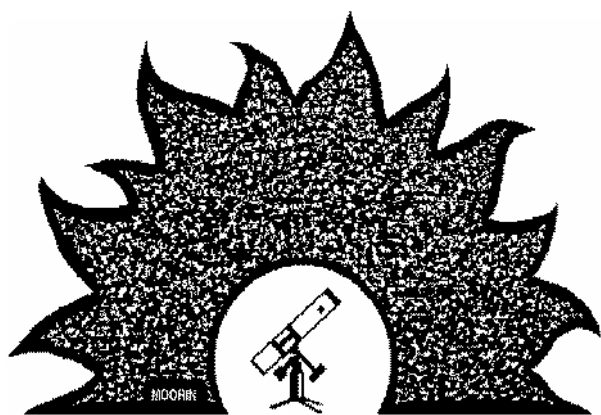




PAStimes

Phoenix Astronomical Society

www.pasaz.org

October 2016

Volume 68 Issue 2

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Dr. Rogier Windhorst to speak at September 29 Meeting Sept 29 and Oct 6 Meetings are Swapped

By Terri, Event Manager

Please note the change in the PAS General Meeting for the month of October. Here's the schedule:

Sept 29 will have Dr. Rogier Windhorst will tell us about the "James Webb Telescope." Rogier Windhorst is the Regents Professor, School of Earth and Space Exploration at Arizona State University. Professor Windhorst is one of the world's 6 interdisciplinary scientists for NASA'S 6.5 meter James Webb Space Telescope that will be launched in 2018. The presentation should be fascinating: from trying to see "first light" after the big bang to seeing

planets in other solar systems and many other things in between, this telescope could truly go where no telescope has gone before.

Doors open at 6:30 for set up, 7pm for socializing, meeting at 7:30pm. This is a General PAS Meeting, so there will be a raffle.

Oct 6 we will have Mike Marron speaking on "Upcoming Astronomical Disasters." Mike will talk about Earth's current magnetic reversal, the most dangerous asteroids, the most dangerous stars, the approaching radioactive supernova shell,

the possible hypernova of Eta Carina and galaxy wide sterilizing jets from nearby blazars and quasars. Doors open at 6:30 for set up and we start recording at 7pm. Since we are recording, if you arrive late, enter but please be as quiet as possible; please hold all questions to the end of the presentation.

Both meetings will have snacks, so bring something to share. Bottled water will be provided by PAS. Donations to the snack fund are requested so water can be provided at the next PAS meeting.

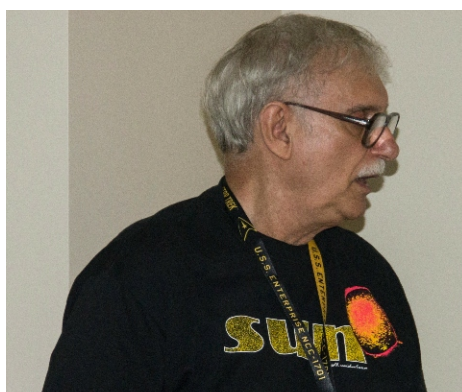
September 1st Meeting Review

By Terri Finch (not in attendance) & President Sam Insana

Terri writes: Many thanks to everyone who helped me "attend" the PAS meeting by phone. William and I were both ill and couldn't be there in person.

President Sam Insana first welcomed a bunch of new members and introduced the new PAS officers: Kevin Witts as the returning Secretary, Alex Vrenios who took over from Howard Moneta as Vice President, Sam, continuing as President this year, Rodney Fong continuing as Meeting Host, Bruce Wurst as the New Member at Large, and Jenny Weitz continuing as Member at Large for another year, Don Boyd continuing as Newsletter Editor and Eric Steinberg continuing for another year as Treasurer. Mike Marron (back from the hospital) was also there.

Earl DeLong started the evening with



Alex Vrenios Photo by Don.

a presentation about eyepieces, full of great information and humor. Thank you Earl!

Sam then did a presentation on the Total Solar Eclipse of 2017 and updated us



This is Earl DeLong. Photo is by Don Boyd.

about the PAS field trip to see this event. This is an eclipse of a lifetime, though It's also short lived: about 2 minutes and 30 seconds length of totality. A lot of research

See "September Meeting" on page 4

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

October 2016 Upcoming PAS Events

By Terri Finch, Event Manager

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

Oct 1: Night Sky Training Session (NSTS) - This is a PAS Member only telescope training class. PAS holds 2 of these classes each year. More details: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2111&day=2016-10-1&c=1> Read about this class in this issue on page .

Oct 4: PAS Members Asteroid Occultation Research <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2094&day=2016-10-4&c=1>

Oct 6: "Upcoming Astronomical Disasters" by Mike Marron. Lecture at PVCC in Room LS 205. Come enjoy an interesting if "scary" presentation. Bring a snack to share. Bottled water provided by PAS snack fund. Everyone welcome. Doors open 6:30pm. Lecture begins 7pm. This Lecture is being recorded, so please hold all questions to the end of the lecture and enter or leave the room super quietly. Here's the link for more details about this event: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2109&day=2016-10-6&c=1>

Oct 7: Private Star Party in Phoenix

Oct 8: Astronomy Day at Roadrunner Park - 3502 E Cactus Rd in Phoenix 6:30pm to 9pm. Several high powered telescopes will be set up for your viewing pleasure. More details: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2033&day=2016-10-8>

Oct 13: Huge Star Party at ASU West at 47th Ave and Thunderbird Road. Come

view through our high powered telescopes: Venus, Mars, Saturn and we might catch seeing the ISS fly over on this night. Event is from 6:30 to 9pm. RSVP is with Paul. More details are at this link: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2112&day=2016-10-13&c=1>

Oct 16: 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=1903&day=2016-10-16&c=1>

Oct 20: 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=2113&day=2016-10-20&c=1>

Oct 21: Orionids Meteor Shower Peak: A meteor shower can be seen from 5

days prior to 5 days after its peak date. It is always best viewed after midnight and is a naked eye event, meaning you don't need telescope. Find a comfortable chair you can lay back in, point it towards the constellation the meteor shower comes from, and view a most spectacular event from your backyard. The darker the night sky, the more meteors you will enjoy seeing.

Oct 22: PAS Members only - first yearly Binocular Star Party. Potluck is at 5pm, set up is at 6:30pm, Highlights of the evening are Venus, Saturn, Moon and possibly a flyby of the ISS. RSVP in the Private Calendar or with Sam. More details: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2045&day=2016-10-22&c=1>

Oct 26: School star party (Private)

Oct 27: 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=2086&day=2016-10-27&c=1>

Oct 28: PAS Halloween Party - PAS Members Only. Potluck is at 5:30pm and party activities begin at 7pm. More details: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2107&day=2016-10-28&c=1>

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.

I want to thank all of our PAS members who contributed to the Telescope Objects List and the Binocular Objects List. These lists show some of our favorites. They can be accessed from the PAS Website's homepage Site Navigation section under the heading "Observing", here's the link:

<http://www.pasaz.org/index.php?pageid=observing>. They are also accessible in the Downloads section of our site <http://www.pasaz.org/>.

Even though I have seen over 130 objects over the years with my 8 inch scope,

there are some items on our lists that I never looked at and can't wait to see on my next observing session. I also want to bring a copy of the list with me the next time I go camping or hiking and have my binoculars. Class members who attend our telescope workshops should also be informed of these lists which can help them decide what to see with their telescope or binoculars or what size telescope they may consider buying. Perhaps once a year these lists can be updated as members come up with more interesting telescope and binocular objects.

Night Sky Training Session Oct 1

By Terri, Event Manager

The Night Sky Training Session (or NSTS) is a members-only class for those PAS Members who are interested in learning more about the night sky as well as using and enjoying their telescopes.

We cover quite a few topics during these sessions, generally covering star hopping (locating objects by eye), eyepieces, filters, set up of scopes, scope comparisons, constellations, how to use setting circles and more. When possible, we have a

knowledgeable PAS Member take us on a night sky tour in which they talk about which constellations are visible, what objects we can find in that constellation, and some star lore.

Each class is assigned homework to be done prior to that class, designed to get you familiar with the night sky. Come prepared with your homework completed and ready to share with the rest of the class. RSVP is required as we have a limit on the number

of attending telescopes.

PAS Members without telescopes may attend to learn the sky or to take notes on what telescope or accessories they may wish to purchase. We really enjoy sharing what we know. This event is usually on a dark sky night. Make plans to attend the next NSTS, with or without a telescope and come learn with PAS, or come to contribute to the class with info to share.

Bookmans Telescope Workshop July 17

By Alex Vrenios

The workshop began with a couple's small Celestron newtonian. They bought it used and, true to form, there was a bolt missing that held one of the legs to the tripod. We improvised with a paper clip, sufficient for our inspection/training session. The next issue was the red-dot finder, which didn't seem to turn on. The switch was stuck for some reason, so we put that back for later. The mount looked like it was driven and possibly a GOTO, but it was a mystery to us so we deferred to Bruce who had a better feel for it. He determined the switch was bad on the finder. Without a source of power, the GOTO system could only be described to the owners. They joined, becoming our newest members. I hope to see them again at a meeting this Fall.

The next person I met was a man who was at the sidewalk session the week before. He came with his wife, who was active in the International Dark Sky association and brought us a bunch of fliers to pass out. They were looking to buy a new telescope, so Terri and William handled that part of the presentation and I pretty much just listened in.

Overall, there were a lot of people there, of all ages. It was good to see interest in astronomy building up.

Terri Finch, Event Manager writes: We had a great turnout today. Javier Herrera brought his Celestron Powerseeker 114EQ, Christina Engdahl and Duane attended and were assisted by Sam with their 5" SLT 130 scope, Rick Pasquale came to

find out what scope to purchase - Rick, William and Terri assisted him. Steve Grayson attended with his 800mm scope, and was assisted by Don. Bruce attended with his Alt Azimuth scope assisted by Roger and Don.

Attending from PAS we had Don Boyd, Sam Insana, William and Terri Finch, Alex Vrenios, Rodney Fong, Roger Anzini, Leah Sapir, Bruce Wurst, Rick Cunningham and new member Somoyah.

I wish to thank Sam for having the event all set up by the time I arrived at Bookmans. Thank you to the telescope teachers who attended. Eight PAS Members enjoyed Carlos O'Briens for dinner after this event.

(Continued from page 1)

September 1st Meeting Review

is being done to find the best, cloud free location to view this eclipse. Alex Vrenios assisted with this presentation.

Right after Alex's presentation on the upcoming Solar Eclipse, he did his presentation on the Mercury Transit of May 9, 2016. His research results earned him a certificate and pin from the Astronomical League for calculating, tracking and recording the transit. Thank you Alex- very informative. Paul Facuna then spoke about the PAS Field Trip to the ASU Earth and Science Center on September 19, assisted by Sam. At the time of this meeting, there were 6 more spots open for this Field Trip. PAS Members are welcome to attend.

Sam next talked about the Occultation of Oct 4th which is a citizen observing program project. If you are interested in attending or helping with calculations, contact Sam Insana.

Bill Powell was next to talk about spectroscopy. He covered the costs of getting started in the field along with scientific contributions you may be able to make. If this branch of astronomy interests you, contact Bill for more details.

Finally, Kevin and Sam did announcements about upcoming events.

The meeting concluded around 9:35pm. Many thanks to everyone who helped out. See you at the next meetings:

Sept 29 and Oct 6.

Sam writes: Our first General PAS meeting of the new season took place Sept 1st at PVCC with about 30 people in attendance. Three new people signed up and paid their dues: Ron Walker, Jim Renn, and Debbi Roth. For Mary Lou Serpa and Mary Raseley who recently signed up, this was their first PAS meeting; visitors Kevin and Bridgette enjoyed the evening and are considering joining. We also had 2 past members show up, Chet Schuler and Sonny Shug. Frank Insana, a lifetime member, made it to the meeting with his friend Lucy who also works at the Grand Canyon. Chet Schuler, a past PAS member, was acknowledged for his color photography of several planets. Phoenix Magazine used his photos in an article about PAS in their August 2016 edition.

After the meeting ended, about 10 of us stayed another half hour discussing various topics. Sam asked them the following question: What tastes better, a moon rock or an earth rock. Two people guessed the correct answer which is a moon rock, although they didn't know the actual reason. A moon rock tastes better because it is a little meteor.

I want to thank the many people who brought snacks and drinks for us to enjoy and a thank you to Don for taking photos during the meeting.



Paul Facuna Photo by Don.



Bill Powell Photo by Don.

Bookmans Telescope Workshop Aug 21

By Terri Finch, PAS Event Manager

We had a very successful event at the Bookmans Telescope Workshop, with 3 RSVP's and 2 walk-ins. Attending from PAS were William and Terri Finch, Sam Insana, Rodney Fong, and Don Boyd.

Joe Gilboy came to find out how to help people with choosing a first telescope. Joe spent an hour and a half, with Don, but also talked with me and listened while Sam helped Jon and Linda Iger. They attended to find out what telescope to purchase and ended up joining - welcome! William and I also assisted with photos of the items we were talking about and I emailed Linda various things during the event for her later reference. Radha Kairav attended with her son and his EZ View scope. Rodney and Don assisted her for a bit and then advised that she might want to get a 6" dob in the future, when her son outgrows the current spotting scope. We had a woman who had

seen my tablecloth at Comicon come over and ask questions and pick up some hand-outs. We also had Tiffany Foley, a college student stop by to ask questions about purchasing a scope, though she left abruptly when a dust storm warning sounded on all of our phones.

It was a fun and busy event with some



Jon noticed I was trying out my new camera and so he was looking at me taking his picture at the moment I shot this image.

Photo by Terri.

great people. After the event, 5 PAS Members went to Carlos O'Briens for dinner.



Bookmans Telescope Workshop of Aug 21 had several activities happening at the same time.

William and Sam were assisting Linda and Jon at the PAS Table in this photo. And in the background, Don and Rodney were assisting Radna & her son, while Joe observed.

Photo taken by Terri Finch.

Bookmans Sidewalk Astronomy Event July 9

By Various Attendees

President Sam Insana writes: We had about 75 customers all night and showed the moon, Jupiter, Saturn and Mars. Handled out about a dozen PAS cards. Everyone said they loved it.

Terri Finch, Event Manager writes: Attending this warm, clear evening of observing at Bookmans were William Finch with his 10" dob, Terri with the PAS table, Sam Insana and Don Boyd, each with 8" scopes and Alex Vrenios with his scope, too. We had help from Paul Facuna and Rodney Fong.

William had his scope on Saturn, Don had Mars, Alex and Sam shared Jupiter and the crescent Moon. As the night went on, Jupiter set and Mars went behind the Bookmans building.

At one point, 2 gentlemen walked over to view through William's scope. The older of the two leaned on William's scope as he tried to view and knocked it over. Luckily William stopped it from damage; as William was trying to find Saturn again, the younger of the two stood in front of the scope, looking into it, as if he was amazed

to see something, maybe an eyeball, down the end, and not realizing that the scope does not have X-ray vision to see through him. He finally moved, allowing William to to reset.

We had a lot of questions about the Juno Spacecraft near Jupiter, but most of the people though it was flying around Saturn. And I'd say we had about 200+ people visit the scopes. It was hot and humid - at 11pm the temperature was still 100 degrees.

I'd like to thank the telescope team for putting up with the heat to do this event. We look forward to the next event in August.

Alex writes: We started with the Moon, just visible in the twilight sky and added Jupiter as it made its appearance nearby. Mars and Saturn came out later, completing the somewhat rare opportunity to view four bright solar system objects in the same evening.

Bookman's customers walked by both of our stations as they were going in and coming out. About a hundred people took a

look at these most interesting objects. Singles, pairs and full sized families stopped to look. It was hard to tell whether the kids or their parents enjoyed it more. One man commented how the four moons of Jupiter were almost exactly in a line. I told him if we could get far enough away from our solar system, our Earth and all the other planets would form a nearly straight line through the Sun. He looked at me wide-eyed and said, "Really?" I felt like I just saved his soul.



William, Paul and Don were seen at the Bookmans Sidewalk Astronomy Event on July 9. Photo by Terri Finch.

Bookmans Sidewalk Event Aug 20

By Terri Finch, PAS Event Manager

The event started with a 6pm black sky and downpour. When the rain let up, PAS members gathered outside Bookmans for this event. In attendance from PAS were William and Terri Finch, Rick Cunningham, Rodney Fong, Sam Insana, Paul Facuna, Kevin Witts, Suzanne Morrison, and Don Boyd.

Because of the rain (which continued on and off), we asked Bookmans if we could set up indoors. Don, William and I set up at the PAS Table and Suzanne, assisted by Kevin brought meteorites, all up by the front doors. Paul did a fantastic job of being "carnival barker" (as he put it) while Sam and Rick set their scopes up for display or to look out at street lights.

Near the end of the event, the rain stopped, so Sam and Rick took their scopes outdoors and focused in on the Moon for about 45 minutes. The Moon was obscured on and off but when it was visible, it was beautiful and those who stuck around to wait out the storm were treated to the view. We look forward to the next Bookmans Sidewalk event on Mar 11, 2017. Many

thanks to the telescope team.



Rick, William and Don chatting at the PAS Table, during set up of this event. Photo by Terri Finch.



Sam provided this really nice photo of the Indoor Bookmans Sidewalk Event in which we were so glad to have 2 telescopes on display with the meteorites.



We have (L to R) in this photo, Sam out of photo on left, then Rick at Sam's scope, Kevin, and Paul sitting at the meteorite table. Photo by Terri.



In this photo, (L to R) Rick, Don, Suzanne squatting at table, Rodney, Sam standing talking to Kevin who has his hands on his head, and Paul are seen in this photo. Photo by Terri.

PAS was at Leprecon June 23, 24, 25, 26

Thursday June 23, Terri writes: This year's Leprecon event was held at the Park Terrace Suites Phoenix at I-17 and Greenway Rd. - formerly the Embassy Suites by Hilton Phoenix. This year's theme for Leprecon 42 was "Life, the Universe, and Everything."

Attending this evening's event were Rick Cunningham, Don Boyd and William and Terri Finch. Rick and Don brought their telescopes while William and Terri did handouts.

The evening started out with a dust storm which William and I saw arriving while we ate at Chipotle. Once it blew through, we met for setup and waited for a bit to see what the sky would do; Rick and Don then set up their scopes in the light of a beautiful sunset.

We had about 20 people come look through our scopes and get handouts which tended to blow away in the wind. We packed up about 10pm.

Friday June 24: 10am to 7pm we were set up indoors with Handouts. Mike and Terri arrived just before 9am and set up at the PAS table. Around 10am Sam Insana arrived to assist. Mike then took off to do his 12:30-1:30 presentation at Leprecon: "Electromagnetic Universe." Don Boyd joined the PAS Team at the PAS Table at about noon. Around 5pm, we packed up the PAS table and left for dinner at Chino Bandido.

We then came back, met up with Rick Cunningham and did the star party from 8 to 10 pm. The weather was cooperative, so we actually stayed until midnight. Sam had left about 11pm, but we had a nice crowd hanging out with us - a turnout of about 50+ at the scopes. The scopes on this night were Sam, Rick, William and Don. Many thanks to the telescope team for hanging in there until midnight. It was exhausting, but there was a nice breeze on this night, so it was pleasant to be out there.

Sam writes: I attended Leprecon with PAS. The opening ceremonies were brief and only had about 12 people in attendance. The best part was meeting D.C. Fontana who wrote many Star Trek episodes as well as Bonanza, Streets of San Francisco, Dallas, Babylon 5, and many other famous TV series. I also heard a musician called the Wanderer sing old folk tales - she sang acapella and had very long beautiful hair (see photo). Then I heard Mike's lecture on

By Terri, Event Manager + President Sam Insana the Electromagnetic Universe. He had about a dozen very interested people in his audience. David Williams gave an excellent presentation on the Dawn Mission involving Ceres and Vesta, and the New Horizon Mission involving Pluto and Charon. He also handed out lots of posters and detailed maps of the moon and mars. At the star party, Rick, Don and I had our 8 inch scopes and William had his 10 inch. Mike was showing meteorites while Terri did the handouts. Don did some astrophotography of Jupiter and Saturn, while the rest of us showed Jupiter, Mars and Saturn to about 2 dozen customers. There were very few people in costume, but everyone was enthusiastic about Sci-fi, Fantasy, art work, and astronomy. Leprecon provided nice snacks and drinks for the volunteers.

Saturday June 25, Terri writes: We talked to lots of people and I got to know many at the convention by the end of Saturday.

For dinner on this night, we went as a group with one of the other set ups like PAS's table, Woody, to Good Fellas Grill.

For the evening, we had Rick, Terri, William and Mike though only Rick and William had scopes. Sam swung by this evening but was headed to a Star Trek activity at Leprecon, so he didn't stick around. The night was muggy and hot. We were set up from 7:30 to 10pm but gave up when the clouds became too thick. We had about 80+ in attendance on this night.

Sam writes: I attended the 50th Anniversary Star Trek Party that David Williams threw at Leprecon in a suite. There were about 50 people enjoying Star Trek memorabilia, like a phaser, a communicator, my Tribble, posters and other items of interest. David had mixed drinks, my favorite being the Warp Breech, made of different rums and fruit drinks. He also had a huge cake which I photographed. D.C Fontana then talked about several items of interest. For example she said Leonard Nimoy developed the Vulcan Death grip and salute and the phrase Live Long and Prosper and there were no objections by the screenwriters or Gene Roddenberry.

Sunday June 26, Terri writes: We were pretty tired by day 4, but it was still fun, other than my tendency to fall asleep at times. An energy drink helped!

Attending this event were William, Mike and Terri. We set up indoors only.



The Star Trek Transporter with Terri Finch on the right. Photo taken by William Finch on June 25.



This is DC Fontana, a writer of the Star Trek Series, with Sam. Photo was taken on June 24 and provided by Sam Insana.



Borrowed this great photo of Don Boyd from the Leprecon Facebook page for the 2016 Leprecon event.



Don took this fantastic photo that has Sam behind Don's scope, Terri and Mike behind the PAS table and people checking out Mike's Meteorites (on table).

Don arrived about Noon and we closed up about 6pm.

Sam writes: Sunday morning I attended David Lee Summers presentation on Mapping the Universe. He is an astronomer at Kitt Peak and had a great slide show. He also writes science fiction in his free time. I would recommend Leprecon to all PAS members.

Terri writes: On the PAS table, I had set up Sam's hand-decorated sign advertising the star party which I believe was effective in getting people to view. We also left handouts, cards and other info there for people to take as they wanted. We took in several new members. Welcome to PAS: Somayeh Bakhtiari, Jennifer Phillips, Geidy Serrano and Susan Cober. Hope to see you at our meetings and events.

We were very lucky to have mostly clear skies for this event because by Sunday night it was nearly overcast.

Overall we enjoyed the event and would like to do it again next year. They are moving the event to Tempe next year, so it might be more of a challenge to do all 4 days, A "pro" for this event over other "Con's" We have done, is that it is a one pass for all days. I had asked for access to the things that Sam got to experience that



Setting up the scopes for the star party portion of this event. This photo was taken by Terri on June 24.

require membership in Leprecon and they gave the PAS volunteers one full event day pass giving them access for all 4 days of activities.

I met and networked with some great people at this event - several of them will be contacting PAS for upcoming events at their locations (teachers, and private events). It was a lot of fun though exhausting. Please enjoy the photos provided by the many member attendees who took them. There are many more on the website than can be included in this newsletter.

Somayeh writes on June 25: Hi Terri, It was my pleasure meeting you! I am so glad I know you and your team. I really enjoyed my time last night and learned so many things that answered my questions. Hope to see you soon again, Have a great weekend.

Paul Tanton, Leprecon Program Manager writes: Greetings Terri, thanks to everyone at PAS for coming out in force for LepreCon 42 Annual Science Fiction and Fantasy Convention. I only heard positive feedback about your Star Parties.



Don, Mike and William pose for this photo for Phoenix Magazine, in which the issue came out on July 29th, Vol 51, No 9, page 46. Photo was taken by Don on June 23 and provided to the magazine editor to use.



Outdoors, for the evening session of this 4 day, all day long event, we see some scopes being set up for the star party and Terri with the PAS handouts



This is the PAS Table set up for inside of the Park Terrace Suites with Mike Marron sitting at the table and Sam Insana chatting with Mike. Photo taken by Terri Finch on June 24.

October 15 2015

Sunrise: 06:33

Sunset: 17:53

What's Up For October?

By Rod Sutter, PAS Past President

Planets

Name	Date	Rise	Set
Mercury	10-15-16	05:54	17:36
Venus	10-15-16	09:21	19:32
Mars	10-15-16	12:53	20:38
Jupiter	10-15-16	05:23	17:16
Saturn	10-15-16	10:31	22:21
Uranus	10-15-15	17:48	06:38
Neptune	10-15-16	15:55	03:16
Pluto	10-15-16	12:51	22:56

All Times Arizona Time
Bolded dates and times are nighttime objects



New: September 30



Q1: October 8



Full: October 15



Q3: October 22

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One Incredible Galaxy Cluster Yields Two Types of Gravitational Lenses

By Ethan Siegel

There is this great idea that if you look hard enough and long enough at any region of space, your line of sight will eventually run into a luminous object: a star, a galaxy or a cluster of galaxies. In reality, the universe is finite in age, so this isn't quite the case. There are objects that emit light from the past 13.7 billion years—99 percent of the age of the universe—but none before that. Even in theory, there are no stars or galaxies to see beyond that time, as light is limited by the amount of time it has to travel.

But with the advent of large, powerful space telescopes that can collect data for the equivalent of millions of seconds of observing time, in both visible light and infrared wavelengths, we can see nearly to the edge of all that's accessible to us.

The most massive compact, bound structures in the universe are galaxy clusters that are hundreds or even thousands of times the mass of the Milky Way. One of them, Abell S1063, was the target of a recent set of Hubble Space Telescope observations as part of the Frontier Fields

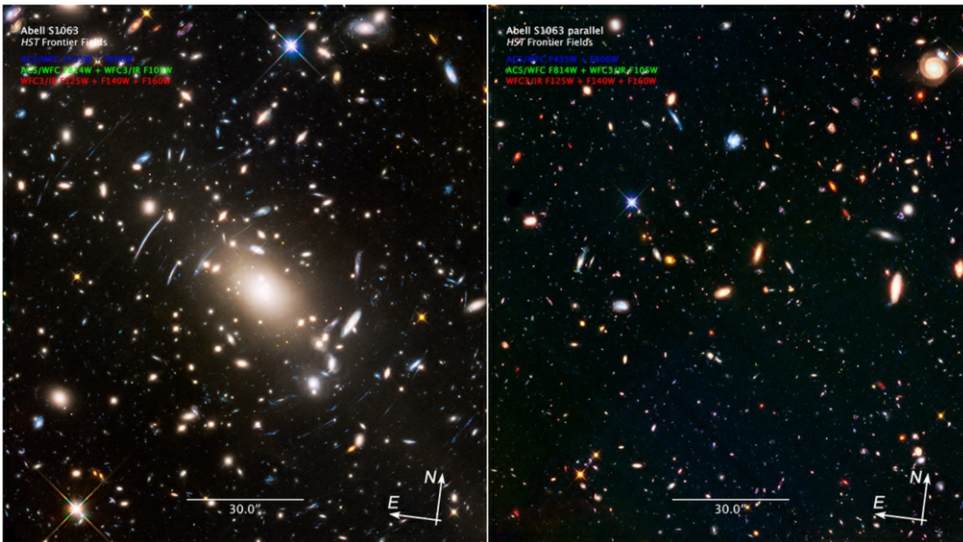
program. While the Advanced Camera for Surveys instrument imaged the cluster, another instrument, the Wide Field Camera 3, used an optical trick to image a parallel field, offset by just a few arc minutes. Then the technique was reversed, giving us an unprecedentedly deep view of two closely aligned fields simultaneously, with wavelengths ranging from 435 to 1600 nanometers.

With a huge, towering galaxy cluster in one field and no comparably massive objects in the other, the effects of both weak and strong gravitational lensing are readily apparent. The galaxy cluster—over 100 trillion times the mass of our sun—warps the fabric of space. This causes background light to bend around it, converging on our eyes another four billion light years away. From behind the cluster, the light from distant galaxies is stretched, magnified, distorted, and bent into arcs and multiple images: a classic example of strong gravitational lensing. But in a subtler fashion, the less optimally aligned galaxies are

distorted as well; they are stretched into elliptical shapes along concentric circles surrounding the cluster.

A visual inspection yields more of these tangential alignments than radial ones in the cluster field, while the parallel field exhibits no such shape distortion. This effect, known as weak gravitational lensing, is a very powerful technique for obtaining galaxy cluster masses independent of any other conditions. In this serendipitous image, both types of lensing can be discerned by the naked eye. When the James Webb Space Telescope launches in 2018, gravitational lensing may well empower us to see all the way back to the very first stars and galaxies.

If you're interested in teaching kids about how these large telescopes "see," be sure to see our article on this topic at the NASA Space Place: <http://spaceplace.nasa.gov/telescope-mirrors/en/>



Galaxy cluster Abell S1063 (left) as imaged with the Hubble Space Telescope as part of the Frontier Fields program. The distorted images of the background galaxies are a consequence of the warped space due to Einstein's general relativity; the parallel field (right) shows no such effects.

Image credit: NASA, ESA and Jennifer Lotz (STScI)

Sci-Fi Movie Trivia:

Space Cowboys (2000) - NASA offered their "vomit comet" plane that can create weightlessness, for filming (it was previously used in Apollo 13 (1995) for the weightless scenes). Clint Eastwood turned down the offer for fear that the older actors would be made too sick to film.

Sci-Fi Movie Trivia:

Mission To Mars (2000) - After Mars Recovery is given the OK to enter orbit around Mars, Woody Blake says "Let's light this candle". This is exactly what Alan Shepard, the first American in space, said just before lift-off on his inaugural Mercury flight.

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>

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

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

Jan 19: Guest Speaker & Topic: TBA

Sci-Fi Movie Trivia:

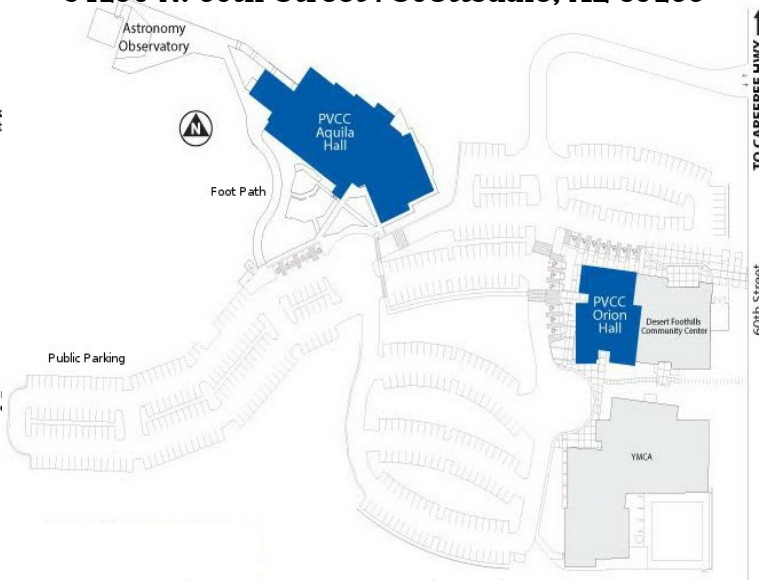
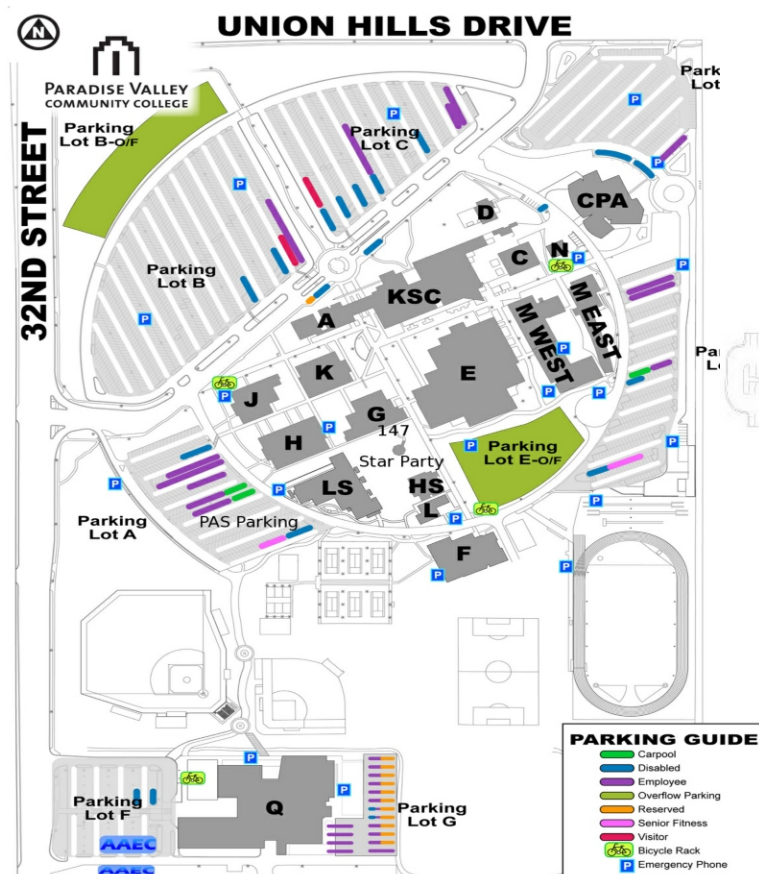
Ender's Game (2013) - Portions of the film were shot at NASA's Michoud Assembly Facility in New Orleans, Louisiana, where the massive external tanks for the space shuttle program were constructed.

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!

October 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 NSTS (Private)
2	3	4 Asteroid Occultation	5	6 Astronomy Lecture	7 Private event in Phoenix	8 Astronomy Day at Park
9	10 School Star Party (Private) Columbus Day	11	12	13 ASU West Star Party	14	15
16 Telescope Workshop	17	18	19	20 Telescope Workshop	21 Orionids Meteor Shower	22 Private Event in Carefree
23	24	25	26 School star party (Private)	27 Huge Star Party at BMC	28 Halloween Party (Private)	29
30	31 Halloween					