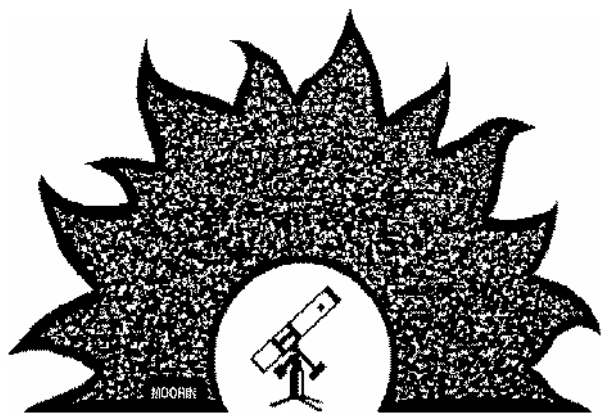




# PAStimes

Phoenix Astronomical Society

[www.pasaz.org](http://www.pasaz.org)

December 2016

Volume 68 Issue 4

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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

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## Suzanne Morrison to Speak at December Meeting

### “Rocks from Space”

By Terri, Event Manager

Suzanne Morrison will be the PAS guest speaker for the December Meeting. Suzanne will share her experiences with meteorites and be bringing some specimens for sale. Bring cash if you are thinking of purchasing any meteorites at this meeting. Here's some additional info about Suzanne on the internet:  
<http://www.scienceandastronomy.com/suzanne-morrison/>

More about her: “Suzanne Morrison, CEO of the company Raining Rocks, will be presenting on the topic of meteorites.

She is a meteorite specialist, field geologist, award-winning photographer and a premier meteorite and mineral dealer. She has worked extensively with meteorites since she found her first one 20 years ago. She was a guest, as well as the behind the scenes location photographer on the television show Meteorite Men. Her photos have appeared in numerous science and education-related books, magazines and television shows.

For her PAS presentation, she will

*See December Meeting on page 4*



*Suzanne Morrison is our December Guest Speake who will knock your socks off with her enthusiasm for Meteorites. Come enjoy her presentation!*

## Dinner prior to December PAS Meeting

By Terri, Event Manager

We are having dinner with Suzanne Morrison at Chili's at 7th Street and Bell (513 East Bell Road, Phoenix, AZ 85022) at 4:30-5pm arrival time. The reservation will be under Finch. RSVP is required through the PAS Calendar:

<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2189&day=2016-12-1&c=1>. PAS Members are invited to join us ther to meet the guest speaker ahead of time. It's a BYO (Buy your Own) dinner. I will be putting the reservation in for this on

Thursday around 12:30pm, Dec 1 so the deadline to RSVP will be 11am Thursday morning. Come join us for a fun dinner prior to the meeting. Would love to see you there. \*\*\*

## November 3 Meeting Review

By Terri, Event Manager

Nov 3 started with a group of PAS Members going to Chili's at 4:30 to meet up and have dinner with guest speaker Dr. David Williams. Present were Alex and Diane Vrenios, Sam Insana, William and Terri Finch, Don Boyd, Kevin Harcey, Pete Turner and Paul Facuna.

Later, Sam opened the meeting with a few items of interest, an introduction of the guest speaker, and then gave the floor to

David whose presentation was about 1.25 hours long. There were, including David, 25 in attendance. David raffled off a special poster which Pete Turner won. Bruce Wurst provided the bottled water this month.

Many thanks to David for a fine presentation. We hope to see everyone at the December 1 PAS Meeting!



*David Williams*

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## December 2016 Upcoming PAS Events

By Terri Finch, Event Manager

Check out these and other events on the PAS Calendar: <http://www.pasaz.org/forums/calendar.php>. RSVP where requested to [Events@pasaz.org](mailto:Events@pasaz.org).

**Dec 1:** PAS Meeting at PVCC in Room LS 205. Come enjoy a presentation by Suzanne Morrison. Bring a snack to share. Bottled water provided by PAS snack fund. Everyone welcome. Doors open 7pm. Meeting begins 7:30pm. Here's the link for more details about this event: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2005&day=2016-12-1&c=1>

**Dec 2, 3, 4:** PAS will be at the Desert Botanical Garden showing the night sky through our telescopes from 5:30 to 9:30pm for the 21 nights of the DBG Luminaria.

naria.

**Dec 9, 10, 11:** PAS will be at the Desert Botanical Garden showing the night sky through our telescopes from 5:30 to 9:30pm for the 21 nights of the DBG Luminaria.

**Dec 15:** Free Telescope Workshop at PVCC main campus, 32nd Street and Union Hills Rd - 7pm to 10pm. RSVP is required with Terri [Events@pasaz.org](mailto:Events@pasaz.org). Seating is limited. When you RSVP, please leave your first name, and the make and model of your telescope and bring it with your accessories to this event. We meet in G-147 near the telescope dome on campus. We have no telescopes for sale at this event. This event is weather permitting. More details:

<http://www.pasaz.org/forums/calendar.php>

[?do=getinfo&e=2013&day=2016-12-15&c=1](http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2013&day=2016-12-15&c=1)

**Dec 16, 17, 18:** PAS will be at the Desert Botanical Garden showing the night sky through our telescopes from 5:30 to 9:30pm for the 21 nights of the DBG Luminaria.

**Dec 20, 21, 22, 23:** PAS will be at the Desert Botanical Garden showing the night sky through our telescopes from 5:30 to 9:30pm for the 21 nights of the DBG Luminaria.

**Dec 26, 27, 28, 29, 30, 31:** PAS will be at the Desert Botanical Garden showing the night sky through our telescopes from 5:30 to 9:30pm for the 21 nights of the DBG Luminaria.

## Membership Dues for 2017 are Due by End of Year

By Terri, Event Manager

The PAS membership year is from Jan 1 to Dec 31. PAS starts collecting for the following year in September. If you haven't renewed your membership for 2017, you might want to get that done because after Dec 31 your membership will be terminated.

An email will be going out to those who haven't renewed with the membership form attached. If you receive an email, please update your membership so you can continue to participate in our events including the PAS Social on Jan 21, the PAS Music Jam

on Mar 4, the PAS Binocular Star Party, the next Night Sky Training Session, and the PAS Messier Marathon, along with other fun, private events. Thank you so much for continuing to be a wonderful PAS Member.

## Year in Space Calendars

By Terri Finch, Event Manager

I have placed an order for Year in Space calendars which should be delivered at the December 1st PAS Meeting. If you ordered one this year, please see me for

your calendar at the December meeting. I hope to deliver all of the ordered calendars prior to the holidays in case you purchased them as gifts. Confirm with me where we

will meet to get your calendar to you. Thank you all for your orders.

# PRESIDENT'S CORNER

By President Sam Insana



PAS President Sam Insana. Photo by Terri

Determining when to have a star party or cancel one based on weather conditions is not an easy matter. We look at 8 or 9 weather reports to see what the percentage of cloud cover, percent chance of rain and

what the wind will be like during the hours of the event. The reports we study are from NOAA, Accuweather, The Weather Channel, Weather Underground, Skippy Sky, Clear Sky, Weather Bug, "yr.no", and Clear Outside. If 6 out of 8 or 7 out of 9 reports show wind no more than 10 miles per hour, and no more than 10% chance of rain with clouds less than 30% we usually go ahead. If things are a little iffy we then look at radar and satellite photos, barometer readings, and wind direction to see if clouds are being blown in or out of the viewing area. Also, if there are a lot of high thin clouds, but we are showing bright objects like the moon, planets, double stars or open clusters, we would probably go ahead with the viewing, but not if we are only after nebulae, galaxies, or globular clusters that

would be washed out. If we have other activities like meteorite displays, rocket displays, or a lecture on astronomy, we might risk having the star party with marginal weather, but not if we are only using telescopes.

Sometimes it would be easier to just use the alleged Native American tool of the weather stone, tied with a string to a tree branch. If it is moving, we know there is a lot of wind, if it is wet it is raining, if it is white it is snowing, if it is hard to see in the daytime it is cloudy, if it is too hot to touch the temperature is very high, etc.... There is a lot of work analyzing the weather for star parties. Luckily we get it right at least 9 times out of 10.

## PAS Yearly December Astronomy Equipment Swap Meet

By Terri, Event Manager

Every December, PAS holds the Yearly Swap Meet at the December PAS Meeting. Setup of your items is at 6:30 when the doors open. When you walk in, to your left will be the Items that are being sold garage-sale style. What that means is that you are putting a price on the items, for which those who wish to buy them can make you an offer. It also generally means that you are willing to be flexible on the pricing, so price your items on that side of the room, accordingly.

To your Right will be the items for the swap meet. For this side, we do the pricing as bidding items in a silent-auction style. Bring a piece of paper per item. Put your first name at the top along with your starting or minimum bid. Also please include a list of everything that comes with that item. The attendees can then bid on your item.

Attention Bidders: If you are bidding on a swap meet item, put your first name or initials next to your bid. Highest bid wins the item. Bidding starts at 6:30pm and goes

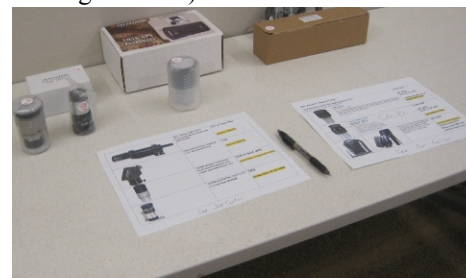
to the conclusion of the meeting. Once the meeting has ended, please purchase the items you have won the bid on.

Attention Buyers: The garage sale side of the room is first come, first served so you don't want to be late to this event.

Please bring plenty of cash for your purchases. All sales are paid to the seller.

Below is a list of items that may be seen at the PAS Swap Meet. If you are seeking these items, make sure you attend this year's swap meet. This is not an all inclusive list. Prices are not listed in this article. You will have to discover the prices and sellers when you arrive: Olympus T-Adapter, Meade Autostar Suite (Lunar Planetary Imager and Software), Celestron Handbook, Patrick Moore Practical Astronomy Book Observing Comets, Pocket Sky Atlas (2 copies), Burnham's Celestial Handbook (Volumes I - 3), Sky & Telescope DVD Hubble - 15 Years of Discovery, Sky at Night CDs, Map the Sky Software, Classic Episode - 1977, Classic

Episode - 2004, Moon Impact, Apollo 13, September 2005, 5 Essential Astronomy Tools, Apollo 10 Special, Apollo 9 Special, Fly the Shuttle, Explore the Galaxy, Classic Episode - 1982, X-15, Venus Then and Now, Telescopes, Classic Episode - 1970, Photoplus 8, Galileo: Seeing is Believing, The Ringed Planet, Firefly Moon Observer's Guide, 4.5 in. telescope and caps for your eyepieces. Some additional items may also be available such as astrophotos (proceeds go to PAS).



These items were seen at a previous PAS Swap Meet. Come see what Treasure you might find at this year's sale! Photo taken by Terri at Dec 5, 2013 PAS Meeting.

## Scope for Sale:

Orion Starblast 6, newtonian reflector on a dobsonian base. It's new \$250.00 firm. Pick up location will be in Scottsdale- 60th Street and Thomas Rd. Contact Chris: chrishowes511@gmail.com.

## December Meeting

*Continued from Page 1*

bring several types of meteorites for examination, as well as some for sale. She will discuss a myriad of meteorite related topics, from the basics regarding types of meteorites, to how to recognize a meteorite, to

where they originate from and more.”

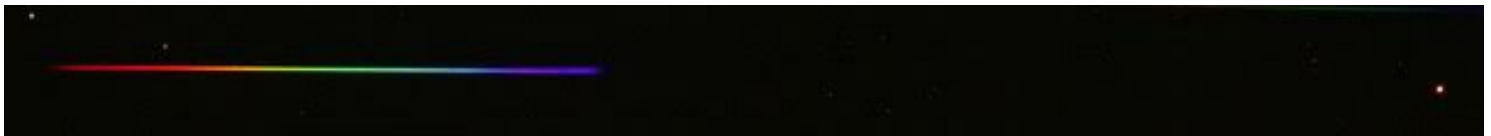
**Terri** adds: Bring a friend and a snack to share while you enjoy this marvelous Guest Speaker. Doors open 7:00 pm with socializing to 7:30 when the meeting will

begin. We are in room LS-205 at PVCC Main Campus. Bottled water will be provided by the PAS Snack Fund for which, your small donation is very helpful in supporting. See you there!

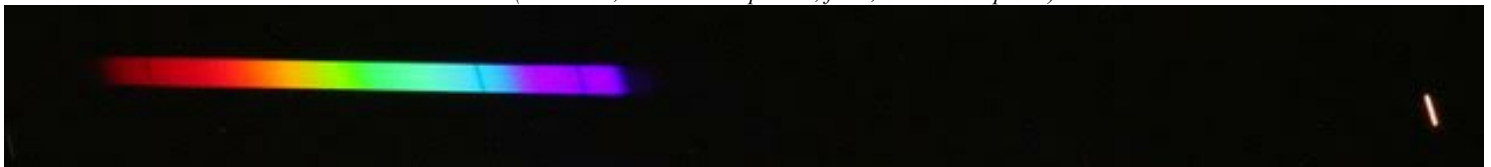
## Spectroscopy SIG

By Bill Powell, PAS Member

**Spectroscopy Opportunity:** How would you like to contribute to science and learn more about the universe? Well, you can, in one way that is both simple and not very expensive. A couple meetings ago I tested the waters to see if members might be interested in forming a special interest group to investigate spectroscopy but only three individuals expressed an interest. I would like to try again to see if we can get a few more members involved. As a teaser I have included a couple images I recently took from my backyard with a DSLR camera and the grating I described at the meeting, Star Analyzer 100. The images are straight from the camera with no processing. The only thing done to the images was cropping. They are not great images for further processing, but they could be easily used for analysis with software, either RSpec or VSpec (freeware).



*Polaris: (ISO 4000, 25 second exposure, f/5.6, 300mm telephoto)*



*Vega: (ISO 4000, 25 second exposure, f/5.6, 300mm telephoto)*

You definitely can see some absorption lines in the Vega shot. The Polaris spectrum is a little too narrow to see without using the software. If you are interested, please send Bill Powell an email ([bill@beta-pi.net](mailto:bill@beta-pi.net)). Thank you to those who have already responded.

## Star Barn Laser Light Shows

By Paul Facuna

I attended laser light shows at the Star Barn on August 20, 2016 and at Christmas in December 2015. Music for that show was by Mannheim Steamroller while the August one featured Pink Floyd's "Dark Side of the Moon" which was also the music played at the first laser light show performed at the Griffith Planetarium in L.A. in November of 1993. The last two laser shows I had before the Christmas

show were at the Flandreau Planetarium many years ago. The Christmas music was slower, so the motion and patterns of the laser lights were different for each. This show began with a faint dark blue background. As the music started, green dots slowly moved on the background, followed by fast-moving red and green dots. As the music picked up the laser lights began to constantly change colors and form many

different fast and slow moving patterns synchronized to the music. The multitude of colors are formed by combining, in many different ways, the primary colors from one blue, ten red and ten green laser lights. I enjoyed the beautiful light and music show. If you have never seen a laser light show this is an excellent one to see and might be the only laser show left to see in the area.

## Observing at Antennas Site Sept 4

By Mark Johnston

My first time out to the site was good. A long way, but all highway so it's not too bad. The site was very dark and I think the seeing was about 3.5 out of 5. When the wind died down I was able to crank up to 545x a few times.

Highlights for me last night including splitting some challenging uneven magnitude tight doubles as part of a research project (and failing to split some others -

will record that too).

Saturn was great, the North America nebula was clear in binocs, M31, M32 and 101 were bright and filled the whole field on my lowest power, M27, M11, Helix Nebula, M57, and the Veil were spectacular. I verified that planetary nebula are indeed sharper in an O3 filter than a UHC, but for supernova remnants the UHC is better. I also had some pleasing views of

galaxies (Sculptor, Pinwheel) that had a complete waste of time attempting in Phoenix. Looking forward to next Antennas outing.

**Sam Insana** writes: The 3 of us (Howard Moneta, Mark and I) observed from 7 pm until midnight. No clouds, no rain, no wind most of the time, good seeing, great transparency.

# Night Sky Training Session Oct 1

By Terri, Event Manager

Attending this private event were: William and Terri Finch, Don Boyd, Sam Insana, George Sabo, Alex Vrenios, Peter Turner, Paul Facuna, Earl DeLong, Rodney Fong, Eric Steinberg, Howard Moneta, Mike Marron, host of the party and Ron Walker our newest PAS Member. Ora Kurland also stopped in briefly.

We started the evening with a good potluck at 5:00 pm, followed by telescope setup at 6:30. The event went to about 11:00 pm when many of the observers packed it in for the night and left. A few of us stuck around until 1:30 am after having a nice visit with Mike.

We had a nice collection of attending scopes. There were two 8" scopes, a 5", 9.25", 10", 12", Eric's 22" and Howard's 14". That made for a great event both for learning and viewing.

The night started with everyone getting their scopes aligned after which we collectively found Venus, Saturn, Mars before moving on to other night sky objects.

This event was Eric's first event since his back surgery. We were all so glad he could attend and bring his scope. I was impressed at how well he managed the scope. It was a great evening for viewing with comfortable temperatures and clear skies for most of the night.

I wish to thank Eric for a most Fantastic Night Sky Tour! That was really impressive. Everytime he does his Night Sky Tour, I learn more from him. I also wish to also thank Alex for doing an indoor demo /

discussion on filters for telescopes including how they work, what they do, how much they may cost and where to get them. Because even more people were interested, Alex went through it a second time (I stayed around for both presentations). Alex did a great job.

Thanks everyone who brought food and to Mike for hosting the event. The next NSTS is scheduled to be on Saturday, Mar 18, 2017. If you missed this event, sign up for the next one. We learned so much at this event and we have more to share!



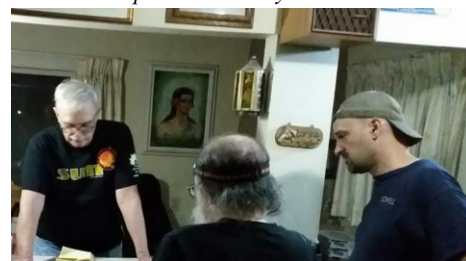
*Eric Steinberg was at the NSTS and did a wonderful Night Sky Tour. We were all fascinated and interested. Photo by Sam.*



*It was a wonderful potluck and it was enjoyed by all. At this dinner table is Sam with his back to us, William to the left, Rodney and Don around the back, and Sam on the right of the table. Photo by Terri Finch.*



*After dinner, the attending telescope owners went out to the observing area behind Mike's house and set up their scopes. Pete, Earl and Don are seen setting up their scopes in this photo. Photo by Terri.*



*Alex Vrenios did a fantastic presentation twice on using filters on eyepieces. Photo by Sam Insana.*

## Upcoming Astronomical Disasters Oct 6

By Terri, Event Manager & Various Attendees

**Terri** writes: Attending this lecture at PVCC were Kevin Harcey, Kevin Gray, Rodney Fong, Sam Insana, Mary Raseley, Mary Serpa, Ron Walker, Paul Facuna, William and Terri Finch (recording the lecture), a few astronomy students and of course, Mike Marron.

The lecture began at 7:30pm and concluded around 9pm. In his lecture, Mike covered the various possibilities of the demise of the Earth from objects in deep space or near Earth flybys. This was one of

my favorite lectures. Many thanks to Mike for presenting it and allowing us to record it. I wish to thank everyone who provided snacks and donated to the snack fund (which provided the water). Thanks also to Sam for the popcorn, it must have been "Ninja" popcorn, as it 'disappeared quickly without a trace.'

We hope to see everyone at the next meeting.

**Ron Walker** writes: Mike's lecture was Astounding!



*Mike Marron was the guest speaker for the evening and he did a fantastic presentation of "Upcoming Astronomical Disasters" He had the audience on the edge of their chairs listening to his every word. Photo by Don.*

# PVCC Telescope Workshop Sept 8

By President Sam Insana

On September 8, PAS held a telescope workshop at PVCC room G147 at PVCC Main Campus. Kevin Witts and Don Boyd helped new customers Kayla Anderson and her mother Liza Childers with a brand new 5 inch newtonian reflector with an equatorial mount. Kevin and Don took it out of the box, assembled it and then went outside to show our customers how to use their new telescope. I also handed out PAS documents on objects to view with different sized telescopes, a document highlighting PAS activities and a membership application. I also showed them how to use a planisphere and sky atlas.

Howard Moneta showed Hugh and Terri Clark how to use their new 8 inch Dobsonian telescope and highlighted the advantages of getting a Telrad finder scope. Another customer, Emily Yazzie was interested in buying a new telescope. I went through the different types of telescopes as shown on our PAS document entitled Selecting a Telescope- the Basics. I answered her questions and gave her our telescope objects list along with a PAS document showing our club activities and a membership form. She will try to attend our big star party at PVCC Blk Mtn to look through a variety of scopes. Alex Vrenios also helped everyone with his sage advice and sense of humor. Rodney Fong helped carry equipment to and from the observation deck and helped guard the equipment when people were going in and out of the building.

When we went outside, Hugh and Terri observed the Moon and Saturn, as did Liza and Kayla.

I also showed the Moon and Saturn with my 8 inch newtonian reflector and then showed Albireo, the blue and gold double star. It was a cloudless night and everyone had a great time.

Terri and William Finch couldn't make

this event due to caring for their very sick cat.

Alex writes: Hugh and his wife, new members, brought their 8" Dob along to this workshop because they were having trouble aiming at an object and then staying on it long enough to observe it to their satisfaction. Their Dob was new and it came with two eyepieces, neither of which was of very high quality. The mount seemed to have sticking points, making it difficult to adjust without losing sight of an object. We made some adjustments to the mount and suggested a higher quality, lower power eyepiece to initially sight an object, and maybe a Telrad viewfinder to make the whole process easier.

A high school student and her mother brought along a new telescope, a 5" Newtonian gift from her uncle. She was interested in space science and wanted to pursue a career with an organization like NASA. All of these visitors seemed quite pleased, and were grateful that we took the time to help out people like them.



(L to R) Kevin, Rodney & Don aligning the gals telescope Photo by Sam.



2 attendees enjoy a view through a telescope on the Observing Deck at PVCC Main Campus during this Telescope Workshop. Photo by Sam.



PVCC Telescope Workshop of Sept 8, 2016. (L to R) We see Kevin, Alex, 2 lovely ladies & Sam having a great time at this event. This photo taken by Don Boyd.



(L to R) Alex, Don & Kevin assist the two gals with their telescope at this workshop. Photo by Sam Insana.



Alex looking through Sam's scope which is set up on the Observing Deck at PVCC Main Campus during the Telescope Workshop. Photo by Sam.

## Telescope For Sale:

MEADE 12" 10/200 and Accessories, eyepieces and filters. MEADE 12 " 10/200 (L x 200 f/ 10) Excellent condition in original shipping box. And following items: Astro Pier – LeSueur Mfg, Mead #1812 DC Adaptor, Outdoor cover for telescope., Meade Pictor CCD Autoguider, Meade Pictor 201XT Autoguider, Case for eyepieces and filters., And following items: Meade Super Plossl 25 mm multicoated,

Meade Super Plossl 9.7 mm multicoated, Meade Super Plossl 40 mm multicoated, Meade Ultrawide Angle 6.7 multicoated, Meade Super Plossl 5.5 mm multicoated, Celestron Reducer/Corrector-f/6.3, Meade Illuminated Reticle MA 12 mm, TeleVue 2x Barlow, Filters:, Meade Series 4000 Filter ND96 (0.9), Meade Series 4000 Filter # 80A, Meade Series 4000 Filter # 23A, Meade Series 4000 Filter #12, Meade Se-

ries 4000 Filter #58, Lumicon UHC filter

Seller prefers to sell all items as one. Selling price is negotiable. Have manuals and original shipping box for telescope. Have original purchase receipt for telescope \$4,584.94. Seller lives in Sun City West, AZ. Contact Cindy at 920-737-7018 or Email post.cyn@gmail.com.

# Scout Star Party at St. Thomas the Apostle Oct 3

By Mark Johnston

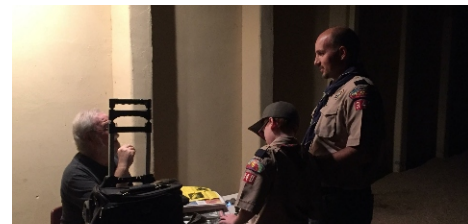
Mike Marron and I had about 80 cub scouts and parents at tonight's event. After they covered some administrative details, Mike took the stage and gave an introductory astronomy presentation. While he was doing that, I set up in the back playground with my 140mm refractor. The venue was in downtown Phoenix and there were some obstructions, but I was able to show Saturn, Mars, Uranus (a special request) and Albireo. The kids were very impressed with Saturn, as usual. I also pointed out constellations and sky info with my green laser which the kids enjoyed. Mike kept a steady group entertained with his meteorites at a table nearby. We ended just after 8PM and our hosts were very happy with the support PAS provided.

**Amy Bowles** writes: The presentation was nice, but the kids really enjoyed the hands-on stuff - seeing the planets in the telescope and looking at the meteorites with the microscopes. It was so cool and both parents and kids learned A LOT!

**Terri**, Event Manager writes: Many thanks to Amy for having PAS at her Scout event!



The Scout Meeting on Oct 3. Photo by Mark.



Mike Marron, entertaining the scouts with his meteorites & stories. Photo by Mark Johnston.



A young scout looking through Mark's scope at this Scout star party in Phoenix. Photo by Mark.

## PAS Occultation Citizen Project Oct 4

By President Sam Insana

The Asteroid 451 Patientia occulted the star TYC 6978-00853-1 just after 11 pm on the night of Oct 4, 2016. Paul Maley led the group of Don Boyd, Paul Facuna and Sam Insana who timed and recorded the event.

Each PAS member was given an 80 mm Orion refractor telescope, a small plastic tripod, a telescope camera, a video camcorder, GPS, and a battery pack. We all met in the desert just West of Buckeye at 6 pm. After a 30 minute training session, the occultation squad spread out to various locations about 20 miles apart heading south along Highway 85. Each member was to make sure the equipment remained set up facing the exact direction needed to the south, then use a timer and alarm to start the procedure at 11:05 pm: carefully plug in the battery pack, turn on the camcorder and then at 11:09 hit the stop button. It seemed simple enough, but as tired observers in the dark, we had to be careful to do everything just right and not disturb the aiming of the telescope which rested on a less than sturdy small plastic tripod.

Two days after the event, Paul Maley reviewed Sam's recording and while it did record stars at the correct time, it just wasn't the correct star. The tripod must have moved slightly during the night. Since there was no finder scope, there was no way to tell it had moved until the recording was reviewed after the fact. Paul Maley said he has had this happen a few times because of the cheap tripod. Don had a mess of wires

covering his camcorder start button so he had to be extra careful not to move the equipment while turning everything on. He did well, and his recording was good.

Shortly after the equipment was set up at Paul Facuna's site and Paul Maley left, Paul heard some faint noises like someone walking on gravel. He checked around his site and saw nothing. Later after he found out what happened at Paul M.'s first site he realized that he had scared away some animal that might have tipped over the telescope. Paul brought his planisphere and binoculars so he could observe and learn to navigate the night sky while waiting. The night sky at his site was darker than the NSTS sky at Mike's, so he found and identified Polaris, Deneb, Vega, Altair, possibly M55, maybe Alnair alpha and beta, the legs, head and great square of Pegasus and more of the Milky Way. Paul also had some wires covering his camcorder, but his recording was good.

Paul Maley was stopped by Military Police and delayed an hour because he was trying to set up near the Goldwater Guntery Range. Imagine explaining that the weird looking equipment was totally innocent. Paul was also stopped and his vehicle searched by Immigration Border Patrol. Finally, a wild animal knocked over his setup and chewed up the wires. Paul therefore had to rush through setting up another site, but his recording was good. Therefore 3 of the 4 recordings went well. Other people in North America did similar occultation

timings of this event. Ted Blank timed the occultation in Acworth Georgia and Rick Hill, who gave a presentation to PAS on near earth objects, and Dolores Hill, who gave a presentation to PAS on the OSIRIS-Rex project, did a visual timing in Tucson.

The data, when put together and analyzed, should help determine the size and shape of the asteroid, it's rotation, it's speed, if it has moons, and if the star has a binary companion, a citizen science project well worth the effort.

The Camelopardalis meteor shower was in progress that night so we had an extra treat. I am very proud of Don Boyd and Paul Facuna and Paul Maley for their dedication and I hope other PAS members will participate in occultation timing events in the future.



The Citizen Occultation Project of Oct 4th had (L to R) Paul Facuna, Don Boyd, Paul Maley, and Sam Insana (not in this photo) attending and doing the project. Photo provided by Sam.

# Archway North School Star Party Oct 4

By Terri Finch, Event Manager

Archway North School is one of my favorite school star parties. The kids, adults and teachers at that school, all want to learn more about astronomy. They ask really awesome questions, pay attention when we tell them what's in the telescope, and really seem to enjoy the event, every time we do it.

On Oct 4, I changed how I normally do Q&A with the kids. What I did was I had 2 ways they could get a prize from me. I came up with a 3rd way and then I got swamped with more kids doing it, so I stopped offering that option. The option that I got swamped with was that I asked one of the kids to go over and get me a red glowing bracelet in trade for a prize. They did that, passed the word around and before I knew it had a bunch of kids coming over to give me red bracelets. I only meant for one child to do it, but word spread. So I awarded all who brought me a red bracelet and then told them no more, after I had 3 bracelets in hand.

These ideas were very successful. I had 2 other ways I gave prizes at this event: 1) answer a question. I started with, did you look through all the telescopes. If they said NO, I sent them to look through the telescopes first and asked them to come back. And I sent them on a mission to find out what the name of the object was and 1 interesting fact they learned about it, that they didn't already know. 2) If they looked through the telescope, we had a conversation about what they saw, maybe they described what they saw in the telescope if they were younger... and if they were older, they needed to tell me a fact about the object that they learned that night... that they didn't already know. The idea behind what I do for Q&A is to make them think. I only had that one girl who said she didn't know anything and I convinced her she did, and asked her to tell me anything she knew about any of the objects she viewed in the telescopes that night, and it didn't have to be a new fact, but it had to do with what we were viewing: Moon, Venus, Mars, Saturn. She finally did and I gave her a prize.

The kids wiped me out of red light key chains, binoculars, and Saturn pictures. I will have to replenish my supply for the next school I attend. I think I gave away at least 100 prizes that night.

It was so much fun!

Attending this event from the PAS-times Star Tours team was Kevin Witts with his 8" scope, Roger Anzini with his 16" scope, Bruce Wurst with his 14" scope and Mike Marron with his meteorites. Due to one scope dropping from this event last minute, William Finch filled in with his 10" scope and I did Q&A & handouts with the kids all night. I wish to thank my awesome telescope Team!

I would estimate 200+ in attendance at this school. The attendees definitely kept us busy the whole time we were there.

**Kevin** writes: At archway last night, I was able to show Saturn, Mars, closeups of the Moon, M-31 and NGC 457. The students were very polite and interested in what I was showing. Many parents were also excited to see views of Saturn and the Moon. There were a few kids who asked for some unique things about each object so that they could report back to Terri on what they saw. It was a very well organized event and well attended.

**Roger** writes: Archway School Star Show on October 4: Just after Sundown students and their parents began setting chairs and blankets down on the South lawn observing area. Still daylight, anxious students went from scope to scope asking what could be seen. Kevin was first to present everyone with a telescopic view, he showed a fine look at Saturn shortly after the Sun had slipped past the western hills.

The first object to tease the unaided eye was the slender waxing Moon, so William and I trained our scopes in that direction. No sooner had I pointed my DOB on Luna's craters, parents and students were quick to gather, rewarding me with Woo's, Ahaa's and thank you smiles. As darkness began to gather Saturn became another interesting target. Even in city skies Casini divided the rings sharp and clear, and to everyone's delight, three of Saturn's moons clustered close to the rings with a fourth moon above. The line of folks seeking Saturn seemingly refreshed moment by moment, keeping the scope transfixed for over an hour on the ringed planet.

Around about eight o'clock a young lady requested a look at Mars in the eyepiece, so I hand guided the 16 inch in that direction. The orange ball was interesting

for most but no match for the jewel of the solar system we had been eyeing for the better part of the evening. My hopes of showing M13 were dashed, as the great square of Hercules was too elusive to locate in the city sky.

I hope the hundreds who gathered around our scopes enjoyed the evening as much as I did. I showed these items at archway. Venus, mars, Saturn, m103, m57, m31, Caldwell13, moon. I think that was all.

**Bruce** writes: I was able to show Saturn, M103 and M57 on this evening. The line was so long, I didn't have a chance to change objects that many times in the night.

**William** writes: I was showing Saturn when the street light got in the way, so I moved my scope to Mars for a little while. Then, the street light got in the way again. E.T was the other object I was able to show in my telescope. The evening was so busy, I didn't have time to hunt for any other objects.



*Archway North school star party is a very well attended event. Looking out over William's scope, we have Roger's scope and then Kevin's scope. Photo by Terri Finch*



*In this photo, we start at William's scope and we go to the PAS Table and to Bruce's scope. There was a food truck at this event. And Mike was set up across the field from us under a light. Photo by Terri.*

# DBG Adult Education Class Oct 7

By Terri, Event Manager

This is a fun event William Finch, Bruce Wurst, Mike Marron and I do on a regular basis for the Desert Botanical Gardens. Because DBG wants specific things at this event, we have devised a great presentation and plan for the attendees of this class.

This time around, the class had 22 DBG Patrons in attendance. The telescope team, listed above, arrived for set up about 6pm, however, the electric carts didn't get to pick us up until closer to 6:30, which limited set up time. But, we got set up and then 3 of us ran indoors to do our presentations, which is the opening of the evening for the class. Mike, William and I go indoors while Bruce makes sure the three telescopes are set up on an object, or several objects. For this event, I had asked Bruce to put all three telescopes on Saturn, which didn't work as planned, but he did that for me.

Indoors, at 7pm, at the start of this class, Our DBG class liaison, Joan was there to open the night and welcome the attendees to the Adult Education Class. Then she turned it over to me... I then introduced myself and the telescope team for the night. I then gave the floor to William who went over How Telescopes Work. After about 8 minutes, William introduced me and I showed everyone how to use a Star Chart, and we talked about what objects are in the night sky, plus I went over what telescopes the class would be viewing through that night. We also talked about

eyes becoming dark adapted. Then, after about 10 minutes, I introduced Mike to do a brief presentation on Astronomy 101.

While Mike did his presentation, William stayed indoors with him so that he could help with the A/V and make sure Mike took his USB drive after the talk, and I went outdoors to help Bruce be ready for the crowd to arrive.

The plan was to have all 3 scopes on Saturn, but a tree got in the way of one scope, so we had 2 scopes on Saturn and the idea was to have the attendees compare the view of Saturn between the scopes, to show why size matters. After we showed Saturn, we moved to various other objects like Venus before it set, the Ring Nebula, ET Open Cluster, Andromeda, Alcor and Mizar, Perseus Double Cluster and a few more.

This time at DBG, for this class, we set up behind the Classroom building and it was darker, nicer, closer for the patrons to get to, plus the bathrooms were near by, and the view was much better. Plus, DBG was able to turn off some of the outdoor lighting, which was very nice for this event.

The evening continued with great temperatures, a slight breeze now and then, and very intrigued attendees. The class ended at 9pm and by then, only one couple was left talking to Mike at his meteorite table. The three scopes started to pack up and the couple left. Joan stuck around for a bit while we packed up and talked about how much better this location was and how we

want to do this event again at this location. Then she left us and the carts came to take us to our vehicles. This was definitely a fun, successful event. We had great comments from the attending class members. I wish to thank Angelica and Joan for having us at this fun event and we look forward to being your telescope team again. Thanks to our DBG volunteer helper, Wendy. And thanks to Michael, the electric cart driver who is very patient when we are loading and unloading his electric cart with our equipment. Michael was at DBG as our electric cart driver for the 2015 DBG Luminaria events, too.

**Bruce** writes: The objects I showed this night were Saturn, M103 and M57.

**William** writes: I was able to show the Moon, Mars, Saturn and ET this night.

Here are some of the class participants' evaluations of this night's event:

**Angelica Elliott**, DBG Program Development Manager writes: I wanted to share with you the student evaluation for the Astronomy at the Garden in October. Kudos to a job well done – thank you to you and your staff for providing a great program. The students provide feedback:

The 3 telescopes were amazing! I appreciated the time and effort that everyone put into this class. Very good job done by all!

All instructors were friendly and knowledgeable. The actual stargazing was great fun.

## What's Up For December?

By Rod Sutter,  
Planets

| Name           | Date            | Rise         | Set          |
|----------------|-----------------|--------------|--------------|
| <b>Mercury</b> | <b>12-15-16</b> | <b>08:56</b> | <b>18:54</b> |
| <b>Venus</b>   | <b>12-15-16</b> | <b>10:31</b> | <b>19:44</b> |
| <b>Mars</b>    | <b>12-15-16</b> | <b>11:22</b> | <b>22:13</b> |
| Jupiter        | 12-15-16        | 02:17        | 14:47        |
| Saturn         | 12-15-16        | 07:02        | 17:04        |
| <b>Uranus</b>  | <b>12-15-15</b> | <b>13:43</b> | <b>02:30</b> |
| <b>Neptune</b> | <b>12-15-16</b> | <b>11:55</b> | <b>11:11</b> |
| <b>Pluto</b>   | <b>12-15-16</b> | <b>08:57</b> | <b>19:02</b> |

All Times Arizona Time  
Bolded dates and times are nighttime objects

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## December 15 2015

**Sunrise: 07:52**

**Sunset: 17:22**

**New: November 29**



**Q1: December 7**



**Full: December 13**



**Q3: December 20**



# Roadrunner Park Public Star Party Oct 8

By Terri Finch, Event Manager

Oct 8 was International Observe the Moon Night and National Astronomy Day for which PAS held an event at Roadrunner Park in Phoenix. Though we had nine RSVP's from PAS, four were unable to attend. Sam Insana and Earl DeLong set up their telescopes while William and Terri Finch managed the PAS Table with hand-outs. Mike Marron set up next to the PAS table with his meteorites, drawing a good crowd right to the end of the event. Also attending and helping at this event were Rodney Fong, Paul Facula, and Frank Insana.

Radna Kairav attended this event - she had come to previous Roadrunner Park events we had and this time she became a new PAS Member. Welcome Radna! She also brought five other people with her to this event. I had quite a few public RSVP's who either didn't check in with me at the table or who didn't come to the event. Earlier in the day there were clouds and strong breezes, so this may have convinced people not to attend.

A special attendee, our chiropractor, Dr. Peter Darvas attended with his family. His daughter, Tova took some amazing photos through Sam's telescope and I asked him to send them over so we could include them in the newsletter. Thank you Dr. Peter and Tova!!!

**Earl** writes: PAS was at Roadrunner Park for Observe the Moon night. It was a nice but very light polluted evening. Lights from the sand volleyball court were a real nuisance but I was still able to show Albireo, Almach, M31, M15, M13 and M57. I also met many nice interested people, though the crowd was small.

**President Sam** writes: At Roadrunner Park, Oct 8th, PAS celebrated International Observe the Moon, and Astronomy Day. Earl and Sam had their telescopes available for viewing and over 50 people showed up to view the Moon, Saturn, Venus, Andromeda Galaxy, Alberio, M57 (Ring Nebula) and many other delights. One young girl, Tova, used her iPad to take beautiful photos of the Moon and Alberio. She had the steadiest hands I have ever witnessed. It was too bad, but 4 PAS members bailed out of the star party. Afterwards, 5 PAS members went to the nearest IHOP. The food was great and we had a lot of laughs.



*This event was awesome. Here's a 2nd beautiful image of the moon taken by Tova and provided to me by her dad, Dr. Peter Darvas.*



*At Sam's scope, we have Janet and her daughter Tova viewing and Tova taking photos through the scope on her Ipad. Photo provided by Sam Insana.*



*William Finch took this photo with his night camera for Howard to post to Meetup. In this photo, we can see Mike at his table with his meteorites and on the right is the PAS Table lit up by flashing triangle lights.*



*This photo was taken by Tova Darvas through her Ipad and through Sam's scope. Photo was provided to me by her dad, Dr. Peter Darvas.*



*Frank, Mike and Rodney (in black & white shirt) look at and talk about meteorites with the 2 gentlemen from the public. This photos was taken at the Astronomy Day event at Roadrunner Park on Oct 8 by Sam Insana.*



# Dimming stars, erupting plasma, and beautiful nebulae

By Marcus Woo

Boasting intricate patterns and translucent colors, planetary nebulae are among the most beautiful sights in the universe. How they got their shapes is complicated, but astronomers think they've solved part of the mystery—with giant blobs of plasma shooting through space at half a million miles per hour.

Planetary nebulae are shells of gas and dust blown off from a dying, giant star. Most nebulae aren't spherical, but can have multiple lobes extending from opposite sides—possibly generated by powerful jets erupting from the star.

Using the Hubble Space Telescope, astronomers discovered blobs of plasma that could form some of these lobes. "We're quite excited about this," says Raghvendra Sahai, an astronomer at NASA's Jet Propulsion Laboratory. "Nobody has really been able to come up with a good argument for why we have multipolar nebulae."

Sahai and his team discovered blobs launching from a red giant star 1,200 light

years away, called V Hydrae. The plasma is 17,000 degrees Fahrenheit and spans 40 astronomical units—roughly the distance between the sun and Pluto. The blobs don't erupt continuously, but once every 8.5 years.

The launching pad of these blobs, the researchers propose, is a smaller, unseen star orbiting V Hydrae. The highly elliptical orbit brings the companion star through the outer layers of the red giant at closest approach. The companion's gravity pulls plasma from the red giant. The material settles into a disk as it spirals into the companion star, whose magnetic field channels the plasma out from its poles, hurling it into space. This happens once per orbit—every 8.5 years—at closest approach.

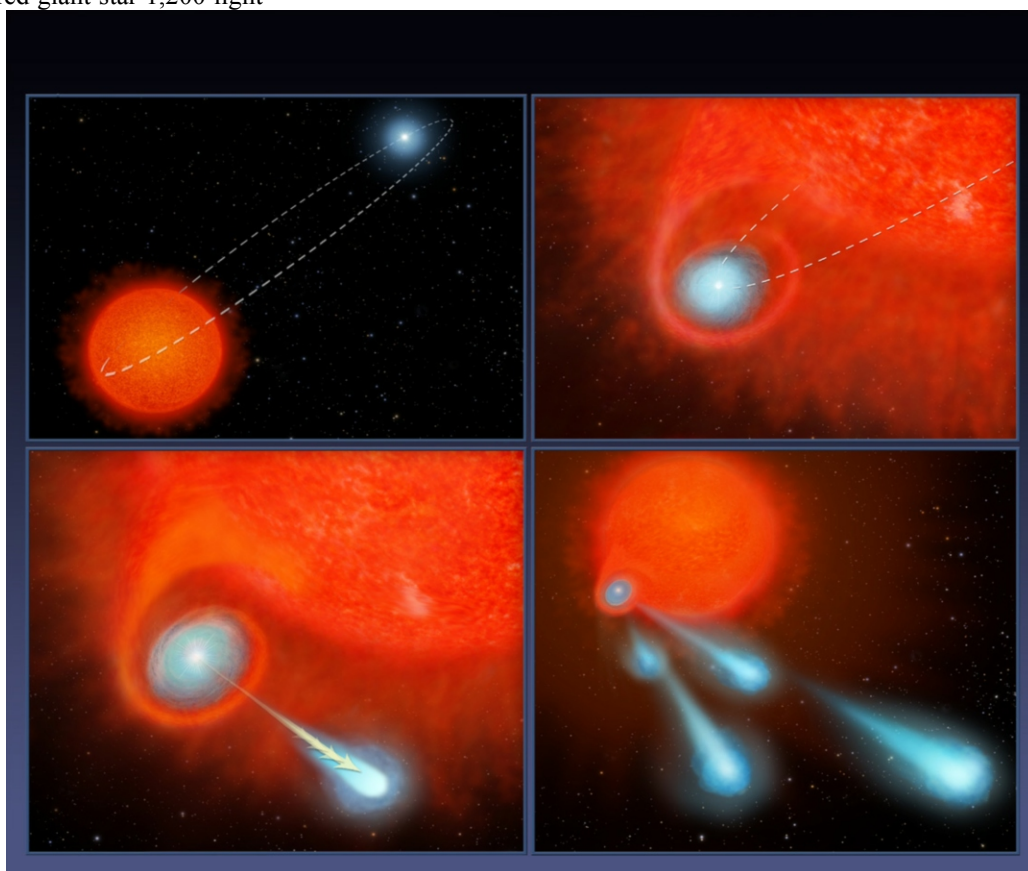
When the red giant exhausts its fuel, it will shrink and get very hot, producing ultraviolet radiation that will excite the shell of gas blown off from it in the past. This shell, with cavities carved in it by the cannon-balls that continue to be launched

every 8.5 years, will thus become visible as a beautiful bipolar or multipolar planetary nebula.

The astronomers also discovered that the companion's disk appears to wobble, flinging the cannonballs in one direction during one orbit, and a slightly different one in the next. As a result, every other orbit, the flying blobs block starlight from the red giant, which explains why V Hydrae dims every 17 years. For decades, amateur astronomers have been monitoring this variability, making V Hydrae one of the most well-studied stars.

Because the star fires plasma in the same few directions repeatedly, the blobs would create multiple lobes in the nebula—and a pretty sight for future astronomers.

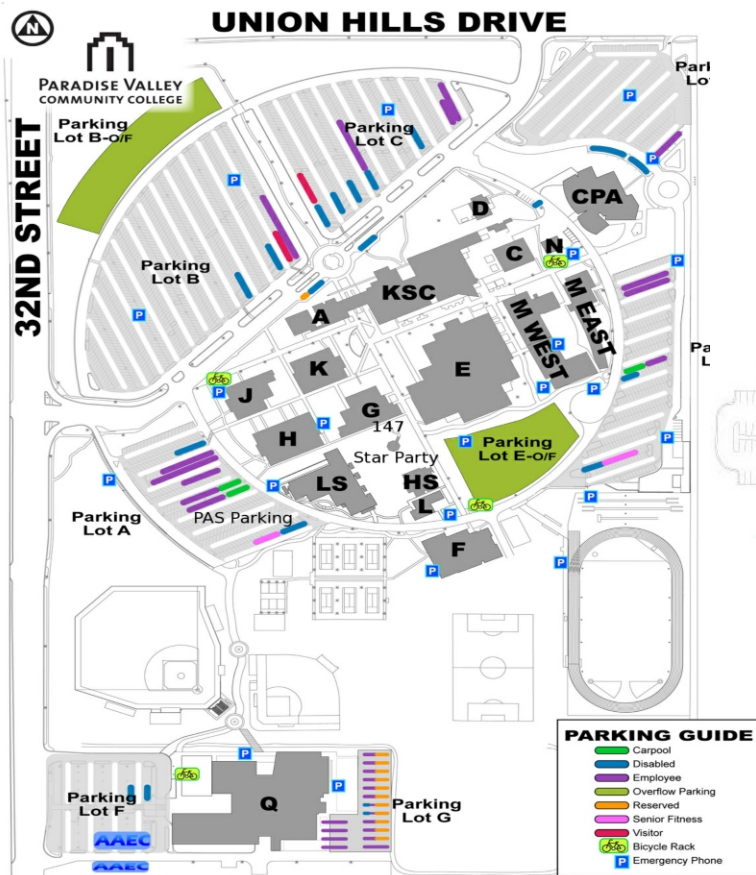
If you'd like to teach kids about how our sun compares to other stars, please visit the NASA Space Place: <http://spaceplace.nasa.gov/sun/compare/en/>



*his four-panel graphic illustrates how the binary-star system V Hydrae is launching balls of plasma into space. Image credit: NASA/ESA/STScI*

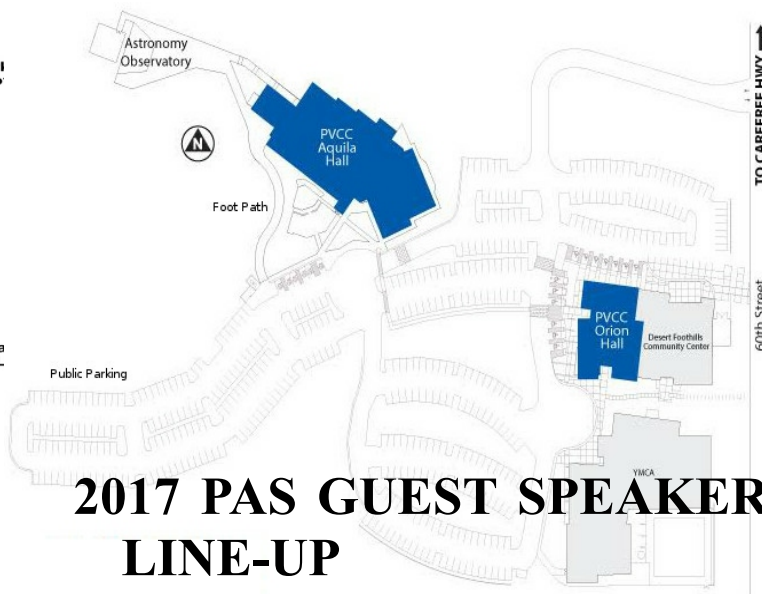
## Map of PVCC Main Location

18401 N. 32nd Street | Phoenix, AZ 85032



## Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



## 2017 PAS GUEST SPEAKER LINE-UP

By Terri Finch, Event Manager, [Events@pasaz.org](mailto:Events@pasaz.org)

PAS Meetings are held on Thursdays in Room LS-205 unless otherwise noted. Do you have an idea for a guest speaker? Email Terri the details. Here are the scheduled guest speakers at PAS: <http://www.pasaz.org/index.php?pageid=meetings>

**Jan 19:** Lauren Edgar PhD "Recent Results from the Mars Science Laboratory Curiosity Rover Mission"

**Feb 2:** Alex Vrenios "Radio Astronomy"

**Mar 2:** Andy Odell "Stellar Evolution"

## December 2016

| Sun                        | Mon                                        | Tue                   | Wed                                      | Thu                                     | Fri                   | Sat                   |
|----------------------------|--------------------------------------------|-----------------------|------------------------------------------|-----------------------------------------|-----------------------|-----------------------|
|                            |                                            |                       |                                          | 1<br><i>PAS Meeting</i>                 | 2<br><i>DBG Lumi</i>  | 3<br><i>DBG Lumi</i>  |
| 4<br><i>DBG Lumi</i>       | 5                                          | 6                     | 7                                        | 8<br><i>School Star Party (Private)</i> | 9<br><i>DBG Lumi</i>  | 10<br><i>DBG Lumi</i> |
| 11<br><i>DBG Lumi</i>      | 12                                         | 13                    | 14<br><i>Geminids Meteor Shower Peak</i> | 15<br><i>Free Telescope Workshop</i>    | 16<br><i>DBG Lumi</i> | 17<br><i>DBG Lumi</i> |
| 18<br><i>DBG Lumi</i>      | 19                                         | 20<br><i>DBG Lumi</i> | 21<br><i>DBG Lumi</i>                    | 22<br><i>DBG Lumi</i>                   | 23<br><i>DBG Lumi</i> | 24                    |
| 25<br><i>Christmas Day</i> | 26<br><i>DBG Lumi</i><br><i>Boxing Day</i> | 27<br><i>DBG Lumi</i> | 28<br><i>DBG Lumi</i>                    | 29<br><i>DBG Lumi</i>                   | 30<br><i>DBG Lumi</i> | 31<br><i>DBG Lumi</i> |