

PAStimes

Phoenix Astronomical Society
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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Members Night at Jan 2013 PAS Meeting

By Terri, Event Coordinator

Due to not having a guest speaker lined up for the January Meeting, I'm opening this month's meeting to any PAS member who would like to do a presentation for the club of anything astronomy related. I have room for one more presentation of about 30-40 minutes in length (or 2 shorter presentations equaling that length of time).

I wish to thank Earl DeLong for offering a to do a presentation entitled "The Compton Gamma Ray Observatory," and many thanks to Eric Steinberg, who will present "The Astronomical Unit and how we know what it is."

Should there be additional guest speakers, I will send out an email closer to the

meeting date with an update, through the PAS Announce list.

Bring a snack to share. Water is provided by President Bruce. The Magazine & Book Swap will be at the back of the room. Bring items to swap. Let's start the new year with an awesome Meeting & great friends! ***

YOUR DUES ARE DUE by Jan 31

By Terri, Event Coordinator

The PAS year runs from January to December, but we start asking our members to renew their membership in September, to make it easier for Mike, our Treasurer, to get the files updated.

The PAS Roster is always available for members to view on our website in the Member's Download section. If you are a current member of PAS, your membership officially ends December 31, but we extend

one month to allow for those who can't get a check to Mike earlier.

But at the end of January, those who have not renewed, will be removed from the PAS website and the PAS Roster. So, be

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December 5th PAS Meeting

By Terri, Event Coordinator

We had a wonderful PAS Meeting. It started with technical difficulties. I'm so glad our guest speaker was patient while we took care of the situation. Many, many thanks to Don Boyd for having and, providing a laptop for use. After a slight delay of about 10 minutes, without the ability to use the PVCC computer and internet access, we started the meeting.

We had a few brief announcements: We thanked Don for coming through for us with a computer to use, and we talked about the closing of the Swap Meet sales. Many thanks goes to the attendees while we were trying to get set up. Don Boyd won the raffle. We talked about the Bolt Case order and the order for Egg Crate Foam. Many

thanks to everyone who brought the snacks, Darlene Ahlefeld brought puffs and grapes, Sam insana brought the popcorn, and Bob Senzer brought the Grahams for which I will have plenty for the next several meetings. We also did a personal, hand delivery of the December Newsletter because there was a miscommunication and we didn't get them in the mail, as they should have. Sam Insana announced the Upcoming PAS Music Jam on Dec 21 and Jerry Belcher updated us on the Astronomical Calendar order we are waiting on.

Then we turned the meeting over to Earl DeLong who did a fantastic presentation on the "Chemistry of the Cosmos." Wonderful information. It was entertaining,

very well planned, and really good info. Many thanks to Earl for this awesome presentation. We look forward to the January Meeting. See you there! ***



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January 2014 Upcoming PAS Events

By Terri, Event Coordinator

To RSVP: Events@pasaz.org
 HAPPY NEW YEAR!

Jan 2: PAS Meeting 7pm to 10pm
 PVCC Main Campus LS-201. Bring a snack to share. Water provided by President Bruce. Bring a friend! Everyone welcome!

Jan 16: Tentative: PAS Meeting of the Minds (Business Meeting). Only held if there are enough topics to have a meeting for 1+ hours. Check Calendar on line to be sure meeting is happening. If it is, this is a Party. Bring a snack to share. Bottled water provided by President Bruce.

Jan 18: PAS Social. At Chris's home in Goodyear. Set up is 4pm, dinner is at 5pm, Games begin about 6-6:30pm. PAS

Members only. Bring a main Dish and compete in the cooking contest. Be sure to RSVP your attendance.

Jan 19: Bookmans FREE Telescope Workshop. 3:30-5:30pm. Please RSVP Events@pasaz.org by noon the day of the event. Bring something to take notes with, your telescope, accessories, questions. RSVP is required. When you RSVP, leave your name, and the make and model of the telescope you need assistance with.

Jan 23: Free Telescope Workshop and public Star Party at PVCC main Campus - 32nd Street & Union Hills- 7pm to 10pm. RSVP is required with Terri Events@pasaz.org. When you RSVP -

leave number in your party and make & model of the scope you are seeking help with. This is also a good class to attend to get ideas on what type of scope you should purchase. RSVP for the Workshop, the Star Party or both.

Jan 30: Black Mountain Campus (BMC) Public Star Party 7pm to 10pm. RSVP is required with Terri Events@pasaz.org by Noon on this day. Bring everyone you know! Black Mountain campus of PVCC is located at 60th Street and Carefree Hwy S.W. corner. Awesome dark sky location! The reason I want your RSVP is in case weather cancels this event. I need to get notice to you by 4pm that day, by email. ***

YOUR DUES ARE DUE by Jan 31

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sure to update your membership with Mike. If you are unsure of your status, pop into the Roster at this link: <http://www.pasaz.org/forums/downloads.php?do=file&id=48> to see if your membership shows you are current through 2014 (right side of document). If not, please consider renewing your membership, and soon. We don't want to have to remove you from

our list of Awesome PAS Members. PAS-times Star Tour Members must be current, before December 31 to receive compensation for helping at a paid event. Convenient ways to pay include: bring cash to a meeting to give to Mike, and be sure to get a receipt for your membership dues, or send Mike a check with your membership form. Be sure your membership form shows 2014 at the

top of the page, as no other dated membership forms will be accepted. The membership form was recently updated and is a full page in length, starting this year. The PAS Dues Sheet / Membership Form is at this link:

<http://www.pasaz.org/forums/downloads.php?do=file&id=129>. The updated version (2014) is available now. ***

WHITE DWARF GIFT EXCHANGE GAME

By Terri, Event Coordinator

We gather in a circle, or somewhat a circle, in the designated room. There is a table with gifts on it, each one is wrapped and disguised so no knows what it is or who it is from. This is the start of the game. Everyone attending the Social has been given a raffle ticket in trade for their wrapped gift. You must provide a gift to be involved in the game.

We randomly draw a ticket and Player

1 takes a prize from the table. Another ticket is drawn, and player 2 takes a prize from the table or steals the gift from Player 1. Another ticket is drawn, and Player 3 can take from the table or steal from Player 2 or 1.

Rule 1: No stealing gifts from the person who just stole from you. If Player 2 takes from Player 1, Player 1 cannot take the gift right back from Player 2. However,

Player 1 can take from Player 3, and Player 3 can then take from Player 2, thus if Player 2 takes from player 1, Player 1 can take from Player 3 and get their original gift back, if they desire.

Rule 2: All gifts must be visible. No hiding gifts behind your legs or under your chairs. Put them out in the open for others to steal.

Rule 3: It is more fun to steal and have

WHITE DWARF GIFT EXCHANGE GAME

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been stolen from, than to watch a Player take from the table. STEAL! That's the whole purpose of the game. Fight for the gifts. Just fight nicely, no rough play. And Laugh your head off!

Rule 4: No opening gifts until told to do so.

When all gifts have been taken from the table, a new ticket is drawn. That Player will read anything stuck to the top of their package (if applicable), and then open the gift. When the gift is completely opened, and held up for photos, then the player to the Left or Right (to be decided at time of game) will then open their gift, in the same

manner.

Rule 5: Always allow time for the photographers to get the photos they desire with your gifts.

When we are all done opening the gifts, if you received a gift you do not wish to keep, you may put your gift on the gift table, and swap with someone else. Meaning... you got a flashlight, for example. You put it on the table, and before you leave for the night, you choose something else from the table that another player left behind. It is a way to exchange gifts.

Please, everyone playing the game, be

sure to help clean up the papers from the wrappings on the floor, and put up the chairs so we can then do another activity, or watch a movie. This is a fun game. Everyone playing MUST have a gift to exchange. No gift, and you do not play the game with us. Gift should be worth about \$20 or have enough items in the box with it, to equal a total of \$20.

If you aren't playing the game and would like to help out, please bring a digital camera that you can take tons of photos of the event and send them my way for inclusion in the PAS Photo Gallery. That would be greatly appreciated! ***

PLANS FOR THIS YEAR: PAS SOCIAL Jan 18

By Terri, Event Coordinator

The PAS Social is the once a year EVENT OF THE YEAR! It is usually held in January or February, and is not related to a Christmas Party. It is a Social gathering, where by we get to know our fellow PAS Members. Bring your spouse & immediate Family. PAS Members may invite 1 guest, each.

Location of this event is at Chris's home in Goodyear for the 2013 PAS Social. Map and directions and RSVP can be found at this link: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=962&day=2013-1-26>.

Event begins on Saturday January 18, 2014 at 4pm. We will postpone eating until 5pm to allow everyone to arrive. Those wishing to help me set up, please be there around 3pm. Thanks so very much!

Here are the plans for this years' event!

1) Food - lots of food. This is a potluck. Please bring a main dish to share, enough to feed your attending party plus 5 people. It is best if each person brings a dish, if the dish size feeds 10, to assure that there is enough to go around. Please bring a drink to share (a 2 liter bottle of pop, or 6 pack, or some equivalent amount. Please, no alcohol, as kids may be attending. I believe I can get a case of water to be at this event, provided by President Bruce.)

2) We will have the White Dwarf Gift Exchange. What is this? This is a game we play, every PAS Social, whereby you bring a wrapped, disguised, gift, astronomy related with the worth of around \$20. Then, you

put your gift into the pile of gifts on the gift table and we play our game. Game rules will be posted in another article within this newsletter. It's a fun, silly game but worth the fun. Remember, FIGHT for the gift you want!

3) RSVP is Required! I need to know who is attending. If you bring a guest, they must also bring food, drink and a gift for the game, if they are playing it with us. You can RSVP by email Events@pasaz.org or phone 602-561-5398, up to the day before the event. Please wear your PAS Name tags. Those without name tags may end up with a sticky name tag from me. First name is all I ask to be on the name tag.

4) Sign up in PerfectPotluck.com with the main dish, any extras and drinks you will be bringing. We are avoiding duplicates. For example: Jerry might bring Pizza and Wings. Therefore, no one else should be bringing pizza, but wings are all different, so if it is from a different location, we might want to have some of those too. The first to RSVP their food, gets to bring it, so think about it, and sign up today. The list will be at PerfectPotluck.com and you put in "Finch" as the coordinator and the passwords is "20130118." Try to bring something different & unique. It is more fun for our taste buds that way.

5) Bring a movie to share on DVD or BlueRay, if you plan to stay later, after the crowd has departed. This way, we can watch something that will keep our attention, as we wind down the evening and do

the clean up. Help is requested for the clean up.

6) Dart Game - We hold the dart game in the backyard at Chris's home. Please be careful throwing your darts. Darts will be provided but it would be helpful if we had more dart boards to make the game flow quicker. Also, you may wish to dress warmly. There is a Trophy, provided by Jerry Belcher, for 1ST PLACE. Competition is stiff, however, everyone should play because it is fun.

Tables and chairs are needed so we can enjoy dinner. If you have access to several, drop me an email so we can start making plans and I can let you know if you need to bring your collection, or if we have enough for the event. Thanks so much.

Door prizes are needed. Drop me an email, let me know how many you can provide. Door prizes can be anything, doesn't have to be astronomy related, just wrap it and tell me how many you have to donate. Past door prizes have been mugs, nick knacks, and other non astronomy related items. The more door prizes we have available, the more fun and prizes can be awarded.

We hope everyone can attend. It is always so much fun and a great get together. The Food and people are a good reason to come, even if you don't wish to play the games with us. Come for the socializing! Bring food to share. Many thanks goes to Chris & Tiffany Johnson for hosting this year's event. See you there! **

New Competition at the Social

By Matt Kohl

Do you like to cook? Do you often bring homemade dishes to the Social? Would you like to win a prize (or prizes) for doing so? This year we will attempt to start a new Social tradition. The rules are simple. Everyone attending, upon arrival, will be given a slip of paper labeled "Main Dish"

and "Dessert" (for simplicity's sake, Side Dishes will fall under the Main Dish category). All homemade food will be designated a number. Attendees will write down the number for the food they enjoyed the most for both categories. NO voting for the food you/your family brings, please. The people

whose food receives the most votes in each category wins a prize. You may even win two if you bring food for each category. The Main Dish/Side Dish category has a special prize provided by PAS. Homemade = you didn't buy it already prepared. ***

Men on the Moon

By Alex Vrenios, PhD

Whatever else you may think about President John F. Kennedy, his command of the English language and his rhetorical skill brought the technical community into sharp focus on a single, well-defined goal. I was a high school junior when I heard him speak.

But if I were to say, my fellow citizens, that we shall send to the moon, 240,000 miles away from the control station in Houston, a giant rocket more than 300 feet tall, the length of this football field, made of new metal alloys, some of which have not yet been invented, capable of standing heat and stresses several times more than have ever been experienced, fitted together with a precision better than the finest watch, carrying all the equipment needed for propulsion, guidance, control, communications, food and survival, on an untried mission, to an unknown celestial body, and then return it safely to earth, re-entering the atmosphere at speeds of over 25,000 miles per hour, causing heat about half that of the temperature of the sun--almost as hot as it is here today--and do all this, and do it right, and do it first before this decade is out--then we must be bold.

I'm not sure if I said it out loud, but my conscious thought was, 'Wow!' And somewhere deep inside my subconscious was, "What I would give to be a part of that" I was too tall to become an astronaut, and too young to join the NASA engineering team, but I was in a technical high school and I happened to be living close to some well respected colleges and universities. I felt strongly that I too must reach for that 'unknown celestial body.' Looking back, however, the closest I ever got to landing on the Moon was completing the two lunar observation programs offered by the Astronomical League; life happens.

It's been over four decades since the last man walked on the Moon. The first man was, of course, Neil Armstrong on July 20, 1969. Eugene 'Buzz' Aldrin, the lunar mod-

ules' pilot, was right behind him. Michael Collins, the third member of the Apollo 11 crew, stayed behind in the command module, orbiting the Moon, awaiting their return. The landing site was in the Sea of Tranquility (Mare Tranquilitatis), near the southwestern 'shore.' Not too far away are to the northwest the twin craters Ritter and Sabine; crater Moltke lies to the southeast. Just north of the landing site, in almost a straight west-to-east line from Sabine are three small craters, now named Aldrin, Collins and Armstrong in their honor.

Note that what we call a lunar sea was thought by early astronomers to be an actual sea. (If you look closely through a telescope under grazing light conditions, you can see what appear to be waves on the surface!) They were formed by volcanic eruptions that spilled molten lava onto the lunar surface, leaving large, darkened areas that are easily visible from Earth without any optical aid. The Sea of Tranquility is just northwest of the center of the lunar face we see. Look for the bunny's hips. (If you don't understand the reference, search online for "bunny on the Moon." Once you've seen it, you'll never forget it!)

Later that same year in November, the Apollo 12 lunar lander arrived in the southeastern part of the Sea of Storms (Oceanus Procellarum), up high in the bunny's left front leg. Charles 'Pete' Conrad and Richard Gordon explored the area around the lunar module while Alan Bean remained in the command module.

Three prominent craters lie north of the landing site, in nearly a straight line running south-southwest to north-northeast: craters Landsberg, Reinhold and Copernicus, the last of which is a classic lunar crater and a spectacular sight in even a small telescope.

Fifteen months later, after the unsuccessful Apollo 13 mission, the Apollo 14 crew (Alan Shepard, Edgar Mitchell and

command module Pilot Stuart Roosa) landed just east of the Apollo 12 site, at the north end of the Frau Mauro formation, the landing site originally targeted by the Apollo 13 crew.

The Frau Mauro Highland forms an "island in the sea," with some interesting lunar formations. This was the last 'safe' landing site, chosen near the equator. Now that NASA felt comfortable with the Lander's ability to land at a pre-specified location, rougher and more interesting sites were on the agenda.

Hadley Mons (Mount Hadley) was the first lunar feature I ever searched for toward the Astro League's Lunar Observer's program. It's in the narrow highland strip between the Sea of Showers (Mare Imbrium) and the Sea of Serenity (Mare Serenitatis). The Apollo 15 crew (David Scott, James Irwin and command module Pilot Alfred Worden) landed in the Hadley Rille, a valley southwest of the mountain, in July of 1971.

This is really rugged terrain and offers a good deal of detail under various lighting conditions. If you want to get a good feel for lunar landscape, get familiar with the area through the eyepiece and then look at the photos these astronauts took of that region from ground level.

If the Hadley Rille wasn't rugged enough for you, the Apollo 16 landing site will keep you at the eyepiece for a while. It's located just west of the bunny's right hind knee cap, inside an oddly shaped depression, north of crater Dollond. The Apollo 16 crew (John Young, Charles Duke Jr., and command module pilot T. Kenneth Mattingly Jr.) landed on the Moon in April 1972.

The Apollo 17 crew (Eugene Cernan, Harrison Schmitt and command module pilot Ronald Evans) landed in the highlands on the western end of the bunny's belt, on the border of the Sea of Serenity

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Men on the Moon

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(Mare Serenitatis) and the Sea of Tranquility (Mare Tranquillitatis). They were the last manned mission to land on the Moon, arriving in December of 1972.

Their landing site is near Mons Vitruvius, north-northwest of crater Vitruvius. The actual site is in an oddly shaped valley but there are several well formed craters nearby: Maraidi is due west and Littrow is to the north-northeast.

Take the time to investigate some of these landing sites. It will serve as an overview of the variety of surface features you'll find on the Moon.

The Russians sent lunar landers to the Moon, too, but robot rovers instead of

men. Dubbed LUNA missions, LUNA 2's landing site is my all time favorite. Back when I first located Mount Hadley I took some time to scan the surrounding area. Northwest of that site I found a trio of large craters: Archimedes, Autolycus and Aristillus. What, I wondered, would it be like to stand in Sinus Lunicus, in the midst of these three giant craters? I was delighted to notice a small red cross there on my Moon map, indicating the LUNA 2 landing site. I imagined a Russian scientist pointing at this spot on a map some time in the late 1950s, deciding that it might be an interesting place to be - a kindred spirit for sure! Of course, the first Russian spacecraft to land

on the Moon was probably not intended to land there, exactly. I'd guess they were thrilled just to land it on the Moon anywhere at all - proof of concept, as they say.

Man has gazed up in wonder at the Moon. A few men have actually gone there. Most of us, unfortunately, can only wonder at their experience.

Ernest H. Cherrington, Jr. in his book, *Exploring the Moon through Binoculars and Small Telescopes* said, "The moon is a good starter for several reasons. Not only is it easier to find and identify than any other inhabitant of the night skies, but it is the most satisfying object that a beginner can observe." ***

Lone Mountain School Star Party Oct 11

By Terri, Event Coordinator

It was a beautiful evening for viewing. We got to the school about 20 minutes before set up time, so about 5:40pm. Eric Steinberg and Earl DeLong were already setting up. After our arrival, Don Boyd rolled in, on the basketball courts, and then Mike wandered in, walking. The goal was 6 scopes, so it was 5 scopes and Mike. Mike set up inside the auditorium. We started setting up and then 6pm came and we were informed the pizza was available. So, Eric & Earl took the first shift, and went in to get their pizza while we set up and watched the scopes. When they came back out, Don, William and I went in, grabbed our pizzas, drinks, dessert, veggies, hit the bathroom and came back out to finish setting up. Before we knew it, it was 7pm and there was a crowd. So, the pizza had to wait. Around 8pm it started getting very chilly, so we found our jackets and continued with the event. We must have had at least 300 people attend this event. I stayed on the Moon, the whole Moon, all night and did Q & A. Sometime during the night, William moved to the Moon and someone asked me to find the E.T.Cluster. I gave it a try but with a fork mount, the angle was all wrong, so I gave up and went back to the Moon. I gave away over 1/2 of the box of Q & A prizes I had brought with me. One boy, didn't catch his name, was so interesting and interested in astronomy, I gave him several awards just for the info he was sharing with me. He'd come up to my scope and I'd say I have the Moon, of course in

the dark I didn't know it was him until he was speaking to me, again. And he'd go on about something science or astronomy related and we'd get into these great discussions, and then as he was walking away to the next scope, about 15 minutes after he got to mine, I'd hand him a prize. He'd thank me, go to the next scope, and work his way around to me again. I saw him at least 3 times that night, and each time he got a prize from me. When the kids are that excited about science, I don't mind giving more prizes to help them stay excited. Some of the things I gave him will be very useful to him.

So, the event closed at 9pm sharp as the principal came out, announced the lights were coming on, and then we started packing up. It took William, Don and I about an hour to pack up. Don was taking his time, as he knew I would be hurrying but it still would take an hour, always does, if I do it right, and make sure everything is put away properly. So, about 10pm, we were rolling off the basketball courts. While packing, there was a group of teachers just laughing and having a super great time, waiting at the gate opening. We could hear them giggling and having a great time. I wish to thank Lone MT School for a 2nd year of a great event. I heard the pizza was from Costco, and I never had such good cheese pizza. Thanks to Colleen Neiman, our contact at this school. I'm sure she will want to set up another event soon. Also, this is the school

that sends us a copy of the Survey they do with the parents who attend, to find out how to better improve their events.

Don writes: I had my new scope working thanks to Mike lending me his weights. Scope was not working all that well because Orion sent me a dovetail bar that was too long. With the Telrad on the back end of the scope I could move the scope back and forth about an inch. And also trying to rotate the scope so that the eyepiece was in a good position I ruined the alignment and the scope would not do a goto after that. I viewed the Perseus double cluster most of the night.

Earl writes: The club had a successful return visit to Lone Mountain School. The weather was chilly and this probably decreased the crowd a little from last year. The visitors that braved the weather, were very interested and appreciated us sharing our hobby with them.

I started the evening showing the moon using a dark green filter. Everyone said I had the best view of the evening. Once the crowd thinned (people went back into the school to warm up and enjoy the hands on demonstrations), I turned my telescope on the double star Alberio. We then viewed star clusters M30, M15, M13 and the Andromeda Galaxy M31. All showed up fairly well in the first quarter moonlight.

Thanks again to the friendly and helpful staff. We look forward to our next visit.***

Ever wondered how the pull of gravity is calculated between heavenly bodies? It's simple. Just multiply their masses together, and then divide the total by the square of the distance between them.

Arizona Sky

Leah Sapir



This is the time when we would have wanted to follow up last month's grandiose predictions about Comet ISON, with even grander observations.

It was such a promising comet; we all had such high hopes for it. Then it recklessly got too close to the Sun... and now Comet ISON is no more. Bits of the core could be faintly detected in the first week of December, and after that it was gone forever.

But with that said – the observations of Comet ISON by various telescopes and other instruments on its journey towards the Sun, as described in last month's "Arizona Sky" article, will provide a wealth of information about comets and about the Sun, after the data is thoroughly analyzed.

In the meantime, we can focus our attention on other interesting objects that are visible at this time of year. For example, in the constellation Taurus we can find an unusual nebula, NGC 1555, also known as "Hind's variable nebula". It was discovered by English astronomer John Russell Hind in 1852, but in 1861 it began to fade, and by 1868 the nebula had disappeared completely. It was not seen again till 1890, but soon after that it began to fade again, and by 1899 it was gone. It reappeared in 1920, and since 1930 it has been gradually brightening.

The nebula is quite small – about 0.2 light years in diameter – and is about 600 light years away. It is illuminated by the star T Tauri, which varies unpredictably from 9th to 14th magnitude. T Tauri is only about 1 million years old, and is the prototype of a group of irregular variable stars that are believed to be still in the process of formation.

T Tauri stars are usually found near molecular hydrogen clouds. They have not yet started to burn hydrogen, but instead emit energy from gravitational contraction. After 100 million years or so, the star will start to burn hydrogen and become a main sequence star. T Tauris are very luminous only because of their large radius.

Meanwhile, back in the solar system, Venus is already fading into the sunset. It will be visible in evening twilight



T Tauri and Hind's variable nebula, photographed in near-infrared by 2MASS, the Two Micron All-Sky Survey. (image credit: 2MASS and NASA.)

during the first few days of January, but then it will disappear into the Sun's glare. Venus will reappear as a morning star in dawn twilight towards the end of the month.

Mercury, on the other hand, is returning to our evening sky, and will be visible in evening twilight after around January 20. In the last few days of January and beginning of February it will even remain up a little after dark. We will see a nice conjunction of Mercury and the crescent Moon after sunset on January 31.

Jupiter is at opposition, and will be up all night – a prime opportunity to see our largest planet and its four charming moons. Neptune and Uranus are evening stars. Neptune sets at 9:30 pm at the beginning of January, and 7:30 pm at the end of the month. Uranus sets three hours later.

Mars is still a morning star, but rising earlier: about half an hour after midnight at the beginning of January, and 11:30 pm at the end of the month. Saturn is also a morning star; it rises at 3:30 am at the beginning of January, and 2 am at the end of the month.

This month will have two New Moons: on January 1 and January 30. The first quarter will be on January 8, full Moon on January 16, and last quarter on January 24.

Join us next time when we continue to explore the Arizona sky. And till then, wishing you clear skies and happy observing!

The Milky Way galaxy we live in: is one among the BILLIONS in space.



Black Mountain Campus Oct 24

By Terri, Event Coordinator

This event started out with a bit of haste. Eric Steinberg, William Finch and I arrived at Bad Donkey about 5pm to have dinner. However, Bad Donkey changed their hours. They now close at 3pm, which makes it hard for us to meet for dinner prior to the BMC event. So, we had to find food and fast as we were all very hungry, having arrived and hoping for a delicious dinner. We went to the nearby Subway.

In attendance at this event from PAS was: Earl DeLong, Mike Marron, William & Terri Finch, Eric & Ora Steinberg, Don Boyd, Sam Insana, and Bob Ewing. Many thanks to the Telescope Team. So, after stuffing food down our throats, back at the set up location, Eric, Earl and the Finches set up first. Mike showed up and we had him on the other side of the vehicles, like normal. Don came with his scope. Sam didn't bring a scope. Sam has been ill for a while and was told he can't lift anything. So, he came to view through the scopes and because he wanted to get out of his house, after being cooped up in it while recovering. Bob Ewing brought out the 12" Light Bridge.

In attendance at this event that were not PAS Members at the start of the event, were: Amy Rusk, Caroline Van Dine and Amy Rusk. These were the public that checked in with me. We had 5 of Bob's students attend, and about 8 to 10 public. It was a nice crowd and they stayed to the end.

I wish to thank Amy for making the big cookie. It was a coincidence that it was Eric's birthday. She gave the cookie to me but I decided to share it around. So, at the end of the event, after everyone was starting

to pack up, we split the cookie. It was a great chocolate chip cookie. A few ate on it, and then the rest went to my Mom as Chocolate Chip is her favorite cookie. Gustavo Guimarae was visiting from Germany and was very pleasant to have around.

Many thanks to Eric for doing a night sky tour. A bunch of students from PVCC Main Campus, attending Julia's astronomy class, attended this event and they were drawing on their pages and so I thought a night sky tour might be a good thing for them. Eric did an awesome tour. Thank you Eric!

So, in review, we had scopes manned by Terri, William, Don, Eric, Earl, and Bob. The weather was great. It didn't start getting chilly until about 9pm. The sky was perfectly clear. The lighting at the YMCA seems to be resolved. We did have the nearby Ball Game going on, so we had the lights and music from there for the evening. Overall, I believe the event was a great success. Next event, we will move further into the dark area, down where Sam sets up, as the light where Mike is, has a new bulb and is way too bright and white to have a telescope near. So, everyone move your scopes as far West as possible in our observing area. Our next 2 events at BMC are Nov 21 and Jan 30. We look forward to seeing you there, with or without a scope. Come enjoy the views with PAS!

Amy writes: Yes it was awesome! I look forward to next event. Thank you so much for making me feel welcome last evening.

Bob writes: Thanks for the great star party last night!!! Nice bunch !!

Gustavo writes: Dear Terri, I'd like to thank you and everyone at the PASaz for the wonderful evening experience last night. I guarantee you that it was unforgettable! Your kindness and patience made a huge impact on me, while handing me a great opportunity to get to know your (upside down!) northern sky. If any of you ever come down to Brazil, please contact me for I will be greatly honored to help you all around in anything you might need. Thanks again! Best regards and clear skies, Gustavo

Earl writes: Our October visit to the Black Mountain Campus of PVCC was a fun time. The weather was perfect, not too hot or not too cold and the seeing was good. While the public attendance was light, I still enjoyed the evening. The members of the public that attended were very interested in the night sky.

I once again used the star tour function of my telescope and viewed the 12 objects in the October database. Two memorable objects were the Saturn nebula, and the Blue Snowball nebula. Both fairly bright planetary nebula.

I then observed double stars in Cassiopeia, Andromeda, and Capricorn. Several interesting combinations were seen. I finished the evening observing NGC 457 the ET cluster and the Andromeda Galaxy.

The Black Mountain campus observing site is a decent place to observe that is relatively close to our homes. Please try and join us next month. ***

ASU West Star Party Oct 30

By Terri, Event Coordinator

It was a chilly night. We saw about 150 to 200 in attendance from the public. It was fun. And there were no clouds, at all. Wonderful viewing, except for the haze around the horizon. In attendance from PAS was Earl DeLong, Don Boyd and William & Terri Finch with telescopes. Paul Schmittke brought out his scope from the school. Also attending were Beth and Michael Myers (newer PAS members) and Angie Lee who we had seen at a Bookmans Event earlier in the year. Jeff Hopkins, who we haven't seen much of lately, from SAC,

joined us, too.

Prior to the event, it was planned that PAS Members were meeting for dinner at Arby's across the street from ASU West. However, since there were no RSVP's to do dinner together, William & Terri didn't go to Arby's, but instead grabbed food at Subway. Found out later that Kevin Adams went to Arby's and had dinner alone. Many thanks to Paul for having PAS at this event. Looking forward to the next event at ASU West which is currently scheduled for Mar 27, 2014. See you there!

Earl writes: It was a beautiful fall night for our event at ASU West campus. We had a decent crowd of both students, faculty, and general public. Everyone was enthusiastic and asked many questions. Several students were getting extra credit observing objects and recording their observations.

This is always an enjoyable event and is close to my home. We observed Venus (half lit), M31 the Andromeda Galaxy, NGC 884 the Perseus double cluster, M15 a globular star cluster in Pegasus and the double star Alberio in Cygnus.



The Big Picture: GOES-R and the Advanced Baseline Imager

By Kieran Mulvaney

The ability to watch the development of storm systems – ideally in real time, or as close as possible – has been an invaluable benefit of the Geostationary Operational Environmental Satellites (GOES) system, now entering its fortieth year in service. But it has sometimes come with a trade-off: when the equipment on the satellite is focused on such storms, it isn't always able to monitor weather elsewhere.

“Right now, we have this kind of conflict,” explains Tim Schmit of NOAA’s **National Environmental Satellite, Data, and Information Service** (NESDIS). “Should we look at the broad scale, or look at the storm scale?” That should change with the upcoming launch of the first of the latest generation of GOES satellites, dubbed the GOES-R series, which will carry aloft a piece of equipment called the Advanced Baseline Imager (ABI).

According to Schmit, who has been working on its development since 1999, the ABI will provide images more frequently, at greater resolution and across more spectral bands (16, compared to five on existing

GOES satellites). Perhaps most excitingly, it will also allow simultaneous scanning of both the broader view and not one but two concurrent storm systems or other small-scale patterns, such as wildfires, over areas of 1000km x 1000km.

Although the *spatial* resolution will not be any greater in the smaller areas than in the wider field of view, the significantly greater *temporal* resolution on the smaller scale (providing one image a minute) will allow meteorologists to see weather events unfold almost as if they were watching a movie.

So, for example, the ABI could be pointed at an area of Oklahoma where conditions seem primed for the formation of tornadoes. “And now you start getting one-minute data, so you can see small-scale clouds form, the convergence and growth,” says Schmit.

In August, Schmit and colleagues enjoyed a brief taste of how that might look when they turned on the GOES-14 satellite,

which serves as an orbiting backup for the existing generation of satellites.

“We were allowed to do some experimental imaging with this one-minute imagery,” Schmit explains. “So we were able to simulate the temporal component of what we will get with ABI when it’s launched.”

The result was some imagery of cloud formation that, while not of the same resolution as the upcoming ABI images, unfolded on the same time scale. You can compare the difference between it and the existing GOES-13 imagery here: http://cimss.ssec.wisc.edu/goes/blog/wp-content/uploads/2013/08/GOES1314_VIS_21AUG2013loop.gif

Learn more about the GOES-R series of satellites here: <http://www.goes-r.gov>.

Kids should be sure to check out a new online game that’s all about ABI! It’s as exciting as it is educational. Check it out at <http://scijinks.gov/abi>

Download photo at: http://www.goes-r.gov/spacesegment/images/ABI_complete.jpg.



The Advanced Baseline Imager. Credit: NOAA/NASA.

Estrella Observatory Star Party Nov 2

By Yves Klein

It turned out very nicely. We had about 50 people over the course of the night. We took several pictures including the comet ISON, bubble nebula, and a couple galaxies. People loved Yukos art and the Story telling by Mario was fascinating. Mythologies are always fun to listen to. We had also a great meal with french crêpes for desert.

Rodney Fong writes: The sky at Yves started out clear but clouds from the South crept in and it was solid soup by 8pm. Yves’ scope was out and ready, hoping it will clear up later, which it did by 11pm. Yves was able to take nice images of the Bubble Nebula and Triangulum Galaxy with 80 second exposures. I did not bring my scope because I wanted to see Yves’s scope in action and I was not disappointed! All in all, a pleasant night at Estrella Observatory. ***

Telescope Workshop Oct 17

By Terri, Event Coordinator

This was an interesting event. We didn't have any public RSVP's this time, so Don Boyd, William & Terri Finch, Rodney Fong, Mike Marron all met in G-147. I set up the handouts, and then we chatted. The event started at 7pm, no one was there from the public. Jenny Weitz went off to her office to grade papers, and we just sat around and talked about a bunch of things. Around 8:10pm, we agreed that if no one showed up by 8:30, we would pack it up and go home early. Well, about 8:15, right after I sent a text to Jenny to say we were departing at 8:30, 2 gentlemen, students at

PVCC, came into the door. Mike quickly grabbed their attention with his meteorites and for 20 minutes, they listened and enjoyed touching, smelling, feeling the meteorites. As they were leaving, about 8:35, I handed them our flier and told them about the upcoming Nov 6 event at PVCC with Dr. James Ashley, and mentioned they should check out our webpage for more events. I also mentioned the Oct 24th Black Mountain Campus event coming up. They left, we packed up, Jenny showed up to help lock up the room, and we all went home about 9pm. It was the shortest event we

have ever had, but it is a good example of why one should RSVP their attendance to our events. We don't need to stick around until 10pm if we don't have anyone scheduled to attend. The temperature outside was nice, cool, clear skies, but we had a 1 day shy of a Full Moon. Not that that would have made a difference, unless we set up for the Star Party portion of this event. We didn't, since no RSVP's were received. Looking forward to a better event next time. Next event of this kind is on Dec 12. See you there! ***

"Europa Report" Movie Night Oct 19

By Terri, Event Coordinator

It was a lovely night outside, a bit chilly, but just on the border of needing a light jacket. We met at Eric's wonderful home. Eric has a 102" HD Projection TV. In attendance were William & Terri Finch, Darlene Ahlefeld, Eric Steinberg - the host of the party, Don Boyd and Rick Cunningham. We began with some snacks, and took them to our chairs. The movie began, and it

was a really good movie. About 1/2 way through Mike Marron and Ofelia Waters showed up. We took an intermission, gathered more snacks, and continued the movie. The movie was 1.5 hours long. After the movie, we chatted for a short while and about 9:30pm, the party broke up. William, Don and I stayed after to help Eric clean up, but soon left. Many thanks to Eric for host-

ing this awesome movie night. Eric is talking about doing it again sometime with another movie. The size of the screen & the surround sound, made this movie experience similar to going to the movies. Thank you so much, Eric. We look forward to the next Movie night at your home. ***

ASU West Star Party Oct 30

From page 7

One family had an elderly lady with them who did not speak English (and I do not speak Spanish). I could tell she was having trouble seeing the double cluster because she had her non observing eye open. I asked one of the party to tell her to

cover her eye with her hand. Even in a foreign language, her excitement was great to see once she got her first view through a telescope.

Michael writes: Thank you for allowing us to ask our questions and view

through your scope last night at the star party. I wish I didn't have to leave so early to return home to work but such is the life of a IT Engineer. ***

SAC Meeting Nov 15

By Terri Finch

It all started when Rick Tejera, of SAC (Saguaro Astronomy Club), offered to have a prize to raffle off at the November PAS meeting. He ordered it from Amazon, but it didn't come in in time for the PAS meeting, and so he said that whoever won the raffle, he would mail the book to them. William Finch won the raffle/book. So, I mentioned to Rick, why not just meet at the next SAC meeting? And that is what we did.

In the December issue of PAStimes, there is a thank you to Rick with the title and author of the book. I believe anyone who is beyond finding the basic, easy stuff in the night sky, should invest in this book.

Wow, what a nice book. I plan to share its contents at the Night Sky Training Sessions. And many thanks, again to Rick for this awesome addition to my astronomical book library. Well, William's library, but it is a shared library.

So, the SAC meeting was very interesting. Up to the Guest Speaker there was club business, show n tell and a few other announcements. Then, they turned it over to the Speaker. Mark Robinson did a fantastic presentation on "Exploring the Moon." After the presentation, Bruce and I ran up to talk to Mark to ask him to do the same presentation at a PAS Meeting. I'm working

on scheduling him. This talk was really fantastic, informative and enjoyable. Watch for a notice as to when Mark will be at our club meeting to do this presentation.

In attendance at the SAC Meeting, from PAS was: William & Terri Finch, Ed, Bette and Bruce Wurst. Many thanks to Rick for inviting us. I totally enjoy the guest speaker and seeing everyone from SAC! **

Oxygen is circulated around the helmet in space suits in order to prevent the visor from misting.

Halloween Party at Mike's Oct 26

By Terri, Event Coordinator

It was an awesome night for viewing and a Halloween party. You really missed a great Costume Contest. Next year, we will do the same thing, but I want to plan to record it and review it at the Awards Ceremony in April. Didn't get to record this one, but wish I had.

In attendance was: Rodney Fong, William & Terri Finch, Don Boyd, Sam, Frank and Vera Insana, Eric & Ora Steinberg, Bruce, Ed and Bette Wurst, Mike Marron (the host), Bob Senser and Kevin Harcey.

The potluck started at 6pm. There was more food than could be eaten. 4 pizzas showed up, several chickens, some great pasta, a salad, plenty of desserts, wow... it was a great spread of foods. Everyone was there except for Ofelia Waters and Helen & Donna Zander. So, we waited on their arrival. Rick Cunningham RSVP'd but later texted by phone that he was stuck in Tucson and probably wouldn't make it until 9pm. So, we started the costume contest without him.

How the contest went was this..... Each person dressed in costume was given a number. Everyone in attendance voted and was given a piece of paper and pencil. So, I made a list of the numbers. 13 costumes were present, 17 people were in at-

tendance. So, everyone voted on everyone, easier that way. Then, one at a time, I called a number, and that person came forward to the pretend stage in Mike's living room, and showed their costume, did a dance, did what ever they needed to do to make their costume come alive, plus named their costume so we knew what they were supposed to be. Here's the costumes: Terri was a Horned Zombie. I don't think any photos were taken of me. Vera was a Zombie and danced to "Thriller," Bob was Jan Valdez, William was just a little horny, Frank was Austin Power, Sam was Scotty on too much Romulan ale, Rodney was the UnaBomber, Bette was the Tin Woman, Kevin was a Biker Clown, Ofelia was from Venice, Italy and sang some of "O Sole Mio," Bruce came as a Big Fat Slob, Mike was from Vendetta and Ora was the Star of the Show. The photos will go up on the PAS Photo Gallery on line, soon. And the results of the Costume Contest will be announced at the April 24, 2014 PAS Awards Ceremony & Pizza Party. Those who can't attend that event, can pick up their awards at a future meeting, or a spouse can pick up the award for you, anytime on or after Apr 24. The costume party was a great success. I want to thank everyone for participating in this fun event. We will definitely improve on it for

next year, assuming that Halloween and a Saturday work out in the schedule to have the next event.

As far as the Star Party went, Eric and Don brought their scopes. Rick had it planned, but since he didn't show, we don't know what he did. Don's review of the event is below.

The first movie watched was "After Earth." I don't know what the second movie was, as I was in the kitchen chatting, rather than watching movies. The party broke up about 11pm. William and I left about 12:30am.

I wish to thank everyone who brought the delicious foods. I wish to thank everyone for participating in the costume contest. Plan your costume for next year. I plan to do this again, maybe a little different but the same idea. Next year's Halloween party will be on Oct 25, 2014. See you there!

Don writes: It was clear just long enough to tease us...about 8 it started clouding up, and by the time I got my scope aligned all that was left of the sky was north...and it disappeared very shortly after that. Eric never even got his scope out.

Eric writes: I didn't bring my scope due to the forecasted cloud cover for the evening. ***

Bookmans Telescope Workshop Nov 10

by Terri, Event Coordinator

It was an awesome event. William & Terri Finch arrived about 2:50pm. While setting up, Don Boyd came in and then Rodney Fong. Then the first scope arrived brought in by Jim Kramer, who is a new member of PAS. Jim brought his 11" Celestron to find out about culmination. Don and William took care of Jim and were done within a 1/2 hour. While they were helping

Jim, Laura arrived. Rodney and I took care of Laura, and when Jim departed, William assisted with as well. Laura was looking to find out what type of scope to purchase. We told her the most important things and invited her to attend our events and take notes on the different telescopes and what they do, and to take her time researching it. When Laura left William, Don and Rodney

watched videos about telescopes on William's laptop.

Ed & Bette Wurst were in attendance. We had 5 individual people stop by, pick up a star chart and take it with them. It was a very successful event. The sky was total overcast but the day was awesome! Thanks to the Telescope Team members: William, Rodney & Don. ***

12/17 Akimel School Star Party Dec 17

By Steve Reed

The event was huge. We had close to 800 in attendance. East Valley sent out three telescope teams and were able to share

some cool things with our guests. One of them had a counter as people viewed his scope and he counted 270 viewers of the

scopes. Mike did a great job as always. Thanks! ***

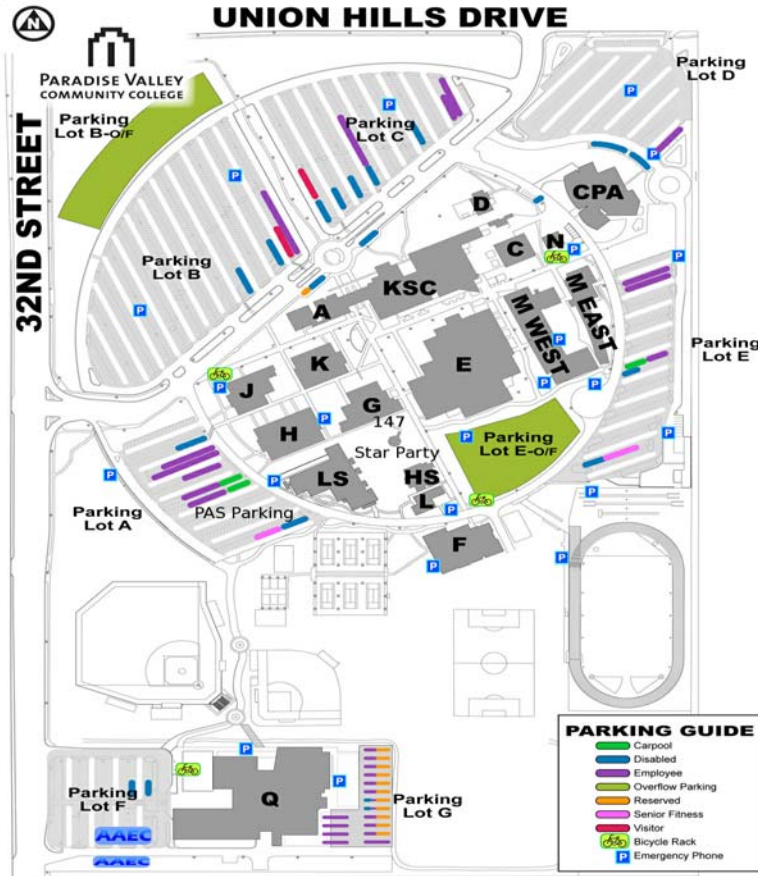
The middle layers of space suits are blown up like a balloon to press against the astronaut's body. Without this pressure, the astronaut's body would boil!

The gloves included in the space suit have silicon rubber fingertips which allow the astronaut some sense of touch.

The full cost of a spacesuit is about \$11 million although 70% of this is for the backpack and the control module.

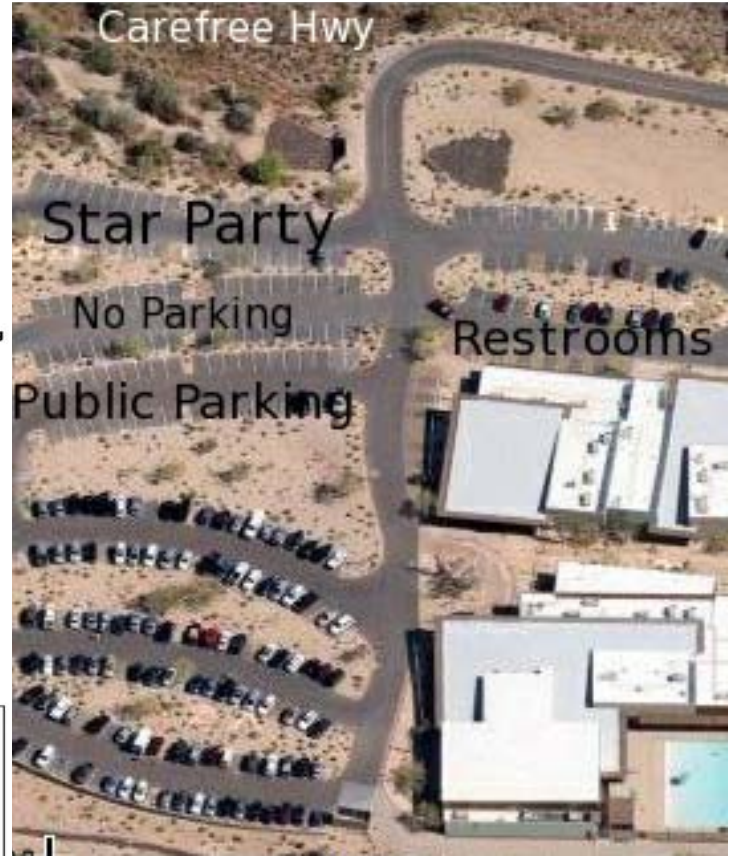
Map of PVCC Main Location

18401 N. 32nd Street | Phoenix, AZ 85032



Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



See page 2 for more details

January 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 New Year's Day	2 PAS Meeting	3	4
5	6	7	8	9	10	11
12	13	14	15	16 Tentative MOM	17	18 PAS Social PRIVATE
19 Telescope workshop	20 Martin Luther King Day	21	22	23 Telescope workshop	24	25
26	27	28	29	30 BMC Public Star party	31	

Don Boyd
PAStimes Editor
3039 W. Peoria Ave 102-188
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To:

2014 PAS GUEST SPEAKER LINE-UP

By Terri, Event Coordinator Events@pasaz.org

Do you have an idea for a Guest Speaker? Email me the details.

Feb 6: Speaker: TBA

Mar 6: Speaker: TBA

Apr 3: Speaker: TBA ***

PAS is incorporated in the state of Arizona as a non-profit, scientific and educational organization. Our newsletter PAStimes is published monthly from September to May and distributed by US PS and the Internet. All Issues are available for download on our website www.pasaz.org Ads for astronomy equipment are provided as a courtesy to sellers and buyers, and do not constitute any endorsement by PAS. All Photos by Don Boyd unless otherwise credited. All articles and photos are copyright their authors or PAStimes.

What's Up For January

By Rod Sutter, PAS Past President

Name	Date	Rise	Set
Mercury	01-15-14	08:20	18:30
Venus	01-15-14	06:47	17:22
Mars	01-15-14	00:08	11:47
Jupiter	01-15-14	16:41	06:157
Saturn	01-15-14	02:48	13:25
Uranus	01-15-14	11:11	23:30
Neptune	01-15-14	09:37	20:43
Pluto	01-15-14	06:32	16:44

All Times Arizona Time

January 15 2014

Sunrise: 07:32

Sunset: 17:44



New: January 1



Q1: January 7



Full: January 15



Q3: January 23