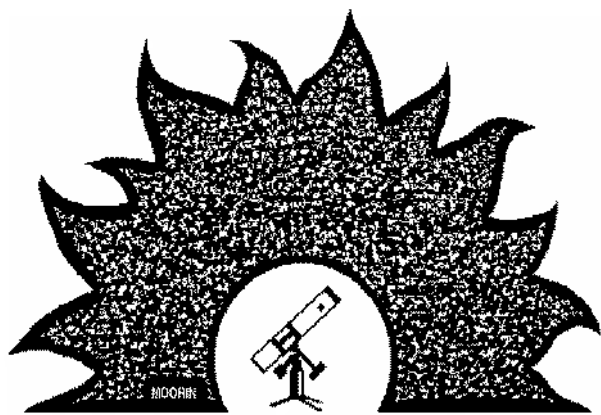




PAStimes

Phoenix Astronomical Society

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Summer 2017

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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

EARL DELONG (1956-2017)

By Sam Insana President of the Phoenix Astronomical Society

Earl DeLong, a member of PAS for the last several years, passed away April 19th. He was born in East Chicago, Indiana, and worked as a chemist in both the coal and nuclear industries for 31 years. He married Anita Levenda in 1982, and had two daughters Katherine Anne and Kari Marie. Earl loved teaching his two grandsons about the fascinating world of science and over the last few years volunteered as a tutor for Phoenix elementary students in math and science. He apparently was very good at playing the piano, and we regret never having had the opportunity to hear him at PAS.

Earl was an active member of the Phoenix Astronomical Society for several years. He attended star parties with his 10 inch Dobsonian telescope which he continued to upgrade with tracking, goto and other features. Earl lectured PAS audiences on the New Horizons Pluto Mission, optics and filters, and other astronomy subjects. He attended our PAS field trips to observatories and also our socials and potlucks. Earl was kind, thoughtful, and willing to help out anyone who needed guidance, especially children with their thirst for new ideas. He was the kind of person who made people feel good. Earl's widow, Anita, has graciously donated his telescope to PAS. We all thank her for her generosity and we know Earl would have approved of the gift.

Anita had a celebration of life for Earl where PAS members Paul Facuna, Pete Turner, Howard Moneta and his Mom, Daniella, Alex Vrenios, and Sam Insana attended and shared memories and photos with his family and friends. PAS also had a celebration of life at the May 11th general meeting where dozens of photos were shown and several PAS members said kind

words about Earl.

I personally loved going to dark sky locations with him, where we spent many hours gazing at deep sky objects. Among many other things, Earl helped me find the North American Nebula with binoculars and showed me the benefits of an Oxygen III filter for observing the Veil Nebula while at a dark sky location north of the Grand Canyon. Although I and others left after a while because of the cold, Earl stayed all night because he knew it was a rare opportunity to see some of the darkest skies in America.

Earl, we will all miss you - you made our lives better for having been such a wonderful part of PAS.

Anita writes: Earl had Brain surgery in late February. He went back into the hospital on April 8th due to complications. He was placed in hospice care on April 18th. Earl lost his battle and passed away on April 19th.



Taken by Sam Insana.



Photo taken by Terri Finch.



Photo taken by Terri Finch.



Photo taken by Terri Finch.

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Upcoming PAS Events of July & August

By Terri Finch, 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 it is for PAS members only. This list is accurate as of the posting of this newsletter to the website. More events may be added to the PAS Calendar.

July 1, 2: PAS will be at Leprecon, held this year at the Tempe Mission Palms from 10am to 10pm Saturday and Sunday. PAS will be indoors Saturday and Sunday and will do star parties Saturday and Sunday nights. More details can be found on the PAS website. <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2321&day=2017-71&c=1>

July 6: PAS will be indoors at Bookmans for a Star Wars event from 12pm to 3pm with demos, telescopes on display, info about the club, and Q&A for the kids. Come answer a question, win a prize. Everyone welcome! Bring the whole family. More info: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2341&day=2017-7>

[6&c=1](http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2242&day=2017-85&c=1)

July 8: Public star party at Bookmans for a sidewalk astronomy event. Event is from 8pm to 10pm and RSVP is requested. Come view through our telescopes to see the Moon, Jupiter and more. More details: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2241&day=2017-78&c=1>

July 9: 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=2023&day=2017-79&c=1>

Aug 5: Public star party at Bookmans for a sidewalk astronomy event. Event is from 7:30pm to 10pm and RSVP is requested. Come view through our telescopes to see the Moon, Jupiter and more. More details:

<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2242&day=2017-85&c=1>

Aug 6: 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=2024&day=2017-86&c=1>

Aug 21: Total Solar Eclipse, totality is not visible from Phoenix, but a number of PAS Members are making a field trip to Oregon, Washington and other states north of Arizona to see it.

Aug 21: Public Viewing of Partial Solar Eclipse at Arizona Science Center in Phoenix 9am to 12pm. More details: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=2361&day=2017-821&c=1>

Thank you from Astronomical Society of the Pacific

Edited by Terri, Event Manager

I received this letter dated May 31, 2017 along with a donation to the club of the Sky & Telescope's Pocket Sky Atlas as a thank you from the ASP. Here is what they wrote:

"To the Members of the Phoenix Astronomical Society: We wanted to thank your club for all of your hard work holding

and logging events in Q1 2017. Our records show that your club has received all of the toolkits available for NSN member clubs at this time. We still wanted to show our appreciation and so are sending your club this copy of the Sky & Telescope's Pocket Sky Atlas, a donation from the Astronomical Society of the Pacific's AstroShop.

We hope you enjoy this pocket sized guide to the night sky! May you enjoy clear skies this summer stargazing season, Dave Prosper and Vivian White, Night Sky Network Admins, Astronomical Society of the Pacific."

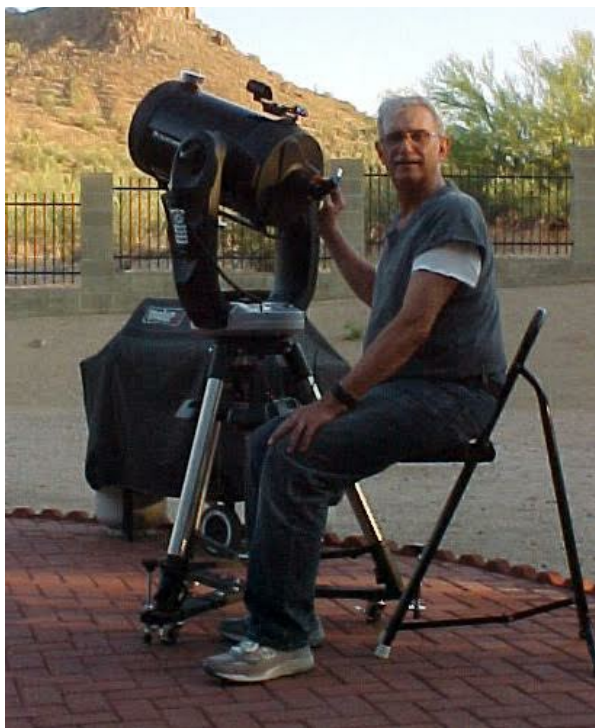
We really appreciate this donation. Thank you NSN!

Alex Vrenios in Reflector Magazine

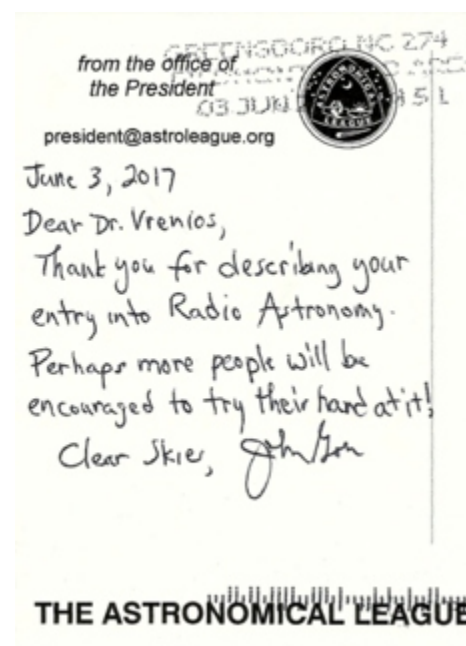
By President Sam Insana

I am very proud to announce that Alex Vrenios, our PAS Vice President, has had a very well written article entitled "The Radio Sky" published by Reflector Magazine on pages 20-22 of the June 2017 edition. It is very professional, and includes diagrams and photos. He includes analyses of solar radiation disturbances, sudden ionospheric disturbances, radio meteor scatter, Jupiter radio streams, and galactic hydrogen radio detection. I encourage everyone in our club to enjoy his article. Alex is our de facto liaison with the Astronomical League, and he has earned many certificates and pins for his astronomical work. Congrats Alex!!!

Alex adds: I've never written for the AL before. It was a nice touch, however, to receive a postcard from the President of the Astronomical League.



Dr. Alex Vrenios is a Lifetime Member and a very active part of PAS.



Here's the postcard Alex received from the President of the Astronomical League (AL) for submitting his article "The Radio Sky" to the AL's quarterly publication the *Reflector*. This publication is provided to PAS Members by being an affiliate AL Member through PAS.

Photo provided by Alex.

Arcosanti Walk Thru Jan 30

By Terri, Event Manager

Sam Insana, Terri Finch and Don Boyd took a Field Trip to Arcosanti to see the location where the telescope team would be setting up for the Arcosanti Star Party of May 12, 13 and 14. Our tour guide was Jeff Stein who was very informative and eager to have PAS at their 2017 FORM Event <http://experienceform.com/>. While there, I took 150+ photos, the goal being to use them to describe how and where we will be setting up the telescopes. Here are a few photos for your enjoyment. The tour, including lunch was about 1.5 hours long; the drive to Arcosanti was about 1 hour, each way. Many thanks to Jeff for the tour and to Sam for driving the three of us up there for this scouting trip.



Using my camera, Sam took this photo of me having lunch. We had a great Walk Thru. I'm looking forward to doing this event in May.



Sam, Jeff and Don look out over the horizon at the view. Behind them is the location the telescopes will be set up, on this roof, for this event. Photo by Terri.



Sam & Don having lunch before returning home. The food was very good and decently priced. Photo by Terri.



From above, we can look down into the Arcosanti Cafe. Photo by Terri.



Jeff shows us the next phase of construction at Arcosanti. Photo by Terri.

PRESIDENT'S CORNER

Aug 21 Solar Eclipse Experiences
By President Sam Insana



Many of our members will be attending the August 21st Solar eclipse in Madras, OR, Casper, WY, Scottsbluff, NE and Grand Island, NE.

PAS Members who experience this

eclipse are invited to give a short presentation about their experience at the Sept 7th general PAS meeting. Your talk can be up to 10 minutes long and will be enhanced if you can include photos or videos of the surrounding area, the eclipse, the people around you or other relevant items. If you stay in Arizona, you can also give a similar presentation on the partial eclipse.

Even if you do not have photos or videos, please say a few words about how it felt to you personally: any change in sounds or temperature, any stars visible, whether you saw the shadow racing across the landscape, solar images on leaves, Bailly's Beads, the Diamond Ring effect, the

corona or solar flares.

You can also tell us how you did with traffic, lodging, weather, escape routes and whether you were on your own or with a group of people or an organized tour.

Other ideas: Did you use solar glasses, filtered scopes, filtered binos? Cameras (and what type)?

We can also talk about other upcoming total, partial and annular eclipses if time permits. Sign up with me via email, and include an estimate of how long your brief presentation will take so we can best manage the time available at this meeting. My email is insanas@aol.com. Best wishes.

Submissions to the PAStimes Newsletter

By PAStimes Staff

Members of PAS are always invited and welcome to submit articles, photos, reviews or ads to our newsletter, "PAS-times". We sincerely want to thank those who have done so over the past PAS year - they make it all that much more fun to read and enjoy. Readers benefit from the many reviews our members write about astronomy events they have attended (not just PAS

events) and the newsletter staff is happy to help in the sale of astronomical equipment by including ads about anything astronomy-related. We hope for another successful year of quality reading material and photos in our club publication. Currently, Don K. Boyd is the Managing and Layout Editor, tirelessly assisted by Terri Finch, who in addition is a major article contributor. Eric

Steinberg is copy-editor with Ora Kurland and Matt Kohl doing the proofreading. Keep sending us those submissions and we'll do our best to include them in PAS-times. Thank you!

The deadline for the each month's issue is the 10th of the previous month. Send your submissions to Events@pasaz.org.

Messier Marathon PAS Results of 2017

By Terri, Event Manager

This year's Messier Marathon, held at Mike's home in Carefree on March 25, was not good weather-wise. The party was small and only 2 PAS members competed. I wish to commend the two members for their efforts and give an "Honorable Mention" for having tried to do the Messier

Marathon through clouds. Don Boyd took 2nd place in this year's Marathon with 2 objects seen through his 8" telescope, while Alex Vrenios took 1st place with 5 objects viewed through his 7X50 binoculars. In spite of the clouds, the group that attended at Mike's enjoyed the night. To read more

about this year's event, please see the May 2017 Issue of PAStimes. The article is on the bottom of page 7. We hope for clear skies for the 2018 Messier Marathon. See you there!

FOR SALE:

\$3200 Meade 10" LX200 Advanced Coma-Free Cassegrain Telescope with GPS and accessories. Come see telescope in Bullhead City, AZ - local pickup only, package deal. Contact: Mike at Email Address: joseph.ascarate@gmail.com

Specifications: Meade LX200 with built-in GPS drive tracking system, Navigate and precisely track over 145,000 objects in the night sky. Primary mirror lock and patented Smart Drive technology. Fo-

cal length: 2540 mm. F-Ratio: f10.0, Tripod: Full sized heavy duty stainless steel tripod. Mount: rigid cast aluminum fork style. Drive: Meade Smart Drive, slew speeds from 1 to 8 degrees per second. Included eyepieces: 1.25 in. 26 mm Super-Plossl eyepiece. Finder Scope: 8x50 Viewfinder. Meade DSI (Deep Sky Imager). Astronomy Viewing Chair: Designed for sky observing and adjustable from 9" to 32". Meade Telescope Tube Balance System. Eyepiece tray. Hand controller: AutoStar II

Controller - 145,000 object database. Contains the following: New General Catalog (NGC) - 7840. Index Catalog (IC) - 5386. Messier Catalog (M) - 110. Caldwell Catalog - 109. Named Objects - 227. Herschel Catalog - 400. Abell Catalog of Galaxy Clusters - 2712. ARP Atlas of Peculiar Galaxies - 645. Uppsala Galaxy Catalog - 12,940. Morphological Catalog of Galaxies - 12,939. General Catalog of Variable Stars 28,484. SAO and Hipparcos Star Catalog - 31,090.

PVCC Telescope Workshop Feb 9

By Terri, Event Manager

We had a solid turnout and some fun people at this telescope workshop! From PAS we had William and Terri Finch, Alex Vrenios, Don Boyd, Leah Sapir, Sam Insana, Rodney Fong and PVCC's Jenny Weitz.

We had 7 RSVP's for the evening, 5 of whom attended. There were also two PAS Members looking for assistance. Vivek attended to find out what telescope to purchase, spending some time with William and me to begin. Leah then took over, giving him some pointers on what astronomy field books would be a good resource. Raul Massand brought his Celestron 21035 70mm Travel Scope and also stayed with William, Leah and me. Jennifer Key brought her Celestron Nexstar 102SLT and was helped by Alex, William, Rodney and me through the night. George Sabo attended to have his telescope looked at after having recently dropped it at BMC. Several members worked with him on collimation and answered questions. Because he had set up outside, he was able to show guests and PAS members views of Venus and Mars. George Zukauckas attended and spent most of the evening getting mentoring (see below) from Sam. One other attendee was Eric Haselman who brought his Orion 8945 SkyQuest XT8 Classic Dobsonian Telescope. William assisted him along with a few other members.

The night was mostly clear, with pleasant temperatures in the 80's. Several attendees stuck around until 9:50pm. I wish to thank my telescope team for all their help. And I'd like to thank the attending class members who were absolutely won-

derful to get to know and assist on this very successful night.

Leah writes: I gave general advice on skywatching and "how to get started in astronomy" to Eric, Raul and Vivek for the majority of the evening.

President **Sam** writes: I was asked by member George Zukauckas if I would mentor him in the methods of telescope observing and doing star party presentations. George is a relative novice and wants to become proficient in as short a time as possible. I spent 2 hours with George at this event showing him how to pick out celestial objects on any given night, how to determine their magnitude and size, what kinds of filters to use, what kind of magnification to use, how to find the objects, how to learn and communicate interesting facts about each object, among dozens of other pointers. I also answered many questions from George on how to do public presentations. The next step will be at the Feb 23rd public star party at BMC. George will see



Leah was super helpful to everyone but spent the most time talking with Eric about star charts and astronomy books. Photo by Terri

how I do presentations and then I will observe George doing them. If all goes well, George should be able to become a star tours member within months rather than have to wait for years of experience. Hopefully other veteran PAS members will take novice members under their wings.....



We had a great turnout at this Telescope Workshop. (L to R) Don and William assisting Jen at the back of this photo, George Sabo's back to us behind Alex in the front who was talking to Leah, and George Zukauckas chatting with Sam at the back right of this photo. Photo by Terri.



Jenny took & posted this photo to Facebook and I saw it & felt it was a great photo for the newsletter. Thank you Jenny, for letting me include it in with this review of the event.

Candeo School Mar 11

By Terri, Event Manager

Three Star Tours team members attended Candeo School on March 11th to show the school community objects in the night sky and some meteorites. Attending this event was Sam Insana who provided a great view (see photo) of his meteorite collection. We also had Roger Anzini with his 16" telescope and Bruce Wurst attending with his large telescope. The night was clear and the event was a success - we got some great feedback from Gabby Gmyrek, the Teacher with whom I set up the event.

Gabby writes: "We LOVE everything. Thank You! -Gabby We hope to do this event again next year."

Sam writes: Roger and Bruce brought large telescopes and showed Venus, Orion nebula and other gems to about 100 students, parents and teachers at Candeo school in Peoria. I showed 14 meteorites and 2 tektites and the 50 students and adults who dropped by seemed to love looking at them and learning about them. It was a beautiful night.



Sam brought his meteorites to this school to share with the attendees of the star party. It was a great success! Photo provided by Sam Insana.

Annular solar eclipse observed from chile

By Paul D. Maley

A unique annular solar eclipse occurred over southern Chile on February 26. I flew down there to observe it near the southern edge as part of a continuing effort by the International Occultation Timing Association to observe Baily's Beads at both the northern and southern limits of the eclipse path. The purpose of this is to perform this activity at as many eclipses as possible to gather data that might be used to assess changes in the solar radius.

This eclipse was interesting in that it was a nearly total solar eclipse. In fact, the Moon covered 98.6% of the Sun's disc at central eclipse time.



Final location of our eclipse observation near Valle Simpson, Chile.

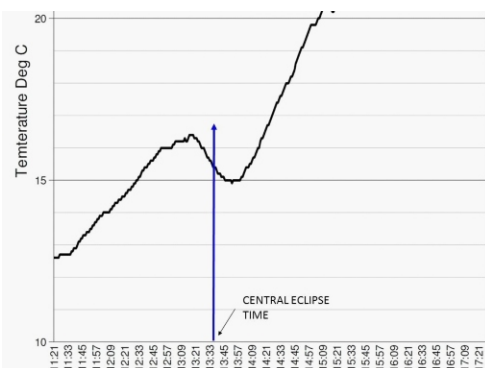
I plan for eclipses long in advance. Although I had planned to travel to Angola, I was convinced the weather and costs/logistics were going to be uncertain/high; I had set up a second plan to go to Argentina but the ground operator we used became unreliable. Instead I opted for Chile. This was my 22nd annular eclipse. My wife Lynn Palmer and I observed the ASE from 2.7 north of the southern edge along a well-travelled road even during annularity. It would seem that many locals paid no attention to the eclipse. Alignment of my Meade 2045D was accomplished using only a map and inclinometer with the three tripod legs set on the hood of our rented SUV. This was difficult but with care, all was stable and, amazingly, tracking was very good prior to and during annularity.

From our roadside site were able to see sheep and chickens retreating back to a local farm house well after second contact; roosting magpies appeared in a field just before annularity. Three flocks of geese flew off between second and third contact and flying insects became more active as we approached maximum eclipse time. The



Setup at a gate by the side of Route 7. Video gear is inside the briefcase; Texas flag (similar to the Chilean flag) was set up on the gate as this is the trademark of RING OF FIRE EXPERIMENTS. L. Palmer photo.

approaching lunar shadow could not be detected visually as we looked up into the sky, though there was a notable lowering of ambient air temperature by what appeared to be several degrees during the march from C1 to C2. My colleague Paul Stewart from Australia measured a 1.6 deg C temperature drop in Coyhaique town.



Temperature log measured by P. Stewart.

One thick cloud which appeared to approach the Moon/Sun vanished quickly. Other clouds lingered to the east but well below the Sun which was 33 degrees above the horizon at maximum eclipse.

Baily's Beads were rapid to appear and vanish (always being tiny in their structural appearance at the south limit of an annular eclipse as they mirror the profile at the Moon's north edge); the horns of the Sun rapidly swung to make an annulus that lasted about 21 seconds. All eclipse observers that we encountered prior to Feb 26 remained in Coyhaique proper or traveled up to the centerline. There was the brief sensation of "totality" though that was not the actual case as the sky around us dark-

ened and the video screen used to assess the Baily's Beads appearance became very easy to use for focusing. Prior to that, even though shielded, the sky was so bright as to make the screen very difficult to make out.



Screenshot from my video system showing Baily's Beads at the tips of the arrows.

My goal was to get video of the appearance of Baily's Beads—tiny points of light appearing at the edge of the Sun. At the eclipse edges, these points of light linger longest and are much easier to capture. At the south edge, the Beads originate from the north pole of the Moon which has a flat topography. Light passing through mountains at the north lunar pole are generally small due to the lunar topography.

However, due to anomalies with my solar filter and telescope there was overexposure and smearing in the video which was not expected. Next time I will have to modify my hardware configuration to mitigate this issue. Astronomy in the field is not always an exact science!

I had been worried due to the abundance of both predicted and observed cloud and the high humidity in the prior hours following sunrise. But remarkably, the eclipse weather forecast model was accurate beginning 72 hours prior to the event. Because of the geography and absence of good roads, there were only two possible locations to observe the eclipse at the south edge where we were and both were poorly located with no safe sites at which to set up.

Prior day's scouting rejected all locations except for a gate to a farm which became our default site. In addition there are no services along the 56km long road between the Balmaceda airport and the town of Coyhaique. The only gas stations were in the town and none at the airport with the only alternative being across the border in Argentina. We were not cleared to travel

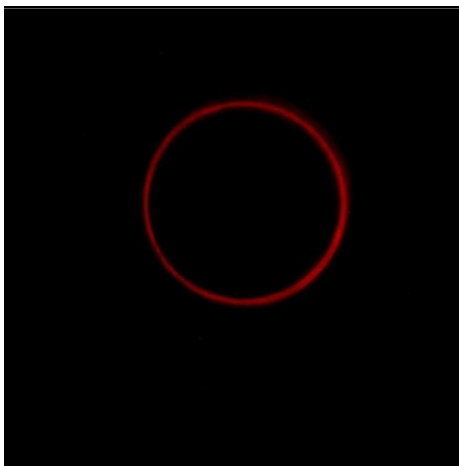


Figure 4. Central eclipse as photographed by P.Stewart from closer to the centerline. The color is defined by the filter being used in front of the camera.

across the border with Argentina by the rental car company so had to contend with a very limited driving radius. All things considered, this plan worked very well.

As is common at the eclipse edges there were no observers or crowds swarming nearby even after we quickly repacked and returned to Coyhaique, Chile. We returned along the same highway, passed the site again and made a flight out of Balmaceda airport 4 hours after annularity. All flights out of the area were completely full that day.

More about this trip can be seen at: <http://www.eclipssetours.com/2017-chile-eclipse-results/>

Onward to my 47th solar eclipse expedition coming in August 2017!

Scope for Sale:

Meade LX200GPS 12" Schmidt Cassegrain Telescope Package Deal. Items are all in new or like new condition. This scope has been under the stars only twice. Asking \$2,950.00. Contact PAS Member Bill Powell by email: wrpowell2002@yahoo.com For the complete list of what this scope comes with as a package deal, visit this link: <http://www.pasaz.org/forums/showthread.php?p=3026#post3026>

Bookmans Sidewalk Astronomy Event Mar 11

By Terri, Event Manager

This was a night event at Bookmans on March 11th. Attending from PAS were: William and Terri Finch, Mike Marron, Don Boyd, Rick Cunningham, Bill and Jean Manney and Rodney Fong. We also had a guest attendee Robert Parrish. Later in the evening, friends Nyla Murphy and Jonna also came. We also had two other PAS members come to us seeking information about the PASaz.org site.

The night was clear and warm and we had fun showing Mars, the moon, Orion nebula, and Jupiter as it was rising. We had a number of RSVP's from MeetUp, though not many of them checked in with me. William helped me with the PAS table, while alongside, Mike and his meteorites stole the show, keeping the people well entertained. Across the parking lot we had Jean and Bill hanging out with Rick and his 8" scope, Don who brought his 8" scope and new attendee, (not yet a member) from MeetUp, Robert Parrish. It was a very successful event.

I'm looking forward to the next event like this on April 8th and then May 6th. Prior to the event, several PAS Members (Rick, Don, William, Mike and Terri) met for dinner at Joe's Philly in the same shopping center as Bookmans.



The PAS Table with William Finch and then Mike's Table with Mike Marron behind it, are set up out front of Bookmans for this Sidewalk Astronomy Event. We had a lot of attendees look through our telescopes on this night. Photo by Terri.



This photo says it all, taken by Terri. At the back of the photo, up on the sidewalk, in front of Bookmans we see Mike's table and the PAS Table set up. Then, as the public crosses the driveway, they come over to the telescope set up location.



Don Boyd looking through his telescope towards Saturn to find it for an attendee of the Sidewalk Astronomy Event of Mar 11. Photo by Terri Finch.



Rick Cunningham was setting up his telescope to focus on the Moon on this evening. It was a clear night and the temperature was pleasant. Photo by Terri.

Bookmans FREE Telescope Workshop Apr 9

By Terri, Event Manager

Our free telescope workshop at Bookmans was staffed by PAS members Sam Insana, Bruce Wurst, William and Terri Finch, Alex Vrenios, Ed and Bette Wurst and Rodney Fong. We had 2 RSVP's, only one of whom attended. Thomas Snuggs

from Queek Creek came with his Celestron Astromaster 130EQ. Sam assisted him while the rest of the telescope team chatted about various club-related matters around the PAS Table. After the workshop, ten PAS Members and friends attended an en-

joyable dinner at Carlos O'Briens. Looking forward to the next few telescope workshops at Bookmans on May 7, June 11, and July 9.

STEAMtastic at Black Mountain Campus Mar 9

Reviews by Leah Sapir, Terri Finch, and Sam Insana

STEAM = A celebration of Science, Technology, Engineering, Arts, Mathematics, & Music

Terri, Event Manager writes: The STEAM event at Black Mountain Campus had two parts to it. From 4:00pm to 7:00pm there was a series of indoor hands-on projects run by the BMC science class for the attending school kids. Some of these activities were: potato printing, straw rockets, microwave brownies, exploding chocolate, laser waterfall and more. There were 6 rooms in the Aquila building being used for these experiments and a detailed color map to direct everyone to the fun activities.

Mike Marron and Ofelia Waters set up a table of meteorites, while Terri set up next to them with PAS Handouts. We also had quite a few experiments going on such as the paper airplanes with lights and "magnetic slime". We stayed until 6pm and then moved outdoors to the top of the walkway leading down to the astronomy observing deck. At my table, I demoed how to read a planisphere and explained why we do not look at the full Moon through a telescope.

There were many outdoor activities as well during the afternoon including a potato launcher, fossil dig, giant jenga and more. See photo of map for complete list of activities at this event. It was a well designed, interactive and fun event for kids of all ages.

Sam, PAS President writes: I showed a beautiful solar flare with my PST from 4 to 6 pm with Mark, Paul, and William giving me 15 minute breaks so I could enjoy some of the STEAM events.

Terri adds: The 2nd half of this day's events included a star party down on the astronomy observing deck from 7pm to 9:45pm. The telescope providers were: Sam, Don, Bill, Mark and Leah. Helpers were William, Ron Walker and Nyla Murphy. The evening portion of this event was very busy with people gathered around Mike's table all night long. I would estimate I talked to over 150 people as they passed by my table to get to the observing

deck; most of the RSVP's checked in with me to say they were there.

Leah writes: I showed Venus (as a crescent) and then the Orion nebula. I explained how seeing the phases of Venus enabled Galileo to determine that Venus orbits the sun, instead of everything orbiting the Earth. And of course for Orion, I pointed out the Trapezium and explained how these are young stars that were formed inside the nebula (Today we know that they are around 300,000 years old.) I also mentioned that astronomers have found with infrared observations that there are more young stars hidden inside the nebula.

At the very end, after Sam pointed out that Jupiter was rising, I was able to point my scope at Jupiter, but not much could be seen because it was so low - only a yellow circle. The two stripes were faintly visible about 15 min later, just before we packed up. The 4 moons were clearly visible: Ganymede very close to Jupiter on the left, and then Io, Europa and Callisto in a straight line on the right.

Sam adds: That night I showed Tycho crater with its mountain peak and debris rays on the Moon, M42 Orion Nebula, M45 Pleiades open cluster, and Venus with my 8 inch newtonian reflector. I estimate hundreds in attendance at the STEAM in the afternoon and about 70 at night for our star party.



At the STEAM event of Mar 9 at Black Mountain Campus Sam provides this photo of Solar Viewing.



Outside, that evening, while waiting for some folk to come to the event, Nyla, Mike, Ron, William and I played around with Mike's toys. One of the toys is Mike's Diffraction Grating Glasses of which I took a photo through of the distant lights in the parking lot. Photo by Terri.



Mike was set up at a table next to my PAS Table and of all the tables set up in this room, Mike had the crowd the whole time we were there. Photo by Terri.



This flier was provided to attendees at the Mar 9 STEAMtastic event and it is very impressive with the number of activities planned for this day. PAS was in room 143 and on the Astronomy Deck.

Sci-Fi Movie Trivia

SpaceCamp (1986) - The footage of the Space Shuttle Orbiter landing is from Challenger touching down at the conclusion of STS-8. This was the first night landing of the Space Shuttle program.

The Black Hole (1979) - Dr. Reinhardt's ship was originally called the Centaurus. It was renamed Cygnus after the constellation where the first known black hole was discovered in 1964.

Marooned (1969) - Was the impetus behind the 1975 Apollo-Soyuz Test Project where American astronauts and Soviet cosmonauts docked in space.

Spring Night Sky Training Session Mar 18

Review provided by President Sam Insana

Mike hosted the NSTS with 9 PAS members in attendance. It was a night where many stars could be seen but there were some high thin clouds which may have washed out the comet Charles came to see. Sam provide the RA and Dec coordinates but no one could spot it with binos or telescopes. It should brighten in the next 2 weeks. Michelle came with her husband Mark to learn about solar filters. Sam gave

her his opinions on glass filters and hydrogen alpha filters. Eric showed great views with his giant 22 inch scope. Paul spent hours learning how to operate the club goto telescope being housed at Mike's place. Peter tried his new coma corrector and he seemed satisfied with its performance. Rodney helped out and enjoyed viewing several telescopic objects like Jupiter, Orion nebula, M81 and M82 galaxies, and

many open clusters. Mike took out some of his more unusual meteorites for Sam and Paul near the end of the night and answered very technical questions.

Unfortunately 4 PAS members cancelled their attendance at the last minute and missed out on a fun and informative and relaxing evening. Many thanks to Mike for hosting another successful NSTS at his home in Carefree.

Black Mountain Campus Star Party Mar 23

By Terri, Event Manager

The weather forecast looked marginal for this event, following a storm the day before, though forecasts showed that rain and clouds might clear by 8pm. We decided to go ahead on that basis.

Six PAS Members met for dinner prior to the event at 4:30 at Sesame Inn in Carefree to meet up with Bob Ewing who was in town for about a week visiting: Bob, Sam Insana, Paul Facuna, William and Terri Finch, and Mike Marron. At the site, clouds were still heavy especially toward the Western sky, but by dark the sky was clear and the event proceeded.

We had about 50 public RSVP's with a total of about 80 attendees for the night. PAS members telescopes were Ray Adams, Sam, Don Boyd, Mark Johnston, Bill Powell and Mike Cawley. Also helping but without a scope were William and Terri with the PAS Table of handouts, Mike with his meteorites, Paul directing traffic and

Bob visiting from out of town. Also attending this event was Jenny Weitz and a wonderful volunteer, Nyla Murphy.

We want to welcome 2 new members to PAS who joined on this evening: Doug Ellmann and Peter Jones!

Many thanks to the PAS Telescope Team who drove in the rain to get to the event, stayed for a successful clear night of viewing and later, braved the cold. Between 8:30 and 8:45, the temperature which was already chilly with a slight breeze, became sharply colder with a wind that cut through the thin jackets of those who didn't come prepared for colder temperatures... these conditions chased away the public by 9:15pm. The PAS Team packed up about 9:30pm. I look forward to the next BMC Star Party (with hopefully warmer temperatures) on April 20 and May 4th (Star Wars Day - May the 4th be with you).



Paul, Sam, Bob, Mike, William & Terri gather for dinner prior to the BMC Mar 23 event at Sesame Inn in Carefree to have dinner with Bob Ewing who was visiting from out of town. Photo with Terri's phone, but taken by waitress.



President Sam Insana presents Bob Ewing with a PAS Night Sky Network Certificate and Pin for his Public Outreach in 2016. Photo taken by Terri.

Basis Mesa School Star Party Mar 31

By Terri, Event Manager

Attending the event, this year, was only Mike Marron with his meteorite display, assisted by Ofelia. Our contact at the school, Jon Hutman, had requested additional scopes, but due to multiple bookings and an illness, we were unable to provide them.

Jon writes: Hi Terri, The event was another success, and Mike and his wife were wonderful. What is her name again? The skies opened up by sunset and we had a great star party outside. Here are a couple of photos that were taken through a scope. Our students and parents had nothing but positive feedback to share with me. Thanks again for your continued support!

Jon writes to Mike: Hi Mike, you did an amazing job once again at Space Night. Thank you for continuing to support our

event and for bringing your wealth of knowledge to our students.



Mike and Ofelia are seen with Mike's Meteorites at Basis Mesa School. This photo was taken by Jon Hutman.



This image was provided by Jon Hutman at Basis Mesa School. Some of his students caught some great images of the Moon and Jon sent one over to be included in the newsletter.

Girl Scouts in North Scottsdale Mar 31

By Terri, Event Manager

On Mar 31, Kevin Witts and Suzanne Morrison presented meteorites and sky views to a great group of 8 year old Girl Scouts. Angela Kevin brought his scope, seen in the photo, and Suzanne presented her meteorites. Many thanks to our contact, Angela Kalia for having PAS at her event. Thanks also to the telescope team for teaching these girls and perhaps inspiring them to become scientists!

Angela writes: "The girls loved it! We all loved it actually! The meteorites were perfect for their age group & a couple of the girls showed so much excitement that I think we may have a few meteorologists born! Thank you all so much!!"

Kevin adds: Great event for a troop of Girl Scouts in Scottsdale on Friday evening. PAS provided a telescope and a presentation on the Solar System complete

with an amazing selection of meteorites. The event took place on the organizers roof! After a challenging climb up a spiral staircase to the roof with a heavy telescope, the event kicked off with clouds already rolling in, we were able to give a dozen girls and their parents views of Mercury and Mars, as well as the Orion Nebula and a few star clusters. It then became completely clouded out. The girls and parents were then provided with an informative presentation on the inner planets and a diverse discussion of meteorites, complete with a chance to hold a piece of the Moon and of Mars. The parents complimented the presenters and offered that they would like to have a similar event for an adult party at some point. The girls loved it and the presenters were given an honorary merit badge for Astronomy.



Kevin's scope was set up on the roof of Angela's home for an exciting Girl Scout star party! Photo provided by Kevin Witts.

Black Mountain Campus Star Party Apr 20

By President Sam Insana

On behalf of PAS, I wish to thank Jenny Weitz and her honor astronomy students for hosting a great star party last night at PVCC BMC. Her students provided PAS members with food and drink and showed enthusiasm looking at the night sky. The weather was delightful and there were about 100 people who looked through our telescopes. Thanks also to all our PAS members for showing up with their 8 scopes and providing interesting information to the public. Ted Blank, Howard Moneta, Pete Turner, Ray Adams, Tom Boharsik, Mike Cawley, Mark Johnston, George Zukauckas, Paul Facuna, Ron Walker, and Mike Marron did a great job, arriving early and staying late which was much appreciated by the public who couldn't get enough of the heavenly show. We showed Jupiter, Orion nebula, M81 and M82 galaxies, M44 Beehive cluster, Cancer Iota double star, Perseus double cluster, Eskimo nebula, and several other objects throughout the evening. There was also a very bright iridium flare at 8:45 pm that drew some ooo's and aaah's.

Shafeek from Meetup writes: Had an amazing time here. Saw Jupiter and its moons, star clusters, Orion nebulae - all for the first time. Terri, couldn't meet you to say 'Hi'. But thanks for organizing this great event.

Jenny writes: Thanks for the fantastic Star Party at Black Mountain! The Honors Students loved it :)



Ron Walker looking through Sam's telescope. Photo by Sam.



Jenny was at the Apr 20 BMC Star Party instructing her honor astronomy students about how to operate a telescope. Photo taken by Sam Insana.



Ted did a Sky Tour with his green laser, sharing the lore of the constellations with the family in this photo. Photo taken by Sam.

Sci-Fi Movie Trivia

SpaceCamp (1986) - What was supposed to be a somewhat light hearted action/adventure movie turned into a marketing nightmare. SpaceCamp was scheduled to be released in early 1986 but on

January 28th the real-life shuttle Challenger exploded 74 seconds after liftoff, claiming the lives of seven American astronauts. After the Challenger disaster, the release was pushed back months. When it was

finally sent to theaters, it grossed less than \$10 million in the U.S. Eerily, the malfunction simulated in the film involved the solid rocket booster and was similar to the actual cause of the Challenger accident.



The Fizzy Seas of Titan

By Marcus Woo

With clouds, rain, seas, lakes and a nitrogen-filled atmosphere, Saturn's moon Titan appears to be one of the worlds most similar to Earth in the solar system. But it's still alien; its seas and lakes are full not of water but liquid methane and ethane.

At the temperatures and pressures found on Titan's surface, methane can evaporate and fall back down as rain, just like water on Earth. The methane rain flows into rivers and channels, filling lakes and seas.

Nitrogen makes up a larger portion of the atmosphere on Titan than on Earth. The gas also dissolves in methane, just like carbon dioxide in soda. And similar to when you shake an open soda bottle, disturbing a Titan lake can make the nitrogen bubble out.

But now it turns out the seas and lakes might be fizzier than previously thought. Researchers at NASA's Jet Propulsion Laboratory recently experimented with dissolved nitrogen in mixtures of liquid methane and ethane under a variety of temperatures and pressures that would exist on Titan. They measured how different conditions would trigger nitrogen bubbles. A fizzy lake, they found, would be a common sight.

On Titan, the liquid methane always contains dissolved nitrogen. So when it rains, a methane-nitrogen solution pours into the seas and lakes, either directly from rain or via stream runoff. But if the lake also contains some ethane—which doesn't dissolve nitrogen as well as methane does—mixing the liquids will force some of the nitrogen out of solution, and the lake will effervesce.

"It will be a big frothy mess," says Michael Malaska of JPL. "It's neat because it makes Earth look really boring by comparison."

Bubbles could also arise from a lake that contains more ethane than methane. The two will normally mix, but a less-dense layer of methane with dissolved nitrogen—from a gentle rain, for example—could settle on top of an ethane layer.

In this case, any disturbance—even a breeze—could mix the methane with dissolved nitrogen and the ethane below. The nitrogen would become less soluble and bubbles of gas would fizz out.

Heat, the researchers found, can also cause nitrogen to bubble out of solution while cold will coax more nitrogen to dissolve. As the seasons and climate change

on Titan, the seas and lakes will inhale and exhale nitrogen.

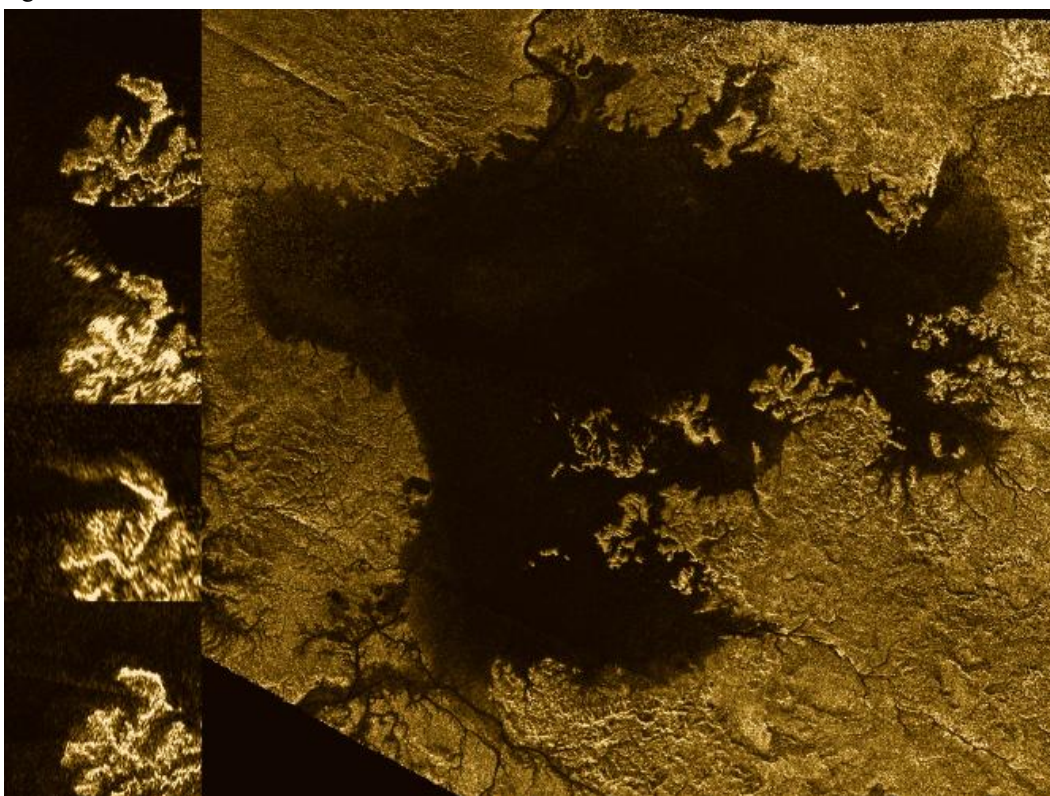
But such warmth-induced bubbles could pose a challenge for future sea-faring spacecraft, which will have an energy source, and thus heat. "You may have this spacecraft sitting there, and it's just going to be fizzing the whole time," Malaska says. "That may actually be a problem for stability control or sampling."

Bubbles might also explain the so-called magic islands discovered by NASA's Cassini spacecraft in the last few years. Radar images revealed island-like features that appear and disappear over time. Scientists still aren't sure what the islands are, but nitrogen bubbles seem increasingly likely.

To know for sure, though, there will have to be a new mission. Cassini is entering its final phase, having finished its last flyby of Titan on April 21. Scientists are already sketching out potential spacecraft—maybe a buoy or even a submarine—to explore Titan's seas, bubbles and all.

visit the NASA Space Place:

<https://spaceplace.nasa.gov/planetweather/>



Radar images from Cassini showed a strange island-like feature in one of Titan's hydrocarbon seas that appeared to change over time. One possible explanation for this "magic island" is bubbles.

*Image credits: NASA/JPL
Caltech/ASI/Cornell*



The Shape of the Solar System

By Marcus Woo

When Stamatis (Tom) Krimigis was selected for the Voyager mission in 1971, he became the team's youngest principal investigator of an instrument, responsible for the Low Energy Charged Particles (LECP) instrument. It would measure the ions coursing around and between the planets, as well as those beyond. Little did he know, though, that more than 40 years later, both Voyager 1 and 2 still would be speeding through space, continuing to literally reshape our view of the solar system.

The solar system is enclosed in a vast bubble, carved out by the solar wind blowing against the gas of the interstellar medium. For more than half a century, scientists thought that as the sun moved through the galaxy, the interstellar medium would push back on the heliosphere, elongating the bubble and giving it a pointy, comet-like tail similar to the magnetospheres—bubbles formed by magnetic fields—surrounding Earth and most of the other planets

"We in the heliophysics community have lived with this picture for 55 years," said Krimigis, of The Johns Hopkins University Applied Physics Laboratory in Laurel, Maryland. "And we did that because we didn't have any data. It was all theory."

But now, he and his colleagues have the data. New measurements from Voyager and the Cassini spacecraft suggest that the bubble isn't pointy after all. It's spherical.

Their analysis relies on measuring high-speed particles from the heliosphere boundary. There, the heated ions from the solar wind can strike neutral atoms coming from the interstellar medium and snatch away an electron. Those ions become neutral atoms, and ricochet back toward the sun and the planets, uninhibited by the interplanetary magnetic field.

Voyager is now at the edge of the heliosphere, where its LECP instrument can detect those solar-wind ions. The researchers found that the number of measured ions rise and fall with increased and decreased solar activity, matching the 11-year solar cycle, showing that the particles are indeed originating from the sun.

Meanwhile, Cassini, which launched 20 years after Voyager in 1997, has been measuring those neutral atoms bouncing back, using another instrument led by Krimigis, the Magnetosphere Imaging Instrument (MIMI). Between 2003 and 2014, the number of measured atoms soared and dropped in the same way as the ions, re-

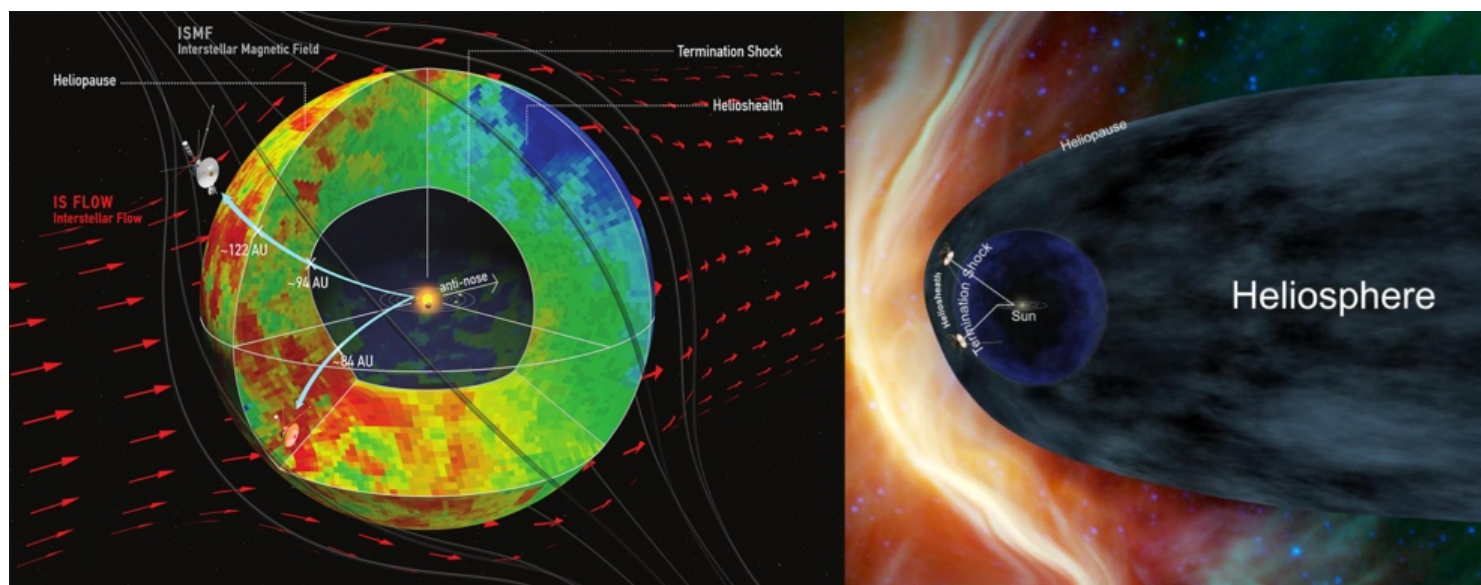
vealing that the latter begat the former. The neutral atoms must therefore come from the edge of the heliosphere.

If the heliosphere were comet-shaped, atoms from the tail would take longer to arrive at MIMI than those from the head. But the measurements from MIMI, which can detect incoming atoms from all directions, were the same everywhere. This suggests the distance to the heliosphere is the same every which way. The heliosphere, then, must be round, upending most scientists' prior assumptions.

It's a discovery more than four decades in the making. As Cassini ends its mission this year, the Voyager spacecraft will continue blazing through interstellar space, their remarkable longevity having been essential for revealing the heliosphere's shape.

"Without them," Krimigis says, "we wouldn't be able to do any of this."

To teach kids about the Voyager mission, visit the NASA Space Place: <https://spaceplace.nasa.gov/voyager-to-planets>



New data from NASA's Cassini and Voyager show that the heliosphere — the bubble of the sun's magnetic influence that surrounds the solar system — may be much more compact and rounded than previously thought. The image on the left shows a compact model of the heliosphere, supported by this latest data, while the image on the right shows an alternate model with an extended tail. The main difference is the new model's lack of a trailing, comet-like tail on one side of the heliosphere. This tail is shown in the old model in light blue.

Image credits: Dialynas, et al. (left); NASA (right)

“Phoenix Forgotten” Movie Apr 22

By Sam Insana & Terri Finch

Sam writes: On April 22nd, Two PAS members made their Hollywood screen debut. Mike Marron and Don Boyd played Astronomers who commented on the Phoenix Lights of 1997. Their 59 seconds of screen time in "Phoenix Forgotten" was great. We had 8 PAS members view the screening: Mike, Don, Terri, William, Alex, Diane, Paul, and Sam. Other people in the audience came up to Mike and Don afterwards and asked if they were the ones in the movie they just saw. The credits on screen at the end mentioned the Phoenix Astronomical Society and Don Boyd and "Mark" Marron!!!

Terri adds: We met at the Harkins at 34th Street and Bell Rd in Phoenix. Sam treated the 8 attendees (including himself) to refillable popcorn - thank you Sam! We enjoyed the movie and really enjoyed seeing Mike and Don “in” the movie. On

screen as the interviewers drove away from Mike’s house, they called PAS the “Bearded Galileo” Society. We all had a good laugh at that. The style of the movie was that of a “mockumentary”, but it was entertaining.

Paul writes: Thank you for organizing this event. It was a lot of fun. I enjoyed it. And thanks to Don and "Mark" for being in the movie.



Our very own STARS! Mike Marron and Don Boyd pose in front of the poster for their movie “Phoenix Forgotten.” Photo by Sam Insana.



This photo was taken by William Finch inside the Harkins Theater at 34th Street & Bell Rd.



We weren't sure the indoor photo would come out good, so we also took a photo outside the theater after the movie. Photo by William.

Spring Binocular Star Party Apr 22

By President Sam Insana and Attendees of this event

PAS held the first ever spring bino star party. Alex started out with a presentation on how to use binos and their different features after which Alex, Howard and I each showed several objects to the group. In the fall we had seen about 36 bino objects, but this time we only saw about half as many due to thin clouds, dimmer and fewer objects available. The Lyrid meteor shower did not have big numbers but we did see a few bright ones and one fireball.

Using my son Frank's 20 x 80 binos, I was able to see M57, the Ring Nebula and M4, a globular in Scorpio around midnight after most of the people had left.

Paul and I were the last ones to leave, around 1:15 am. We saw 4 meteors each during the night and it was a beautiful time

to kick back in the gravity chairs. There were plenty of coyotes to serenade us, a great horned owl a few feet away from us in a saguaro and some fireworks going off in the nearby town. For the potluck, Alex and Diane brought a delicious cake, made by Diane, shaped like a pair of binoculars.

Terri adds: Attendees at this event were: Howard Moneta, Sam Insana, Alex and Diane Vrenios, William and Terri Finch, Paul Facuna, Mike Marron (our host), Don Boyd, Pete Turner, Richard Pipkin, Mike and Linda Cawley, George Sabo and Rodney Fong. The clouds were annoying but the three teachers, Howard, Sam and Alex took turns showing and talking about objects we were seeing. Thanks to our teachers, to everyone who provided the good food and to Mike for hosting this

event. We had a great turnout in spite of the clouds. Everyone had a pair of binocs or monoculars or borrowed one to be able to do this event together. We look forward to the next event like this, the Fall Binocular Star Party which is scheduled for Oct 21, 2017. We will see you there!!!



This beautifully decorated cake was made by Diane Vrenios for this event. It was delicious and wonderfully created. Thank you Diane!

Sci-Fi Movie Trivia:

Marooned (1969) - The space station using a spent Saturn S-IVB stage was based on early proposals during the Apollo Applications Program; at the time of filming, what came to fruition as Skylab was still under development. The only differences between the orbital workshop depicted in the film (which has a rocket motor attached) and the real Skylab was the incorporation of the Apollo Telescope Mount and two docking ports on the docking mod-

ule, not to mention the absence of a rocket motor. The real Skylab was launched as a 'dry' workshop using a surplus Saturn V #SA-513 (originally earmarked for the canceled Apollo 18 mission). The three-man crew in the film spend 5 months living in space; the longest duration in the real Skylab was 84 days during the final mission, Skylab 4.

Contact (1997) - Author and producer

Carl Sagan died during production of the film. He was reportedly taking great care to ensure that "science" was accurately depicted in the film.

Contact (1997) - The movie establishes that the signal was launched from planet Earth in 1936, during the Berlin Olympic Games' opening. Since Vega is 26 light-years from planet Earth, the signal would have returned in 1988, not 1997.

Star Wars Day Star Party at BMC May 4

By President Sam Insana

The “May the 4th be with you” star wars star party at PVCC BMC was a fine event. Loretta Mondragon, our BMC contact had people making mini light sabers in honor of the night’s theme. Mike Marron, Mike Cawley, Paul Facuna, Sam Insana, George Zukauckas, Howard Moneta, Pete Turner, Mark Johnston and Ray Adams attended from PAS. With eight telescopes and our meteorite man, Mike Marron, we had plenty of heavenly things to make the over 50 attendees happy. We showed the moon, Jupiter, M44 (Beehive) open cluster, M13 globular cluster and other fine objects. Tristan Byers, a guest, brought his wife, their 3 inch scope and a giant dog. The weather was great, with no clouds or wind, mild temperatures and good transparency and seeing.

Howard spent the night showing incredible images with his new toy, the Revolution Imager R2 which he used with his 8 inch scope. It showed M51 whirlpool better than I have ever seen it, even in a 24 inch scope. I think that toy will be a hot item and spread like wildfire in our club once others see it in action.

One lady had a fun tee shirt saying “The force is large in this one”. The writing was covering her almost due baby bump. I was too embarrassed to ask her to photograph her belly, so I took a picture of Howard and his new toy instead.

Loretta writes: I added a theme to this

Star Party- since it's May 4th we are doing the May the Force Star Wars theme. My costumed characters fell through this morning, was hoping to have some Star Wars characters out there. But I'll have a couple activities to make mini light sabers.

Tristan adds: The event was really great. I was impressed by assortment of telescopes and the way the public was able to access the various scopes. I think the event was really well done. I am grateful to have been able to participate in the event. All of the PAS members were very professional and helpful as well.

Thomas writes: Hi Terri, I thought that tonight’s star party at Black Mountain Campus went very well. We had approximately nine or ten astronomy members attend the event who were willing to display all manner of telescopes and answer questions. If I had to guess on the public’s attendance it would be about thirty people. Even though I, personally do not possess the extensive knowledge that some members exhibit about astronomy, collectively we promoted the Phoenix Astronomical Society and shared our common interest in the stars, planets and moons. The people that I met were very genuine and excited about astronomy and they seemed eager to gain knowledge and insight about our hobby. The evening was “embellished” with a half-moon so there was a little light pollution but we were still able to view Jupiter,

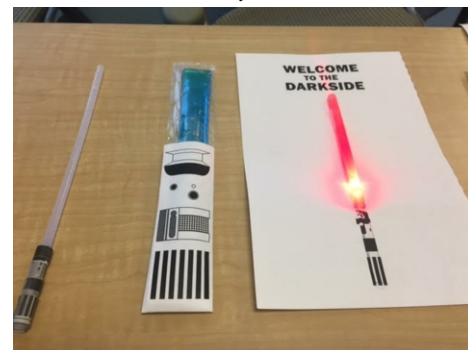
the moon and a few other bright objects that appeared to “wow” the public. All-in-all, it was another grand opportunity to mingle with people, answer questions and share our enthusiasm for astronomy. Yours truly, Tommy B



Howard was seen at this event with his new toy.

Howard writes: “It is a fun little camera that goes into the eyepiece holder on the telescope.”

Photo taken by Sam Insana.



Loretta Mondragon, our contact at PVCC Black Mountain Campus, provided this photo of the project she set up for Star Wars Day at BMC on this night “May the 4th be with you.”

North Phoenix Prep Academy May 19

By Terri, Event Manager

Attending this school event were Bruce Wurst with his 12” scope, Terri Finch with her 8” scope and Storm Sallas with her 8” scope. Helping out were William Finch and Jake Von Ruhr. Kara Harris, our contact at the school, provided pizza and generally took very good care of the telescope team. Skies were clear with a slight breeze from setup at 6:30 until the event ended at 9:30. Unfortunately, the activities for these 8th graders also included a dance in a brightly-lit building directly

adjacent to our viewing area. That made observing a challenge, but the three telescope operators did a great job which Kara and the 8th graders seemed to really appreciate. We viewed M3 through Bruce’s scope, Jupiter through all 3 scopes, M13 through Storm’s scope along with Alcor/Mizar. We tried for a few other objects but the lights to the north were just too bright.

There were a number of boys who went back and forth from the scopes to the

dance, but one 8th grader, Ben, stayed with us the whole time we were there. He was highly inquisitive and fun to chat with. I showed him around the night sky with a sky tour, and the three of us kept him busy with facts about the objects we were showing. I’d like to thank North Valley Prep Academy for having PAS at their 8th Grade dance, and especially Kara for her assistance. The night was pleasant and successful. We look forward to doing future events there.

Sell Your Astronomical Equipment through This Newsletter

By Terri, Event Manager & Format Editor

Ads in PAStimes run for a month and may be renewed on a month-by-month basis, if submitted by deadline, space permit-

ting. Ads in PAStimes are FREE to members. All others are asked to make a small donation. Donations are to be sent to

Terri, the Newsletter Assistant, who will forward them to the Treasurer. Email Terri at Events@pasaz.org to place an ad.

Arcosanti Star Party May 12th, 13th and 14th

By Terri Finch, Event Manager and the telescope team for this event

This event was scheduled each night for 8pm to midnight, on the rooftop. We had 6 scopes on Friday, 6 scopes on Saturday and 5 scopes scheduled for Sunday. Expected attendance was 2400 patrons, though there may have been that number each night.

Friday, May 12:

Setup for this event proved a complicated and extended process. We had to bring cars in one at a time, unload, carry the equipment to the roof and then move the car to make way for the next one, all while negotiating our way through the crowds of patrons. Thankfully we had volunteers to help, particularly with getting gear to the roof. Initially, evening temperatures were quite comfortable, though around 9:00 pm it seemed to get significantly colder leaving some wishing they had brought warmer clothing. Our patrons, many of whom were from Phoenix and Los Angeles were quite patient with lines for the telescopes and seemed to really appreciate the views, often staying to chat and ask questions. We were all kept busy all evening. Some objects we showed were the Moon, Jupiter, Saturn, M57 (Ring Nebula), M13 (Hercules Cluster) and Alcor/Mizar. Team members were: Rick Cunningham, Kevin Witts, Roger Anzini, Terri Finch, Bruce Wurst and Storm Sallas. Runners were William Finch and Jake Von Ruhr.

Saturday May 13:

This night was breezier, colder and cloudier than Friday, with clouds at the horizon reflecting quite a bit of light. Team members for Saturday Sam Insana with his 8" scope, Bruce his 12", Kevin with his 11", Roger with his 16", Terri Finch (8") and Pete Turner with his 12". Runners were Storm, William and Jake.

By **Roger**: I must tell you that I am humbled by the politeness and gratitude by those guests who stepped up to view at my telescope. One gentleman, after viewing M13 said: "Astronomy is a most noble pursuit. The more you understand about the heavens the more you understand respect for everything in nature and your fellow human beings. Astronomy engenders peace and kindness in your mind, body and soul. It changes your life of the better and the lives of those around you. Understanding the Cosmos allows understanding of all things in the heavens and the earth.....thank you so much for being

here and for what you do."

Friday night, using 16" f5 DOB with 10mm ethos eyepiece, we viewed Jupiter including the 4 large moons. Then, my guests were stunned and puzzled when we switched to the M104 galaxy some 29 million light years distant. 29 million light years does kind of bend the mind a bit !!!

Finally we dazzled our viewers with the great globular cluster M13. Ooh's, aah's and wows were commonly heard along with... come on.....no way. Several said it looked like a great flower hanging in space, one man, after tweaking the fine focus described M13 as a snowflake of crushed diamonds.

Sam writes: Last night we showed the moon, jupiter and saturn but we also had good views of M13, M81, M82, M3, M44, M104, and a few other objects.

Roger adds: Saturday we viewed the same lineup but this time Jupiter treated us to it's Great Red Storm, swirling away, just below and left of planet center in our eyepiece. I must say, the viewers that stepped up to the DOB on these two evenings were overall, one of the most sky smart and appreciative groups that I have had the pleasure to meet. Thank you all for a great event.

Sunday, May 14:

Terri writes: The sky was clear and quite dark this night, in spite of earlier forecasts for clouds and high winds. It was chilly, but the viewing was excellent. We showed Jupiter, Saturn and the Moon!

I wish to thank the telescope team for an event well done! It was a long drive - 70 miles each way to Arcosanti and back that we all did each night of the event. Team members were: Terri, Storm, Sam, Don Boyd and Bruce. Roger was our runner and Jake showed up later in the evening to help out.



On May 12, we have Don setting up his scope. This photo provided by Bruce. The patrons are looking over the wall at the band that is below in the amphetheater.



As the Sun set on May 14 at Arcosanti, we see the 2400 patrons at this event start coming out to greet the evening.



Sam provided this photo of a gal in Fancy Dress on the rooftop with the Telescope Team, viewing through Sam's scope at this event on May 14.



Bruce captured this image on May 12, of the parking lot of Arcosanti



Up on the 3rd story roof, we see the set up of telescopes and Patrons getting ready for the band below to being. This photo was taken by Bruce on May 12.



On May 12 Sam was waiting for it to get dark so he can show these patrons the night sky. This photo was provided by Sam.

Teen Science Social at Arizona Science Center June 9

By President Sam Insana

The Arizona Science Center had their first Teen Science Social on June 9th from 6 to 10 pm. The entire science center was open with free admission to visitors 13 to 18 years of age. They invited PAS to provide telescopes, so Don Boyd and Sam Insana used their 8 inch reflectors to show the Sun, Moon, Jupiter and Saturn. It was a warm night, but the ASC provided cold water to us throughout the event. We were also treated to pizza, salads, and lemonade. Throughout the night Mikaila, our teen contact, made announcements through their DJ to the crowd of over 500, every time we had a new object to show with our telescopes so the visitors would know when to go outside. Although there was a 10 to 14 mph wind, we were protected by the buildings. It was a fun night and Don and I were

thanked many times for showing up by ASC personnel and many teenagers.

Don adds: It was a great event, but my back was killing me most of the night, so I had to sit down most of the time. But the kids more than made up for it. They were really excited to see what we were showing.



At the Teen Science Social at the Arizona Science Center, Sam and Don provided Solar viewing until the Sun went down that evening, and then night time viewing of Jupiter, Saturn and the Moon on June 9th. Photo by Sam.



Here's some teenagers being spun around at this event. Photo by Sam.

Dark Sky Star Party in Carefree May 20

By Terri, Event Manager and President Sam Insana

Terri writes: At this event from PAS were: William and Terri Finch, Rick Cunningham, Sam and Frank Insana, Ron and Julie Walker, Paul Facuna, Charles Beaudrot, Terry Dancer Jr and Terry Dancer Sr, Don Boyd, Alex Vrenios, Howard Moneta and Eric Steinberg. The telescopes were provided by Rick who brought his Dob, Sam and Frank with Frank's 16", Paul with the club scope housed at Mike's, Howard with his 8", and Terry Jr with his 5" refractor. The potluck dinner began after the scopes were set up; at dinner two movies were announced possibilities for the evening but because the skies were so beautifully clear and dark, we all stayed outside. We were able to observe a lot of really great objects and Sam took us on a tour of Sagittarius once it rose above the horizon. The party broke up about 11:30pm, but some of us stayed for a while, leaving around 12:30 am. There was a nice celebration of Mike's 63rd birthday with cupcakes and ice cream after dinner, followed by ice cream floats at the end of the star party. Thanks to everyone who joined in providing food for the great dinner and to Mike for hosting this event. It was a perfect evening for a fantastic private PAS members only star party!!! Looking forward to the next dark sky event

at Mike's!!!

Sam adds: About 15 PAS members attended Mike's birthday party. After the potluck we sang happy birthday and had Ice cream and cupcakes. We then had a star party with Howard, Sam, Frank, Paul F, Rick, Charles, and Terry Dancer providing scopes. Rick and Sam and Frank kept observing until 1:30 am. During the night we saw M8, M20, M81, M82, M44, M13, M51 M57, M22, Jupiter, Saturn, the Veil Nebula, and several other objects including the Milky Way and at least 7 meteors. It was a fun and pleasant night with temps in the 70s, and no clouds, winds or rain.



Behind Mike is a gift in the box. Mike had several cards given to him and a few gifts. We all enjoyed cake, ice cream and a great party at Mike's on May 20. Thank you Mike for hosting this event. Photo by Terri.



Mike Marron, Birthday Boy, getting ready to open his gifts and cards and blow out the candle on his birthday cupcake. Photo was taken by Terri Finch. The candle is a question mark, not because we don't know Mike's age, but because we couldn't find enough candles and fit them on one cupcake.