PAStimes

Phoenix Astronomical Society
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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Gene Hanson to Speak at April 5th Meeting

About the Milwaukee Astronomical Society: A Look At Another Astronomy Club

Have you ever wondered about other astronomy clubs? PAS member Gene Hanson will give you the inside scoop on his other club, the Milwaukee Astronomical Society where he has been a member for over 40 years. That club built an observatory in the 1930's which has become one of the largest amateur club observatories in the entire world. He was their Observatory Director and so can give you many insights about having a large observatory - both the advantages and some of the surprising disadvantages. He will also fill you in on other club strengths and weaknesses.

Gene Hanson has been interested in astronomy for as long he can remember; it became his major hobby when he received a telescope as a Christmas present from his parents. He joined the Milwaukee Astronomical Society (MAS) in 1977 and the AAVSO in 1979. He was an active observer of variable stars and made many presentations about his work, including one to the AAS. He has also won a number of awards for his work including: the AL Peltier Award, the AAVSO Director's Award, various AAVSO observing awards and the AL Webmaster Award for the MAS site. He is an experienced speaker having given innumerable presentations over the years, with his favorites being those for general audiences getting them excited about astronomy.

PAS will have a "Meet the Guest Speaker" dinner at Chili's, 7th Street and Bell Rd in Phoenix, 4:30pm to 5pm. Everyone is welcome, however RSVP must be received by noon on Tuesday April 3rd. See this link for more details about dinner: http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2609&day=2018-04-05

The April PAS Meeting brings a wonderful guest speaker who was a member of PAS in the 1990's, moved away and now has returned to Phoenix to enhance our club with his ideas. Meeting doors open at 7pm with socializing and snacks; President Mike Marron will open the meeting at 7:30pm, with the our speaker starting shortly after.

Please bring a friend to this meeting and a snack to share. Bottled water will be provided by Bruce Wurst. We hope to see you there!!! Here is some additional information about this meeting: http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2391&day=2018-4 5&c=1

Our April Guest Speaker is Gene Hanson. This photo was provided by Gene.

PAS Meeting Mar 1

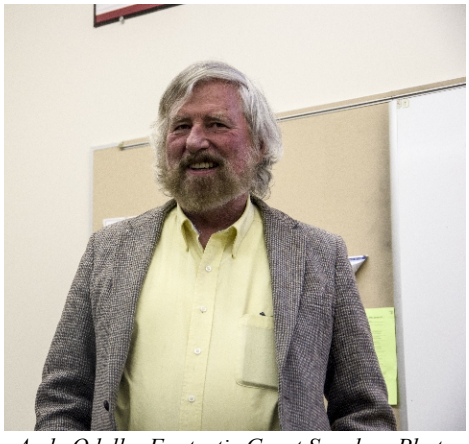
By Sam Insana

PAS held its monthly meeting at Paradise Valley Community College. About 25 members attended and heard Astronomer Andy O'Dell's presentation on binary stars. Andy taught Astronomy at NAU for many years and he is now Professor Emeritus. He still does research at Lowell Observatory and Kitt Peak Observatories. His power point presentation was fascinating. It showed how most stars are part of a multiple star system. Some have periods of thousands of years, others just a few days.

The shortest known period is a little over 12 minutes!!! Mike, Paul Facuna, Rick, Don, Frank Otsuka, Mark Johnston and Sam joined Andy for an enjoyable meet the speaker dinner at Chili's beforehand.

At the general meeting, Sam brought up the future PAS field trip to Lowell and Meteor Crater, along with National Park star parties. Mike, our President, went over PAS events scheduled for the next month. Bruce did a fine job helping out with some audio visual complications during the main meeting.

Our next monthly meeting in April will have a speaker discussing a Wisconsin astronomy club along with Sonny Schug, our own PAS member, discussing beginning astrophotography.



Andy Odell – Fantastic Guest Speaker. Photo taken by Don.

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Upcoming PAS April Events

By Terri, 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

April 5: PAS Meeting at PVCC main campus in room LS-203. Come enjoy a presentation by Andy Odell. Bring a snack to share. Everyone welcome. Doors open at 7:00 pm. Meeting begins 7:30pm. Here's the link for more details about this event: http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2391&day=2018-4-5&c=1

There is a "Meet the Guest Speaker" dinner prior to the meeting at Chili's at 4:30pm. RSVP is required by Tuesday April 3rd at noon to attend. Everyone is welcome. It is a BYO dinner. More details are at this link: http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2609&day=2018-4-5&c=1

Apr 6: School Star Party (Private)

Apr 7: Planetarium Show in Cave Creek (Private) http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2625&day=2018-4-7&c=1

Apr 8: Free Telescope Workshop at Bookmans, 19th Ave and Northern in Phoenix - 3:30 pm to 5:30 pm. RSVP is required with Terri - events@pasaz.org. When you RSVP, email the make and model number of the telescope you need assistance with. We also assist with suggestions and advice on what telescope to purchase to match your needs. We have no telescopes for sale at this event. More details:

http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2414&day=2018-48&c=1

Apr 12: Huge public star party at PVCC Black Mountain Campus, 60th Street and Carefree Highway from 7:00 pm to 9:30 pm. Follow the signs to the star party at the observing deck next to the Aquila building. Everyone welcome. RSVP is requested with Terri - events@pasaz.org. This event is weather permitting. When you RSVP by email, please include the number in your party. An auto-reply will be provided from the above email address on the date of the event with a weather update. PAS usually provides between 10 and 14 scopes for your viewing pleasure (please do not touch the telescopes when viewing). Highlights on this night are Venus, ISS Fly over and the Great Orion Nebula. Prior to the Star Party, PVCC will have STEM activities indoors at the Aquila building from 6pm to 7pm with child and adult-friendly activities. Set up is 6:00 pm for telescopes. More details: http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2403&day=2018-4-12&c=1

Apr 13: 2 Private Star Parties

Apr 14: Public Star Party in Mesa. Here are the details: http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2576&day=2018-4-14&c=1

Apr 14 Public Star Party Tonto National Monument. Here are the details: http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2506&day=2018-4-14&c=1

Apr 14 : Planetarium Show in Cave Creek (Private) http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2626&day=2018-414&c=1

Apr 17: PAS Meeting (Private)

Apr 19: Free Telescope Workshop at PVCC main campus, 32nd Street and Union Hills Rd - 7:00 pm to 9:45 pm. RSVP is required with Terri - events@pasaz.org. Seating is limited. When you RSVP, please tell us your first name and the make and model number of your telescope. Bring your telescope and accessories to this event. We meet in both G-147 and by 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=2410&day=2018-4-19&c=1

Apr 20: School star party (Private)

Apr 21: Public star party in Fountain Hills. Here are the details: http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2584&day=2018-4-21&c=1

Apr 26: Private party for PAS Members only

Apr 28: Planetarium Show in Cave Creek (Private) http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2627&day=2018-428&c=1

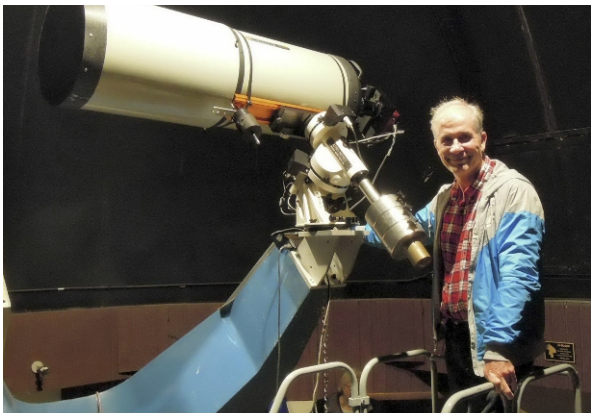
Apr 28: Private Star Party

Apr 29: Private star party in Scottsdale

At the time of completion of this issue of the newsletter, 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 more events that didn't make it into this list

Gene Hanson to Speak at April PAS Meeting

Photo provided by Gene Hanson



Come Meet & Greet the Guest Speaker at the Dinner before the Meeting.

PAS Awards Ceremony / Member Appreciation Night Apr 26

By Terri Finch, Event Manager

Come to the Awards Ceremony of April 26 and cheer on your fellow astronomer / friend as they receive their NSN Pin for Public Outreach in 2017

This year's awards ceremony is just around the corner. The criteria for this year's awards are based on the 2017 PAS Members, who have also renewed their Membership for 2018, and who have attended 6 or more public outreach events in 2017.

A public outreach event is any event that has any public attendance. Members who attend the required number of public events in past year will receive a really nice pin from The Night Sky Network. To receive a Pin this year, you must have attended and assisted at a public event such as a telescope workshop, Black Mountain Campus star party, school star party, private star parties, and any event at Mike's where the public was welcome to attend.

This year, we will be awarding 20 PAS members with NSN Pins. Come help us congratulate those who have attended public events in 2017.

The meeting is also a pizza party - you need to put in your request for pizza with Terri by the deadline so that we are sure to have enough for all. You also must be a current 2018 member and RSVP on the website to confirm attendance. This party is for all PAS members and their immediate family. We hope to see you there!

What's Up For April?

By Don K. Boyd, PAStimes Editor

Planets

Name	Date	Rise	Set
Mercury	04-15-18	05:06	17:16
Venus	**04-15-18**	**07:08**	**20:49**
Mars	04-15-18	01:07	10:59
Jupiter	**04-15-18**	**20:50**	**07:26**
Saturn	04-15-18	12:33	10:33
Uranus	**04-15-18**	**06:09**	**19:08**
Neptune	04-15-18	04:16	15:45
Pluto	04-15-18	01:24	11:28

All Times Arizona Time

April 15 2018

Sunrise: 05:58
Sunset: 18:36

Full: March 31 & April 29

Q3: April 8

New: April 15

Q1: April 22

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Measuring the Movement of Water on Earth

By Teagan Wall

As far as we know, water is essential for every form of life. It's a simple molecule, and we know a lot about it. Water has two hydrogen atoms and one oxygen atom. It boils at 212° Fahrenheit (100° Celsius) and freezes at 32° Fahrenheit (0° Celsius). The Earth's surface is more than 70 percent covered in water.

On our planet, we find water at every stage: liquid, solid (ice), and gas (steam and vapor). Our bodies are mostly water. We use it to drink, bathe, clean, grow crops, make energy, and more. With everything it does, measuring where the water on Earth is, and how it moves, is no easy task.

The world's oceans, lakes, rivers and streams are water. However, there's also water frozen in the ice caps, glaciers, and icebergs. There's water held in the tiny spaces between rocks and soils deep underground. With so much water all over the planet—including some of it hidden where we can't see—NASA scientists have to get creative to study it all. One way that NASA will measure where all that water is and how it moves, is by launching a set of spacecraft this spring called GRACE-FO.

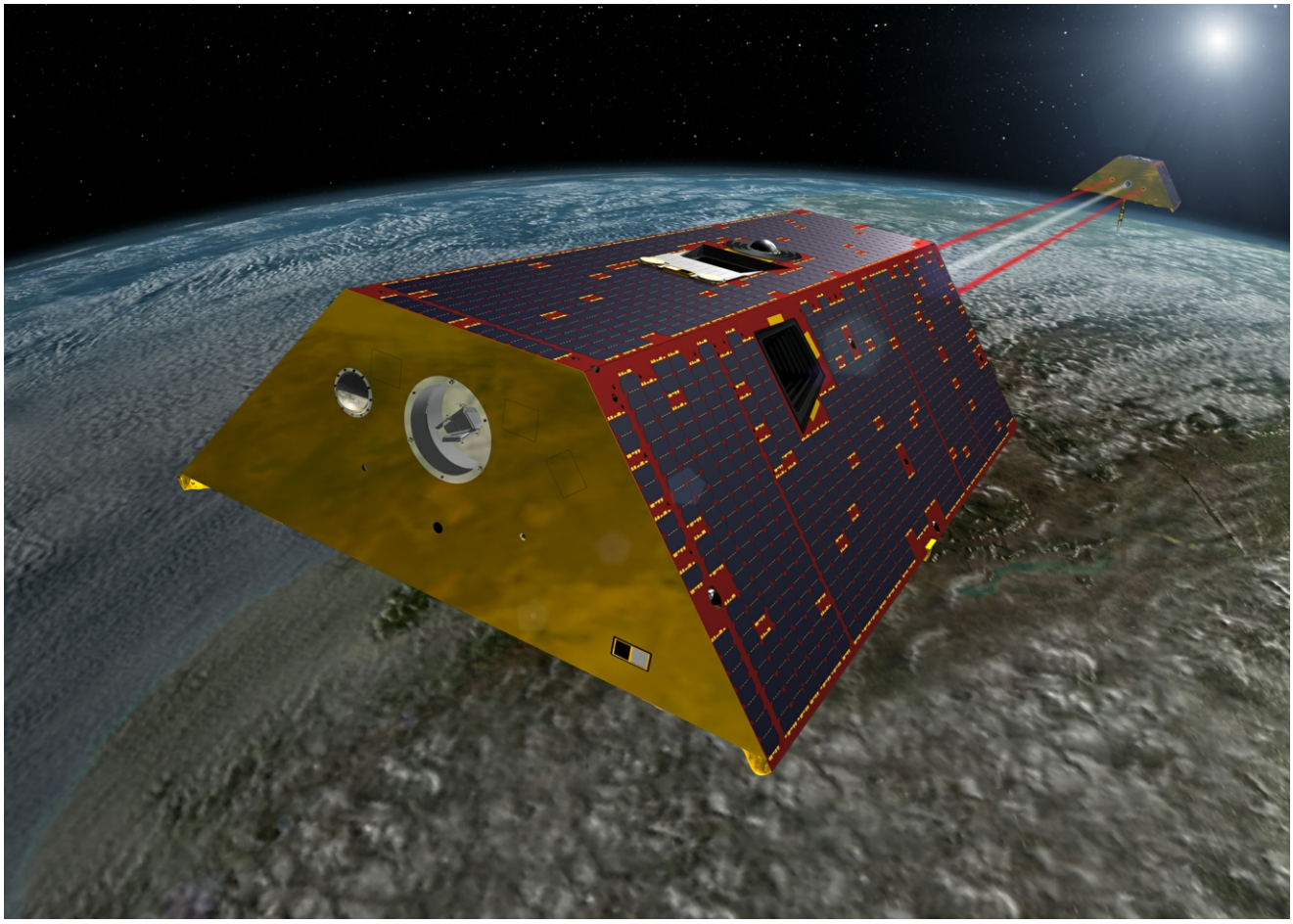
GRACE-FO stands for the "Gravity Recovery and Climate Experiment Follow-on." "Follow-on" means it's the second satellite mission like this—a follow-up to the original GRACE mission. GRACE-FO will use two satellites. One satellite will be about 137 miles (220 km) behind the other as they orbit the Earth. As the satellites move, the gravity of the Earth will pull on them.

Gravity isn't the same everywhere on Earth. Areas with more mass—like big mountains—have a stronger gravitational pull than areas with less mass. When the GRACE-FO satellites fly towards an area with stronger gravitational pull, the first satellite will be pulled a little faster. When the second GRACE-FO satellite reaches the stronger gravity area, it will be pulled faster, and catch up.

Scientists combine this distance between the two satellites with lots of other information to create a map of Earth's gravity field each month. The changes in that map will tell them how land and water move on our planet. For example, a melting glacier will have less water, and so less mass, as it melts. Less mass means less gravitational pull, so the GRACE-FO satellites will have less distance between them. That data can be used to help scientists figure out if the glacier is melting.

GRACE-FO will also be able to look at how Earth's overall weather changes from year to year. For example, the satellite can monitor certain regions to help us figure out how severe a drought is. These satellites will help us keep track of one of the most important things to all life on this planet: water.

You can learn more about our planet's most important molecule here: https://spaceplace.nasa.gov/water



An artist's rendering of the twin GRACE-FO spacecraft in orbit around Earth. Credit: NASA

Science with Small Telescopes

Article provided by Robert K. Buchheim, Altimira Observatory www.RKBuchheim.org Board Member, Society for Astronomical Sciences

In 21st century astronomy, it may be surprising that there is still an important role for data gathered by non-professional researchers using backyard-scale telescopes: people like us, with equipment like ours.

The giant professional telescopes are designed to study faint targets. Their detectors cannot handle objects that are very bright, their observing time is oversubscribed and many worthy targets go unstudied. The small-telescope community has several special capabilities: (a) There are a great many small telescopes and capable observers, which makes it feasible to examine targets that can't be fit into the schedule of the giant telescopes. (b) Relatively bright targets (say, brighter than about 10th magnitude) can only be monitored with smaller instruments. (c) Privately-owned telescopes are not constrained by "time allocation committees" – we can spend as much time as we want, observing anything that seems intriguing. (d) Small telescopes can be devoted to targets and phenomena that demand a lot of observing time. Determining the time of minimum light of an eclipsing binary system will use an entire night. Determination of an asteroid's rotational lightcurve will probably take a half-dozen all-night observing sessions. Monitoring a nova or other variable star might take a few hours every night for a month. Such tasks are difficult to fit into a large professional observatory's schedule, but the researchers do need – and value – observations like these that are fairly straightforward to make from our backyards, using visual observations, DSLR images, CCD images, and low-resolution spectrographs.

The annual Symposium of the Society for Astronomical Sciences is the premier gathering of the small-telescope research community, where amateur and professional astronomers come together to share results, learn the techniques, discuss projects and instruments and enjoy each other's company. This year the Symposium will be a joint meeting with the Association of Lunar and Planetary Observers. It will be held in Ontario, California, on June 14-15-16, 2018.

For more information, see the SAS website (www.SocAstroSci.org). The Invitation and Call for Papers are on the Symposium tab. Everyone with an interest in small-telescope science is welcome.

Moon Valley HS Star Party Feb 21

By Roger Anzini

Wednesday the 21st dawned bright and clear, however little cream puff clouds became more and more prominent throughout the afternoon only to become bigger cream puff clouds during our viewing session at Moon Valley High School on their STEAM night.

Our four man team consisted of Mike Marron, displaying his always popular space rocks, Don Boyd with his 8 inch tracking scope, Paul Facuna, our all around guide, heavy lifter and point man who provided transportation for Don and me with my 16 inch DOB.

We set our scopes up in a small courtyard, convenient to everything, secure from the wind and a milder temperature than expected. Mike attracted great attention at his meteor table set up among the other science displays in the crowded cafeteria, while our hostess Veronica Carlson and her wonderful staff embraced us with overwhelming care and enthusiasm.

The usual pizza was replaced by tasty grilled hot dogs, pasta salad, chips and a large array of home baked snacks.

Those floating cream puffs I spoke of were perfectly placed all evening long, hiding The Orion Nebula, The Pleiades, Beehive cluster, Cassiopeia and every other February object we could think of. I pointed out stars in Orion with my laser whenever they became visible for a brief moment or two. Our saving grace was a stunning, gleaming 34 percent Moon that skimmed through those cloud puffs like a sky surfer riding a feathery wave. At least this gave us a chance to show our guests what our scopes were capable of. One little gal returned to my scope about half a dozen times.... I must say the Moon struck the eye with a pleasing glow that tempted the observer to linger at the scope on this night.

I think I speak for Paul, Mike, Don and myself in saying that the students and staff here at Moon Valley welcomed us like we were long awaited returning alumni. And, very special thanks to Veronica and Brent Carlson for their constant care and personal attention to our every need. Thanks to Everyone, Roger.

Expeditions for PAS Members to Help Record Eclipses of Stars by Minor Planets during 2018

By Paul D. Maley

Observing occultations of stars by asteroids, as some of you know, is a source of valuable scientific data in helping determine the three dimensional shape and size of minor planets in the main asteroid belt located between the orbits of Mars and Jupiter. In 2017 I drove 14,000 miles in pursuit of such opportunities and successfully intercepted and recorded 38 of these events including one from Madrid, Spain. My insurance company is penalizing me appropriately for this large amount of mileage!

Over the past years we have graduated from making visual observations through telescopes to video recording which eliminates human error and upgrades the timing to a professional astronomical level where the data can be used in research projects.

I have a lot of portable video station equipment that I can lend to volunteers willing to participate in such expeditions. Some training is needed, but fundamentally I will prepare all equipment, prepoint all telescopes to the correct place in the sky and collect and handle the data reduction. All that is required for PAS volunteers is to meet for a short amount of training, then caravan or drive independently to a common meeting point where I will establish sites that will likely by 3 to 10 miles apart depending upon a number of factors. Each telescope operator will be given credit for his/her observation.

For 2018 there are four potential eclipses of stars brighter than magnitude +11 that will likely cross the Phoenix metro area or at least come close to it. These are identified as follows:

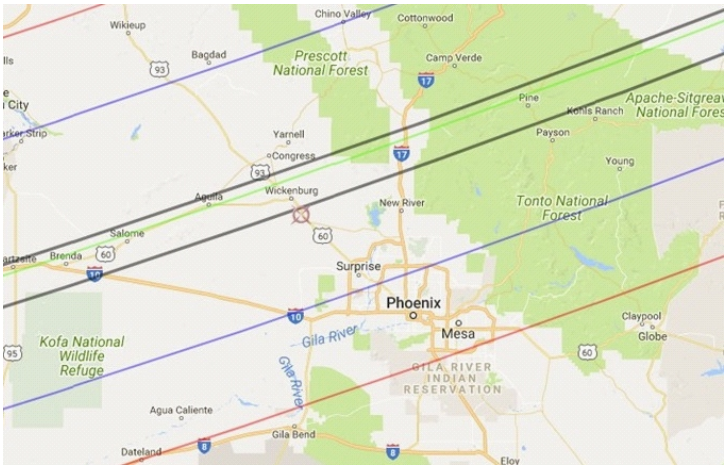
ASTEROID	DATE	DAY	TIME	MAG STAR	MOON PHASE	MOON ELONG (deg)	STAR ALT (deg)	STAR AZ(deg)
PENELOPE	MAY 21	MONDAY	1029PM	9.9	51%	23	48	236
BENDA	June 12	TUESDAY	306AM	9.8	3%	60	22	107
FIDELIO	Sep-18	SUNDAY	126AM	8.9	58%	29	16	63
GALLIA	Nov-18	FRIDAY	720PM	10	64%	16	32	186

Fidelio, which happens on a Sunday morning will likely be the most convenient of these events for those of you who work Monday through Friday, though all of them involve reasonably 'bright' stars. We have plenty of equipment to lend to any potential volunteers.

In the maps below, the green line is the predicted center of the eclipse path, the blue lines define the edges of the predicted path and the red lines define the estimated error limits of the prediction. The idea is to set up video stations at locations perpendicular to the two blue lines between them at roughly even distances. For Fidelio, the star is located low in the east northeast sky. This means that sites may be chosen on highway 85 (south of I-10) which has a relatively flat horizon in that direction. For the other occultations different roads might be chosen.

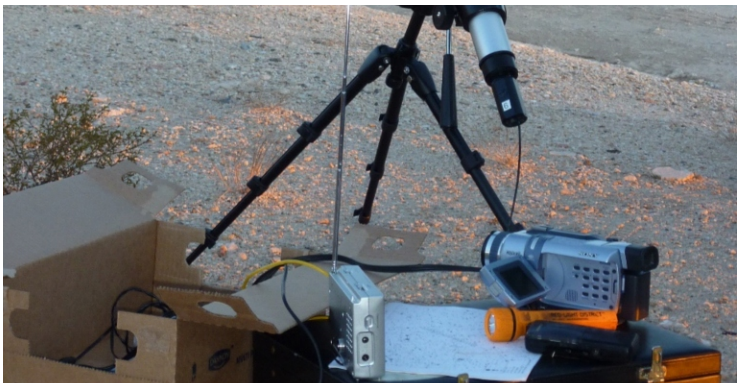
Fidelio occultation path for September 2 (Sunday), 2018. This path should be updated during the summer months but ought to be reasonably accurate now.

Path of May 22, 2018 Penelope occultation.



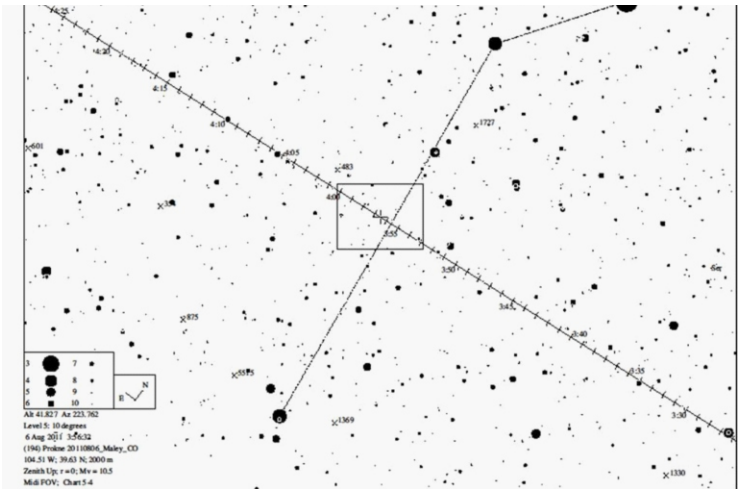
Path of June 12, 2018 Benda occultation

Path of November 16, 2018 Gallia occultation



Typical 80mm telescope set up with older style camcorder and radio (no longer used)

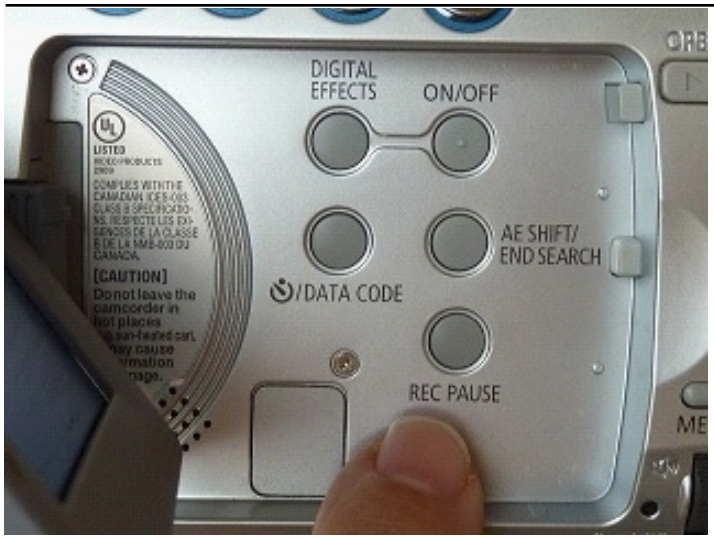
In the image at the bottom left of this page an 80mm refractor mounted on a photo tripod is set up with a video camera attached at prime focus. Video is then directed to a camcorder which you will activate. This telescope can record stars down to about +11 magnitude. This telescope will be the standard device used for all the occultations listed above.



An example of a prepoint chart that allows waiting for a particular time when the star in question will pass near a bright star. This makes it possible to use a tripod rather than a tracking mount to set up multiple telescopes ahead of time. The dashed line shows the path of the star elevation/azimuth point as the earth rotates. You can see spots where several 'bright' stars can be identified close to or on that line. If the target star is quite dim, it is not necessary to even see it, but to only locate a prepoint star along this path.

Gallia is likely to be the greatest challenge in terms of setting up a large number of stations, since sunset occurs about 5:25 pm and the occultation is less than 2 hours afterward.

The author at home with a 50mm refractor, 8AA battery pack and camcorder beside it

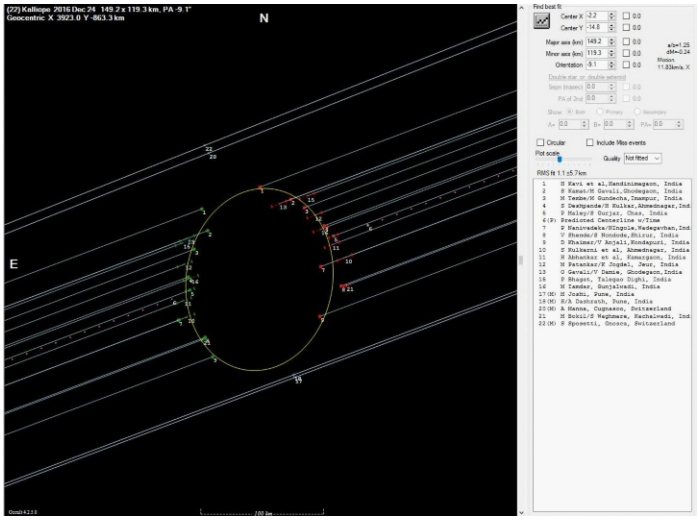


An example of one of several buttons to push in the camcorder

Your job: provide your own transportation, bring an adult companion if possible – no kids or animals – cell phone, flashlight and appropriate clothing. Expect to spend about 2 hours at the site once you arrive. Sites will be located along roads that are dark since we normally cannot rely on urban streets to be safe and dark.

At the appropriate time, you will be expected to apply power to the equipment, begin recording and then wait until the occultation time has passed. Afterward, turn off all equipment, collect the hardware and return to the meeting place where I will collect all gear. It will likely take a week or so to know whether the data recording was successful.

Your participation is needed in order to collect enough geographically separated data to provide both the fidelity and displacement required to build an accurate profile of the asteroid.



Results from a large expedition showing a two dimensional set of measurements from 22 stations in India during the December 2016 Kalliope occultation observing that I organized there.

Separately, there will be an eclipse of a bright 7.2 magnitude star in Sacramento on Sunday morning September 16. I will be organizing a multi-station observing effort for that should it be of interest to our readers

Readers who might wish to get involved with asteroid occultations this year are asked to kindly email me at pdmaley@yahoo.com.

Why Write a Review

By Terri, Event Coordinator, Events@pasaz.org

When PAS does an event, whether hosting or participating, I usually send out a request, by email, for those who attended, to write a review for the newsletter. Why? Because, PAS would like to keep a historical record of the events attended. Your newsletter review (of any length) enhances reviews written by other PAS Members or "thank you's" from a school, or scout group. So, take a moment and write a review of any astronomical event, you have attended, especially if you felt really good about the event. Let other people know, and help maintain our history.

The other reason I ask for reviews is that having me as the only writer of reviews of events, can get kinda dull for the reader. I don't usually put humor into my reviews (but Darlene does), and I may forget some details that the reader may wish to know about, so I ask that others give me their reviews so that we can make a really good picture of how the event went.

We include things like weather, seeing and transparency, as well as activities if it's not just a Star Party. Talk about who attended the event, tell us about the parts you really liked and give the reader something different to read with your personal touch. So if you have a moment to review an event, get the it to me by the deadline so it can be incorporated into the Newsletter with the other reviews about that same event.

One other reason we might want your input is if you did an event that was extremely awesome, and you want people to know about it so they attend the event with you next time, such as a really spectacular viewing session at Antenna's site, then your review is the only way they will find out about this event and what a great time was had by the attendees. So, send those reviews to me. They can be as short as a few sentences.

Reviews can be about an event, a phone app or computer program having to do with Astronomy or an Article written for the newsletter about anything else astronomy related. Send them to me today!

Our Condolences to Mike Marron On the Death of His Father, James Matthew Marron

James Matthew Marron passed away at the age of 86. Born 1/28/32 he worked at Social Services giving aid and comfort to the indigent of Michigan. Directing and acting in dozens of plays in theaters throughout Kent County he inspired generations of actors. He opened and lectured at the first Roger B. Chaffe Planetarium at the old Grand Rapid Museum, became president of the Grand Rapids Astronomical Association and provided the land where they built the James C Veen Observatory. He designed and built his version of a Frank Lloyd Wright house. Loved by all who met him, many adopted him as their father, he changed the trajectories of lives for the better.

Tonto National Monument Star Party Jan 13

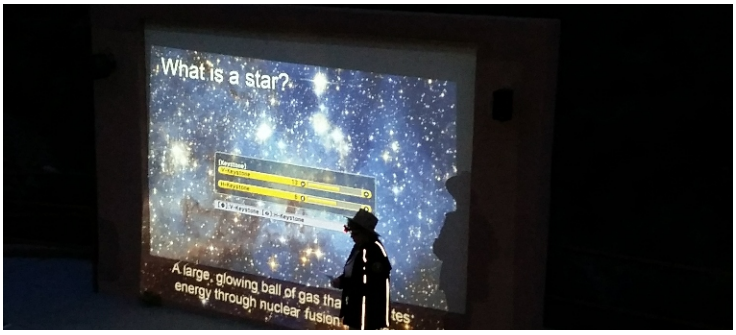
By Sam Insana

PAS furnished telescopes to Tonto National Monument for a star party January 13, 2018 where about 60 members of the public enjoyed the Bortle 2 very dark skies. Though scenic mountains blocked the sky to about 25 degrees elevation on three sides, the view to the north was unobstructed. The event began at 7:00 pm with 2 park rangers doing a 30 minute outdoor PowerPoint presentation about stars in the amphitheater. Then our PAS scopes took over - Mark Johnston showed the Orion Nebula, Castor, Eta Cassiopeia double star, and the Double Cluster in Perseus. Sam and Frank Insana showed the Andromeda Galaxy, the Pleiades open cluster, Gamma Andromeda double star, and M81 and M82 Galaxies. We also had one member of the public join PAS at the event. PAS volunteers were rewarded with a free dinner, free entrance to the Tonto National Monument visitor center museum, and free access to the cliff dwelling ruins. Mark drove home after the event, but Sam and Frank camped out at a free spot furnished to volunteers next to the beautiful Roosevelt Lake. PAS will be providing telescopes for future events at the monument in February and April, an idea originally suggested by Frank at a PAS Meeting of the Minds several months before - thanks, Frank. Frank also knew two of the Park Rangers, Christa and Eric who had previously worked at the Grand Canyon National Park. Red LED light bands were furnished to PAS telescope people to wear on their arms. They are very handy and PAS may want to purchase these for our public outreach events.

Tonto cliff dwellings. Photo provided by Sam Insana.

Sam at the Tonto National Monument Ruins. Photo by Sam.

Mark Johnston at Tonto NM Star Party. Photo by Sam.



Tonto Park Rangers' power point presentations on Stars. Photo by Sam.

Spectroscopy with PAS

By Terri, Event Manager

Apr 17 is the next Spectroscopy SIG meeting. PAS Members are invited to attend. Here's the link for more details: http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2617&day=2018-4-17&c=1.

Country Meadows Star Party Jan 18

By Sam Insana

Thursday night January 18th, Country Meadows elementary school had a science night with over 500 people in attendance. School children displayed homemade volcanoes and other science projects along with vendors including Arizona Science Center, the Arizona Herpetological Society, Wildlife World Zoo and of course our own PAStimes Star Tours. Mike Marron showed his meteorites inside while Roger Anzini, Rick Cunningham, Sam Insana and Pete Turner had their telescopes outside. The event ran from 5:00 pm to 7:00 pm - a challenge for PAS with sunset at 5:45 pm. We showed the sun from 5 to 5:30 (with no sunspots or solar flares since we are entering a solar minimum cycle), took a 30 minute break and then at 6:00 showed a 5 % crescent moon, followed at 6:30 with the Pleiades and at 7 pm (a little over our time limit), showed the Orion nebula. The stellar objects were ducking in and out of high clouds but we managed to please hundreds of children and adults. The real challenge was driving through an opening in a fence with only a few inches clearance on each end of our vehicles. Rick's collision device sounded the alarm as he slowly passed through. It was an interesting night.

Mike Marron sharing his knowledge of Meteorites at the Country Meadows School Star Party. Photo taken by Sam

Sarah Tekulve Writes: Hello All, THANK YOU! Last night was an amazing success and we couldn't have done it without all of you participating. I just want to say thank you as well for everyone showing up on time and staying for the entire event…that was the best! I do apologize for the rush at the end in trying to clean up, we had not been notified ahead of time that our court had been rented out to a third party. So I am sorry if you felt rushed at the end - we will try to make sure that doesn't ever happen again. We had about 513 in attendance not including all of our teaching staff that attended/volunteered as well as personnel from all the organizations. It was our biggest Science Night! I saw most booths/tables packed all night with families. I've never seen kids so excited about sorting trash/recycling before and the line to try and win an electric toothbrush at one point was out the door! I observed every station and was so impressed with every single one of you and our kids were just so excited and happy! That's all they are talking about this morning, lol. Even many of the parents were learning which was great! I really hope you all will be able to join us next year! Thank you for your time in helping shape the minds of our youth!

PVCC Free Telescope Workshop Feb 22

By Terri Finch, Event Manager

It was a chilly Thursday night when I arrived - the team and one RSVP were already outside the locked room waiting. It took a call to PVCC Security to get us in, though Jenny Weitz arrived shortly after. In attendance from PAS were also William Finch, Rodney Fong and Rick Cunningham. We had the assistance and company of Liam. Our one RSVP needing help with his telescope was Jordan Eisgrou who joined PAS at the event. Welcome, Jordan!

The night began with assembly of Jordan's telescope indoors after which, Sam, Rodney and Rick helped Jordan move outdoors. Throughout the night, just about everyone assisted Jordan in some way. After about 2 hours, the skies were clear but the temperature was 47 degrees and Jordan decided to head home. Many thanks to the Telescope Team for assisting Jordan and helping out and to Jenny for making the trip to PVCC to give us access to G-147. Those of us who weren't helping Jordan spent the time talking about upcoming events; Liam and I also worked with a deck of "Astronomy Constellation Flashcards" that William had gotten me for Christmas. It was a good, if small event.

Encanto School Star Party Jan 19

By Sam Insana

After 60 years, I finally returned to my first school, Encanto where I attended first through fourth grades (there was no Kindergarten at that time). I brought my telescope and 6 other avid astronomers from PAS. Mike showed his impressive meteorite collection. Mark showed the Moon, Owl Cluster, Gamma Andromeda, and Hind's Crimson Star in Orion while tons of kids ooo'd and aaah'd. Roger showed both the full view of the moon with his 81 mm refractor while showing the close up edge with his 16 inch dob. Roger also did a complete Orion laser presentation while people viewed M42. Don showed the Moon all night and always had a line of people. Rick showed the moon, NGC457 Owl Cluster, and M42 with a narrowband nebula filter. The filter made the nebula stand out in the light polluted skies of Phoenix and allowed him to easily split the trapezium. Rick estimated several hundred viewing through his scope. Pete showed the moon, and several other objects. I showed the moon, Orion Nebula, Pleiades open cluster, and Gamma Andromeda double star. At 8:00 pm the lights at a nearby stadium went out so I was ready to show the Andromeda Galaxy, but just then school teachers came running out warning of sprinklers going off any minute. We all hurried our equipment off the field to safety, but Roger had some non essential equipment like a table and step stool get soaked. I had checked with school officials before the star party and was told no sprinklers or irrigation would go off that night, however there apparently was a misunderstanding with the groundskeepers. It was a beautiful night and Encanto School teachers and volunteers kept the students under control, turned off school lights when requested, helped carry our equipment off the field during the sprinkler event, provided a fine dinner and did everything they could to have a very successful event.

Kids of all ages were eager to look through Sam's telescope at this school event. Photo by Sam.

Tonto National Monument Star Party Feb 17

By Pete Turner and Rick Cunningham

Rick writes: Saturday started with heavy cloud cover which persisted most of the day and the decision to go/cancel for the event wasn't made until 2:00 PM. Tonto was a two hour drive from the south side of Scottsdale that included fighting the Medieval Festival traffic (I took the south route since I live in the Old Town Scottsdale area), but for a chance to view at a Bortle 2 site and see the ruins, it was too tempting to resist.

Park rangers started their 40 minute presentation on the ancient Navajo sky at 7:00 pm, giving the clouds a chance to clear and for Sirius and then Orion became visible. There was no moon this night, so I started by showing M42, M43 and NGC1975 using my nebula filter. After all the guests had left, one of the volunteer rangers wanted to see more as the high thin clouds were allowing better viewing. I showed her M45 Pleaides both through my spotting scope at 10x and at 50x, NGC457 Owl Cluster, the double star Pollux, Sirius, and for color contrast Betelgeuse. Hoping for better skies on April 14th, our next scheduled visit.

Pete writes: The clouds at Tonto National Monument cleared overhead about 7:30 pm so that we were able to show several objects (Orion and Pleiades, Owl Cluster). We had 52 people that braved the clouds.

Tonto National Monument, photo taken by Pete Turner.

Pardes Jewish Day School Feb 22

By Mark Johnston

PAS arrived by 5:30 and got set up. We were fed some excellent hot food and got ready for the event. Mike Marron was indoors with meteorites and Eric Steinberg with his 22" scope and I, with my 5.5" refractor were outside in the main courtyard. We started off showing the Moon which was a big hit. There was a steady stream of K-8 kids and their parents making the appropriate oohs and ahhs throughout the evening. After it got darker I switched to Castor and explained the sextuple nature of the star, while Eric showed the Orion nebula and then Uranus. I then switched back to the Moon due to popular request and had a beautiful view of the terminator. The event ended just after 8pm.

South Mountain Star Party March 3rd

By Sam Insana

Saturday night, Pete Turner, Howard Moneta and Sam Insana provided telescopes for a South Mountain Star Party at the Environmental Center. We showed Venus, Mercury, Orion Nebula, Gamma Andromeda Double Star, the Pleiades and the brightest star in the night sky Sirius. South Mountain Community College and South Mountain High School were invited to send interested students and teachers - about 50 adults and children attended the event which ran from 6:00 to 8:00 pm. There were videos and PowerPoint demos inside the center describing archeo-astronomy and the International Space Station, along with a review of constellations of the night sky. Although there were some clouds, we were able to show objects in the gaps over the night. It was very pleasant.

Pete writes: The only other object I looked at was Alnitak in Orion's belt. It's a triple star with a lot of nebulosity around it. We could see the two of the stars, however the nebula was too faint to view from our location.

Howard & Pete setting up at the star party. Photo provided by Howard Moneta.

Sam and Pete chatting before the start of the star party

The Partial Eclipse of February 15

By Paul D. Maley

On February 13, 2018, I traveled to Santiago, Chile to witness my 70th solar eclipse. This one featured a 7.6% coverage of the Sun's disc by the Moon which occurred quite late in the afternoon (7:15 pm local time) with the Sun only 15 degrees above the horizon. To see this I chose the terrace of the Courtyard Hotel 27 floors above the ground, as the hotel where we were staying (the Santiago Marriott) had no exterior places where I could view the eclipse and photographing through the windows was not an option as they were not of good optical quality. I had found a park behind the hotel which was quite vast and had a great horizon, but too many people used it and I was concerned about being able to take photos without being interrupted by dogs, walkers, joggers and sports enthusiasts.

The reason I chose Santiago is that it has experienced good weather and was reachable with just two flights. Chile has a desert climate similar to Arizona. We stayed two nights in the Santiago Marriott Hotel located right next door where I was able to monitor the weather in case we had to fly elsewhere. Luckily the weather pattern held strong and we experienced clear skies day and night.

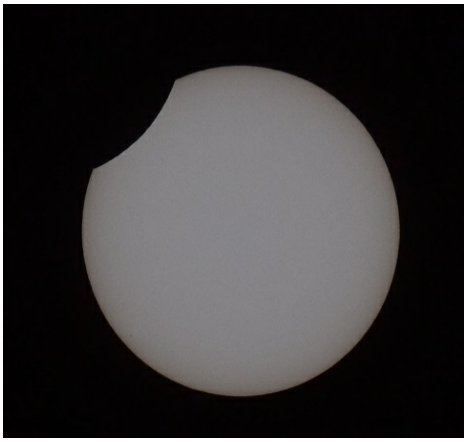


Figure 1. The partial eclipse through a Takahashi FS60C with the Sun nearly 8 percent covered at maximum eclipse. P. Maley photo.

Following this success, I will be focusing on the next 3 partial solar eclipses over the coming year.

Figure 2. I am photographing the eclipse near its maximum while people completely ignore what I am doing and continue to exercise.

Private Star Party at Desert Botanical Gardens Feb 26

By Sam Insana, PAS RSVP for this event

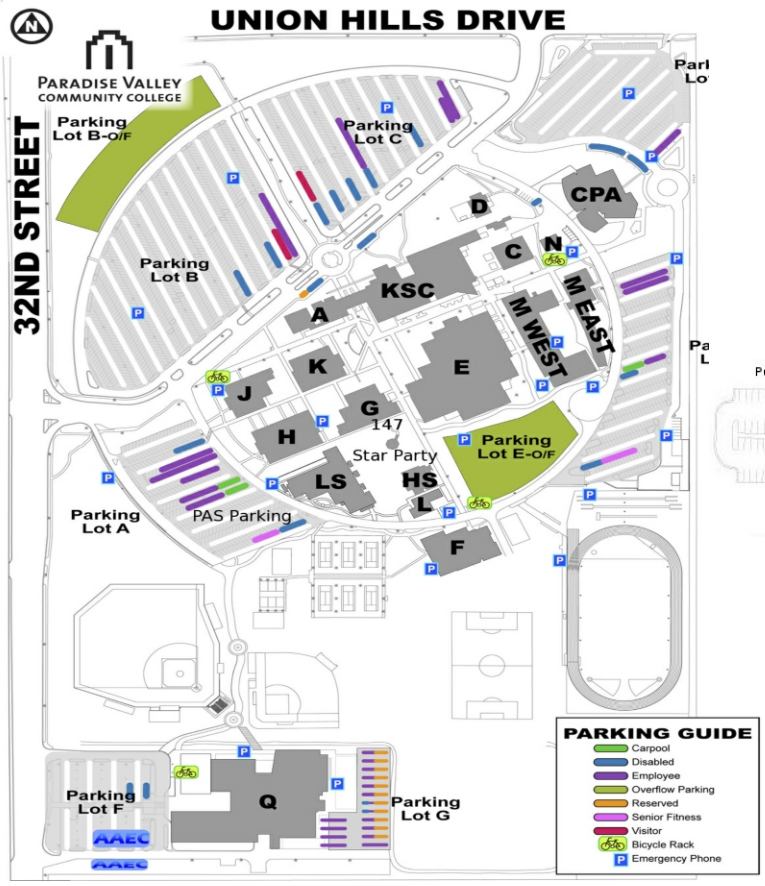
Monday night, PeteTurner, Don Boyd and Sam Insana attended a private star party at the Desert Botanical Gardens for an interior design group. About 150 guests attended on a beautiful night with no wind, clouds or rain. In addition to our telescopes, there was a live band, design award presentations and the most incredible gourmet food ever served to our astronomy club at a star party. We were supposed to finish telescope viewing at 9:30 but the guests kept wanting views so PAS stayed until the last guest left at 10:00. We showed the Orion Nebula, Gamma Andromeda double star, the Pleiades and several different magnification views of the moon. The guests were from all over the U.S. but most were from New York City, where they never get to see such objects in the sky. The event went so well that the host, Caroline who did everything she could to make the event a success, treated our PAS members like royalty!

This photo was taken by Sam. His caption for it is "Viewing is so good at DBG, even headless guests enjoyed my telescope."

Photo by Sam.

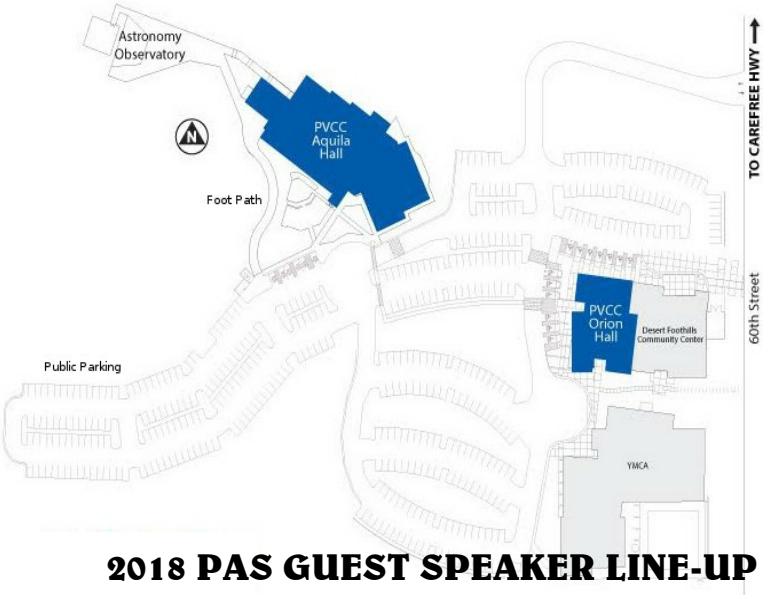
Map of PVCC Main Location

18401 N. 32nd Street | Phoenix, AZ 85032



Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



2018 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 the details. Here are the next scheduled guest speakers at PAS:

May 10: Tom Polakis "CCD Photometry from Inside the Light Dome"
*** Summer Break - No General Meetings ***
Sep 6: Laurence Garvie, Topic: Meteorites
Oct 4: Topic & Speaker - TBA
More information at:
http://www.pasaz.org/index.php?pageid=meetings

April 2018

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 *Easter*	2	3	4	5 *PAS Meeting & Dinner*	6 *School Star Party (Private)*	7 *Planetarium Show*
8 *Free Telescope Workshop*	9	10	11	12 *Huge Public Star Party*	13 *2 Private Star Parties*	14 *Tonto NM Star Party Planetarium Show*
15	16	17 *Private PAS Meeting*	18	19 *Free Telescope Workshop*	20 *School Star Party (Private)*	21 *Public Star Party*
22	23	24	25	26 *Private PAS Party*	27	28 *Private Star Party Planetarium Show*
29 *Private Star Party Planetarium Show*	30					