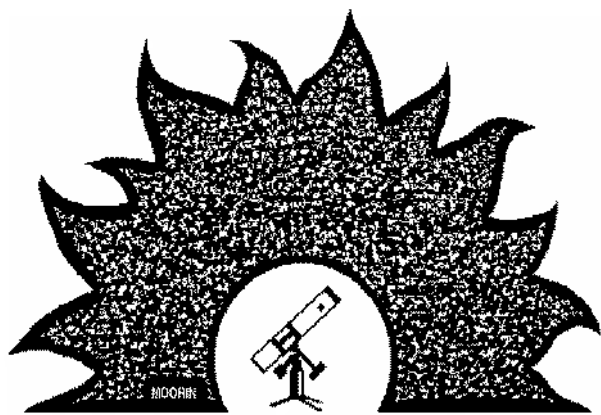




PAStimes

Phoenix Astronomical Society

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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Occultation Timing Discovers Asteroid's Moon

By Sam Insana, President of PAS

Five PAS members, Paul Maley, Ted Blank, Sam Insana, Paul Facuna and Don Boyd were involved with occultation timings of 13th magnitude asteroid 113 Amalthea on March 14, 2017 at 4 am Universal Coordinated Time (UTC). We set up in different locations of Arizona in order to try to determine the size and shape along with other information about the asteroid,

which occulted a 10th magnitude star, TYC 1878-01081-1 in Gemini. I had an 80 mm refractor telescope, a video camera for the scope, GPS unit, time insertion device, camcorder, battery packs, monitor, and other equipment. The process involved over 2 dozen individual steps over a 2 hour period of time. I also had to study various pre-point star charts and make sure the scope,

which did not track, was pointed at correct stars so that as the earth turned, the target would drift into view at the exact time of the occultation.

I was located several miles south of Gila Bend on the East side of highway 85, within a few yards of the Goldwater Gunnery Range. As I was (Continued on [page 3](#))

Sharing the August 21 Solar Eclipse Experience

by Sam Insana and Terri Finch, Event Manager

At the Sept 7th PAS meeting, we will have our installation of new officers with a brief word from each. We will have mini presentations on "Sharing the August 21 Solar Eclipse Experience" with photos and videos which should last about an hour.

Time permitting, we may also have discussions on the following topics: Occultation, Spectroscopy, Astrophotography, Future events, the Flagstaff Festival of Science, and more.

Bring the whole family and enjoy this

meeting with PAS. Bring a snack to share. Bottled water will be provided by the PAS Snack Fund, so be sure to donate a little to the snack fund so we have water for the next meeting. See you there! ***

PAS Meeting May 11

By President Sam Insana

The meeting at PVCC ran from 7 to 10 pm with about 35 people in attendance. Ron Walker gave a fine and humorous presentation about the building of his planetarium in Cave Creek. He had many photos showing all the hard work and interesting situations involved. He also talked about the kinds of programs he presents such as "What's up in the night sky?"; "Hubble Space Telescope Photos"; "The Christmas Star"; "Bell Lab Programs" (like Mr Sun, Rock music with laser light shows and more_.

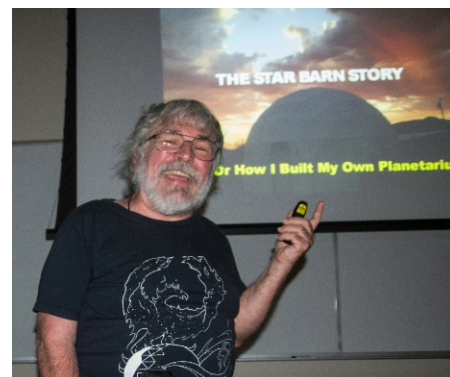
We then held a tribute to Earl Delong. Anita, his widow who dropped by with her daughter, really appreciated all the kind words PAS members had to say. We also showed 83 photos of Earl including ten that

his family had sent us and ten others we had of Earl doing PAS activities.

At the annual PAS elections, Mike was elected President, Paul Facuna, Vice President, Sonny Schug, Secretary, Eric Steinberg, Treasurer, Don Boyd, Newsletter Editor, Jenny Weitz, Director at Large, and Rodney, Host. These officers will take over at the September 7, 2017, PAS general meeting.

The rest of the evening was spent discussing spectroscopy, occultations, meteor showers, the total solar eclipse and many other activities such as upcoming star parties, telescope workshops and Leprecon. Finally we had a raffle with Rodney winning a free ticket to the Arizona Science Center. Prior to the meeting, PAS had a

dinner for Ron and his wife Julie at Chili's with 10 people in attendance.



Ron Walker was our Guest Speaker for the May 11 PAS General Meeting. He is a fantastic guest speaker and his topic of the evening was about how he built his Planetarium.

(Photo by Don Boyd.)

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PAS Upcoming September 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 event is for PAS members only.

Sept 5: Spectroscopy SIG Meeting (Private). See Private Calendar for location & time.

Sept 7: PAS Meeting at PVCC in Room LS 203. Come enjoy a presentation by Harrison Smith. 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=2385&day=2017-9-7&c=1>

Sept 8: Cityscape Movie Night - E.T. 7pm. PAS will be at this event with one telescope showing Saturn, Q&A with prizes for the kids from 6pm to 9:30pm. Here's the details about this free event: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2429&day=2017-9-8&c=1>

[8&c=1](http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2398&day=2017-9-14&c=1)

Sept 10: Free Telescope Workshop at Bookmans, 19th Ave and Northern in Phoenix - 3:30pm to 5:30pm. 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=2025&day=2017-9-10&c=1>

Sept 14: Huge public star party at PVCC Black Mountain Campus, 60th Street and Carefree Hwy from 7pm to 10pm. Follow the signs to the star party at the Observing Deck next to the Aquila building. Set up is 6pm for telescopes. 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. We usually provide 10-14 scopes for your viewing pleasure. Please do not touch the telescopes. Highlights: Saturn, Jupiter. More details:

<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2398&day=2017-9-14&c=1>

Sept 15: Private Star Party in Desert Ridge.

Sept 16: Private Star Party in Phoenix.

Sept 21: Free Telescope workshop Free telescope workshop at PVCC main campus, 32nd Street and Union Hills Rd - 7pm to 10pm. RSVP is required with Terri Events@pasaz.org. Seating is limited. When you RSVP, please leave 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=2406&day=2017-9-21&c=1>

Sept 28: PAS Meeting of the Minds - More details coming soon.

Sept 30: Astronomy Day - Location of this event is in the planning stages.

Free Public Star Party at PVCC on Nov 15

By Terri, Event Manager

PAS and PVCC will be holding a free public star party at PVCC Main Campus (32nd Street & Union Hills Rd in Phoenix) from 5pm to 10pm on Nov 15. Everyone is

welcome. Come view some great objects in the night sky through our high powered telescopes. More details can be found at this link, for this event:

<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2340&day=2017-11-15&c=1>.

Scope for Sale:

Celestron CPC 1100 XLT, an 11" SCT GOTO telescope with GPS, enhanced with Celestron's StarSense Auto-Align for fully automated alignment. This instrument comes with Celestron 40mm and

25mm eyepieces, a standard spotting scope and an image erecting diagonal. It includes a Thousand Oaks glass Type 2 front-fitted solar filter, an installed Feather Touch focuser and Starizona counterweights, origi-

nal manuals and various power and control cables. All in excellent condition. Local pickup only. \$1500 firm. Contact Alex for further details at axv@cox.net

Occultation Timing Discovers Asteroid's Moon

(Continued from page 1)

getting ready to do the final steps necessary to record the occultation, a Border Patrol vehicle pulled up. Looking at an AR 15 made me nervous and I had to quickly talk my way into having them let me continue my work. It did look a little suspicious, being alone at night next to the military facility, with strange looking equipment. The Border Patrol agent was actually quite nice but he stuck around for a while to make sure I was telling the truth. I was fortunate it wasn't an MP, since in a previous occultation episode Paul Maley was temporarily forced to leave his equipment by the MPs and when he returned a javalina had destroyed his delicate equipment setup making timing impossible.

Besides the 5 PAS members mentioned above, there were several other amateur astronomers in other states timing the same occultation. I was lucky to be in my location, since my recording showed a miss while other recordings above and below my location showed hits. The video tapes and timings were studied by Paul Maley, Ted

Blank and several other occultation experts who determined this indicated a natural satellite orbiting the asteroid. Only a few hundred asteroid moons have been discovered over the years and they are usually optical discoveries by professional astronomers. This was in fact, a rare event with amateur astronomers finding a moon using their occultation timings. While the IO-TA experts agree that there is a high probability that a natural satellite has been discovered, adaptive optics telescopic observations next spring will be used to try to reach 100% certainty.

I encourage all PAS members to get involved with Citizen Science Projects. Sky and Telescope Magazine ran an article about this Asteroid Moon discovery in their online edi-

tion of S & T. Please use the following link to learn more details:

<http://www.skyandtelescope.com/astronomy-news/amateur-observers-discover-asteroid-moon/>

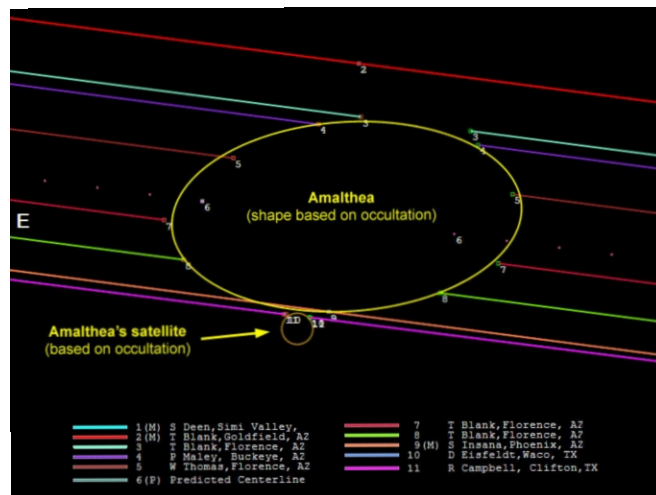


Image shows the resulting data that was collected by the 5 PAS Members involved in this Citizen Science Project. This diagram was drawn up Brad Timerson. Image provided by Paul D. Maley with permission to put it in PAStimes.

Grand Canyon Star Party June 17-24

By Attending PAS Members

rangers could give star parties more often during the year.

By **Mark Johnston**: My wife Shirley and I attended the GCSP on the North Rim from June 17-22. At 8600 ft the North Rim has astounding clear steady dark skies. We had one night of clouds but otherwise ex-

cellent dark skies with great seeing. The event was organized by SAC but had astronomers from California, Texas, Utah, Washington State, and all over AZ. We

(Continued on page 4)

Sam Insana, President of PAS: June 18, Vera Stiesmeyer, along with Frank and Sam Insana were at the 27th Annual Grand Canyon Star Party at the South Rim. We saw Rick and Terri Cunningham, and Dennis Young. The night we observed, Sunday June 18, the weather was perfect with no clouds, wind or rain. The Milky Way was spectacular looking with the naked eye. I measured it as a Bortle 2 where the scopes were set up at the Visitor Center. The lights were turned off this time making it excellent viewing. We looked through about 40 telescopes. M51, M57, M13, M8, M20, M104, M81, and M82 and many more deep sky objects were large and bright. The scopes ranged from 8 to 28 inch reflectors, and 5 to 7 inch refractors. While the Tucson Astronomy Club had a lot of scopes, there were dozens more from other places around Arizona along with US. Park rangers with laser pointers teaching visitors the constellations. We attended a presentation the next night, June 19 in an auditorium about dark skies in Arizona State Parks and how more of them are putting on star parties. A free beginner 3 inch scope was raffled off for children. Dennis Young donated a 10 inch Meade goto Schmidt Cassegrain to the GC park service so their



While at the GCSP, Sam took this photo of Rick, Terri and Dennis with his Pluto Hat on June 19.



Sam was treated to a view of this deer from the telescope viewing area just before dark on June 19. Photo provided by Sam.



The Grand Canyon Star Party for 2017 was held from June 17 to 24. This photo was taken by Mark Johnston of the North Rim observing location.



Sam, Vera and Frank attended an Indoor Ranger Program on June 19. Photo provided by Sam.

PRESIDENT'S CORNER

By President Sam Insana



PAS President Sam Insana. Photo by Terri

It has been a demanding but rewarding 2 years as PAS President. I enjoyed getting to know our 100 members and I loved seeing them attend our monthly meetings, hear our guest speakers, attend telescope workshops, get involved with citizen science projects, go on field trips to planetariums and observatories, have fun at our socials, do public and private star parties and our many other astronomy activities. Every PAS member did something astronomy related, helping to make us one of the most active clubs in the nation.

I would like to acknowledge about two dozen members, however, for some things that I will always remember. If I mentioned all members and all that they did for PAS this article would be 10 pages long. These just stick in my rapidly fading memory.

* Mike Marron for letting us use his house and dark sky observing acreage, displaying his meteorites and giving very unusual and enthusiastic talks about astrophysics theory.

* Terri Finch for her many hours of work as Events Manager for PAS and Star Tours Director.

* Don Boyd for his devotion as PAS Newsletter Editor, making it an excellent publication documenting the history of PAS.

* Eric Steinberg for doing an excellent job as PAS Treasurer, sharing his monster telescope at dark sky star parties, being copy editor, and playing a wild bass guitar.

* Alex Vrenios for his support as PAS Vice President, being our de facto liaison with the Astronomical League, his radio astronomy lectures and spearheading binocular star parties.

* Kevin Witts for 2 great years as PAS Secretary, helping PAS with publicity, planning our field trip to Kitt Peak Observatories and sharing with us his lifelong space rocket collection.

* Howard Moneta for his support as PAS Vice President, planning the Mount Graham Observatory field trip and getting PAS many new members through MeetUp.

* William Finch for always being available at PAS meetings for much-needed technical support.

* Jenny Weitz for being on our PAS Board of Directors and always helping us with getting rooms for our meetings, special events, and other needs at a moment's notice.

* Bruce Wurst for being on our PAS Board of Directors and his extensive knowledge of the workings of telescopes.

* Paul Facuna, who came to PAS as a pleasant, quiet man with limited knowledge of astronomy who over the last 2 years has learned the constellations, helped organize a PAS field trip to ASU astronomy facilities, taken part in meteor studies, occultation timings, spectroscopy and has stood in front of our members to make announcements and give short talks and lately successfully running for PAS VP.

* Leah Sapir for always being available to answer the public's questions about astronomy.

* Chet Schuler for his expertise with

spectroscopy and his excellent astrophotography.

* Bill Powell for leading our Spectroscopy Group and for his willingness to share his expertise in upgrading our PAS website (I hope our club will be taking him up on his offer).

* Chris Johnson for being our PAS webmaster and for his fantastic astrophotography.

* Frank Insana for encouraging me to run for President of PAS, giving me sage advice beyond his years, sharing his 16 inch telescope with me and for attending about 5 PAS events a year even though he lives and works at the Grand Canyon.

* Rodney Fong for being PAS Host.

* Ron Walker for opening his Star Barn Planetarium to PAS and for his sense of humor.

* Pete Turner for doing so many PAS activities: field trips, public and private star parties, socials, general meetings, meetings of the minds, speaking on black holesand being such a nice guy.

* Paul Maley and Ted Blank for their expertise and for helping PAS members with occultation timing citizen science.

* Rick Cunningham for working strenuous star parties, always with a smile and without a complaint about his knees.

* Roger Anzini for never wanting to cancel a star party even in pouring rain.

* Mark Johnston for convincing me that a good refractor can show deep sky objects.

* Earl Delong, John Pulis, Bob Senzer, and Jerry Belcher who left PAS too soon and will always be missed.

Gratefully to all PAS members, Sam Insana President of the Phoenix Astronomical Society

Grand Canyon Star Party

(Continued from page 3)

squeezed 14 scopes, mostly large Dobs, on the lodge veranda overlooking the canyon (see photo). The Milky Way was routinely mistaken by guests as clouds it was so bright. I did both HA Solar and nighttime astronomy. On Tuesday night I gave a talk on Astronomy in the lodge auditorium to a full house (about 130 people) while Shirley manned my scope. I was able to pick up Jupiter about 45 minutes before sunset and

had a steady stream of guests interested in Jupiter, then Saturn until well after 10PM. In total we had 1509 people at my two telescopes this week! After the tourists went to bed many of us continued past midnight looking at special objects. It's my favorite observing location in Arizona! We have reservations and look forward to the 2018 event.



This is the May 9 Spectroscopy meeting at PVCC. In this photo are Chet Schuler, Bill Powell, Don Boyd, and Paul Facuna. Sam Insana and Alex Vrenios are not pictured. Photo provided by Sam.

DBG Adult Education Class Mar 24

By Terri, Event Manager

The Desert Botanical Garden holds fall and spring adult education classes with four instructors provided by PAS. There is a fee to attend, but participants have found the class both informative and fun. The class starts out in the Marley Education & Volunteer Building with a half-hour introduction, after which we head to the Stardust Foundation Plaza to enjoy an hour and a half of observing through three PAS-provided telescopes.

After some earlier meteorite demonstrations with Mike, the class began at 7 pm with a welcome by Terri and a brief review by William of the various types of telescopes and how they work. Terri demonstrated the use of a planisphere and went

over what to expect outside at the viewing session. Finally, Mike took about 25 minutes to do an "Astronomy 101" class.

When Mike completed his presentation, the class of 17 proceeded outside to the telescope area. Bruce had his 12" telescope, William had his 10" Dob and Terri had her 8" SCT. Skies were not very dark, but Terri was still able to do a sky tour from Orion to the Big Dipper for those around her. Mars and Jupiter were highlights, though it seemed like some of the class departed after viewing Mars without waiting for Jupiter to rise.

Around 8:15 pm, Jupiter appeared through the trees allowing William and

Terri to realign and show it. Some other objects seen this night were Pleiades, Orion Nebula, M103, E.T. Cluster and Perseus Double Cluster.

Our contact at DBG was Joan who checked in with us periodically during the event. We also had the assistance from Rocco with transporting our equipment, along with general help from another DBG volunteer. I would like to thank DBG, and of course the telescope team for a very successful class. We look forward to the next DBG Adult Education class scheduled for Sept 16th, 2017. If you are interested in attending this class, check the schedule and sign up through DBG at this link: <https://www.dbg.org/classes-workshops>.

PAS Field Trip to Marston Exploration Theater Apr 1

By Terri Finch, PAS Event Manager

Many thanks to President Sam Insana for putting together this members-only trip to the 3D theater for the show "To the Edge of the Universe and Back". Attending were: Sam Insana, William and Terri Finch, Vera Streismyer, Mike Marron, Ofelia Waters, Paul Facuna, Bill Powell, Pete Turner and Joe Aquavella.

This was an interesting and informative presentation in 3D about three of the upcoming missions being done by ASU - Lucy, Osiris Rex and Psyche. The show was about 1 hour long. Our guide through space was Ric and our "pilot" on the trip (running the projector program) was Shane.

Together they were a spectacular team!

The theater is set up with state of the art technology, including a Definiti Sky-Skan Planetarium and two Sony 4K projectors, which make the entire space come alive with stars, planets and other celestial objects.

After the show, the group went to an early dinner at the Student Union at Pei Wei. For more info about these shows: <https://sese.asu.edu/public-engagement/3-d-astronomy>

Sam writes: The experience was amazing from the many satellites orbiting the Earth to the cosmic radiation background at

the edge of the universe and all the galaxies in between. Our host, Ric, lives in Sam and Vera's neighborhood and their sons went to school together. Ric provided a wealth of knowledge on astronomy while narrating the show and answering questions at the end. Before the show we toured the ASU meteorite exhibits. We received a discounted \$5 planetarium rate instead of the normal \$7.50 rate because we had a group of at least 12 people. Parking was free in the Rural Rd parking structure because we went on a Saturday. In June we hope to organize another trip to the 3D planetarium to see breathtaking photos of "25 years of the Hubble Space Telescope".

How I built my Planetarium

Ron Walker will be at Desert Foothills Library on Saturday, September 23rd starting at 10:30am. This presentation is Free & Open to the Public. Everyone welcome!

Ron writes: I have been asked to give

a talk at the local library on how I built my planetarium (this is the fourth time, still can't believe the interest). I'm told there are twelve sign up's already. It will be at the Desert Foothills Library on Saturday, September 23rd starting at 10:30 and lasting

about an hour.

For more information on the library presentation call (480) 488-2286 or visit at <http://www.calendarwiz.com/calendars...rd=dfcalendar>

3 Scopes for Sale

With Accessories: 1) 10 inch Dobsonian 2) Meade ETX-LS8 with hard case and built in dolly 3) Celestron NexStar 5 with high quality hard case. Additional items: empty small hard case, never opened cover, two hard cases with lenses. I have small boxes for all lenses. Spreader-lens holder. Also have two cotton cloth scope covers, not shown. The actual retail prices

are to the left of the items, in the photos of the lists, and the half price selling price is on the right. I have all the original sales slips, software and user manuals. I check email every day. I want to sell my three telescopes and a selection of books. I am asking 1/2 of the purchase price. Equipment is like new. Here's the link to the lists and photos:

<https://www.dropbox.com/sh/o8ri3j4ba4xws0t/AADvvlqlb9jK-0sfT7pc6sska?dl=0>. It's a lot of equipment for sale, something for everyone. Contact Mary to purchase these items marylj3@gmail.com. Phone is 602 866-8693.. Land line, please leave message. Email.. much better, as I check it daily. The location to see these scopes will be near PVCC Main Campus.

PVCC Telescope Workshop Apr 13

By President Sam Insana
shirts." Welcome aboard Emily.

PAS had a free telescope workshop April 13, 2017, at PVCC. Alex Vrenios, Howard Moneta, Sam Insana and Rodney Fong attended along with a public attendee, Tom from MeetUp. He had a new Celestron Nextstar 8SE and was in need of help. Howard had used the same scope a few years ago so gave most of the aid to Tom and after an hour he was able to use the red dot viewfinder, align the scope using 3 stars and use the goto to find Jupiter and M42. He was very pleased with the help.

A PVCC student was walking near our setup and appeared interested in astronomy. After I talked with her, she decided to join PAS. Emily Yazzie is now a member of PAS and wants to attend star parties, meetings and "buy some cool astronomy tee



Sam, Alex and brand new PAS Member Emily Yazzie. Photo by Sam.



Howard, Rodney and telescope attendee Tom from Meetup at this months PVCC Telescope Workshop. Photo by Sam Insana.

Benchmark School Star Party Apr 21

By Terri, Event Manager

We had 6 scopes: Sam, Roger, William, Terri, Storm and Roger; Mike with meteorites and 2 helpers: Jake Von Ruhr and George Zukauckas in attendance from PAS.

Pizza was provided by the school and our teacher contact there, Heather Rheinfelder. The event was scheduled from 6:30 to 8:30 with sunset at 7:04 and dark not until 8pm.

While we waited for it to get dark enough to observe, we watched a beautiful sunset and I did Q&A with a few girls that were standing near my scope. I gave out 5 Q&A prizes and also gave Jake a handful of prizes to give out if he had the chance to do Q&A before it got dark. It was about 7:15 before we saw Jupiter which was the highlight until about 7:45 when the Orion Nebula came into view.

During the event, Jake had the helpful idea of using Wikipedia on his phone to provide interesting facts about the objects in the scope he was standing near, while the other three of us moved between the scopes to help Storm get her scope set up on something.

During the evening, Roger noticed a small dark circle on the surface of Jupiter - the shadow of one of its moons which drift-

ed across the surface until shortly before we packed up when it came into direct view. I drew people over to look at it first as a shadow, then as the moon itself. We started to pack up about 8:30, but I asked Roger to stay set up a little longer to show Jupiter's moon occultation. Thank you Roger for extending the time you were set up so that those attending this event could enjoy this interesting view.

Two other things of note were 1) a bright meteor near the end of the event from the Lyrids Shower that a lot of people saw, and 2) a semi truck on-site with a simulator of the space station inside. Heather had a week long exhibit at the school: Rick Gutridge and his space simulator, Voyager, which was a nice complement to us while we waited for dark, along of course, with Mike and his meteorites. It was a very



William, Jake & Storm finding Jupiter so that all the telescopes can get on the first object of the night. Photo by Terri.

successful event with the fireball making a great conclusion! Many thanks to Heather for having PAS at her event and to the telescope team and helpers for the night. It was a great viewing evening, with the exception of some lighting on some of the buildings in the area.



Bruce & Roger are seen waiting for it to get dark enough to find the first object. Photo by Terri.



Sam & George looking for Jupiter as the Sun leaves the sky. Photo by Terri.



Twenty Years Ago on Mars...

By Linda Hermans-Killiam

On July 4, 1997, NASA's Mars Pathfinder landed on the surface of Mars. It landed in an ancient flood plain that is now dry and covered with rocks. Pathfinder's mission was to study the Martian climate, atmosphere and geology. At the same time, the mission was also testing lots of new technologies.

For example, the Pathfinder mission tried a brand-new way of landing on Mars. After speeding into the Martian atmosphere, Pathfinder used a parachute to slow down and drift toward the surface of the Red Planet. Before landing, Pathfinder inflated huge airbags around itself. The spacecraft released its parachute and dropped to the ground, bouncing on its airbags about 15 times. After Pathfinder came to a stop, the airbags deflated.

Before Pathfinder, spacecraft had to use lots of fuel to slow down for a safe landing on another planet. Pathfinder's air-

bags allowed engineers to use and store less fuel for the landing. This made the mission less expensive. After seeing the successful Pathfinder landing, future missions used this airbag technique, too!

Pathfinder had two parts: a lander that stayed in one place, and a wheeled rover that could move around. The Pathfinder lander had special instruments to study Martian weather. These instruments measured air temperature, pressure and winds. The measurements helped us better understand the climate of Mars.

The lander also had a camera for taking images of the Martian landscape. The lander sent back more than 16,000 pictures of Mars. Its last signal was sent to Earth on Sept. 27, 1997. The Pathfinder lander was renamed the Carl Sagan Memorial Station. Carl Sagan was a well-known astronomer and science educator.

Pathfinder also carried the very first rover to Mars. This remotely-controlled rover was about the size of a microwave oven and was called Sojourner. It was named to honor Sojourner Truth, who fought for African-American and women's rights. Two days after Pathfinder landed, Sojourner rolled onto the surface of Mars. Sojourner gathered data on Martian rocks and soil. The rover also carried cameras. In the three months that Sojourner operated on Mars, the rover took more than 550 photos!

Pathfinder helped us learn how to better design missions to Mars. It gave us valuable new information on the Martian climate and surface. Together, these things helped lay the groundwork for future missions to Mars.

Learn more about the Sojourner rover at the NASA Space Place: <https://spaceplace.nasa.gov/mars-sojourner>



Caption: The Mars Pathfinder lander took this photo of its small rover, called Sojourner. Here, Sojourner is investigating a rock on Mars. Image credit: NASA/JPL-Caltech

Rock A Rama Solar Event Nov 4th Weekend

By Terri Finch, Event Manager

Rock a Rama takes place in Black Canyon City and is a Gem and Mineral Show event. For a couple years, PAS has been volunteering to do Solar Viewing at this event. Here is the review of the weekend in 2016.

Friday, Nov 4 at Rock A Rama was just after a rainstorm the night before. The vendors at this event, had to rush to set up their tables for the event, due to rain and wind getting in the way on set up day, which would be Thursday.

The Telescope Team for this day was Kevin Harcey, Don Boyd, Mike Marron & Terri Finch. Terri & Kevin did the PAS Handouts, while Mike showed his Meteorites and Don, who arrived later than planned, showed the Sun through his telescope. The clouds stayed with us right up to about 1 hour after Don had arrived at the event.

We met so many really nice people. DeeDee was in charge at the event and provided the Telescope Team with Ice Cold Bottled Water and lunch. Lunch was very good. The Sun wasn't out much, but I did get a slight sunburn on my face.

I had arrived about 8:30 with Kevin, while Mike was right on time at 9am, and Don didn't make it to 11am, however, the clouds didn't allow for solar viewing until about noon, so it worked out great. We all packed up at 3pm and left. Many thanks to the telescope team of this day. I would estimate 60 people in attendance from the public.

Nov 5, Saturday, the telescope team of this day was William & Terri Finch with our Astroscan to put on the Moon, Mike Marron with his meteorites, Don Boyd brought his scope, Paul attended to help out, Ofelia Waters was in attendance to help Mike keep an eye on his meteorites. I would estimate about 150 people from the public attended on this day.

Moon rise was around noon, so our event was set to be from 10am to 3pm. William spent quite a while leaning back in his chair trying to find the elusive Moon. What made it so elusive was that it was a thin crescent and in the haze of the daylight, it was challenging to find. Finally, we found it and put the Astroscan on it to show everyone.

The weather for the day was breezy, but not enough to blow over our canopy. Lunch was again provided for the Team,

enjoyed and appreciated.

Our tent drew many people to come see what we had to show them. One young man, Joey Fuller, stopped by on Friday to chat with the group, and hung around most of the event with the PAS Team. He was very intrigued with Mike's theories and so Mike went through several of his lectures with Joey listening to every word.

Paul Facuna writes: Saturday morning when I arrived at Black Canyon City for the Rock-A-Rama, the sky had patchy clouds. The sun had no sun spots so it looked white and smooth through Don Boyd's 8 inch telescope. The sun has entered a solar minimum so there will be very few sun spots visible for many years. People looked through the scope at the sun, stopped at the PAS table to get information about PAS, to look at and hold Mike's meteorites and to listen to his meteorite presentations. A young man (Joey) listened to Mike's astronomy and astrophysics lecture on and off for over half a day. He was very interested and I thought captivated by Mike's lecture. In the afternoon the moon was visible between the thicker clouds but it was not a good view through William's low power telescope because of the low power and the sun's brightness washed the moon's features out. There were more clouds in the sky in the afternoon so the sun was only intermittently visible through Don's telescope.

I looked at some of the vendor displays. I looked at Suzanne Morrison's (of Raining Rocks) meteorites, minerals and fossils which are very beautiful and interesting. I bought a neodymium magnet and a Pakimer (a double terminated clear quartz crystal with natural petroleum pocket and enhydro bubble) from her. I also found a very nice fossilized fish impression at one vendor and an amber encased insect at another vendor. Two other vendors had some beautiful, large pyrite crystals.

Sunday Nov 6 the Telescope Team consisted of: Terri and William with the Astroscan, Mike and Ofelia with his meteorites, Sam Insana had his telescope, Paul again attended and helped out with set up and take down, and Don brought his scope again.

Sam writes: On November 6th, PAS helped with the Rock O Rama exhibition in Black Canyon City. Sam and Don provided solar telescopes. They showed a large

prominence, a solar flare that looped around a magnetic field. No sunspots were seen since we are heading into a solar minimum for the next several years. William showed people the moon. Mike presented his meteorites and Ophelia assisted him.

Terri handed out literature about PAS. Paul Facuna was our carnival barker and helped bring in about 50 people to our area for six hours, from 9 am to 3:30 pm. It was a beautiful day with blue skies and a few clouds. We took turns looking at the dozens of booths containing meteorites and gems and minerals. We were also provided food and drink. Alex and Diane and their puppy dropped by at the end to check things out (See photo).

Paul F. writes: Sunday morning and all day there were a few small, thin clouds in the sky so solar viewing was good. The view of the sun through Don's scope was again the same as yesterday with no sun spots visible. A nice solar flare could be seen through Sam Insana's PST at the 6 or 7 o'clock positions and at times some small flares could be seen at the 2 o'clock position. The moon could be seen in the afternoon and again the view of the moon through William's telescope was rather washed out because of the brightness of the sun. Even though the view was not very good people, especially children enjoyed looking at it. People stopped by to look through the scopes at the sun and moon, look at Mike's meteorite collection, listen to his presentations on meteorites, and get information on PAS. The young man again came and listened to Mike's astronomy and astrophysics lecture. One person who viewed the sun through the scopes began telling us about the nice night time view of the sky at their mine, about his prospecting for precious metals using his eight metal detectors, and about searching for and finding his neighbor's wife's diamond ring she had lost doing yard work several years before. He was the most interesting person I met during the two days I assisted. I had a very good time assisting for the two days.

Terri adds: I wish to thank my wonderful Telescope Team for braving the sun, the heat (it was a rather warm event), the chill (when the breeze came up and tickled the back of our necks), and being there to help with set up, take down, and sharing the love of our hobby with everyone who attended this event. Many of the vendors stopped by to look through the various

scopes throughout the weekend (drawn over by me - as i walked around and told them to come see what we have to show them). We had a few attendees mention that they never knew the Moon was visible during the daytime. Overall, it was a very successful and fun event. Thank you also to Darlynn (DeeDee) for inviting us to do this event, this year. DeeDee took over for Susan, who did the managing of this event last year. Thank you for having PAS there!



William, Terri, Mike and Ofelia are seen at the Rock A Rama event on Nov 5. Photo by Don.



This is the grand view of the whole event. PAS is in the center location of this huge parking area. All around the outskirts are the vendors of various gems, minerals, jewelry and more. Photo by Terri on Nov 5.



Mike shares some meteorites at the Rock A Rama weekend on Nov 6. This photo taken by William Finch.



Hiding under the PAS Canopy, from the Sun and extra warmth of the day (L to R) are: Sam sitting by his PST, Paul in front of Don's black scope, Ofelia reading a magazine while seated in front of Don who is in the red shirt standing up, Terri at the front of the image with the white hat and Mike at his table on the far right of this photo. This photo was taken by William on Nov 6.



Mike at Rock A Rama in Black Canyon City set up under the PAS Canopy at the PAS Table. Photo by Alex Vrenios on Nov 6.



Alex brought his camera, and everyone was posing for photos, including the furry 4 legged friends. Photo by Sam on Nov 6.



The PAS Table, in this photo, has William looking for the Moon so we can show it. It was a very thin sliver and a challenge to find in the bright sky. Don is standing up in the background. Mike is chatting with Joey Fuller at the meteorite table. Photo taken by Terri on Nov 5.

Bookmans Telescope Workshop Mar 12

By Terri, Event Manager

This event had five RSVP's, four of whom attended. Steven brought his 10" Dob for which he wanted collimation help. Bruce Wurst brought his collimator and provided a quick fix to get Steven on his way. Hernando Yson attended with his wife and son and their Celestron 6SE. Don Boyd and Alex Vrenios assisted Hernando who stayed around for another hour listening to our conversations at the PAS Table. He also joined PAS this day. Welcome to PAS New Member Hernando!!!

Charles Beaudrot who joined PAS recently, attended to find out what telescope he might want to purchase. He already owns a Celestron Astromaster 130EQ but William and I spent some time in discussion with him. Welcome new member Charles and his wife Virginia!

Linda McDonough attended with her Celestron Astromaster 114 and was assist-

ed by Sam Insana. Also at this workshop from PAS was Rodney who assisted everyone with carrying in their telescope equipment. Thank you Rodney for all your help, and for helping to set up and take down the tables and chairs provided to PAS by Bookmans. After all the telescope owners had been taken care of, the attending PAS Members discussed a variety of topics including dinner for that evening. Many thanks to Bookmans for providing the space within your store to have this event, and thanks as always to the telescope team for assisting with this event. I'm looking forward to the next couple free telescope workshops at Bookmans on April 9 and May 7th. Hope to see you there!!!

Dinner after this event was at Carlos O Briens with Don, Rod, William, Terri, Diane and Alex.

Sci-Fi Movie Trivia:

Men In Black (1997) - The little ball J accidentally sends smashing around MIB headquarters is said by K to be "a practical joke from the Great Attractor". In astronomy the Great Attractor is an actual entity, first detected in 1973, a gravitational anomaly some 250 million light-years from Earth that affects the motion of every galaxy within hundreds of millions of light-years.

Contact (1997) - William Fichtner's character in the film, a blind astrophysicist with enhanced hearing as a result of his condition, is named Kent Clark, a play on the name of Superman's alter ego, Clark Kent. The character is based on a real-life blind SETI scientist, Kent Cullers.

PAS Social of April 15

By Terri, Event Manager

The PAS Social, which is the Party of the Year, has once again been a success! The party began with a potluck around 5pm. We had some great ribs, more pizza than everyone could eat, rotisserie chicken, some great sliders and a nice collection of desserts and more. Thank you to all who brought food to share.

The games began about 6pm. Bruce and Ed Wurst set up the dart game outside Mike's back door. This year we had five dart boards, so the game went really fast. There were ten people competing in the dart game: Bruce Wurst, Ed Wurst, Terri Finch, Rodney Fong, Paul Facuna, Mark Johnston, Howard Moneta, Sam Insana, Mike Marron and Frank Insana. The game progressed through 3 rounds - competition was intense and scores were high - thanks to everyone who played.

Concurrent with the dart game was the bean bag toss, hosted by Sam Insana and Vera Stiesmeyer with 15 players: Mark and Shirley Johnston, Paul, William, Mike, Sam, Ed, Howard, Don Boyd, Terri, Bette Wurst, Bruce, Alex Vrenios, Vera and Frank. The scores for this game were also high after 3 rounds. Thank you Sam for bringing it along and providing some great fun.

The games concluded about 7:30 and we set up for the White Dwarf Gift Exchange with ten players. Each player provided a wrapped, disguised gift around \$20 in value. In this event, gifts are exchanged, but can also be "stolen" as an added wrinkle. Gifts this year ranged from AZ Science Center tickets to books and DVD's to a sky atlas. Eric Steinberg and Ora Kurland also arrived around that time.

Awarding of prizes followed the gift exchange. First was the bean bag toss won by Frank Insana receiving a Star Trek Puzzle provided by Sam. 2nd place was Vera,

distantly followed by everyone else. Next came the dart game won by Bruce who received a mug donated by Paul Facuna.

Finally came the door prizes (not necessarily astronomy-related), donated by various members, including a number given by Alex. 15 members joined this party at the beginning and were eligible for door prizes. Shirley won first and chose a star mug donated by Alex. We drew one more



Ed is taking his turn stabbing the dart board. There's a dart in motion in this photo. Photo taken by William.



Terri takes her turn at the Bean Bag Toss. Sitting with the red flannel shirt is Ed, and then behind Terri is Paul on the couch on the left and Bette on the right. Photo by William.

BRUCE 20	✓ HOWARD 16
ED 11	SAM 20
TERRI 8	MIKE 6
RODNEY 8	FRANK 6
PAUL 14	
MARK 16	

The Dart Game had some stiff competition this year. Coming in in 2nd place we had a tie with a score of 16 of Howard and Mark. But hitting that "20" on the Dart Board has Bruce taking home the 2017 Dart Game Trophy. Photo by Terri.



Paul took his shot at the 5 dart boards. It was a quick game with only a few rounds. And we were done before dark. Photo by Alex.



Terri playing Bean Bag Toss game in Mike's home in Carefree for the 2017 PAS Social on Apr 15 2017. Photo by Don Boyd.



As the Dart Game progresses, it is a very close game. And this year, everyone is shooting so well. Here we have, lined up for throwing darts (L to R) Mike, Bruce, Paul, Terri, Howard and sitting down in the back, Mark. Photo by Don.



Dinner in the living room at Mike's home in Carefree has (L to R) Mark (in yellow) & Can't see Shirley behind Mark and Don behind Shirley, Bruce, then Ed, Bette with the baseball cap, Alex standing up, Paul, and then Vera on the end. Dinner was very good. Photo by Terri Finch.



In the kitchen, the rest of the group was enjoying food from the potluck. Photo by Terri.



Mike tosses the bean bag. In the background is Bette, watching the game. Photo by William.



The White Dwarf Gift Exchange was fun this year. Paul won the items in this photo and Sam won a new eyepiece case. It was a lovely party. Photo by Alex Vrenios.

ticket, won by Bette who chose a Star Trek notepad donated by Paul.

The party then broke up around 9 with some of the members leaving and others sticking around to watch the movie "Dr. Strange" - too loud for some of us so we stayed in the kitchen and socialized until late night.

Many thanks to all who helped make this event a success: Ed and Bruce with the Dart Game, Sam and Vera with the Bean Bag Toss, all who helped rearrange the living room for the White Dwarf Gift Exchange and those who donated door prizes; and thanks of course, to the 17 attendees who made the event a success.



Frank takes 1st place in the 2017 Bean Bag Toss competition. Photo by Sam.

Palo Alto		Palo Alto	
MARK 6, 8 (12)		BRUCE 3, 4, 8 (15)	
SILVER 3, 6, 9 (18)		ALEX 6, 5, 7 (15)	
PAUL 7, 2, 5 (14)		VERA 10, 7, 9 (26)	
WILLIAM 5, 6, 4 (15)		FRANK 3, 12, 6 (27)	
MIKE 9, 1, 9 (19)			
SAM 4, 3, 7 (14)			
ED 9, 5, 8 (22)			
HOWARD 4, 5, 9 (18)			
DON 2, 4, 8 (14)			
TERRI 6, 4, 9 (19)			
BETTE System Mechanic (17)			

For the Bean Bag Toss we had the top two places running neck and neck. Vera took 2nd place with 26 points and the Winner was Frank with 1st place and 27 points. Photo by Terri.

Fireworks in Carefree July 3

By Terri, Event Manager

This year's fireworks event was quite hot, but otherwise nice. Attending were: William and Terri Finch, Don Boyd, Leah and Avinoam Sapir, Ron Walker, Kevin, Alex Vrenios, Sam Insana, Mike and Aubrey (Mike's sister from Michigan) Marron and Paul Facuna. A few other members RSVP'd but weren't able to make it.

After dinner, we socialized and then had an Ice Cream Birthday Party for William (birthday July 5th) and Don (birthday July 18th). We all enjoyed one of the 6 types of ice cream and popsicles brought by the attendees of this party.

About 8:45 pm, we headed out to the end of Mike's driveway to watch the fireworks. The air had cooled and winds were calm with a slight breeze now and then. The

fireworks began at dark - a really excellent show this year about 40 minutes long - notable for the absence of storms, lightning, rain, high winds or dust storms. .

At the end of the show we set up in Mike's living room to view a movie Mike had recently acquired: "Live, Die, Repeat." Most of the members went home after the movie but a few of us hung around for about an hour longer before we departed.

Many thanks to everyone who provided food and frozen treats for this event. Thanks to all who participated in wishing William and Don a Happy Birthday to Sam for the card and to Mike for hosting the party. Looking forward to next year's Fireworks and Popsicle party, July 3rd.



Don & William stand in Mike's kitchen waiting for everyone to finish singing "Happy Birthday" to them.. Photo by Terri Finch.



Sam took this awesome photo of fireworks as seen from Mike's home in Carefree on July 3.

Planetarium Show in Cave Creek July 16

By Terri, Event Manager

It was a very hot day in Cave Creek when several PAS Members met at the Sesame Inn before the planetarium show at Ron Walker's Star Barn. We had a good, filling lunch there with Mike Marron, Sam Insana, William and Terri Finch, Alex and Diane Vrenios and Don Boyd, heading afterward to the planetarium to fill our minds with Astronomy. We saw the newly created show "Galaxies, Nebulae and Star Clusters... Oh my!" The show was fun and information-packed, running about and

hour and 10 minutes. After the show, the group spent some time with Ron before heading back to our oven-like vehicles. Many thanks to Ron for a fun planetarium show!

The Star Barn is open free to anyone who is a current PAS Member. We keep Ron for ourselves, so if you want to attend these FREE events, you must be a PAS Member to do so. See the Private PAS Calendar for show listings.



This is PAS at The Star Barn. Photo taken by Sam.

Sci-Fi Movie Trivia:

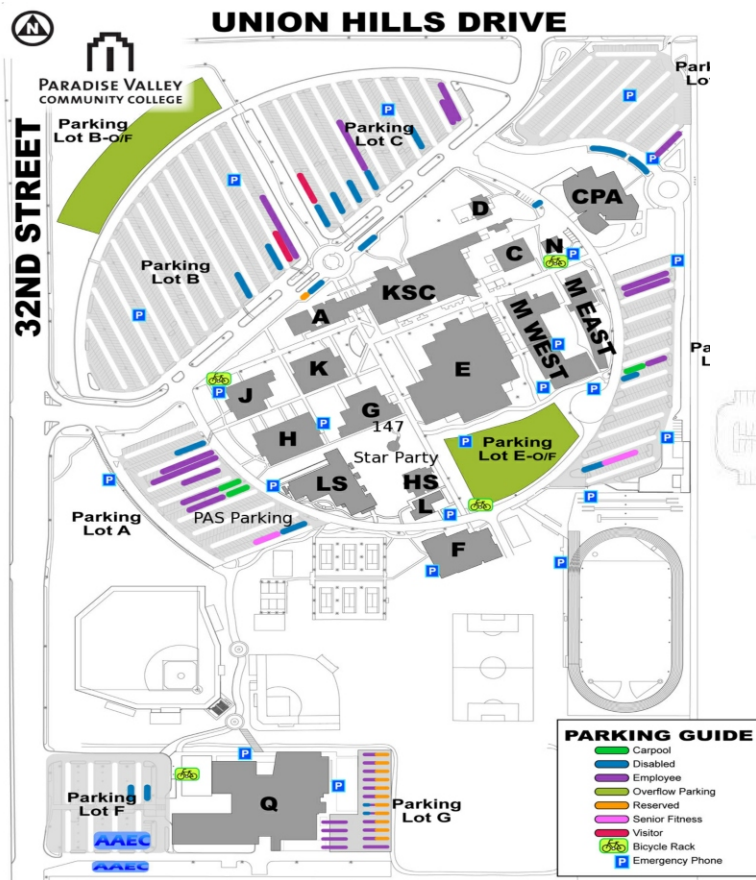
Contact (1997) - The character of Dr. Arroway was modeled after two of the pioneering radio astronomers of the 1930s

and 1940s, Grote Reber and John Kraus; both men were ham radio operators at an early age. Another model for the character's

work was real-life SETI researcher Jill Cornell Tarter.

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

PAS Meetings are held on Thursdays in Room LS-203 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>

Sept 7: Mini Presentations on "Aug 21st Solar Eclipse Experiences"

Oct 5: Kai Staats "LIGO - Gravitational Waves"

Change in room at PVCC for Oct 5 Meeting: KSC 1000A

Nov 2: Dr. David Williams "The Psyche Mission"

Dec 7: Steven Desch "Meteorites and Jupiter's Cleaving of the Solar System" + PAS Astronomical Equipment Yearly Swap Meet - Bring your astronomy items to sell at the swap meet.

September 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2 <i>Planetarium Show</i>
3 <i>Planetarium Show</i>	4 <i>Planetarium Show</i>	5 <i>Private SIG Meeting</i>	6	7 <i>PAS Meeting</i>	8 <i>CityScape Movie</i>	9
10 <i>Telescope Workshop</i>	11	12	13	14 <i>Public Star Party</i>	15 <i>Private Star Party</i>	16 <i>Planetarium Show</i> <i>Private Star Party</i>
17 <i>Planetarium Show</i>	18	19	20	21 <i>Telescope Workshop</i>	22	23 <i>Planetarium Show</i> <i>Free Lecture</i>
24	25	26	27	28 <i>Meeting</i>	29	30 <i>Astronomy Day</i>



The 2017 Solar Eclipse Across America

By Teagan Wall

On August 21st, the sky will darken, the temperature will drop and all fifty United States will be able to see the Moon pass—at least partially—in front of the Sun. It's a solar eclipse!

A solar eclipse happens when the Moon passes between the Sun and Earth, casting its shadow on Earth. Sometimes the Moon only covers up part of the Sun. That is called a partial solar eclipse. When the Moon covers up the Sun completely, it's called a total solar eclipse. As our planet rotates, the Moon's shadow moves across Earth's surface. The path of the inner part of this shadow, where the Moon totally covers the Sun, is called the path of totality. The path of totality on August 21 stretches from Oregon to South Carolina. If you happen to be in that path, you will be able to experience a total solar eclipse! If you're in any of the 50 United States during this time, you can see a partial solar eclipse.

No matter where you'll be for the eclipse, remember that SAFETY is very important. Never look at the Sun when any part of it is exposed, like during a partial

eclipse! It can hurt your eyes very badly. If you want to view the eclipse, you can buy special eclipse glasses. Go the [NASA 2017 Eclipse Safety](https://eclipse2017.nasa.gov/safety) website to learn more about what glasses to buy.

If you are in the path of the total eclipse, you may look directly at the eclipse only when the Moon has completely covered the Sun. This is called totality, and it lasts a very short time. You must be sure to put your eclipse glasses back on before the Sun peeks out from behind the Moon.

You won't be the only one watching this event! NASA scientists will use this eclipse to study our Sun. During a total solar eclipse, we can see the Sun's atmosphere, called the corona. Usually the Sun is so bright that we can't see the corona. However, when the Moon blocks out most of the Sun's light, we can get a glimpse of the corona.

The surface of the Sun is about 10,000 degrees Fahrenheit, but the corona is much hotter. It's about 2 million degrees Fahrenheit! The eclipse gives NASA researchers the chance to learn more about why the

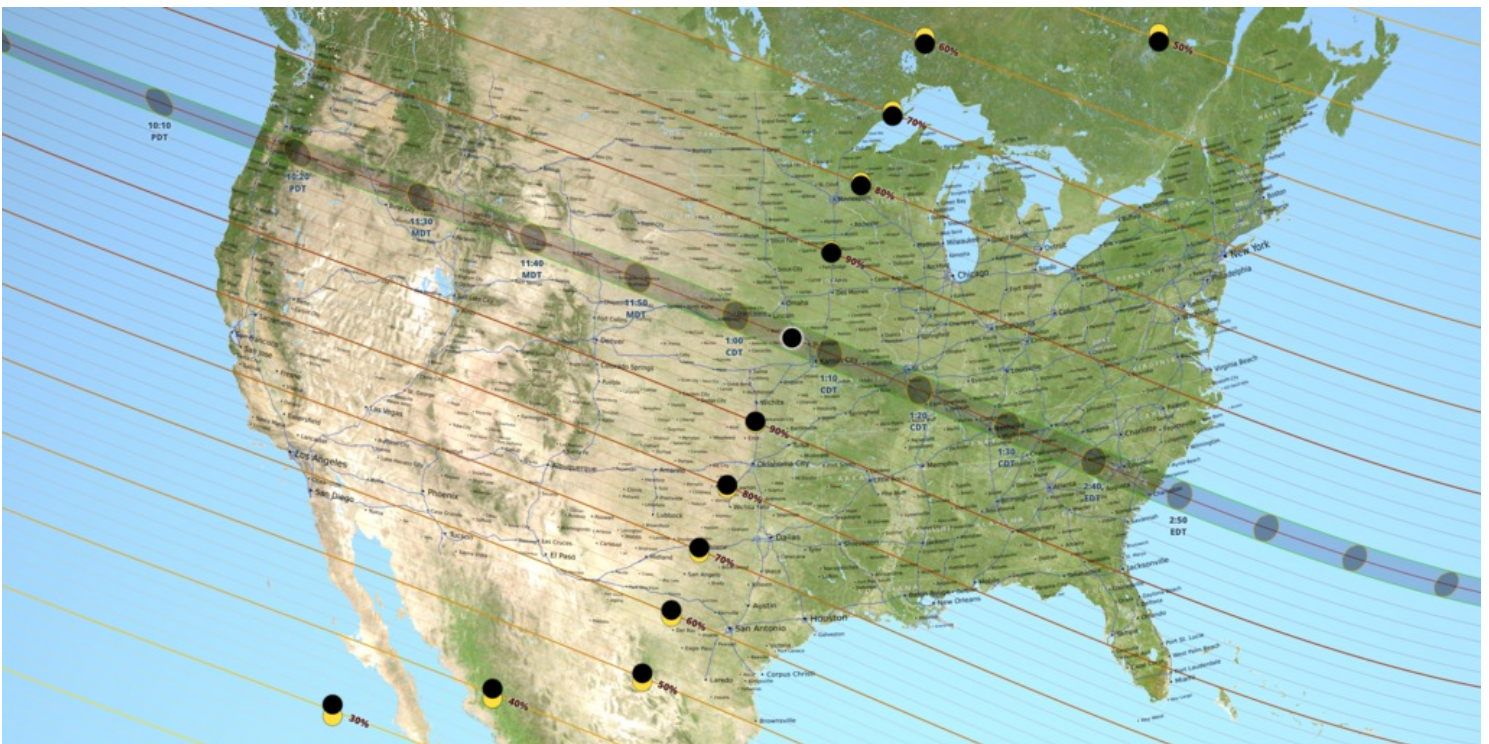
corona is so hot. In fact, while the eclipse will only last about two to three minutes in one place, scientists have found a way to have more time to study it.

NASA will use two research jets to chase the eclipse as it crosses the country. The jets will fly very high, and spend seven minutes in the shadow of the Moon. Researchers are using jets to help look for small explosions on the Sun, called nanoflares. These nanoflares may help to explain the corona's extreme heat.

Whether you're watching with eclipse glasses from the ground, or in a NASA jet from the sky, the 2017 eclipse should be quite a show! It's a fun reminder of our place in the solar system, and how much we still have to learn.

To learn about what eclipse glasses to buy and other eclipse safety guidelines, visit: <https://eclipse2017.nasa.gov/safety>

To learn more about solar eclipses, check out this NASA Space Place video: <https://spaceplace.nasa.gov/eclipse-snap>



A map of the United States showing the path of totality for the August 21, 2017 total solar eclipse. Image credit: NASA's Scientific Visualization Studio

National Astronomy Day at Arizona Science Center Apr 29

By President Sam Insana

I wish to thank all of our PAS members, Don, Peter, Paul F, Terri, William, Mike and Storm who took part along with me in National Astronomy Day at the Arizona Science Center. It was a long, grueling day from 9 am to 9 pm, but well worth it. We had hundreds of children and adults come by and look at sunspots and solar flares during the day and then Jupiter and the Moon at night along with Mike's meteorites which were the usual hit. Our contact, James Enos, gave us a high profile, so that many ASC customers came outside to enjoy our astronomy outreach. He even mentioned PAS to Fox news during an interview that morning. ASC also provided us with much needed cold water, chips for a snack, and pizza for lunch.

Two days earlier, Janet Chapman had called to tell me her neighbor Wes Terry wanted to donate his telescope to PAS, hoping we could give it to someone who needed a beginners scope.

I drove out to her apartment the same afternoon, and picked it up. Terri Finch then set up a free raffle at ASC outside. The winner had to be present at 8 pm for the drawing. Monica, a teenager who loves astronomy but didn't have a scope, won and her father helped carry the scope to their vehicle. They may come to our telescope workshop in one week if they have questions about it.

I handed out dozens of cards to people wanting information on our club's many activities and Terri signed up two new members. It was a good venue in south central Phoenix, having a lot of diversity among the attendees.

Terri writes: Many thanks to Mike for bringing the 2 canopies for shade. For the

daytime portion of this event, I had brought the Solar Demo provided by Night Sky Network. It has a plastic half of the Sun that use magnets inside and pipe cleaners demo the prominences and flares. This turned out to be very popular with the public.

For the evening, I brought another Night Sky Network item: the Moon Demo, which uses - ready - flour, water, hot chocolate and a styrofoam meat tray to make the surface of the Moon. With it, I showed how the lighting on the Moon's surface is better for viewing through a telescope during any phase of the Moon except full.

I also had over 500 copies of the Who Are We page with a May Star Chart on the back; I was out of them by the time we left that night. I estimate over 1000 people came to Heritage Square (including a wedding party) and stopped by our scopes and PAS table.

I wish to thank the telescope team and especially James Enos, the Planetarium Director at ASC for having us at this event. He took great care of all the PAS Members and did a fantastic job of setting up and managing the event. James was there early morning until pack up time for PAS which was about 9:30pm. I look forward to the next Astronomy Day event and to future



Sam stood by the Telescope we were raffling off at this event. Photo taken by Terri with Sam's cell phone.



Paul assisted Sam by helping with which ever scope Sam wasn't at. Here we see Paul assisting with Sam's 8" scope. Both of Sam's scopes had lines at them all day and into the night.

Photo by Sam.



And Pete attended the evening portion of this event with his 12" scope, and he had a crowd for most of the evening. Photo by Terri.



In the evening time of this event, Storm joined us with her telescope, an 8". Photo by Terri.



Paul is assisting the public with seeing the Sun through Sam's scope. We see the Arizona Science Center in the background of this photo.

Photo by Sam.



Sam had his PST set up and a crowd around it most of the day. Photo by Sam.

PAS events at ASC.

James writes: "I thought this event was a great time! This was my first time organizing a big event like this on my own, but I think it really came together into something pretty cool. We had some hiccups with our first guest presentation (Kai Staats and his film about LIGO/Gravitational Waves), but it ended up just fine and Dr. David Williams' presentation was fantastic as well. I think everybody enjoyed the various partners (Saguaro, Ronald Greeley Center for Planetary Studies, ASU's Low-Frequency Cosmology Group, The Superstition Spacemodeling Group, etc), and the telescope support provided by PAS was a fantastic way to both introduce and conclude

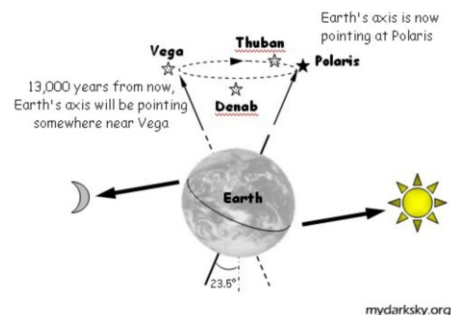
astronomy day for all of our guests. I don't have the exact data on the number of attendees; I'll try to get that info! I'd love to see any photos you or your team may have taken!



Here's the set up of this event's PAS Table.
Photo by Terri.



For the evening portion of this event, Don used his scope again. Photo by Terri.



Precession – the slow and gradual shift of Earth's axis through a 26,000-year cycle. When viewed from outside and looking down onto the Earth from the north, the direction of precession is clockwise. When standing on Earth looking outward, the axis appears to move counter-clockwise across the sky.

mydarksky.org



Mike was also present for the evening portion of this event. In the background of this photo, we see Pete & Sam with their scopes. Photo by Terri.



The temperature this day was very pleasant, not too hot and not too breezy. This is Sam's scope with Don off to the left of the photo. Photo by Sam.



Here we have Sam, the Raffle Scope and the Winner of the Raffle, Monica who was so happy to have won the telescope. Photo by Terri.

What's Up For September?

By Rod Sutter

Planets

Name	Date	Rise	Set
Mercury	09-15-17	04:51	17:50
Venus	09-15-17	03:58	17:17
Mars	09-15-17	04:54	17:52
Jupiter	09-15-17	08:43	20:00
Saturn	09-15-17	13:11	23:11
Uranus	09-15-17	20:01	09:03
Neptune	09-15-17	18:02	05:29
Pluto	09-15-17	02:59	01:06

All Times Arizona Time

Bolded dates and times are nighttime objects

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September 15 2017

Sunrise: 06:11

Sunset: 18:33



Full: September 6



Q3: September 12



New: September 19



Q1: September 27

PAS Awards Ceremony Apr 27

By Terri, Event Manager

It was a small party this year, but those who attended were appreciated. This year's theme was different from previous awards ceremonies, being more of a member appreciation event honoring one person.

We started out the evening with the following PAS attendees: Sam Insana, Bruce, Ed and Bette Wurst, William and Terri Finch, Howard Moneta, Mike Marron, Linda and Mike Cawley, Alex and Diane Vrenios, Rick Cunningham, Rodney Fong, Bill Powell, Ron and Julie Walker and Don Boyd, joined later by Eric Steinberg. While we enjoyed the pizza that PAS provided, we listened to music that was recorded by Ron Walker at the March 4th PAS Music Jam and watched a slideshow of 2016 PAS events.

We gave out 10 NSN Pins. The Night Sky Network provides Pins for public outreach, though this year they changed their criteria to require five events rather than three; additionally, PAS raised that number to ten, so fewer pins were given out than previously. The event criteria also changed this year to only include telescope workshops, public star parties, solar events, Comicon and Leprecon. Honorable Mentions went for 9 events by Ed Wurst, 8 events by Rick Cunningham, 7 Events by Howard Moneta, and 6 Events by George Sabo, Mark Johnston and Earl DeLong. Pins were given to Pete Turner for 12 events, Paul Facuna for 13 events, Bruce Wurst for 14 events, Alex Vrenios for 17 events, Rodney Fong for 18 events, Mike Marron for 21 events, Don Boyd for 27 events, Sam Insana did 27 events, William Finch had 33 events and Terri Finch took

top attendance with 35 events. Next were the results of the bean bag toss at the PAS Social of Apr 15th. There were 15 players - 2nd place was taken by Vera Stiesmeyer and 1st Place by Frank Insana. Sam accepted Frank's award in his absence.

The dart game plaque came next. 2nd Place went to Howard Moneta and Mark Johnston both tying at a score of 16 with 1st Place went to Bruce Wurst with the first ever score of 20.

The next item on the agenda was the Member Appreciation Award. To make this more interesting, President Sam Insana and Vice President Alex Vrenios read the list of criteria polled from PAS members along with their votes, each taking a turn, describing the member who was being appreciated on this night. Between each reading of an item, there was a pause to allow all present to think about who this member might be. The answer was Don Boyd, who received his member appreciation award while a slideshow about his PAS tenure played in the background. A ten-minute break followed to enjoy a cake provided by Bill Powell, followed in turn by a documentary named "Death of a Star", provided by Alex. I wish to thank everyone helped make this event go smoothly, along with all who took photos. The event was enjoyed by all and underscores how much PAS appreciates its members. Maybe next year, you will be the Appreciated PAS Member. We will see you at the next awards ceremony which is scheduled for Apr 26 2018.



Using Don's Camera, Bruce took a photo of Don receiving his Member Appreciation Award. Don Boyd is the Member being Appreciated at the 2017 Awards Ceremony.



At the Awards Ceremony, Frank Insana was awarded 1st Place for the Bean Bag Toss, however, he couldn't attend to get the award. So, on May 4th, when Frank was in town, his dad, President Sam Insana, gave him the award. Photo provided by Sam.

Bookmans Sidewalk Astronomy Aug 5

By Terri, Event Manager

The event started just as the Sun was setting behind the Bookmans building. Attending on this very hot muggy night were Sam Insana with his 8" telescope, Roger Anzini with his 16" telescope, William and Terri Finch and Rodney Fong. Sam and Roger set up in the parking lot across the way from the front of the store where we had our PAS Table with handouts. Rodney was really helpful with loading and unloading vehicles and being the runner between the two locations at Bookmans.

We also had a surprise visit from Kevin Harcey and Kevin Gray who sat with us at the PAS Table for most of the event. An old friend of William and Terri's named Jonathan stopped by and chatted with us for the rest of the evening.

I estimate that we had about 250 people this night, not including those who just walked by and went into Bookmans. It was a great turnout for such a muggy and hot night.

I wish to thank my Telescope Team - It was a nice surprise that Roger joined

us with his scope. The objects visible this night were Jupiter, until it set, Saturn and the Moon. The Moon was mostly full, bright and beautiful all night long rising over the Walgreens building. I look forward to the next event like this one on Apr 28, 2018. Remember, in order to have this type of event, there has to be a Moon plus one other bright object in the night sky on a Saturday that isn't already scheduled with some other PAS event. See you there!