



PAStimes

Phoenix Astronomical Society

www.pasaz.org

February 2019

Volume 70 Issue 6

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Richard Harshaw to Speak at February 7, 2019 Meeting

By Terri, Event Manager

Please join PAS in welcoming this fantastic guest speaker to PAS for the February 7, 2019 Phoenix Astronomical Society meeting. Doors open 7pm (in room LS-203) with set up of the guest speaker, socializing, and snacking until 7:30pm when the meeting begins.

Prior to the meeting we will have a Meet and Greet dinner at Chili's. RSVP for this dinner is required by the day before and can be emailed to Terri at Events@pasaz.org. PAS Members are asked to RSVP on the PAS Calendar at this link:

<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2802&day=2019-2-7&c=1>

Bring a snack to share, bring a friend and join us for this fantastic presentation. Richard has written a book which is available online for purchase at this link: <https://www.springer.com/us/book/9780387468938>. He has also offered to do a book signing, if you purchase his book prior to the meeting and bring it with you. His book is also available as an e-book for those of you who would rather have a digital copy of the book.

See "Double Vision Without Drugs or Booze" on page 3

Everyone is welcome at this meeting. We will see you there!



Richard Harshaw and a 2.1 meter telescope.
Photo provided to PAS by Richard.

January 2019 Meeting Review

By Terri, Event Manager

Happy New Year to everyone! At the January meeting we saw about 50 individuals in attendance! That is an awesome number of attendees! Thank you all for attending.

Prior to the meeting, dinner was enjoyed by eight PAS members to Meet and Greet our wonderful guest speaker, Mark Johnston.

The January meeting opened a bit later than usual due to everyone getting their Swap Meet items into the room and set up on the Swap Meet table. We did not have a Garage Sale table set up, so we put all the items on one table and the sales happened. There were quite a few items, and I saw a minimum of 5 telescopes for sale, a bunch of eyepieces and a few other items. It was an exciting Swap Meet! Thank you all for participating in the Swap Meet this year.

So, the meeting opened and President Mike had a few quick announcements and

then we turned it over to Mark Johnston to make his presentation on Exoplanets from about 7:45pm until about 9:00pm. Everyone was fascinated by this topic and totally enjoyed the information shared, as well as the wonderful animated graphics Mark had provided in his Power Point presentation.

Due to some confusion at the opening of this meeting, the new attendees didn't get acknowledged as they should have. I'm sorry about that, but I wish to welcome new members Peter and Rose Arata, and thank them for joining PAS!

After the presentation, we had a few brief announcements, I went over the upcoming events for the new and public attendees since PAS members had received the upcoming events for Spring 2019 through the end of May, via email the day before the meeting. We held the PAS Raffle, and congratulations to winner Sam Insana! The meeting was concluded about

8:30pm, and until 9:30pm when everyone left, final sales of the Swap Meet were concluded. Several members chatted with me, a brief meeting of the Officers took place to discuss a location to hold the November Mercury Transit and a few other details. It was a wonderful first meeting of the year. We look forward to the February 7, 2019 PAS Meeting in LS-203. See you there!



Mark Johnston had a very informative, fun presentation at the January 17 PAS Meeting.

Photo by Terri Finch.

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PAS Upcoming February Events

By Terri Finch, Event Manager

Check out these and other fun events on the PAS Calendar:

<http://www.pasaz.org/forums/calendar.php>. RSVP where requested to Events@pasaz.org. On the PAS Calendar, "Private" means the event is for PAS members only. If you wish to become a PAS member and attend the private events, please download a membership form here: <http://www.pasaz.org/forums/downloads.php?do=file&id=129>

Feb 2: Public Star Party at South Mountain from 6:30 to 8:30pm. More details: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2791&day=2019-2-2&c=1>

Feb 5: Star Party in Phoenix (Private)

Feb 7: PAS Meeting: PAS Meeting at PVCC Main Campus in LS-203 at 7pm. More details: <http://www.pasaz.org/forums/calendar.php>

[?do=getinfo&e=2739&day=2019-2-7&c=1](http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2739&day=2019-2-7&c=1)

Feb 9: School star party in Gilbert (Private)

Feb 10: Free Telescope Workshop at Bookmans from 3:30pm to 5:30pm. Bookmans is at 19th Ave & Northern in Phoenix. RSVP required with Terri. More details at this link: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2735&day=2019-2-10&c=1>

Feb 14: PAS Meeting of the Minds (Private) which is the Business Meeting of the club for PAS Members only. This meeting happens almost quarterly. Details are in the online Calendar for the all the info you need:

<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2765&day=2019-2-14>

Feb 21: FREE Telescope Workshop at

PVCC Main Campus 7pm to 9:30pm in G-147. Bring your telescope and accessories. This is an indoor/outdoor event (weather permitting) and RSVP is required with Terri. No public RSVP's could cancel this event. More details are here: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2731&day=2019-2-21&c=1>

Feb 28: Huge Public Star Party at Black Mountain Campus of PVCC from 6pm to 9:45pm. More details: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2716&day=2019-2-28&c=1>

At the time of completion of this issue, several more events were in the planning stages and could not be listed as "Scheduled" until they are definitely happening. Please see our online calendar for the events that didn't make it into this list.

The DBG Luminaria of December 2016 review can be found at this link: <http://www.pasaz.org/forums/downloads.php?do=file&id=292> for your reading enjoyment.

Desert Botanical Garden Luminaria Dec. 2018

By Terri Finch, PAS Event Manager - Review 1 of 6

Las Noches de las Luminarias of December 2018 at the Desert Botanical Garden (DBG) had the PAS telescope team of four Telescopes and one presenter each clear night, with variations on cloudy nights that consisted of these wonderful Lumi Telescope Team members: Pete Turner brought his 12" Dobsonian and was a runner for many nights of this event; Mark Johnston brought his 5.5" refractor to

the event, Rick Cunningham brought his 8" Dobsonian; Roger Anzini was a runner on some nights and provided views through his 16" Dobsonian on other nights; Ted Blank had several scopes and interesting items to show the patrons of DBG, but his main scope was a 9.25" SCT; Mike Marron brought his meteorites and was one of two presenters at this event, Bruce Wurst brought his 12" SCT and also filled in as a

runner a few times; Don Boyd brought his 8" scope; Sam Insana brought his meteorites and was a presenter at this event; Storm Moon had her 8" scope and was a runner; William Finch had an 8" SCT and was runner and Terri Finch brought her 8" SCT and was runner. We had additional help from Vera Stiesmeyer, Ofelia Waters & Jake Von Ruhr. The Telescope Team was scheduled to be part of the Lumi entertain-

See "DBG Luminaria Dec. 2018" on page 4

"Double Vision Without Drugs or Booze"

By Richard Harshaw, February Meeting Guest Speaker

Do you think it is possible to image double stars at the resolution limit of your telescope? If it were possible, would you want to know how?

Richard Harshaw's exploits in astronomy began 50 years ago when he purchased a 60mm alt-azimuth refractor. Over the years, he worked his way up to his present scope, an 11-inch SCT. His main interest

is speckle interferometry of close double stars. But he is also an avid galaxy hunter and enjoys star clusters and planetary nebulae.

He has had several articles on double stars published in journals (The Webb Society Double Star Section and the Journal of Double Star Observations) and has a book published by Springer Publishing, the

Complete CD Guide To The Universe. He has also contributed about 6,000 measurements of double stars to the Washington Double Star Catalog (his observer code is HSW). He is presently working on speckle interferometry on extremely close binaries, having done observing runs at Kitt Peak National Observatory and other observatories in Arizona.

My Attendance at the 2018 DBG Luminaria

By Rick Cunningham, PAS Treasurer

December and Desert Botanical Gardens. For some years for PAS the two go hand in hand. This year at DBG the weather was a bigger consideration than past years of my involvement. Some nights were relatively cloud and moon free, others were relatively star free due to heavy overcast evenings. On those several evenings it was not unusual to show objects less than twenty minutes total of the four-hour window of opportunity afforded by DBG. On several nights there were multiple rolling bands of heavy clouds generally obscuring observations until 9:30pm, when the Gardens closed, at which time the sky would clear and cloud free as we drove home.

Twice this year, I showed features on the lunar surface only to get home and while eating dinner, open an astronomy

magazine received that day, only to discover an article and pictures on the very object I was showing. The first was Reflector Magazine (provided to PAS Members from the Astronomical League), December 2018 issue, page 25, The Mare Nubium and Rupes Recta, aka Straight Wall. These had been shown that night at 255x with my variable polarizing lunar filter. The very next night I was featuring Rheita Valley, a valley created by meteorite impacts on the perimeter of Mare Nectaris, again at 255x. Again, while eating dinner, I opened Astronomy Magazine, January 2019 issue, page 37, and there it was.

Several evenings near full moon I would center on the periphery of the moon, searching for adjacent crater walls and look for stars between crater walls. Other eve-

nings when the moon was unavailable, I showed Mars first, since it was always up at sunset when DBG opened to guests, Beta1 Cyg Albireo, NGC 869/884 Double (h Persei/Chi Persei), NGC 457 (Owl Cluster), M45 (Pleiades), M31 (Andromeda Galaxy), Almach Double (Gamma Andromedae), Iota Cassiopeiae Double, M42 (Orion Nebula), and tried and failed multiple times to show NGC 281 (Pacman Nebula).

Thank you, Desert Botanical Gardens, for transporting the telescope team and our equipment to and from the Wildflower Garden in a very timely manner, and for having PAS at your Luminaria event again this year.

What's Up For February?

By Don K. Boyd, PAStimes Editor

Name	Date	Rise	Set
Mercury	02-15-19	07:53	19:10
Venus	02-15-19	04:42	14:48
Mars	02-15-19	10:05	23:14
Jupiter	02-15-19	03:05	13:03
Saturn	02-15-19	04:57	14:58
Uranus	02-15-19	10:04	23:05
Neptune	02-15-19	08:09	19:39
Pluto	02-15-19	05:21	15:24

All Times Arizona Time

Bold means the object is "visible" in the evening

February 15 2019

Sunrise: 07:12

Sunset: 18:43



New: February 5



Q1: February 12



Full: February 19



Q3: February 26

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DBG Luminaria Dec. 2018

Continued from page 2

ment for 29 nights of December 2018. We took turns attending this event. By the end of the event, there were only two nights that were totally rained out. PAS was at the 2018 Luminaria event for 27 of 29 nights. That's a lot of events and it was fun, exhausting and well worth our time to meet all the wonderful patrons who attended during December.

This article is one of six reviews

planned to be in the next several issues of the PAStimes Newsletter. Please watch for the rest of the exciting reviews of how this event progressed over the twenty-seven nights of Luminarias at the Desert Botanical Garden. Also, enjoy our vast collection of fascinating photos, in this and the next six issues of this newsletter, taken by the telescope team for your visual and reading enjoyment. The reviews can be found in

this issue plus March, April, October, November and December of 2019.

I wish to thank DBG for having PAS at the Lumi's this year. It was a fun, exhausting, and rewarding event, and from Christmas to December 31, it was freezing cold, but the PAS Telescope Team enjoyed doing it! We hope to do it again for December 2019.



In the foreground is the gate leading to the Butterfly Pavilion which opens in March 2019. In the far back of this photos is one of the mini mountains of the Desert Gardens all lit up by the Electric Desert. The bright red & white area is where Run Boy Run or Traveller (they shared this location) were playing during the Dec 21 event. Photo taken by William.



William Finch captured this photo of the constellation of Orion above the DBG Luminaria & Electric Desert event of Dec 9.



Taken From the Wildflower Garden by the Butterfly Pavilion gate at DBG, we see this fantastic sunset of Dec 23 during the Luminaria event. Photo by William Finch.



Hexagon at Night, Quartet in the Morning

David Prosper

The stars that make up the **Winter Hexagon** asterism are some of the brightest in the night sky and February evenings are a great time to enjoy their sparkly splendor. The Winter Hexagon is so large in size that the six stars that make up its points are also the brightest members of six different constellations, making the Hexagon a great starting point for learning the winter sky. Find the Hexagon by looking southeast after sunset and finding the bright red star that forms the “left shoulder” of the constellation Orion: **Betelgeuse**. You can think of Betelgeuse as the center of a large irregular clock, with the Winter Hexagon stars as the clock’s hour numbers. Move diagonally across Orion to spot its “right foot,” the bright star **Rigel**. Now move clockwise from Rigel to the brightest star in the night sky: **Sirius** in Canis Major. Continue ticking along clockwise to **Procyon** in Canis Minor and then towards **Pollux**, the brighter of the Gemini twins. Keep moving around the circuit to find **Capella** in Auriga, and finish at orange **Aldebaran**, the

“eye” of the V-shaped face of Taurus the Bull.

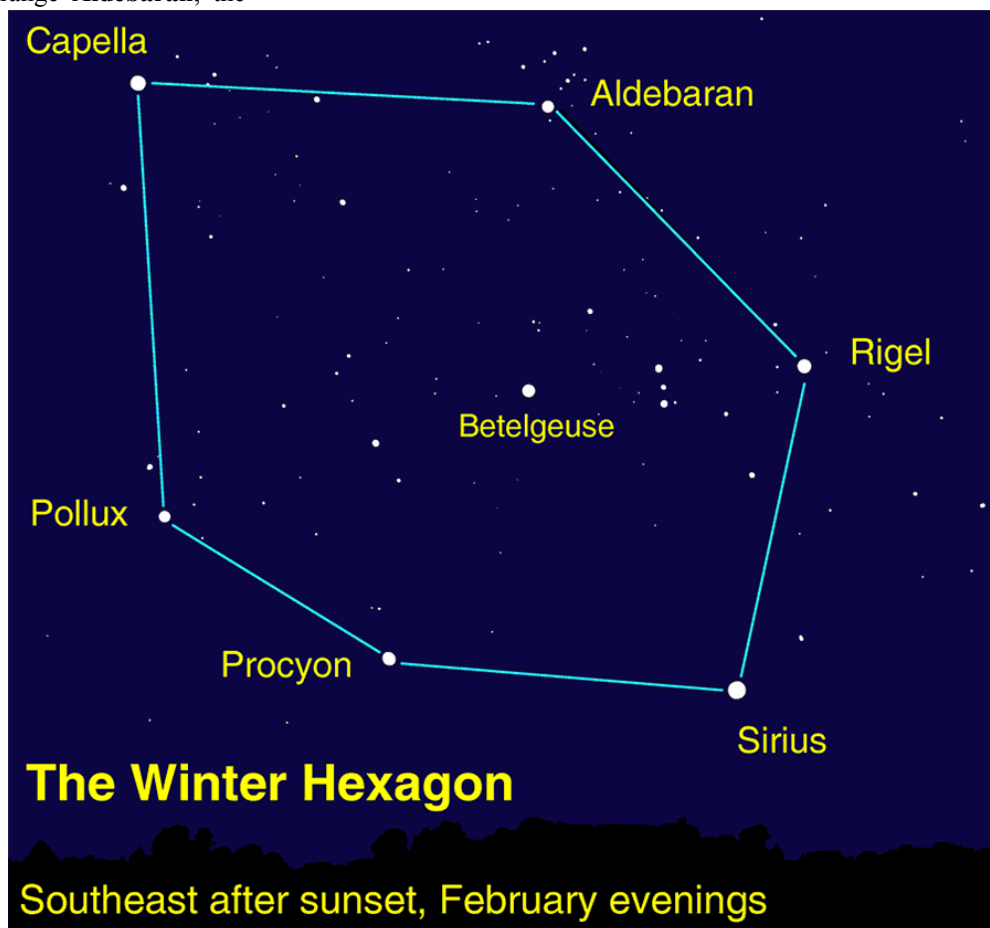
Two naked-eye planets are visible in the evening sky this month. As red **Mars** moves across Pisces, NASA’s InSight Mission is readying its suite of geological instruments designed to study the Martian interior. InSight and the rest of humanity’s robotic Martian emissaries will soon be joined by the Mars 2020 rover. The SUV-sized robot is slated to launch next year on a mission to study the possibility of past life on the red planet. A conjunction between Mars and **Uranus** on February 13 will be a treat for telescopic observers. Mars will pass a little over a degree away from **Uranus** and larger magnifications will allow comparisons between the small red disc of dusty Mars with the smaller and much more distant blue-green disc of ice giant Uranus.

Speedy **Mercury** has a good showing this month and makes its highest appearance in the evening on February 27; spot it above the western horizon at sunset. An unobstructed western view and binoculars

will greatly help in catching Mercury against the glow of evening twilight.

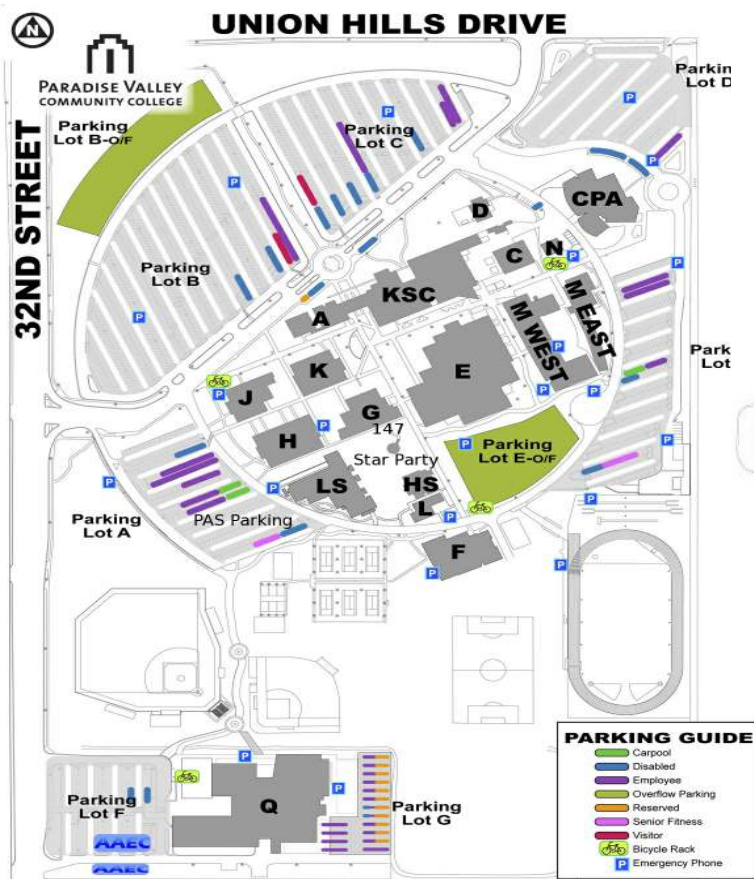
The morning planets put on quite a show in February. Look for the bright planets **Venus**, **Jupiter**, and **Saturn** above the eastern horizon all month, at times forming a neat lineup. A crescent **Moon** makes a stunning addition on the mornings of February 1-2, and again on the 28th. Watch over the course of the month as Venus travels from its position above Jupiter to below dimmer Saturn. Venus and Saturn will be in close conjunction on the 18th; see if you can fit both planets into the same telescopic field of view. A telescope reveals the brilliant thin crescent phase of Venus waxing into a wide gibbous phase as the planet passes around the other side of our Sun. The Night Sky Network has a simple activity that helps explain the nature of both Venus and Mercury’s phases at bit.ly/venusphases

You can catch up on all of NASA’s current and future missions at nasa.gov



Map of PVCC Main Location

18401 N. 32nd Street | Phoenix, AZ 85032



Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



2019 PAS GUEST SPEAKER LINE-UP

By Terri Finch, Event Manager Events@pasaz.org

PAS Meetings are held at PVCC Main Campus on the first Thursday of the month in **Room: LS-203** unless otherwise noted. Do you have an idea for a guest speaker? Email Terri Finch, Paul Facuna, or Mike Marron the details (their email addresses are at the top of page 2 in this newsletter).

Here are the next scheduled guest speakers at PAS:

Mar 6 Wednesday: Jim Renn: "The Vatican Observatory and the Big Bang"

Apr 4 in room K1000A: Will Grundy "The findings of the MU69 Kuiper Belt object flyby by the New Horizons mission on March 28th"

May 9: David Lee Summers "Surveying the Universe"

More information at:

<http://www.pasaz.org/index.php?pageid=meetings>

February 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2 <i>Public Star Party</i>
3	4	5 <i>Star Party in Phoenix (Private)</i>	6	7 <i>PAS Meeting</i>	8	9 <i>School Star Party (Private)</i>
10 <i>Telescope Workshop</i>	11	12	13	14 <i>PAS MOM (Private)</i>	15	16
17	18	19	20	21 <i>Telescope Workshop</i>	22	23
24	25	26 <i>Star Party in Phoenix (Private)</i>	27	28 <i>Public Star Party</i>		