16hr 48min

--dec.: -01deg 59'

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: NGC 6946

--alt name: Fireworks galaxy, Caldwell 12

--magnitude: 8.8

--size: 12x10 arc-minutes

--R.A.: 20hr 35min

--dec.: +60deg 13'

*Bright Nebulae:

*name: M 17

--alt name: Omega Nebula, Swan Nebula, NGC 6618

--magnitude: 6.0

--size: 46 x 37 arc-minutes

--R.A.: 18hr 22min

--dec.: -16deg 10'

*name: M 8

--alt name: Lagoon Nebula, NGC 6523

--magnitude: 6.0

--size: 90 x 40 arc-minutes

--R.A.: 18hr 05min

--dec.: -24deg 23'

*name: M 20

--alt name: Trifid Nebula, NGC 6514

--magnitude: 6.3

--size: 29 x 27 arc-minutes

--R.A.: 18hr 04min

--dec.: -23deg 02'

***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'

LAST QUARTER MOON ON OCTOBER 2 AT 09:47

NEW MOON ON OCTOBER 8 AT 03:47

FIRST QUARTER MOON ON OCTOBER 16 AT 18:02

FULL MOON ON OCTOBER 24 AT 16:47

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 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](#).

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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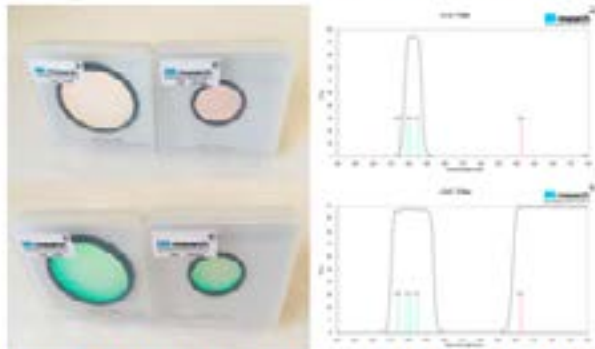
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Field of Dreams Star Party

at

Top Of The World Oct 5, 6 & 7

Come join the fun at Top Of The World's Field of Dreams Star Party.

For more information on this fun filled weekend or to find a home for your remote telescope and/or dome, contact John Evelan at (480) 241-7401, jevinids@gmail.com.

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

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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](#)



Upcoming Meetings

October 19

November 16

December 21

January 18

February 15

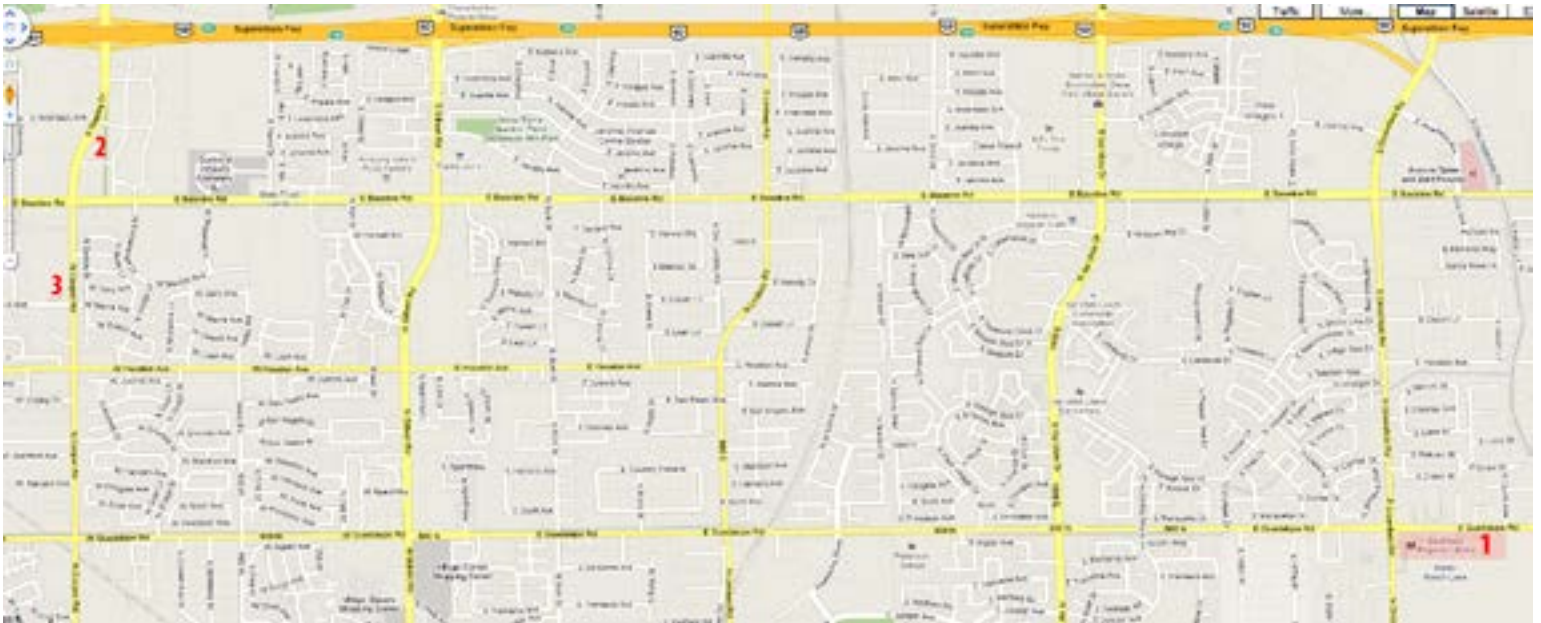
March 15

April 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



OCTOBER 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 | 31 | | | |

October 5-6 - All Arizona Star Party

October 9 - Red Mountain Library Star Party

October 12 - Public Star Party

October 15 - CGCC Star Party

October 19 - EVAC Monthly Meeting

October 25 - Shepherd Jr High Star Party

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 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

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