PAS times

Phoenix Astronomical Society
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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Elections & Meeting of the Minds for May 7th

By Terri Finch, Event Manager

The May 7th PAS Meeting will be enjoyed by PAS Members only. The plan is to have a remote meeting using Zoom in which PAS will hold Elections for the next Officers of the club, plus a Meeting of the Minds to discuss various topics of interest to PAS Members.

The instructions for accessing the meeting will be sent out with the Agenda being prepared by Terri. If you have something you wish to discuss with all of PAS who attend this meeting, please send your topics for discussion to Starstuff@gmail.com by end of day Monday May 4th (Star Wars Day - May the 4th be with you).

This is a Members Only meeting. Do not invite anyone who isn't living with you in your household. PAS Members include everyone in one household as a PAS Member.

Also, please access this meeting with only one device shared by all the attendees in your household. There is a limit of 100 attendees allowed to log into this meeting. So, please allow more households to access the meeting by only logging into the meeting from one device.

Reminder, upon the start of the meeting, everyone should mute their devices so that President Mike can open the meeting promptly at 7:30pm without background noise. Also, if you don't have anything to say, mute your device until you do have input.

The plan is to send out the Agenda to all PAS members through email by end of day Wednesday May 6th so that everyone who wants to attend can do so.

We will NOT have a guest speaker at this meeting. Our Guest Speaker for the evening asked if he can wait until he can do his presentation in person for PAS. So, we have tentatively scheduled Vincenzo Cataldo's topic, Planetary Science, for Fall 2020. Vincent requested to be scheduled for the November 5, 2020 PAS Meeting in hopes that PAS can hold an in-person meeting by then.

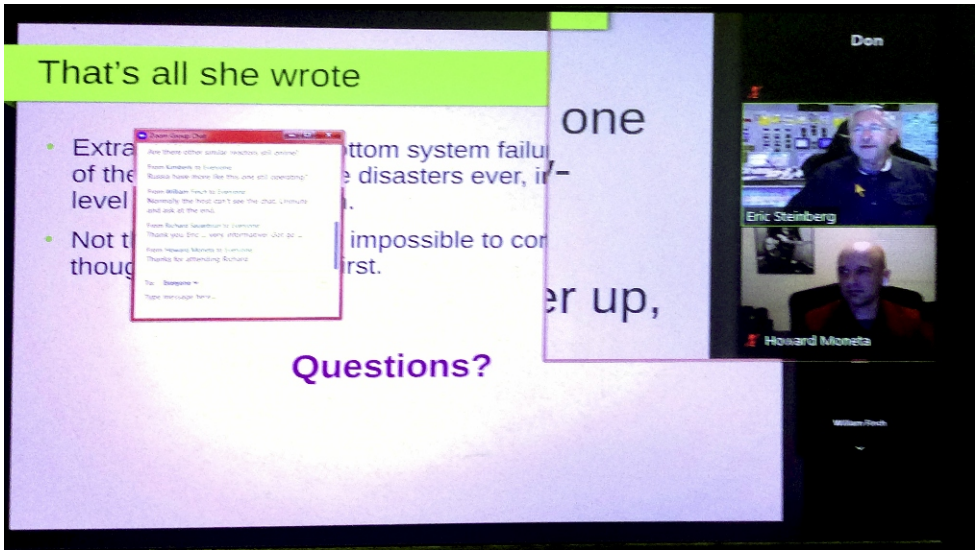
Hope to see all of you through Zoom. If you haven't downloaded it to your device, computer, smart phone, tablet, please do it prior to the date you wish to connect with PAS for the meeting. This way you are ready and set up for the meeting. Hope to see you there, digitally!!!

April PAS Meeting Review

By Terri Finch, Event Manager

The April PAS meeting was different in both content and delivery. The topic of The Physics of Chernobyl was not astronomy related but about 28 PAS Members tuned in via Zoom to enjoy the presentation by Eric Steinberg. Eric has done a lot of research on Chernobyl and came prepared with lots of explanations, information, some humor, and a great 1.25 hour presentation. Q&A was conducted for about 20 minutes longer.

Many thanks to Eric for his well presented topic, and his willingness to test Zoom as the program PAS will use to remotely conduct future meetings/presentations as long as the Corona Virus has everyone practicing Social Distancing.



Don Boyd, PAS Editor, provided this image of the April PAS Meeting in Progress as seen on his computer monitor.

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May & Summer 2020 PAS Events

By Terri, Event Manager

With the CoronaVirus, the Stay at Home order and Social Distancing all in effect to the end of April 2020, it is unknown when PAS will be able to hold the next in-person meeting, star party or Telescope Workshop.

Please note that all 2020 April and May in-person PAS events have been cancelled. In April, however, PAS successfully used Zoom to teleconference Eric Steinberg's presentation, The Physics of Chernobyl. In the future, if necessary, PAS Meetings, presentations, and possibly Telescope Workshops may be conducted remotely using Zoom.

Each summer, the PAS Newsletter takes a publication break in June, July and August, so this is the last newsletter until September 2020. I would like to take a moment to remind everyone that if you are interested in what PAS is providing in the way of Astronomy entertainment and education this summer, you can monitor the links below for announcements about events, and whether they will be taking place.

PAS Links:

Please, keep an eye on the **Meeting info** here: http://www.pasaz.org/index.php?pageid=meetings for announcements of changes to meetings....

Please keep an eye on the **News & Announcements Forum** for updates about events, cancelled, planned, changed, etc.... http://www.pasaz.org/index.php?pageid=news

Also, download the **Newsletters**, as they have important meeting info and other things you may wish to know about, here: http://www.pasaz.org/index.php?pageid=newsletter

And the **PAS online calendar** will have the newest info you may wish to know about here: http://www.pasaz.org/forums/calendar.php To navigate to future or past months, use the data in the below right corner under the main calendar.

Thank you for staying safe, healthy and happy during the quarantine. And thank you for your interest in PAS!

Corona Ranch March 4

By Sam Insana

March 4th, Corona Ranch had an event in Laveen, AZ, with over 400 guests attending. There was a bar-b-que, hot air balloon, live band, lots of drinks, and two telescopes from PAS. Pete Turner brought his 12 inch Dobsonian and showed the Moon and the Orion nebula. Sam Insana brought his 8 inch Newtonian reflector and showed a 60% Venus, the Pleiades open cluster, and close up views of lunar craters and mountains. One view on the terminator of the 60% Moon, showed what looked like a giant arch floating above the surface, a very unusual observation I had never seen before. It turned out to be the Alps mountain range very close to the crater Plato, and the shadows gave that optical illusion. During the two hours of viewing, about 50 guests came by, one or two at a time. They were very well educated and had some knowledge of astronomy and telescopes. They seemed to enjoy the views, especially since some lived in very light polluted areas. Laveen has fairly dark skies, but unfortunately the Corona Ranch property left a lot of lights on, making it harder to see faint objects. The really strange thing was that the band announced that we were showing Saturn and Mars and asked everyone to go see the telescopes, five minutes before we were to pack up!! Therefore Pete and I had about 50 more guests approach us all at once. We decided to stay about 20 minutes longer than scheduled to make sure everyone got to see some objects. It was a beautiful night.

Pete Turner at Corona Ranch with a hot air balloon flying near by. Photo by Sam Insana.

Phoenix Country Day School Jan 31

By Terri Finch, Event Manager

It was a chilly evening, but it started out nice. Terri Finch had her 8" scope, Storm Moon brought her 8" scope, Pete Turner had his 12" scope, Roger Anzini attended with his 16" Dob and we had to have Mike Marron with his meteorites. Mike, of course, stole the show for most of the evening.

Terri and Storm arrived about 4:45pm for a 5pm set up. We met Roger at the gate with Cliff the maintenance man for the school. Roger told us the plan of where we were setting up and then I saw a bright light that might become a problem for a star party, so I requested we keep our vehicles up on the top of the hill, and unload and set up at the bottom of the grassy hill, and that worked out well. Pizza was provided at this event for the Telescope Team and so we enjoyed "A Piece of the Pie" pizza brought to us by our Teacher Contact's daughter. Teacher was Kathryn Bucolo, who had so much energy after teaching a full day of 1st graders… that's amazing! So, we enjoyed our pizza and then about 5:40pm, the telescopes started aligning and setting up, and Mike had stolen the show before the 6pm start time. About 5:55pm, I was on the Moon and many people enjoyed the view. I kept the Moon until about 6:30pm when Storm decided to move from Venus to the Moon with her scope and since I had the 32mm eyepiece with the Moon filter, and she had the 30mm eyepiece without a filter, we swapped eyepieces but the line kept coming and so the break between swapping of eyepieces was not very long. Then I took Orion Nebula, which Roger had for a while and so I made it a game for the kids to compare the view between Roger's scope and my scope on Orion Nebula. That worked for a little while.

Pete Turner sets up his 12" Dob scope while the beautiful sunset happens behind him. Photo by Terri Finch.

PAS provided views through 4 telescopes on this night. The scope way down the end in this photo is Roger's, then there is Terri's, then Storm's scope and behind the photographer is Pete's scope. Photo by Terri.

Pete took Venus and tried to get Neptune but was having a bit of a hard time with it. The location we were set up was dark enough for the brighter objects and Orion Nebula had four clear Trapezium stars, like we did at the Encanto school at the end of January. But, the clouds took over and Orion and his nebula were covered by Earth clouds for the rest of the evening. Luckily, I was already on the Orion Nebula and so as long as no one bumped or moved the scope, I was able to keep Orion Nebula in my telescope for the duration of the event.

I wish to thank Roger a ton for scouting out this event a month prior. Roger met up with Kathryn and together they talked about options for where to set up the telescopes. Then, when we arrived on Jan 31st,

What's Up For May?

By Don K. Boyd, PAStimes Editor

Name	Date	Rise	Set
Mercury	**05-15-20**	**06:08**	**20:24**
Venus	**05-15-20**	**06:54**	**21:36**
Mars	05-15-20	01:44	12:39
Jupiter	05-15-20	23:43	09:55
Saturn	05-15-20	12:04	10:18
Uranus	05-15-19	04:36	17:53
Neptune	05-15-20	02:31	14:10
Pluto	05-15-20	23:38	09:43

All Times Arizona Time

Bold means the object is "visible" in the evening

May 15, 2020

Sunrise: 5:28

Sunset: 19:23

Full: May 7

Q3: May 14

New: May 22

Q1: May 29

the plans had to be changed as there was now a fence in the way of the set up location. But, the location where we set up was marvelous! The lights from the school buildings pointed down, which was nice, but also we were in a little gully. Our cars were in between the lights and the observing area, just what we needed to block the building lights to keep them from messing with the views.

I wish to thank Kathryn and the many other teachers who assisted with setting up this event. It was just 1st graders and their teachers and parents, and some siblings but not many. I'd estimate there were about 150 in attendance. Kathryn had set up bottled water and cookies for the attendees of the event. Plus, the 1st graders made fake candle luminarias, meaning they used the little battery powered tea-lights, not real candles. They did a fantastic job of the decorations for the evening, with cut-out stars that were colored or covered in glitter. Kathryn let me take a few stars home to add to my collection of memorabilia from events I have been to, in appreciation of what PAS provided at their event.

Kathryn wants PAS to come back next school year. I shall get that set up. Many thanks to Roger again for taking a few hours one afternoon to scout out where the telescopes should set up. And thank you to my Telescope Team for all they did to make this event a great success! And one more thanks… to Phoenix Country Day School for having PAS at their wonderful event. I look forward to doing the next evening star party for Kathryn.

Roger adds: I wanted to thank the kids of this school for the luminarias that were made by the 1st Graders. All the attending kids made luminarias from 2 liter pop bottles for this event. The luminarias were each unique and all were wonderful. Then the teachers put a battery operated plastic candle in each one, and they used the luminaria to line the path from the top of the hill to the bottom where the telescopes were set up. They also marked off areas where the attending families could possibly trip and fall in the dark. They also put luminarias on the round tables that were set up for the attending families to enjoy cookies, bottled water, and hot chocolate. The 1st Graders also made beautiful paper stars that had been colored, glittered and cut out to put on the tables as decoration. Also, all five lady teachers in attendance wore the same black and white star shirt/sweater. They were a matched set and easy to find. Way cool teachers!

There were about 7 kids who kept coming back for more. They loved looking at everything we showed them. Photo of Terri's scope taken by Terri.

From before the start time, up to about 7:40pm, there were constant lines at every scope, and at Mike's meteorite table. This photo has Storm's scope in the center and Pete's telescope at the back left. Photo by Terri.

Sonoran Trails Middle School Feb 13

By Sam Insana, PAS Member

Pete Turner showed the Orion nebula through his 12" Dobsonian, and I showed Venus, Gamma Andromeda double star, and Andromeda galaxy through my 8" telescope. About 75 students and adults viewed the night sky. It started at 6 pm, but wasn't dark enough for viewing until 6:30pm.The event was over at 8:00pm. Mike Maron had his meteorites and wow'd the attendees. Ashley Fauss, the School Teacher who was our contact, gave the three of us one medium cheese pizza to share and bottled water. It was a nice night. This was their STEAM night.

By Pete Turner

Sam Insana, Pete Turner, Mike Marron and Ofelia Waters supported this school star party. Pete writes: I showed Venus, Andromeda Galaxy and Gamma Andromeda but stayed on the Orion Nebula most of the night because the view got better and better as the night wore on. By 8:00pm, when the event concluded, I could see almost as much of the nebula as I saw through Mark Johnson's night vision eyepiece. People came back to view the Orion Nebula several times and were amazed at how clear the nebula looked. The optical seeing was as good as I have ever experienced in the valley, even though the Phoenix light dome prevented us from viewing the Milky Way.

Planetarium Shows

By Terri, Event Manager

PAS Members are invited to the Star Barn for planetarium shows each month. We ask that you make a small donation to Ron for hosting these shows. These events are open to PAS Members only. The dates & times of the shows vary each month. Please see Private Calendar at www.pasaz.org to attend and RSVP is directly with Ron for these events. Enjoy!

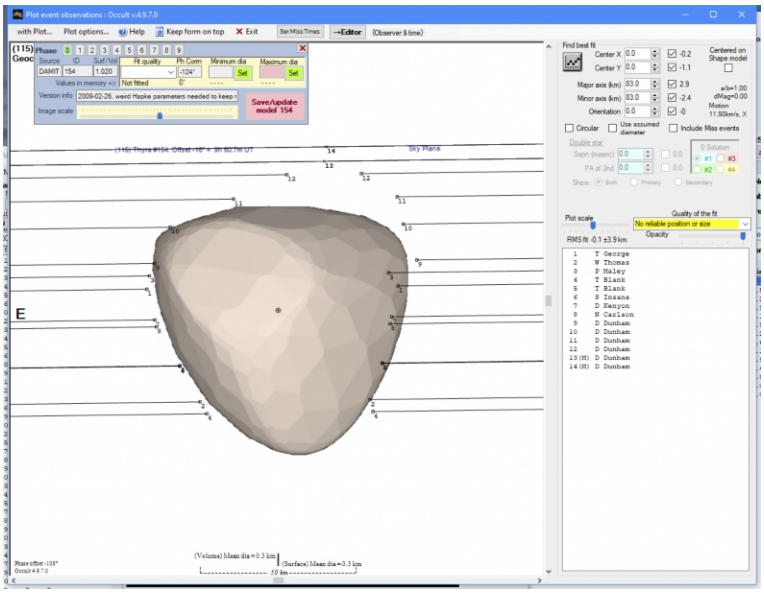
Asteroid Thyra Occultation Timing

By Sam Insana, PAS Member

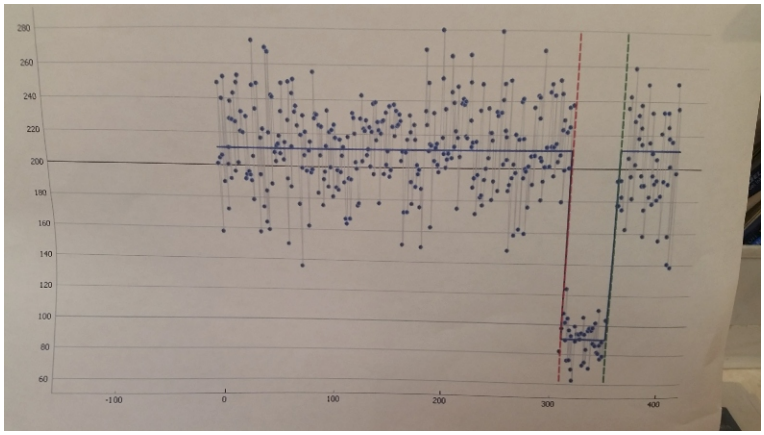
Monday morning February 17, Ted Blank asked me to perform an occultation timing of Asteroid Thyra which was going to pass in front of an 11th magnitude star, and the center of the path was predicted to be over my house near 20th St and Bethany Home Road in Phoenix. I wanted to get to bed early since I was doing a solar/lunar observation with Mark Johnston the next morning at 8 am at Phoenix Country Day School. However, I did not want to pass up the chance of doing an occultation from my backyard. I called Vice President Paul Facuna and he came by around 8 pm to help me set up the 5 inch refractory, gps, time insertion device, laptop, camera, batteries and cables. Ted had given me a prepoint star in Orion, about a degree above Rigel. Paul and I were able to find it and had the scope zeroed in on it at 9:17 pm. We then left it alone and let the sky drift before us. Paul went home and then I came out of my house every few hours to check the path of stars going in front of the scope and displayed on the laptop monitor.

I disconnected the batteries for a few hours so they would have enough power for the timing event scheduled at 3:10:22 early February 18. About an hour before the event I reconnected the batteries and saw another prepoint star drift across the screen, giving me hope. I started the recording a few minutes before the scheduled event, and within a few seconds of the prediction, I saw the target star fade a little for a few seconds. The recording stopped about a minute later. I went to bed at 4 am and then got up at 6 am to go to Phoenix Country Day School for the solar/lunar telescope viewing. On 2 hours sleep I was one tired guy. The next day I met with Ted Blank. He analyzed my video data and determined we did have a hit at 3:10:21.502 less than half a second from the predicted time. This combined with other occultation timings from Ted Blank and others in Arizona and some in California, will help determine the size, shape, rotation, direction, speed and other parameters of the asteroid.

Anyone in PAS who would like to become involved with the citizen science work of occultation timings should contact our expert PAS member Ted Blank (tedblank@gmail.com).



This diagram shows the shape of the asteroid Thyra based on the timing Paul and Sam made, and also timings by Ted Blank and many other observers. Diagram courtesy of Ted Blank.



This is a digital analysis of the Thyra occultation. It shows a hit of about 5.5 seconds. Photo courtesy of Ted Blank

Solar / Lunar Viewing at Phoenix Country Day School Feb 18

By Sam Insana, PAS Member

Tuesday morning Mark Johnston brought his solar scope and showed first graders at Phoenix Country Day solar granules, small flares, and a filament. I showed a crescent moon with the large Grimaldi crater. Both of us answered several questions and talked about our objects.

We also asked the students astronomy questions. I showed them astronomy magazines about the moon, and a photo from the Lunar Reconnaissance Orbiter of the lunar lander and astronaut footprints on the surface of the moon. It went well, but the sun was close to the moon, so it really didn't look great in my 8 inch scope.

Mark Johnston set up for solar viewing on the left, and Sam Insana set up for solar viewing on the right, at Phoenix Country Day School on February 18. Photo provided by Sam.

Astronomy Lecture Feb 19

By Mark Johnston

On Feb 19th, I did a 30 minute astronomy talk for a senior men's group at the Scottsdale Ranch Community Center. Full house of about 30 people were there. Afterwards, I did Q&A. They found me to give the talk because one of the men had seen me speak on a cruise ship!

Phoenix Country Day School Feb 21

By Sam Insana

February 21st, Phoenix Country Day School had a science night with various hands-on activities for 5th through 8th graders. They asked PAS for telescopes, but unfortunately, the skies were clouded over. We did have my meteorite presentation table instead. About 100 students, parents, teachers, groundskeepers, and security officers visited the meteorite table and took turns holding the heavy iron-nickel meteorite and the large stony meteorite with a fusion crust. They viewed the lunar and martian meteorites with lighted handheld microscopes. They were amazed to see the Murchison meteorite which contains 12% water, 92 amino acids, including all the ones found on Earth and about 70 amino acids that were not on Earth before the meteorite impacted Australia 51 years ago. It has recently been found to contain some material 7 billion years old!!

The beautiful Pallasite iron-nickel with Olivine crystals thrilled the people when a light was shined through it. The Aubrite, one of the few white meteorites, surprised the crowd when an ultraviolet light brought out beautiful fluorescent colors.

About 20 other meteorites and impactites were also shown. One student, Ethan, kept coming back to the meteorite table throughout the evening. He loved what he was seeing, and kept asking great questions. At the end of the evening, as I was packing up, I asked if he had any meteorites. He said he didn't but someday hoped to have one. I found out his relatives were from China, so I gave him a small meteorite in a plastic case with written information about the fact that it fell about 500 years ago, found about 60 years ago in Nantan, China, and was iron-nickel. I showed him how a magnet picked it up. He was very excited and very thankful to receive it. I then gave him my PAS card and told him to ask his parents to drive him to a free PAS star party at PVCC BMC sometime in the future. He loved the idea since he was hoping to view the night sky with our telescopes at his science night.

Duane Freeman, teacher at PCDS writes: Sam was so amazing! Thank you for everything. I can't wait to do an event again next year.

PVCC BMC STEAM Event March 5

By Sam Insana, PAS Member

Paradise Valley Community College at Black Mountain Campus, had its annual STEAMtastic event March 5th. There were about 50 presentations by students and faculty on various interesting subjects of Science, Technology, Engineering, Art, and Math. Some of the students were from nearby high schools. PAS was invited to have meteorites and telescope viewing. President Mike Marron was still suffering from a cold and allergies, so he asked Sam Insana to present his own meteorites. Dozens of adults and children enjoyed looking at and handling a variety of meteorites and impactites.

Kim Hollingsworth and Mel McClure attended and helped out with PAS literature, star maps, astronomy puzzles and other handouts. Bob Ewing brought some of his own meteorites and interesting Earth rocks. Pete Turner and Jenny Neujoy were the only PAS members who showed up with telescopes. Pete had his 12 inch Dob and Jenny used the large College scope in the dome observatory. It was a shame that we had only two scopes for the largest event of the year. Stuart Brackney showed up with his binoculars and new laser pointer and entertained the crowd with his astronomy anecdotes. People were also pleased to look at the Pleiades, an open star cluster, through his binoculars. I know that several PAS members were ill and couldn't attend, and some members may not have wanted to set up telescopes with high thin clouds allowing only bright objects to be viewed. However, for such a big event it would be nice in the future to have a better turnout for telescope viewing public outreach.

I do want to thank all PAS members who attended and gave such a good effort at educating and entertaining the public attendees. Special thanks to Pete Turner who showed up despite having back pains, since he realized we might be short-handed on telescopes.

Sam Insana and Kim Hollingsworth are at Sam's Meteorite Table at the BMC star party March 5, 2020. Photo by Stu Brackney.

Bob Ewing assists with Sam's Meteorite Table at this event. Photo by Stu.

Become a Citizen Scientist with NASA!

David Prosper

Ever want to mix in some science with your stargazing, but not sure where to start? NASA hosts a galaxy of citizen science programs that you can join! You'll find programs perfect for dedicated astronomers and novices alike, from reporting aurora, creating amazing images from real NASA data, searching for asteroids, and scouring data from NASA missions from the comfort of your home. If you can't get to your favorite stargazing spot, then NASA's suite of citizen science programs may be just the thing for you.

Jupiter shines brightly in the morning sky this spring. If you'd rather catch up on sleep, or if your local weather isn't cooperating, all you need is a space telescope - preferably one in orbit around Jupiter! Download raw images straight from the Juno mission, and even process and submit your favorites, on the **JunoCam** website! You may have seen some incredible images from Juno in the news, but did you know that these images were created by enthusiasts like yourself? Go to their website and download some sample images to start your image processing journey. Who knows where it will take you? Get started at bit.ly/nasajunocam

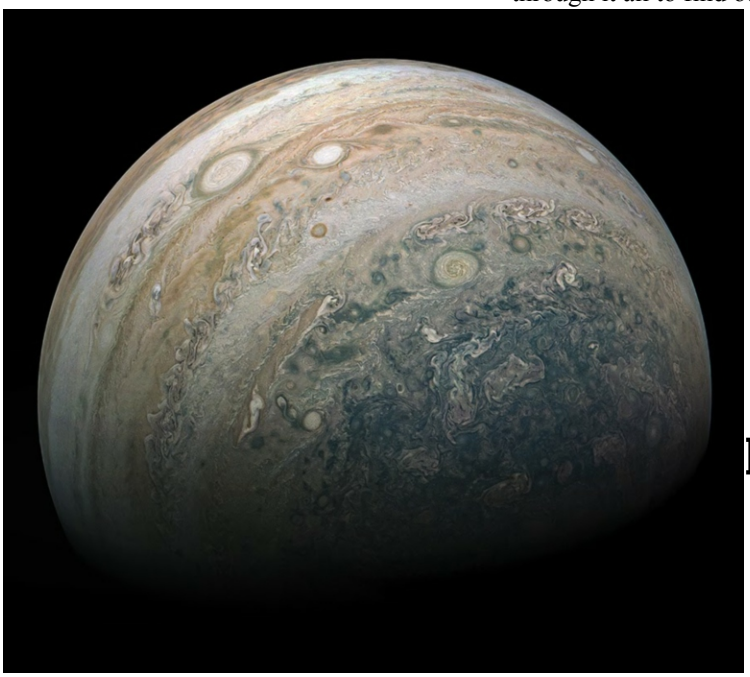
Interested in hunting for asteroids? Want to collaborate with a team to find them?? The **International Astronomical Search Collaboration** program matches potential asteroid hunters together into teams throughout the year to help each other dig into astronomical data in order to spot dim objects moving in between photos. If your team discovers a potential asteroid that is later confirmed, you may even get a chance to name it! Join or build a team and search for asteroids at iasc.cosmosearch.org

Want to help discover planets around other star systems? NASA's TESS mission is orbiting the Earth right now and scanning the sky for planets around other stars. It's accumulating a giant horde of data, and NASA scientists need your help to sift through it all to find other worlds! You can join **Planet Hunters TESS** at: planethunters.org

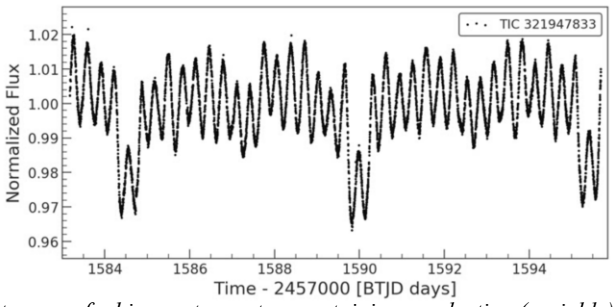
Intrigued by these opportunities? These are just a few of the many ways to participate in NASA citizen science, including observing your local environment with the GLOBE program, reporting aurora with Aurorasaurus, measuring snowpack levels, training software for Mars missions – even counting penguins! Discover more opportunities at science.nasa.gov/citizenscience and join the NASA citizen science Facebook group at facebook.com/groups/Sciencing/ And of course, visit nasa.gov to find the latest discoveries from all the research teams at NASA!

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!



GREAT SOUTHERN JUPITER: Incredible image of Jupiter, submitted to the JunoCam site by Kevin M. Gill. Full Credits : NASA/JPL-Caltech/SwRI/MSSS/Kevin M. Gill



Light curve of a binary star system containing a pulsating (variable) star, as spotted on Planet Hunters TESS by user mhuten and featured by project scientist Nora Eisner as a "Light Curve of the Week." Credit: Planet Hunters TESS/NASA/mhuten/Nora Eisner

Infini-tees Scientific Apparel

http://www.infini-tees.com/

This site has the most fantastic astronomical apparel! PAS Members receive a discount for purchases ordered through Sam. Email Terri for contact info at Starstuff@gmail.com.

Non-PAS members can receive 10% off ofonline orders & Free delivery for orders of 3+ shirts in the Central Phoenix area. Please place your order directly with Dirk at InfiniTees.Dirk@gmail.com & me ntion you saw this ad in the PAStimes Newsletter. This offer is valid during the Covid 19 pandemic through Aug 31, 2020.

Scope for Sale:

I bought the Cgem used in July 2019. The mount works very well. Included with the mount are the following: Pelican case (the case shows some scratches but is tight, dry and secure); new Nexstar hc with the usb port; new ADM dual saddle; pole master adapter and 2 inch tripod. I want $750:00 for the mount and will sell the mount and ed 80 for $1200.00. I used this telescope less than ten times, the optics are pristine. The telescope is an Explorer Scientific 80 mm ED APO triplet. Included with the Scope are: 2 inch diagonal and two extenders. I'm asking $475.00 firm. Contact: Mario Gemini1718@q.com 480-892-3388

2020 PAS GUEST SPEAKER LINE-UP

By Terri Finch, Event Manager
Events@pasaz.org

PAS Meetings are held at PVCC Main Campus on the first Thursday of the month in Room: **TBA** unless otherwise noted. Do you have an idea for a guest speaker? Email Terri Finch, Paul Facuna, or Mike Marron for the details (their email addresses are at the top of page 2 in this newsletter).

During the Corona Virus "Stay Indoors" order, PAS meetings may be provided by teleconference. See Calendar listing for the meeting to find out more.

Here are the next scheduled guest speakers at PAS:

*** Summer Break: June, July & Aug ***

Sept 3: Speaker: TBA

Oct 1: Speaker: TBA

Nov 5: Vincenzo Cataldo: Planetary Science

Dec 3: Dr. David Williams, Title: "Titan: The Past and Future Exploration of Saturn's Largest Moon."

More information at:
http://www.pasaz.org/index.php?pageid=meetings

Moon Valley High School Feb 20

By Sam Insana, PAS Member

Moon Valley held its annual STEAM night February 20th. During the 90 minute event there were 20 different exhibits and presentations like robotics, microscope viewing, solving a Rubics Cube, building model rockets, etc..

I had 24 meteorites and tektites along with posters and brochures. About 50 students, parents, and teachers took part in my presentation. The culinary students provided fantastic desserts for everyone. It was a great night.

Sam Insana's meteorite table at Moon Valley High School STEAM night.Photo by Sam.

10 Great Reasons to Join PAS

By Kevin Witts, Former PAS Member

For anyone out there who may be hesitant to join the PAS, here are 10 great reasons to do so:

Reason 1 - Share Your Passion of Astronomy with Others

The group provides access to a community of passionate, knowledgeable people who all share a love of astronomy, the sky and even earth sciences. PAS provides information, recommendations and many resources which allow in-depth exploration and learning.

Reason 2 - Observe with Others

There are regular nighttime gatherings to study the sky and discuss topics of interest. Sometimes members meet at selected locations to get the true "dark-sky" experience and see things unviewable in urban areas. Because it's important not to be out alone in these remote areas, PAS provides an opportunity to meet up with others there.

Reason 3 – Make New Friends

Not only are PAS members knowledgeable, they are also nice people. Whether observing with sophisticated high-end equipment or just binoculars, they are all eager to welcome others who share a passion for the sky and astronomy.

Reason 4 - Share Your Knowledge with Us

PAS members share knowledge with each other. Knowledgeable members give lectures, submit articles to the newsletter or simply alert others in the club to useful, interesting information.

Reason 5 - Receive Expert Advice / Information/ Instruction

Many of our members can offer training on the use of various types of telescopes, eyepieces and related equipment. Others are experts on the night sky and can provide detailed observing advice. Still others provide weather updates, alerts to astronomical events or relevant articles and websites. The pool of knowledge is extensive.

Reason 6 - Try It Before You Buy It

All equipment used by PAS members is personally owned, but members are generous in allowing others access to their equipment. The best way to choose the right equipment is to try it out first, and members often take advantage of that option. PAS even offers a forum for members to trade or sell equipment to others in the group.

Reason 7 - Gain Access to the Larger Astronomy Community

PAS maintains relationships with other astronomy groups including NASA, ASU and the University of Arizona. There are frequent opportunities to hear from and connect with experts in the field. PAS members also become members of the Astronomical League, which provides resources worldwide.

Reason 8 - Attend Exclusive Events

PAS affords members the opportunity to attend exclusive events that would not ordinarily be available to the general public. These events include lectures, private star parties, gatherings and even social events.

Reason 9 - Join in on Public Outreach

Once certified, PAS members can take part in numerous outreach events where members can share knowledge and expertise with schools and the general public. On other occasions, the group is hired to do events hosted by private parties as well. These events are greatly appreciated by the public.

Reason 10 - It's Inexpensive to Join

A full year of PAS membership costs only $25 and includes the immediate family. This membership provides access to resources, a monthly newsletter and all PAS sponsored events.

I would highly encourage anyone with an interest in astronomy to explore the benefits of a PAS membership.