

THE OBSERVER



The Northern Winter Hexagon - APOD December 26, 2019

Image Credit & Copyright: Petr Horalek

From the Desk of the President by Gordon Rosner

Greetings from your President.

First, the good thing... 2020 is over!

And as always, I sure hope everyone is still doing well and keeping healthy. Please remain vigilant into the new year as virus cases are rising. Remember that all EVAC in-person group activities remain cancelled. We are still uncertain exactly when in-person events will return but certainly believe it will be this year. As always, check our club website for the latest information.

"The Great Conjunction of Jupiter and Saturn" provided some public-

ity for our night sky passion. And it did not disappoint those who understood what it actually was and followed its path. We followed the separation shortening evening after evening with growing anticipation as the unique event provided its grand show to the world of our dynamic universe. Locally, ASU had an online event at the evening of the conjunction as did the Lowell Observatory. I hope most of you hopped between both those events as I did to share in the excitement. If you missed this conjunction, don't worry. This conjunction happens every 20 years. However, rarely visible to this extent. You can catch a great

UPCOMING EVENTS:

All meetings will be held online.

EVAC Meeting via Zoom - January 15th

Travis Rector - "How and Why We Make Color Composite Images at Professional Observatories".

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From the Desk of the President

by Gordon Rosner

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one again on 15 March, 2080. Mark your calendars now so you don't forget!

As a reminder, 2021 club dues are now due. It is especially important for club members to renew their memberships this year and for new enthusiasts to join as we recover from 2020 restrictions that taught us how to come together without getting together. Club members have been loyally supporting the club through this past bleak year and we need this continuing support to grow to a new level as we eventually bring back the familiar events and incorporate the new ones we developed during 2020. Online presentations expanded our club's value by providing the path to international professionals. Our Facebook page has been a growing showcase for both our fledgling astrophotographers and those seasoned artists whose level are the dreams of those just now learning.

We also grew closer to other astronomy clubs as we shared safety strategies and activity status during the downturn. The last year has brought a major challenge of having our Hovatter Airfield dark sky site closed down due to construction of a huge solar energy facility there. This year we must find a new dark sky site for the All Arizona Star Parties and Messier Marathons. This includes negotiations with a new site owner for use agreements and insurance policies. We will again kickoff those programs the membership requested such as the "Protostar" astronomy beginner classes that were cut short just as they were about to be deployed. Our GRCO Observatory will reopen again to amaze and inspire thousands of visitors. Our school outreach programs will return being a part of our youths' science interests and discoveries. The club's monthly Public Star Parties will return. The return and growth of these club amenities require your support. As the race car driver said when he ripped off his rearview mirror at the beginning of the race "What's behind me is not important!". We can now look forward to a better year. Continue to be a club member and a part of an exciting 2021 ahead. Club members are the most important part of our club. This is YOU. By renewing your membership or joining as a new member, you become a part of a premier astronomy club. Go to our club website on the JOIN page and renew or join online or by mail.

In December Tom Mozdzen, Tom Polakis and I attended an online Astronomy Club Leadership Meet-Up with clubs across the country. This event was organized and led by

the Rose City Astronomers of Portland, Oregon to discuss the current status of clubs and to share lessons learned, best practices, and thoughts about the future. At the conclusion, all agreed this was considered an initial meeting and to continue with them, probably monthly. A common concern was recruiting new young members, under 40 years old or so. All the clubs have a desire to fill this gap as they strive to bring astronomy to everyone. Telescope sales have increased lately mainly due to the shift to stay-at-home activities. This certainly will provide an opportunity for younger folks to be introduced. If you know of anyone with a new telescope or those just now discovering the wonders of the sky, encourage them to continue learning and to support that with a club membership.

Those who follow telescope sales certainly are seeing this sales increase. Quite a few common ones are now on a waiting list. When the fortunate ones receive their first telescope, they may quickly get discouraged by what they see, or more correctly what they don't see, as magazine and internet color pictures race through their anticipation. The new scope is soon retired to the back of a closet. We can help them in their first steps of a new discovery. After that first "Oh, Wow!", encourage them to research the object, find out its history, composition, age, distance and take notes on the object. Can they find the Messier objects? Star Clusters? Double Stars? Then, have them go back and look at it again through their new eyes of knowledge. They will see things quite differently as we all can attest to. If it's a very small scope, have them study the Moon. What are the major features? Where did the astronauts land? What are the names of the major craters and who were they named after? Then, suggest they go back and find those features. Suggest they follow the terminator as it crosses the Moon from night to night hiding the objects they just learned about. And seeing how long until they reappear. Get excited along with them. This is the process that I bet got most of us continually hungry for more and hooked on astronomy. There are always new discoveries for the explorer. You may be the one who turns a few days of disappointment into fanning the spark of a lifelong passion. And we may also get a new young club member!

December provided us with an additional online club treat viewed by 70 of us. On 5 December, Tom Mozdzen organized a very successful special "Coffee Talk" presentation by Mateo Tacca on "Gravitational Wave Detection of

From the Desk of the President

by Gordon Rosner

Continued from page 2

VIRGO-LIGA and Upgrade Plans". Dr. Tacca presented from his home in Europe (near Pisa, Italy). This is another example of how our club continues to grow and has expanded its reach world-wide even during these tough times. Remember that all our meetings are recorded and a link is placed on the monthly meetings page of our club's website.

As a reminder, there are three ways to receive a notification link via an email to register for the next online monthly General Meeting. You only need to do one of the following and only once to continue to receive the email on how to register for the upcoming meetings:

1. Send a one-time email request to vp@evaonline.org
2. Sign up for the evac-announce@freelists.org mailing list
3. Sign up for the AZ-observing@groups.io mailing list

A way to get notifications of any special online events and how to register, is to join the EVAC Facebook page and occasionally check for special event announcements. These will also be announced during our monthly General Meetings.

Everyone should remember that member presentations are always a fun and valuable part of our monthly meetings. These are about ten minutes long regarding any astronomy related subject you would like to share with the club. I encourage you to do one of these. Just let me know you would like to do one by using the 'Contact President' link near the bottom of the main page of our EVAC website. I'll then get back with you and we can discuss. If needed, we can also do a dry run sometime before the actual meeting.

Our next online Monthly General Meeting will be on Friday, 15 January starting at 7:30PM. The main presentation will be by Dr. Travis Rector of the University of Anchorage, Alaska on "How and Why We Make Color Composite Images at Professional Observatories".

I'll 'see you' at our 15 January meeting.

"Keep your feet on the ground and keep reaching for the stars."

Gordon Rosner
President

EVAC Zoom Meeting Notes for 2020 December 18, at 07:30 P.M. AZ Time

by Wayne Thomas

Meeting Minutes.

President Gordon Rosner welcomed those in the "audience" to the virtual meeting at 7:30 p.m. When recording started there were 54 in attendance, which later peaked at 72. His first slide presented the meeting agenda:

- Welcome
- Introductions
- Dues are Due
- Jupiter & Saturn Conjunction
- Club News
- Member presentation: Claude Haynes - "Requiem for Arecibo"
- Featured Speaker: Ed Buie - "Turbulence in the Halos of Galaxies"

After his welcome, Gordon introduced the leadership team in charge of keeping EVAC running and mentioned that Club dues are due. Individual membership is \$30, and family membership is \$35. You may renew either online at

["evaonline.org"](http://evaonline.org) or by mail. The mailing address is on our website with the membership form.

Gordon encouraged all to get out early in the evening to view the closest conjunction of Jupiter and Saturn visible at night since 1226. If you miss this one, the next one will be in the year 2080.

Under club news, he reminded us that all club sponsored events with personal contact are still cancelled. Member presentations are still welcome. Send Gordon a note if you are interested in making one. Our monthly meetings on Zoom are being recorded and each can be viewed from its link on the EVAC website.

Our next regular club meeting will be at 7:30 p.m. Friday January 15 via Zoom. Dr. Travis Rector will speak on "Color Composite Images by Professional Observatories." Register for the meeting in the usual way by the link in the invitation email.

EVAC Zoom Meeting Notes for 2020 December 18, at 07:30 P.M. AZ Time

by Wayne Thomas

Continued from page 3

Gordon introduced Claude Haynes who spoke on "Requiem for Arecibo." Claude shared images of the historic Arecibo Radio Observatory's past and recent demise. Built in 1963 with a 305 meter diameter reflecting metal mesh, it was the largest radio telescope until the Chinese built a 500 meter dish in 2016. And Arecibo could both send and receive light (radio waves).

Claude listed many of the contributions to astronomy by Arecibo. These included observations of our planets, asteroids, neutron stars, pulsars, and gravitational waves around pulsars. And the radar capability was used to "phone home" for ET with a 3 trillion watt transmission. The loss of the Arecibo telescope probably means the loss of 50 thousand tourists and 50 thousand school children visitors each year.

Possible replacements include the Lunar Crater Radio Telescope (LCRT) and possibly using Meteor Crater in northern Arizona to hold another dish.

Tom Mozden then introduced the main speaker, Ed Buie, speaking on "Turbulence in the Halos of Galaxies." Ed began his presentation by developing distance scales from our Solar System up to the size of galaxy clusters. His simulations of the outer realms of galaxies are of the order of 42.5 mega parsecs. He relies heavily on the Illustris Simulation in which he studies the CircumGalactic Medium (CGM) which is a galaxy's halo gas.

His technique for observing this gas utilizes distant quasars which are quite distant and abundant. As the quasar light passes through the CGM, various wavelengths are absorbed depending on the chemical composition of the gas. Two observed ions of interest in his research are Mg II (singly ionized magnesium) and O VI (oxygen missing 5 electrons). These two have different absorption character-

istics whether near the center of the galaxy or farther out.

When running his simulations, there is a reasonable match to the data up to maybe 3 gigayears. However, at 4.8 Gyr, the simulation diverges from the data, especially when a magnetic field is introduced.

Following Ed's talk, there were maybe a dozen questions.

What drives the turbulence?

What is the temperature variation?

What % of the CGM is dark matter?

How much mass is contained in the CGM cf. the galaxies stars?

Does the CGM account for the missing baryonic mass problem?

In the simulation, the scale of the SN explosions appears too large?

How does the CGM relate to the Fermi Bubble?

Why does the center get cold?

The simulation must require a lot of computer power.

How many nodes are required?

What allows the gas to cool?

How does the CGM vary by galaxy type?

For the answers to these questions, view the recorded Q&A portion of the talk which can be found on our EVAC website.

Our next meeting will be on Friday January 15th, at 7:30 p.m. via Zoom.

Gordon adjourned the meeting at 8:57 p.m.

Wayne Thomas
Secretary EVAC

LAST QUARTER MOON ON JANUARY 6 AT 02:38

NEW MOON ON JANUARY 12 AT 22:02

FIRST QUARTER MOON ON JANUARY 20 AT 14:03

FULL MOON ON JANUARY 28 AT 12:18

The Backard Astronomer - December's Four Finest Ornaments for Binoculars

by Bill Dellinges (January 2021)

Winter Hexagon – the Ultimate Asterism

Asterism: A pattern formed by stars that are part of one or more constellations, such as the Big Dipper, which is part of Ursa Major.

Stargazers fortunate enough to have a clear view of the eastern sky in January will note a cornucopia of unusually bright stars rising there. Is this something special? It's the annual appearance of six bright winter constellations: Taurus, The Bull; Auriga, The Charioteer; Gemini, The Twins; Canis Minor, The Lesser Dog; Canis Major, The Greater Dog; and Orion, The Hunter.

In no other part of the northern night skies will you find so many bright stars packed into such a small area. While the Summer shows a brighter Milky Way than its winter counterpart, the winter's brightest stars blow away the summer ones – no contest. We can use many of the brighter stars of these constellation to create a monster asterism – the Winter Hexagon. We'll use the six above constellations and seven of their stars. Let the high jinks begin. It doesn't matter where you start; I prefer beginning at Capella in Auriga and working counterclockwise.

From yellow Capella (magnitude (mag) +0.08), travel southeast 35 degrees to Castor (mag +1.6) in Gemini. Here we must take writer's license and consider Castor and fellow Gemini star Pollux (mag +1.2), only five degrees away, one stop on our star-trek. Otherwise, we no longer have a hexagon. This will be the last time I'll "cheat" a little. I beg forgiveness. Head due south to Procyon (mag +0.34) in Canis Minor. Now scoot southwest to white Sirius in Canis Major (mag -1.4) – the night sky's brightest star (hard to miss this guy!). From Sirius race northwest to blue-white Rigel (mag +0.12) in Orion. Just two legs to go! Ascent northwest to orange Aldebaran (mag +0.87) in Taurus. To complete the Hexagon, we simply coast northeast about the same distance we traveled from Rigel to Aldebaran, back to our starting point, Capella.

Within the confines of its borders, one could spend many years exploring the copious nebulae and star clusters therein. But here, we are trying to appreciate the big picture, the glorious concentration of the bright colorful stars of the Winter Hexagon.

EVAC Outreach Events

by Gordon Rosner

Again, unfortunately another very short column this month. All outreach events remain cancelled due to supporting the public health concerns. For more information, see the President's column at the beginning of this newsletter or at the top of the EVAC website.

As always, still looking very forward to our outreach program getting back and to hearing all those "OH WOW's" we so love to hear.

Gordon Rosner
EVAC Outreach Events Coordinator

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 in the Contact-Us area on the Home page of our EVAC website. 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 to consider is AZ-Observing@groups.io, simply click on this link <https://groups.io/g/AZ-Observing> and follow the instructions on the page. 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



[SkyPi Remote Observatory](#)

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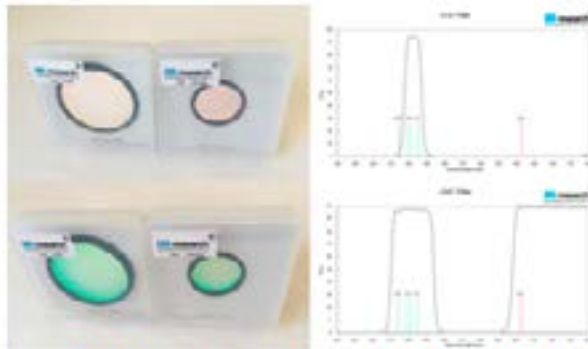
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Monthly Meetings will be presented live online using Zoom. See the EVAC Website for updates. All other events are on hold until health concerns are resolved.

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 normal in-person monthly meetings have temporarily been cancelled, and are replaced with an online Zoom meeting.

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!



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



JANUARY 2021

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
23	25	26	27	28	29	30

January 15 - EVAC Monthly Meeting Live Online via Zoom.

The EVAC Monthly Meeting will be held live online via Zoom. All other meetings and events have been cancelled until further notice.

FEBRUARY 2021

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						

February 19 - EVAC Monthly Meeting Live Online via Zoom.

The EVAC Monthly Meeting will be held live online via Zoom. All other meetings and events have been cancelled until further notice.

East Valley Astronomy Club – 2021 Membership Form.

IMPORTANT: All memberships expire on December 31 of each year

New Member Dues (select according to the month you are joining the club)

	Individual	Family	
January, February & March	\$30.00	\$35.00	
April, May & June	\$22.50	\$26.25	
July, August & September	\$15.00	\$17.50	
October, November & December	\$37.50	\$43.75	<i>(Includes following year)</i>

Renewal (current members only):

\$30.00 Individual **\$35.00 Family**

Astronomical League: \$7.50 Annually (per person)

Name Badges:

Quantity: _____

\$10.00 Each

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC
Payment will be made using PayPal

Name:

Phone:

Address:

Email:

City
State
Zip

URL
For website

Would you be interested in our outreach program? Yes No

How did you discover East Valley Astronomy Club?

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC"), the receipt and sufficiency of which is hereby acknowledged, I hereby affirm that I and any related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, children, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, hereby forever release, acquit and discharge to hold EVAC and its related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, from any and all causes of action, claims, losses, damages, liabilities, expenses (including attorneys' fees) and demands of any nature whatsoever, known or unknown, that in any way relate to, arise out of, or concern EVAC and/or my presence on the premises of any EVAC Star Party and related areas, whether or not those causes of action, claims, damages, liabilities, and demands are part of the specific subject matter of EVAC or any EVAC Star Party. This release is intended to and does cover all injuries and damages, and the consequences thereof, whether known or unknown at the time of the execution of this release, which have occurred or may hereafter occur or which may hereafter be discovered, and which may have been caused or may be claimed to have been caused by the said incident, and specifically includes, but is not limited to, bodily injuries, mental and emotional injury, pain and suffering, medical treatments, and loss of earnings or income.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance. EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Signature _____

Date _____

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

www.evaonline.org

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

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