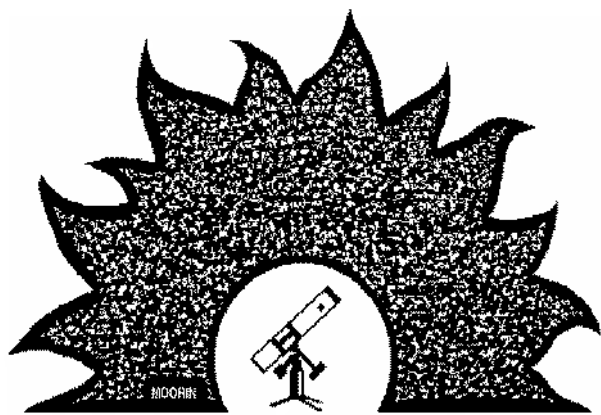




PAStimes

Phoenix Astronomical Society

www.pasaz.org

September 2016

Volume 68 Issue 1

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

September PAS Meeting

By Terri, Event Manager

The first Meeting of the 2016/17 PAS Year will be on September 1st, beginning with socializing at 7:00 pm. It's PAS Members and Guest Night, so bring family or a friend and enjoy an evening of short presentations which will begin at 7:30pm after

a few brief announcements. The current line up of presentations will be Earl DeLong with "Eyepieces," and then Alex Vrenios and Sam Insana with "2017 Total Solar Eclipse PAS Field Trip Update." If you'd like to do a talk, sign up with Sam to

do a 5 - 40 minute presentation. Bring a snack to share; bottled water will be provided by the PAS Snack Fund - please donate to the snack fund if you don't bring snacks to share. We would love to see everyone attend!

New Vice President Alex

By Alex Vrenios

I will be the new PAS Vice President, come September. My role, as I understand it, is to support the agenda of our President. Sam has a lot of ideas, many of which focus on citizen science projects. Last year, for example, he asked us to record details about the meteors we saw during the Geminids. He then combined all of our notes and posted the data on the International Meteor Organization's website. I helped in this effort by printing report forms, and rules and examples sheets for the many participants.

I will continue to support such programs because I believe that the more people become exposed to the scientific process, the more they will become inter-

ested in and read about the science of astronomy, and the more they will appreciate what they observe in the sky.

I've been interested in amateur astronomy since childhood, and in photography, computers, electronics and radio communication all my adult life. My latest project, combining many of these interests, is radio astronomy. I've completed five of the projects required for the Astronomical League's radio astronomy observing award and I have a presentation on that subject scheduled for February 2017.

This is a terrific club with interesting members and forward thinking leadership. I consider it an honor to serve in this capacity.



Alex Vrenios is the new PAS Vice President. This photo was taken by Bruce Wurst at the Apr 14 2016 PAS Awards Ceremony.

PAS Membership Dues are Due in September

By Terri, Event Manager

Dues are collected September through December, for 2017 memberships and renewals. Though payments are technically for 2017, Some upcoming events, including the Luminaria at DBG, require you to be paid up before participating. You can give your membership dues with a membership form to Terri Finch, Sam Insana or Eric Steinberg. If you were informed that you are a current member to the end of 2017, then you don't need to pay again. If you are

unsure of your status, you can email Terri Events@pasaz.org or ask at the September PAS meeting to find out. Membership forms will be provided at the meeting, however, if you want to fill your form out prior to the meeting, go to this link <http://www.pasaz.org/forums/downloads.php?do=file&id=129> and download the form and turn it in preferably with a check (though cash will not be refused) to one of the Officer's listed above. We hope to see

all the current 2016 members renew to 2017. Remember, your membership dues are critical to maintaining the club and keeping it going and your timely renewal makes the paperwork easier on those doing the updating. As a quick reminder, anyone who hasn't paid for their 2017 membership by Dec 31, 2016, will be removed from the roster. Thank you in advance for renewing.

Phoenix Astronomical Society Contact Info

President	Sam Insana	602-315-4750	President@pasaz.org
Vice President	Alex Vrenios	602 789-6556	VicePresident@pasaz.org
Secretary	Kevin Witts		Secretary@pasaz.org
Event Manager	Terri Finch	602-561-5398	Events@pasaz.org
Treasurer	Eric Steinberg		Treasurer@pasaz.org
Newsletter Editor	Don K. Boyd		Editor@pasaz.org
PAS Host	Rodney Fong		
Librarian	Rod Sutter		Librarian@pasaz.org
Member at Large	Jenny Weitz	602-787-6818	jennifer.weitz@paradisevalley.edu
Member at Large/Equipment Manager	Bruce Wurst	602-971-3555	PastPresident@pasaz.org
Webmaster	Chris Johnson		Webmaster@pasaz.org
Phoenix Astronomical Society	3039 W Peoria Ave	#102-188	Phoenix AZ 85029

September 2016 Upcoming PAS Events

By Terri, Event Manager

Check out these and other events on the PAS Calendar: <http://www.pasaz.org/forums/calendar.php>

Sept 1: PAS Meeting at PVCC in Room LS 204. Come enjoy a wonderful presentation by Ted Blank. 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=2084&day=2016-9-1&c=1>

Sept 8: 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 of your telescope. Bring your telescope and accessories to this event. We meet in 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=2011&day=2016-9>

[8&c=1](#)

Sept 15: PAS Meeting. Details to be announced at this link: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2108&day=2016-9-15>

Sept 18: 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 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=1902&day=2016-9-18&c=1>

Sept 19: ASU Astronomy museums field trip for PAS members. More details will be provided, soon, through the PAS ListServ, and at the September 1st PAS Meeting.

Sept 22: Huge public star party at PVCC Black Mountain Campus, 60th Street and Carefree Hwy from 7pm to

10pm. 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. More details: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2085&day=2016-9-22&c=1>

Sept 29: Dr. Rogier Windhorst is our guest speaker. This is a Special Date change to accommodate the guest speaker who couldn't attend on Oct 6. His topic will be the "James Webb Telescope". We meet in LS-205. Doors open 6:30 to set up, and then 7pm we have socializing, snacking & Guest Speaker set up, then we begin the meeting promptly at 7:30pm.

Bring a snack to share. This is our General Meeting so there will be a Raffle, and the usual announcements at this PAS Meeting. Hope to see everyone there. <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2003&day=2016-9-29&c=1>

Congratulations to 2016/17 PAS Officers

By Terri, Event Manager

Congratulations to our new and returning officers for the 2016/2017 PAS year.

Returning Officers:

Sam Insana as President for one more year

Kevin Witts, Secretary

Eric Steinberg, Treasurer

Don Boyd, Editor

Rodney Fong continuing as Host New:

Alex Vrenios as Vice-President (Howard Moneta stepped down to concentrate on core astronomy)

Other Positions:

Terri Finch continuing as Event Man-

ager

Jenny Weitz continuing as Member-at-Large

Bruce Wurst stepping in as new Member-at-Large

Thanks to all for giving your time to PAS and to all those who voted in the elections

President's Corner

By Sam Insana, PAS President



Sam Insana is the 2016-2017 PAS President. Congrats Sam! Photo by Terri Finch, taken at Carlos O'Briens Mexican Restaurant on May 15 2016 for Mike's Birthday Party.

September starts our new season for the Phoenix Astronomical Society. I hope all of our members come out and enjoy our meetings with guest speakers, star parties and telescope workshops. There will also be two exciting field trips: On a weekday in September, several PAS members will be going to the ASU main campus to visit the Center for Meteorite Studies, the Lunar Reconnaissance Orbiter Camera Operations Center, the Mars Space Center and the Ronald Greeley Center for Planetary Studies. The last week in September is the Flagstaff Festival of Science (not a PAS event). It is a 10 day event with over 90 activities

including lectures, field trips, open houses, stargazing, hands on science projects and more. Check out the details by going to www.scifest.org. My favorites in the past few years have been the star party in Buffalo Park with over 30 telescopes, the open house at Lowell Observatory, the hike around Meteor Crater, the open house at the Northern Museum of Natural History and the Science Fest in Wheeler Park with about 50 exhibitors. Turn off the TV and turn on to great astronomy activities this month.

Exciting September Events

Data gathered by Terri, Event Manager

The events listed here are mostly free and open to the public. They are not PAS events, but everyone may attend them. An RSVP is highly suggested, if asked to do so.

Flagstaff Festival of Science

Sept 23 to Oct 2: <http://www.scifest.org/>

This is a 10 day yearly event that has over 100 free activities. Some events may have a fee to attend, so read about them carefully. There are more events than are listed here, but some astronomy-related highlights of this year's event are:

Sept 24: Protecting our home from asteroids (all 10 days), Sunset Crater, Flagstaff Star Party (see below), NAU Campus Observatory.

Sept 25: Playing with Atoms, NAU Campus Observatory.

Sept 26: Earth's Changing Surface, Mars Rover.

Sept 27: Changing Martian Landscape, Book Club: The Martian.

Sept 28: Eye on the Sky at Lowell Observatory,

Sept 29: The Martian - Movie.

Sept 30: STEM education, Our Changing Views of Ceres, Origin of Meteor Crater, NAU Campus Observatory.

Oct 1: Landscape Discovery Expo, National Weather Service (weather affects astronomy), NAU Campus Observatory.

Oct 2: The Martian Panel, Lowell Observatory Open House, NAU Campus Observatory.

Flagstaff Annual Star Party

Sept 22 thru Sept 24

<http://www.flagstaffdarkskies.org/flagstaff-star-party/>
<http://www.flagstaffstarparty.org/calendar->

[of-events/](#)

There are several free lectures given prior to this event each night. One of these lectures has a fee. Please read about the event before you RSVP.

Sept 22, 23, 24 6pm to 6:30pm: Sunset Shadows & Circles

Sept 22, 23, 24 7pm to 10pm Flagstaff Star Party

Sept 22 3pm to 5pm: Telescope Workshop

Sept 22 6:45pm to 7:15pm: A Walk around our Solar Neighborhood

Sept 23 6:45pm to 7:15pm: Asteroid Impacts

Sept 23 5:30pm to 8:30pm: Night Sky Photography

Sept 24 6:45pm to 7:15pm: Discovering New Worlds

2016 PAS GUEST SPEAKER LINE-UP

By Terri, Event Manager, Events@pasaz.org

PAS Meetings are held on Thursdays in Room LS-205 unless otherwise noted. Do you have an idea for a guest speaker? Email Terri the details. Here are the scheduled guest speakers at PAS:

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

Sep 29: Rogier Windhorst, ASU "James Webb Telescope"

Oct 6: Mike Marron "Upcoming Astronomical Disasters"

Nov 3: David Williams "Dawn Mission to Vesta and Ceres"

Dec 1: Suzanne Morrison "It's Raining Rocks!"

What's Up For September?

By Rod Sutter, PAS Past President

Name	Date	Planets	
		Rise	Set
Mercury	09-15-16	05:51	18:07
Venus	09-15-16	08:21	19:45
Mars	09-15-16	13:26	23:02
Jupiter	09-15-16	06:51	18:57
Saturn	09-15-16	12:19	10:28
Uranus	09-15-15	19:49	08:42
Neptune	09-15-16	17:55	05:17
Pluto	09-15-16	14:49	00:27

All Times Arizona Time

Bolded dates and times are nighttime objects

PAS Social Jan 30

By Sam Insana, President

I want to thank Terri for doing a great job with the annual PAS Social at Mike's house last Sat night. I know she was not feeling 100% but all the work she did before the event allowed the Social to be as good as ever. I also want to thank Mike for his hospitality, Bruce and Ed for the Dart Game, Vera and Frank and Andie for handling the Bean Bag game, Don for getting there early and helping to set up, and Rodney for helping clean up. I also want to thank everyone who attended for bringing great food and drinks and gifts. All the PAS people at the event were a delight to party with. Thanks to all of you and a special shout-out to Alex and Diane for bringing extra gifts for the raffle.

Terri Finch Writes: Here's how the festivities happened: About 4pm we had socializing until everyone arrived at 4:30pm. We enjoyed many fine foods until around 6pm when we started the games. The games included: 1) Bean Bag Toss (run by Sam and Vera, prizes by Sam). Frank took first place with Mike and Rodney in 2nd.

2) The annual dart game (run by Bruce and Ed). This year, we had a new Dart Game Winner with Ed Wurst taking first place Congratulations Ed!

3) The White Dwarf gift exchange. This is a yearly game with cleverly disguised gifts and lots "stealing" of the gifts back and forth. Everyone had a good time and enjoyed this year's fun gifts.

4) Awards and Door Prizes for the evening. Sam presented a card signed by all the attendees for Mike in gratitude for his hosting the party. That was followed by the door prizes won by Mike, Andi, Dewell and Tree.

Many thanks to Sam for bringing the card for Mike. I think everyone had a great time with great food and activities. I can't wait until next year, when we do this event again. Hope to see all the PAS members at next year's PAS Social!

George Sabo, PAS Member, writes: Terri, that was a super party last night --I had great conversations with a number of

people while eating at the big table and enjoyed darts, though I'm not very good at it. The food was outstanding, too, but I had been at it non stop since 7 in the morning, and when I heard you had an hour game to do and it was after 8 PM, I thought I was going to drop through the floor, so all I could think of was getting home -- I was so



Sam, Vera & Frank running the Bean Bag toss game at the PAS Social on Jan 30. Photo by Terri.



It was a chilly night, so jackets were worn to play the Annual PAS Dart Game. Bruce & Ed ran the game as a team. Many attendees enjoyed the game. Photo by Terri.



Paul Facuna is seen playing the Bean Bag Toss at the PAS Social on Jan 30. Around him (L to R) are Mike, Vera, Bruce, Ed, Bette & Dewell.

beat I could hardly talk to my wife when I got there!!!--she was delighted to hear about the party---PAS is really a remarkable and helpful group of people and I am very glad to be a part of it!! --see you all soon, and thanks, George.



Vera Striesmeyer was at the PAS Social of Jan 30th and won this awesome prize in the White Dwarf Gift Exchange. Photo by Don Boyd.



Mike Marron and Frank Insana sit on the couch at Mike's home in Carefree during the 2016 PAS Social in which Frank wins this awesome Tshirt while playing the White Dwarf Gift Exchange. Photo provided by Don.



Enjoying a very delicious potluck at the PAS Social, we see (L to R) Mike, Vera, Bruce, Ed, Bette & Dewell. This photo was taken by Terri Finch.

Sci-Fi Movie Trivia

Deep Impact (1998) - After discovering the comet, one of the astronomers is killed in a car accident. This mirrors the real life car accident death (July 18 1997, in outback Australia) of astronomer Eugene

Shoemaker, who helped discover the Shoemaker-Levy 9 Comet.

Deep Impact (1998) - One of the NASA officials in the movie is played by Gerry Griffin, who is a former NASA flight

director. Griffin presided over the Apollo 12 mission and later became director of the Johnson Space Center in Houston.

Telescope Workshop PVCC Apr 21

By Terri, Event Manager

We started the event at 7:00 pm in pleasant, jacket-free conditions. We had William and Terri Finch, Rodney Fong, Bruce, Ed and Bette Wurst, Alex Vrenios, Peter Turner and George Sabo attending this event from PAS.

From the public, Brian came to find out what telescope to purchase. He stayed most of the evening and viewed through the 2 scopes outside; he was helped by Bruce, William, Terri and particularly, Rodney.

Wade Williams brought his old but well taken care of and beautifully boxed Mayflower Astronomical Telescope Model 815. He was assisted by Alex and Rodney who along with Brian were quite excited since this was the first unboxing of the telescope. We also had Rita who came by to ask questions about her Meade 10" - new in the box at home but too heavy for her to lift or bring to the event, Bruce and Pete talked to Rita for a long time about how to proceed.

I wish to thank my telescope team. Thanks to George who brought his scope initially to find out how to use it, but later successfully shared views of the Moon and Jupiter with Wade and Brian. We look forward to our next Telescope Workshop at PVCC.

Alex writes: April 21, 2016 PVCC Telescope Workshop review:

Among the familiar faces I spotted a guy with a very old and classy looking hinged wooden box, concealing what I guessed to be an antique telescope.

Wade set the box up on a table and we all gathered around to see what wonderful thing lay inside. It was a Mayflower 3" refractor on an equatorial mount with a wooden tripod - obviously of 1960s vintage. He had a full set of .965 eyepieces, a variety of attachments and a manual. (You read right: he actually had the owner's manual!) Rodney, Pete and I assembled the tripod and attached the head and the OTA. It was a rickety mount, but it held together. We brought it outside, put in a low power eyepiece and dedicated its first light in perhaps many years to the Moon, and later to Jupiter.

This was especially fun for us older folk who remember drooling over such wares in astronomy catalogs but it probably won't be much use in the field. Much like an old British sports car, it's best kept put away and brought out only for special occasions.



(L to R) Alex and Wade by the Antique Telescope brought by Wade. Photo by Terri Finch.



At the back of the room, during the Telescope Workshop of Apr 21, we see a conversation happening around a large telescope that I we think is Bubba (the scope that lives in the telescope dome outside G-147). In this conversation are (L to R) Ed Wurst, Alex Vrenios & Pete Turner. Photo by Terri.

DBG Walk Thru Aug 4

By Terri, Event Manager

On this super humid Thursday evening, Bruce Wurst, along with William and Terri Finch did a walk through with Angelica Elliott at DBG from to scout out possible locations to have the adult education class of Oct 7, 2016. We discussed the lighting situation, which had been a problem in the past and came up with a few ideas on how to adjust it.

We looked at a number of locations, both for the adult education class and for

the Luminaria, including the Stardust Foundation Plaza, the Sonoran Loop Trail, "Space Mountain" and the water tower area (which looks promising) with an eye toward light levels and object visibility.

While there, we stopped to visit with the many presenters along the way who were set up, showing various wildlife: scorpions, spiders, lizards, geckos, and other creatures of the Desert at tables for DBG's Flashlight Tour night.

I wish to thank Angelica for taking us on the Walk Thru, and also I'd like to thank her for letting us do some additional Lumi research helping us to be one step closer to ready for this year's 2016 Luminaria event. Many thanks to William and Bruce for their input about the various locations we visited and discussed for the upcoming Adult Education Class.

Sci-Fi Movie Trivia:

Event Horizon (1997) - The Event Horizon was named after the theoretical boundary surrounding a black hole, within which gravitational attraction is so great that nothing, not even radiation, can escape because the escape velocity is greater than the speed of light. Technically, it is where the physical universe ends and physical

laws no longer apply. So the ship's name is symbolic for its journey beyond the borders of the known universe.

2001: A Space Odyssey (1968) - Poole (Gary Lockwood) was filmed wearing a helmet on the bridge of Discovery because Stanley Kubrick initially had doubts over the scientific possibility of a

person's survival for even an instant in a vacuum; however, data published at the time indicated that such survival was indeed possible, which allowed the emergency airlock re-entry sequence to be shot with the astronauts helmet-less.

Awards Ceremony Apr 14

By Terri, Event Manager

Attending this year's awards ceremony were Alex and Diane Vrenios, Bruce, Ed and Bette Wurst, Christine Mintzmyer, Greg and Elise Schwimer with their son Will Dowdell, Eric Steinberg and his wife Ora Kurland, Mike Cawley, Paul Facuna, Sam Insana, Rick Cunningham, Rodney Fong, Howard Moneta and William and Terri Finch.

Awards were presented by President Sam and Vice President Howard, assisted by Terri Finch, Events Manager.

PAS awarded 22 Night Sky Network pins and certificates with the top 3 winners in Public Outreach being Terri (60 events), William (44) and Kevin Witts (37). PAS also purchased pins for "Top Performers of 2015". For public outreach, pins were awarded to Terri, William and Kevin along with Mike (36 events), Don (33), Sam (27) and Howard (20). Other areas within the "Top Performer" category were "2015 Most Newsletter Articles and Reviews." Terri had 64 articles, Sam had 23, Kevin 11 and Alex 10 (the minimum number for an award).

By email polling, the following were awarded: 1) "2015 Most Active Member" (given a pin and certificate). Sam and Terri tied with 5 votes, followed by Pete Turner with 3 votes while Don and Paul took 3rd place with 2 votes each. 2) "2015 Unsung Hero" (pin and certificate) to Rodney Fong with 6 votes. Honorable mentions went to Don with 3 votes, Paul with 2 votes, and Terri with 2 votes.

3) "2015 Best Presenter" (pin and certificate) to Earl DeLong with 5 votes. Honorable mentions went to Greg Schwimer with 4 votes and Eric Steinberg with 3 votes. 4) "2015 (Most Accurate) Weather Forecaster" to Sam with 7 votes. 5) "2015 Leader of the Club" to Sam with 7 votes followed by Terri with 6 votes. 6) "2015 Most Votes Overall" (pin and certificate) to Sam with 21 votes in, Terri with 13 votes and Rodney with 6 votes.

7) "2015 Overall Top Performer" (pin and certificate) to Terri with a score of 142, Sam with a score of 50 and Kevin Witts in 3rd place with a score of 48.

Next were the 2016 Messier Marathon awards. 1st and 2nd places received a certificate, trophy and prize; 3rd to 7th places received a "2016 Messier Marathon" pin, certificate and prize. First place went to Greg Schwimer with 99 objects successful-

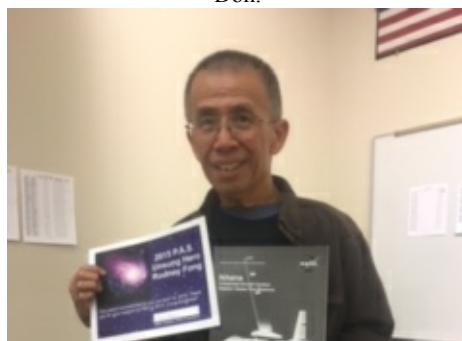
ly identified. Pete Turner took 2nd place with 64 objects followed by Earl DeLong - 39 objects, Christine Mintzmyer and Dewell Howell - 31 objects, Will Dowdell - 28 objects, Sam Insana - 23 objects, Leah Sapir and Alex Vrenios - 6 objects. We also awarded a special Messier Marathon certif-



At the 2015 Halloween Costume Contest in Carefree, Sam Insana took first place and was awarded at this Awards Ceremony a Certificate with his costume in the photo, and a prize from the Awards Ceremony Prize Table. Congrats Sam Watch out for next year's competition! Photo taken by Don.



This year's 1st Place Winner of the PAS Messier Marathon was won by Greg Schwimer. Greg received a special Trophy and a prize from the Prize Table. Congratulations Greg! Photo by Don.



Rodney Fong won this year's 1st place position, voted in by PAS Members as Unsung Hero. Rodney received a certificate and prize. Congrats Rodney. Photo by Bruce.



At the PAS Awards Ceremony of Apr 14, 2015, this was the table of Awards. Many trophies, Certificates, and Pins were given on this night. Photo by Terri Finch.



Ed Wurst won this year's PAS Social Dart Game. Congrats to Ed. Photo by Don Boyd.



President Sam Insana and Member at Large Alex Vrenios surprised Terri Finch with the Distinguished Service Award. Photo taken by Bruce Wurst.



In this photo: (L to R) Sam Insana, Mike Marron, Terri Finch. Sam & Terri award Mike Marron with a surprise Trophy called the "Appreciation Award: Lamp of Knowledge." Thank you so much Mike! Photo taken by Bruce.

Awards Ceremony Apr 14

icate and prize to Will Dowdell for being the "Youngest Messier Marathon Participant."

After the Messier awards came those for the Social. Sam received a certificate for 1st place in the Halloween Costume Contest, appearing as Scotty from Star Trek complete with almost-live Tribble (who also assisted Sam in accepting his prize). We also awarded a dart trophy for 1st place to Ed Wurst.

The last two awards for the night were specially created by Sam and Alex: 1) the "Distinguished Service Award for Sustained Services as Event Planning Manager" given, no surprise, to Terri and 2) a certificate and trophy given to Mike Marron called "The Lamp of Knowledge" for

his many contributions, hours of lectures and events and for sharing his home with PAS over the years for star parties, events and potlucks.

Thanks to: Sardella's Pizza and Wings, M&J Trophies, Bruce (for printing the certificates), along with Sky and Telescope, Celestron, Susan Rubin from DBG, and Alex Vrenios for providing the prizes. Thanks also to those who brought other snacks and water. For the complete list of prizes and who won them, please see this link in the Private Forums: <http://www.pasaz.org/forums/showthread.php?t=950>.

We hope to see all PAS Members at next year's Awards Ceremony!



Will Dowdell, 11 years old, son of Greg Schwimer, not only placed in this year's PAS Messier Marathon, but was the Youngest Messier Marathon competitor. Congrats Will & we hope you compete again next year! Photo by Don.

Telescope Workshop at Bookmans May 15

By Terri, Event Manager

It was a pleasant, slightly hot Sunday afternoon, but nice and cool indoors at the May Bookman's telescope workshop. Attending this event were Lisa Tapp, via MeetUp, who has been trying to get together with PAS (with her scope) for about 6 months, and Yu Li (known as "Li"), who had joined PAS the night before this event at the Roadrunner Park International Astronomy Day.

We had expected more attendees, but it was a still successful day with Lisa and Li.

We opened the event with everyone introducing themselves and talk about their work in the club after which Lisa did similarly about what they wanted to learn. Sam followed with a brief talk about the different types of telescopes and then along with Don, assisted Lisa with her Bushnell North-Star telescope with Li following along. Later, Li spoke at length with Rodney about various telescope purchasing options. George Z. also spoke with us and sought advice about the scope he was planning to purchase Monday night from another PAS Member. In attendance from PAS were William and Terri Finch, Rick Cunningham, Rodney Fong, Sam Insana, Don Boyd, Bruce Wurst, Ed and Bette Wurst, Mike Marron, Joe Aquavella, Alex Vrenios and George Zukauckas. Thanks to everyone who attended and especially to the telescope team members for all their hard work.

Lisa writes: So awesome!!! Thank you so very much :) I am super excited to be able to finally use my telescope!! Have an awesome week! Lisa



Rick, Don and Ed looking very stuffed after over eating dinner. Photo by Bruce.



PAS Members enjoying dinner at Carlos O'Briens after a successful Bookmans Telescope Workshop on May 15. Photo by Terri Finch.



Sam, Alex, Diane at Carlos O'Briens for the after dinner and surprise Birthday Celebration for Mike. Photo by Bruce Wurst.



Joe, Mike with Birthday Cake and Sam celebrating Mike's birthday. Photo by Terri.

Sci-Fi Movie Trivia:

2001: A Space Odyssey (1968) - In honor of the book and movie, NASA named a Mars orbiter: 2001 Mars Odyssey. This was not the first time NASA had a connection with the film: the Apollo 13 command module's call sign was Odyssey during the ill-fated mission.



Is there a super-Earth in the Solar System out beyond Neptune?

By Ethan Siegel

When the advent of large telescopes brought us the discoveries of Uranus and then Neptune, they also brought the great hope of a Solar System even richer in terms of large, massive worlds. While the asteroid belt and the Kuiper belt were each found to possess a large number of substantial icy-and-rocky worlds, none of them approached even Earth in size or mass, much less the true giant worlds. Meanwhile, all-sky infrared surveys, sensitive to red dwarfs, brown dwarfs and Jupiter-mass gas giants, were unable to detect anything new that was closer than Proxima Centauri. At the same time, Kepler taught us that super-Earths, planets between Earth and Neptune in size, were the galaxy's most common, despite our Solar System having none.

The discovery of Sedna in 2003 turned out to be even more groundbreaking than astronomers realized. Although many Trans-Neptunian Objects (TNOs) were discovered beginning in the 1990s, Sedna had properties all the others didn't. With an

extremely eccentric orbit and an aphelion taking it farther from the Sun than any other world known at the time, it represented our first glimpse of the hypothetical Oort cloud: a spherical distribution of bodies ranging from hundreds to tens of thousands of A.U. from the Sun. Since the discovery of Sedna, five other long-period, very eccentric TNOs were found prior to 2016 as well. While you'd expect their orbital parameters to be randomly distributed if they occurred by chance, their orbital orientations with respect to the Sun are clustered extremely narrowly: with less than a 1-in-10,000 chance of such an effect appearing randomly.

Whenever we see a new phenomenon with a surprisingly non-random appearance, our scientific intuition calls out for a physical explanation. Astronomers Konstantin Batygin and Mike Brown provided a compelling possibility earlier this year: perhaps a massive perturbing body very distant from the Sun provided the gravita-

tional "kick" to hurl these objects towards the Sun. A single addition to the Solar System would explain the orbits of all of these long-period TNOs, a planet about 10 times the mass of Earth approximately 200 A.U. from the Sun, referred to as **Planet Nine**. More Sedna-like TNOs with similarly aligned orbits are predicted, and since January of 2016, another was found, with its orbit aligning perfectly with these predictions.

Ten meter class telescopes like Keck and Subaru, plus NASA's NEOWISE mission, are currently searching for this hypothetical, massive world. If it exists, it invites the question of its origin: did it form along with our Solar System, or was it captured from another star's vicinity much more recently? Regardless, if Batygin and Brown are right and this object is real, our Solar System may contain a super-Earth after all.



A possible super-Earth/mini-Neptune world hundreds of times more distant than Earth is from the Sun. Image credit: R. Hurt / Caltech (IPAC)

Bookmans Sidewalk Astronomy Event June 11

By Terri, Event Manager

This event almost didn't happen. Because of conflicting weather information, we actually canceled the event at about 5:15pm and reinstated it at 6:45 when the sky cleared again.

June 11 was a hot one, though much better after sunset.

William and Terri brought the PAS table and joined Sam Insana with his 8" scope, Don Boyd with his 8" scope, Rick Cunningham with his 8" scope and Rodney Fong as helper. We had a great turnout for the event, not through RSVP's, but rather, of people already headed to Bookmans for that night. I'd say we shared astronomy with about 200 people. That's pretty good for a once cancelled event. We showed Jupiter, Moon, Mars and Saturn from 8pm to 10pm. Many thanks to my telescope team and those who could make it after the cancel notice. Thanks also to Don and Sam who monitored the weather to see that the forecasts for 7pm to 10pm were actually correct on the weather sites. Finally, thanks to Bookmans Entertainment Exchange at 19th Ave and Northern, for letting PAS set up out front and share the night sky at this sidewalk astronomy event!



Rodney, a gentleman, and Sam chatting while setting up to do the Sidewalk Astronomy event. It was a very hot evening and Sam provided Popsicles to all who attended and helped out.



Rick Cunningham setting up for the Bookmans Sidewalk Astronomy event on June 11 with his scope. This is the parking lot set up. Photo by Don Boyd.



Three scopes were set up for this event. Rick has his back to us and is by his scope, Sam's scope is in the foreground (white), Don is set up in this photo, to the back and right and Rodney is looking through Don's scope. We had a nice steady crowd viewing through the scopes at this event. Photo by President Sam Insana.

Lumi Meeting Aug 12

By Terri, Event Manager

The Lumi Team met on Friday Aug 12 at Deer Valley Airport Restaurant. In attendance were William and Terri Finch, Donna Zander, Bruce Wurst, Sam Insana, Don Boyd, Roger Anzini, Pete Turner, Rick Cunningham, Kevin Witts, Mark Johnston, Christine Mintzmyer, Ofelia Water, Mike Marron, and Suzanne Morrison. The meeting topic was the upcoming series of events, including the setup of the telescopes, presenters and other factors that needed to be worked out prior to the first Luminaria event of the season.

For those not familiar, Every Christmas season Desert Botanical Gardens sets up "bagged" lights along all the paths

around the facility for those who wish to enjoy evening walks, maybe dinner, bands (usually 10 bands are at the events) and more. This year PAS will be there providing telescopes and presenters for guest to observe through each night of the event. The dates of this years' events are November 25th, 26th, December 2nd, 3rd, 4th, 9th, 10th, 11th, 16th, 17th, 18th, 20th, 21st, 22nd, 23rd, 26th, 27th, 28th, 29th, 30th and 31st. We would love to have you come by to attend the Lumi and look through our telescopes.

Many thanks to all who attended and helped sort out some of the details. Thanks also to Deer Valley Airport Restaurant!

September 15 2015

Sunrise: 06:11

Sunset: 18:33



New: September 1



Q1: September 9



Full: September 16



Q3: September 23

PAS is Incorporated in the state of Arizona as a 501(c)3 organization. Our newsletter PAStimes is published monthly from September to May, and is distributed via the Internet. All issues are available on our Website www.pasaz.org. Ads for astronomy equipment are provided as a courtesy to buyers and sellers and do not constitute any endorsement by PAS or PAStimes. All photos by Don Boyd unless otherwise noted. All articles and photos are copyright their respective authors or PAStimes.

Grand Canyon Star Party June 2016

By Various Attendees

Earl DeLong writes: June 4th and 5th, Christine and her family, Sam and his family and Earl attended the Grand Canyon Star Party at the North Rim. Christine's family camped while Sam's family and I stayed at Jacob Lake Inn. It is a beautiful 4.5 hour drive from Phoenix to Jacob Lake. I arrived around 2:00pm, and after a nap and dinner, travelled to our observing site, an open meadow about 17 miles south of the inn. The observing site was easy to find and I began to set up my 10 inch Dobsonian reflector. Sam and his family arrived next with Frank's 16-inch Dobsonian reflector, followed by Christine and her family with her 10 inch reflector. It was an exceptional although cold night on the plateau - the darkest sky I have been under with a telescope. Sam measured the sky condition as Bortle 1. We had a few members of the public stop and observe while we were there. On Sunday evening we all went to the North Rim Lodge. We attended the presentation on what objects were to be seen that night in the telescopes. We then went out to the patio behind the lodge and they turned out the lights. The patio is small and there were a lot of attendees - I counted nine scopes. Most were focused on the visible planets which were all above the canyon and suffering from atmospheric distortion from thermals rising from the rocks. Please make plans to attend at the Grand Canyon north rim. You will not be disappointed. I hope to return again. Thanks Sam for suggesting this outing.

Alex Vrenios writes: Our primary reason for going to the Grand Canyon this weekend was for something other than the GC Star Party, but since we arrived on Friday June 10, we decided to have a look.

They started with a presentation by Dr. Odell, Professor of Astronomy and Physics at the Northern Arizona University. Quite nicely done! I was expecting a very general preview of what we might see outside, but he did a whole show on stellar evolution. Photos (from large, ground based scopes and the Hubble space telescope) of nebulae demonstrated the difference between a gas cloud that is so hot it glows, and a cloud that just reflects the light from adjacent stars. He showed dust clouds that completely blocked the stars in a small region of the sky and thinner clouds that allowed the brightest stars to shine through. He showed clusters with mostly blue-white stars and a small number of red giants. Then he de-

scribed the Main Sequence on a stellar evolution graph, along with the white dwarfs, giants and supergiants, tying the whole stellar evolutionary cycle together to end his very interesting speech. We went outside afterward but it was so cloudy that the Moon was just barely visible.

Saturday night, June 4, we decided to give it another try, thinking if we aimed for a 9:30 pm arrival, the best parking spots would just become available, vacated by early arrivals. Alas, there was a sprinkling rain as we left the hotel so we aborted. Oh well, maybe next year...

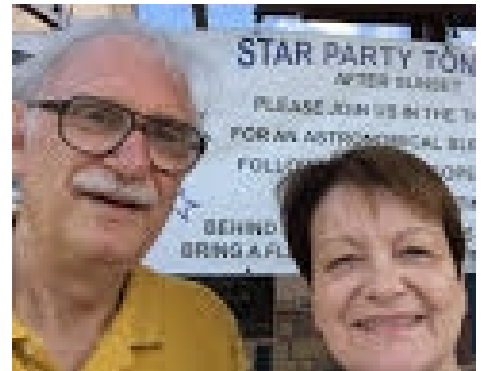
Sam Insana adds to Alex's review: Dr O'Dell will be speaking to PAS next spring. He is scheduled to talk about stellar evolution. I am glad you were able to hear him. It sounds like a great presentation. Too bad about the bad weather. I hope you and Diane had fun on a Frankopedia tour.

Mark Johnston writes: One of the world's largest annual volunteer events is the Grand Canyon Star Party. Endorsed by the National Park Service, the GCSP attracts volunteers (who get free admission and free camping permits) who in turn bring their telescopes and share their passion of astronomy with ~100,000 Grand Canyon visitors over a 9 day period each June.

While most of the visitors and volunteer astronomers choose to go the south rim, having done both I find myself enjoying the north rim the most, due to higher elevation, smaller crowds, better views to the south, and a nicer location to set up the scopes. I frequently get the same people several days in a row, eager to look through the scopes and amazed at what they see.

This year I arrived Wednesday and stayed through Sunday. Weather permitting, I did solar observing with my Ha Lunt solar scope from 2-3:30 each afternoon, and night observing with my TEC140 refractor from 7:30 to ? each night. The first couple of nights were good, but later in the week the clouds rolled in and we even had rain, although we were never completely skunked.

Each evening before the observing session there was a presentation in the North Rim auditorium; I gave a talk on "Looking Back in Time in Astronomy" on Thursday night, June 9, to about 110 visitors that was well received.



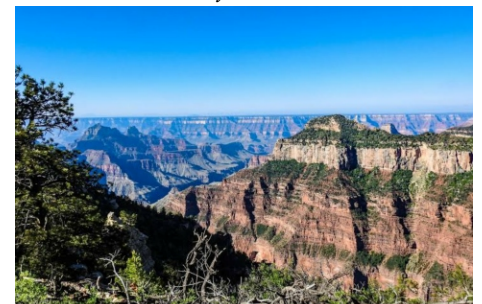
Alex & Diane at the Grand Canyon Star Party on June 10. Photo by Alex Vrenios.



Earl DeLong keeping his night vision at the Bortle 1 site at the Grand Canyon Star Party on June 4. Photo by Sam Insana.



Frank Insana, freezing and enjoying a Bortle 1 viewing session at the GCSP on June 5. Photo by Sam.



The Grand Canyon Star Party is extremely scenic by day and awesomely dark at night. Taken by Mark Johnston.

Grand Canyon Star Party June 2016

Altogether, despite the poor weather, I was able to tally up 808 visitors looking through one of my scopes during the 4 days I was there, with plenty of "Wow!"s as people got their first telescopic view of Saturn, Mars, Jupiter (which cooperated with a nice transit one evening), the Sun in Hydrogen Alpha, the waxing Moon, the Stargate Cluster, epsilon Lyra, M57, M13, M6, M17, M22, NGC7000 and many other objects.

I was also finally able to cleanly split Antares at 218x, a notoriously difficult double with the secondary 370x fainter than the primary and only 2.5" away. The high altitude and clear air sure helps compared to Phoenix skies! I already have my reservation for next year!

Sam Insana writes: Skies at our site were incredible. We all had fantastic views of galaxies, nebula, globular cluster, planetary nebula, and open clusters. There were deer and bison in a nearby meadow and the temperatures were cool and crisp. After 4 hours of continuous viewing we finally packed it in because the temperatures were colder than we expected. However, we did see dozens of objects at their best. Earl was able to show us the North American Nebula with his 10 inch scope, and I finally found it in my binos thanks to Earl's help in locat-

ing it. Frank had 3 south rim nature tour guide friends join us in the Bortle one meadow. They all enjoyed it.

I measured the North Rim Lodge as Bortle Two and the Kaibab Lodge, 18 miles north of the rim, as Bortle One and one half. Rick Cunningham of PAS and his wife were also scheduled to attend the Grand



The Grand Canyon by day. Taken by Mark Johnston.



Sam hiking the North Rim on June 5 before the star party that night. Photo by Sam Insana.

Canyon Star party on the South Rim.



Mark Johnston doing an indoor presentation at the GCSP Thursday, June 9. The title of the presentation was "Looking Back in Time in Astronomy." Photo provided by Mark Johnston.



Mark with his scope at GCSP setting up for evening viewing. Photo taken by Mark.

Perseids Meteor Shower Aug 12

By Sam Insana and Alex Vrenios

Sam writes: From 1:00 am to 4:00 am Friday morning, August 12th, 6 PAS members viewed the Perseids meteor shower from Mike's property in Carefree. I attended, along with Paul Facuna, Mark and Michelle Peterson, Mike Marron and Ophelia Waters. We enjoyed 80 degree temperatures, clear skies, no moon, no winds, a bortle 4.3, a limiting magnitude of 5.39, comfortable anti gravity chairs and a great show. Paul took notes and will submit the findings to the International Meteor Organization. In a 20 minute period around 2:30 am, we saw 35 meteors, equating to an hourly rate of 105. There were several fireballs, though few colorful ones. This was the best meteor shower I ever saw. At that point I received a text from my son, Frank. He was out at Moran Point on the South Rim of the Grand Canyon from 12:30 am until

3 am. It is a very dark spot, and they saw a minimum of 3 meteors per minute (about 180 per hour) and some bursts of up to 8 meteors in a minute. Dark skies make a big difference.

Alex writes: Diane and I saw all the predictions, but we've seen them before (and been disappointed). Plus, the sky was a solid overcast that morning and I wasn't overly optimistic but I dragged out the lawn chair anyway. What could it hurt?

Around 1am I awoke for no obvious reason but, realizing the significance of the hour and the date, I grabbed some clothes and went to the back door without waking Diane. It was warm and a bit too humid, but there was a gentle breeze - quite nice for this time of year.

I wasn't down for a minute when a

very fast, very bright meteor flashed across the sky from Perseus. I noted the time and ran back inside to get my red light, a pencil, paper and a clipboard. Back in the chair now, the sky remained dark - and quiet.

About the time I began to sense that I was being taken in by just one meteor, another showed up. Then another. I recorded them and went back in to get Diane. We spent the next half hour watching the show. Not exactly the 200 per hour they predicted, but we were in a major city. It was reward enough for my minor effort.

We tallied about fifteen meteors in the hour we spent actively recording the times, properties and relative brightnesses. Not too bad. We'll be out again tonight, just in case there's a bolide on its way.

PAS Field Trip to Mt. Graham June 18

By Various Attendees

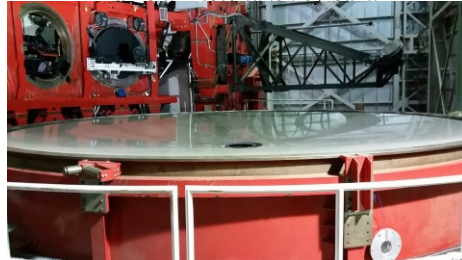
Sam Insana writes: Mike Marron, Ophelia Waters, Vera Stiesmeyer, Sam and Frank Insana and Paul Facuna rode up to Safford on June 17th. Some of us went to a movie while others rested in the motel. That night the 6 of us met with Alex and Diane Vrenios, Earl DeLong, Don Boyd, Howard Moneta, and his Mom Daneilan at a nice restaurant on the Salsa Trail in Safford. The next morning we all met up with Bill and Beth Powell and Mike Cawley at the Discovery Center. We looked around the exhibits and then took shuttles to the top of Mt Graham. After a nice box lunch in the forest, we went to the Radio Telescope Observatory, then the Vatican Observatory and finally the Large Binocular Observatory. The tours were fascinating with many photos taken by us. That night, after dinner, Don, Frank, Paul and Sam returned to the Discovery Center to look at planets through their 20 inch cassegrain scope. The moon made it tough, but it was fun to see their small observatory. Earlier, Frank, Vera, Sam, Mike, Paul, and Don took a ride in a space shuttle at the Discovery Center and we all enjoyed the tour of the solar system. It was good that we ate after the bumps and accelerations and decelerations.

I know everyone wishes to thank Howard for putting together this trip, and Don for giving us tips on the motels, restaurants and the Discovery Center.

Earl DeLong writes: On Saturday June 18th PAS members attended a tour of the Mount Graham telescopes in Safford, AZ. On Saturday we arrived at Discovery Park between 8:30-9:00 and several of us toured the museum. At 9:00 we attended an orientation about the Large Binocular Telescope, used for spectroscopy. We then were driven up to mountain in two vans, arriving on top in time for lunch (included in the cost of the tour). It was a quick change in altitude as the observatory is at 10,500 ft. and I found myself a little slow moving and "hard to focus." Nevertheless, we had a wonderful tour "up close and personal." We toured a radio telescope, the Vatican telescope (being used to hunt for near earth objects) and the Large Binocular Telescope. They even moved the LBT just for us. It is currently the largest telescope in the world and is a site to behold. Thanks Howard for taking the time to arrange this great trip.



At the Space Museum at Discovery Park we have these PAS Members attending the PAS Field Trip to Mt. Graham: Don Boyd, Paul Facuna, Vera Stiesmeyer, Ofelia Waters and Mike Marron. Photo taken by Sam.



Here we have one of two 27 foot Telescopes of the Large Binocular Telescope. Photo taken by Sam.



PAS at the Large Binocular Observatory. Photo taken by Sam.



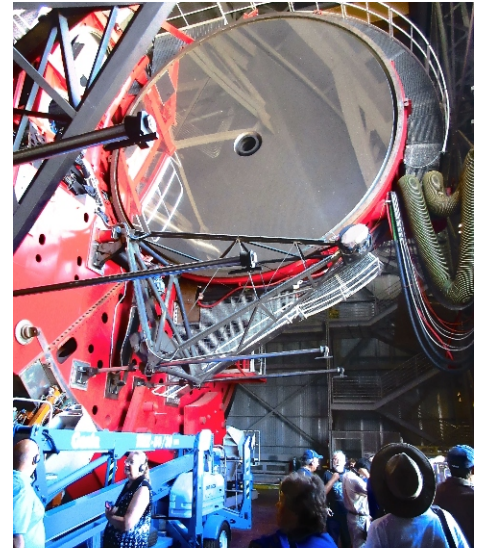
Here's the Vatican Observatory. Photo taken by Sam.



The Vatican Telescope was one of the stops during the PAS Field Trip to Mt. Graham on June 18. This photo was taken by Sam Insana.



Feasting on the Salsa Train in Safford. Photo taken by Don.



Mt Graham Field Trip. Photo taken by Earl DeLong.



Radio Telescope Observatory. Photo taken by Sam.

Fireworks, Birthday Party in Carefree July 3

By President Sam Insana

PAS had a 3rd of July celebration at Mike's home in Carefree. We mingled at 5 pm and had the potluck at 5:30 pm. Williams' 41st Birthday was celebrated at 6:30 pm with cookies and cream, butter pecan and Italian spumoni ice creams. Terri presented William with a cleverly designed homemade (by Terri) birthday card which people in attendance signed.

Sam handed out our new PAS tee shirts to those who had placed an order. The shirts have beautiful designs of Saturn, Orion Nebula, Omega Centauri, the Moon, the Sun, the Triffid Nebula, the Solar System, the Pleiades, and in a few days we will be getting the Milky Way. All the tee shirts have a glow in the dark PAS logo on the sleeve.

At 7 pm we had a meeting to discuss next year's total solar eclipse. Alex Vrenios and I presented weather data along the path of totality and we all discussed transportation, sleeping arrangements, best cities to go to, photography, etc... Paul Maley, who is our most recent member, discussed his tour that he and Ted Blank (also of PAS) will be giving in Grand Island, Nebraska. There was a lot of interest in the total eclipse, but we decided to have everyone do their "own thing" and choose a city, mode of transportation, place to stay, and length of trip. For example Sam, Vera and Frank will fly to Denver and then rent a car to drive to the eclipse in either Casper, Wyoming or Scottsbluff, Nebraska. Alex and Diane will drive from Phoenix and go to Casper, Wyoming with stops at some national monuments in southern Utah. Mike is thinking about seeing the eclipse with his parents in the midwest. Alex and Sam will give a final presentation on the Eclipse September 1st at the PAS general meeting. Anyone interested in going to the eclipse should make their own arrangements asap.

Don, Leah and Sam then set up telescopes for the star party. It was a surprisingly good night for viewing, considering monsoons usually are a spoiler in July and August. We saw Jupiter, Mars, Saturn, M13, M92 and M22 globular clusters, M81, M82, M51 and M31 galaxies, Lagoon, Triffid, Swan and Veil nebulae, M57 planetary nebula, and ET cluster. Don also tried his hand at photographing Saturn using eyepiece projection. There were also several meteors seen during the night.

Alex brought a DVD about the super-

nova 1987a. The people who watched it said it was very good.

Everyone enjoyed seeing Cave Creek fireworks, while having ice cream and other treats. Paul learned several important constellations and stars with his planisphere, binos, and a little help from Leah and Sam. We had about 20 people in attendance and some stayed until after 1am. when I packed up my telescope and left for Spur Cross Ranch to test the bortle reading on my way home. It was the same as Mike's place, 4.3.

Terri, Event Manager writes: Many thanks to Mike and everyone who participated with a variety of food for the potluck and ice cream for the fireworks. In attendance were: William and Terri Finch, Sam Insana, Earl DeLong, Somoya, Don Boyd, Leah Sapir, Alex and Diane Vrenios, Eric Steinberg, Paul Facuna, Mike Marron, Joe Aquavella, Ofelia Waters, Chris Eckard (+ 4), Paul Maley and Lynn, Rodney Fong, Len and Randy. Thanks to Sam for bringing the birthday ice cream and for Ofelia for providing the Minion Candle that was used for William's birthday ice cream. It was a great party.



This Fireworks party also included a birthday party for William Finch. Ofelia Waters provided the Minion Birthday Candle and Sam Insana provided the ice cream. It was a wonderful party! Photo by Terri.



William reads his Birthday card which was hand made by Terri, and everyone signed it. It was a great party with lots of wonderful PAS friends. Photo by Terri.



The fireworks photos were taken by Don Boyd. This year's fireworks was the best they have been in many years. There wasn't any storm to get in the way.



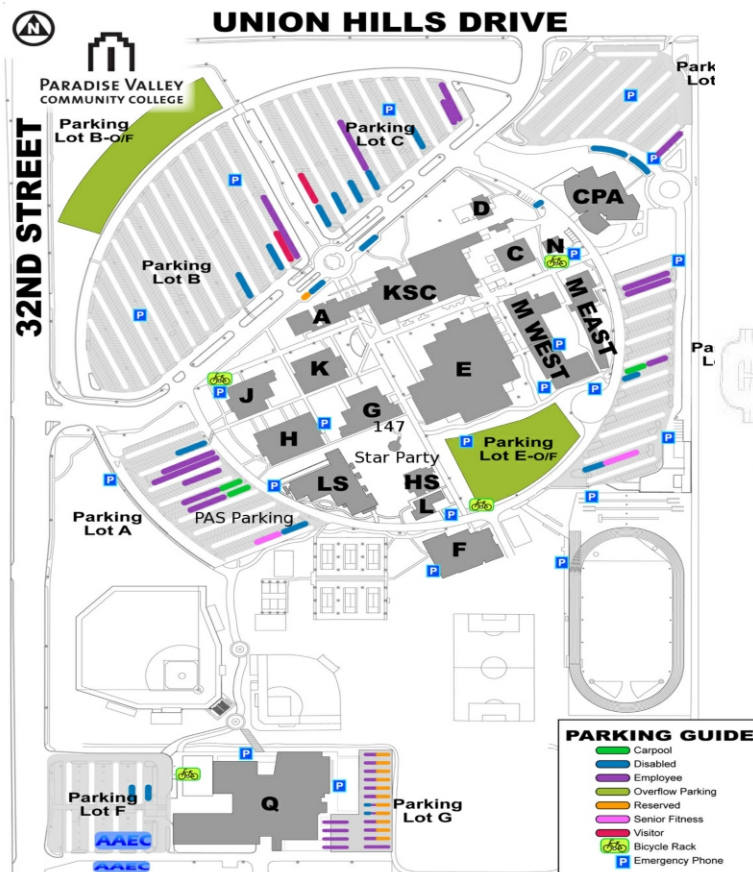
Fireworks photo taken by Don.



Ofelia Waters provided the Minion Birthday Candle and Sam Insana provided the ice cream. It was a wonderful party! Photo by Terri.

Map of PVCC Main Location

18401 N. 32nd Street | Phoenix, AZ 85032



Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



Sept 29 & Oct 6 are swapped.

Sept 29 will be the October General Meeting,
and Oct 6 will have a Lecture by Mike Marron.
We hope to see you at both of these fun meetings!

September 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 PAS Meeting	2	3
4	5 Labor Day	6	7	8 Free Telescope Workshop	9	10
11	12	13	14	15	16	17
18 Free Telescope Workshop	19	20	21	22 Huge Public Star Party	23	24
25	26	27	28	29 PAS Meeting	30 Private Star Party	