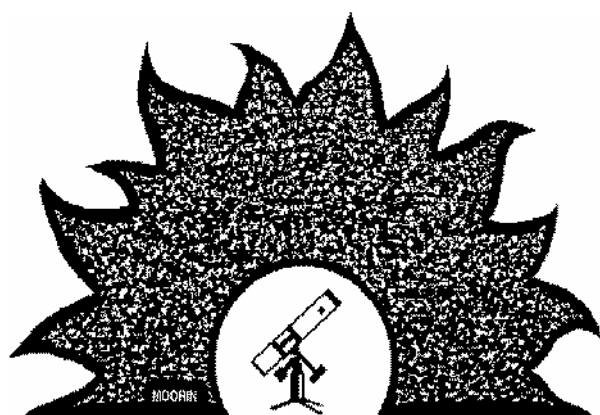




PAStimes

Phoenix Astronomical Society
www.pasaz.org

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Volume 64 Issue 10

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

PAS Meeting May 2

By Terri, Event Coordinator

It was a wonderful meeting. We did a Raffle. Our Guest Speaker Paul Wieland, donated a T-shirt to the raffle. Congrats to Sam Insana for winning it.

The meeting opened with a continuation of the Awards Ceremony from the previous week. I announced the previous awardees, and Bruce Congratulated Darlene Ahlefeld, Joe & Renee Collins & Don Boyd. We also awarded Rockie Hervieux a PAS T-shirt for being the youngest PAS Member of 2012. For more details about who won what award and why, see separate article that reviews all those details, in this issue.

Then we did the Elections. We had a bit of humor going on with the elections (entertaining) and the results are as follows: For President we have Bruce Wurst, Vice President and Event Coordinator is Terri Finch, Editor of the PAStimes Newsletter is Don

Boyd, Treasurer is Mike Marron. Then we turned our attention to the Directors. In position and continuing again this year are: Mikey Webb as PAS Host, Dave Hellman as Member at Large, Chris Johnson as Webmaster, and we newly appointed Jenny Weitz as another Member at Large. Congratulations to the 2013 Officers and Directors.

We then turned the meeting over to the Guest Speaker, who did a wonderful presentation, also with humor, and great information & a bunch of really great interaction with the audience. Paul's topic was "Space: It's not just a vacuum." After the presentation, announcements were made. A couple PAS T-shirts were sold.

In attendance, and not seen that often, were Joe & Renee Collins, and Chet Schuler. The pizza was awesome this time! Thanks to Sardella's! If you missed this

meeting, you really missed a great time. It had good food, good people, great entertainment, and was a wonderful meeting. Our next PAS Meeting will be September 5th. Hope to see everyone there! ***



PAS Awards Ceremony Apr 25

By Terri, Event Coordinator

What a wonderful evening for an awards ceremony. In attendance were the following PAS Members: Earl Delong, William & Terri Finch, Darren Johnson, Chet Schuler, Chris Johnson, Jerry Belcher, Albert Tucker, Ed, Bette, & Bruce Wurst, Dave Hellman, Kevin Adams, Mike Marron, Sam Insana, Alex & Diane Vrenios, Rachael & Mandy Hervieux, Eric & Ora Steinberg. Attending Guests were: Kelly, Emily, Allen, Millard. Thank you all for attending.

We opened the meeting with a few announcements. Jerry shared that on June

20 there will be a conjunction of Venus & Mercury close together and worth getting out to see. He said that the Saturday before or after that date, would also be good viewing of these 2 planets together. Rachael announced that she got all A's on her midterms. Mike announced his upcoming Lecture Series. Alex announced 2 DVD's he has lent to me for use by the club. Bruce also shared the award PAS received from JPL for our close work with the Space Place team. The photo of this award will be in a future issue of the newsletter.

Here's a description of how you earn an

award from the Night Sky Network. The NSN rules are - attend 3 Public Outreach Events in the year and receive an award and Pin recognition. Since I put together the list of who receives the awards, I also based it on nominations. Back in January and February, I asked PAS members to email me nominations of who they think should receive an award for doing Public Outreach Events in 2012. The only rule was, do not nominate yourself. I collected the nominations, and those receiving just 1 nomination, were added to the list of awarded PAS Members. And the (Continued on page 5)

<u>President</u>	Bruce Wurst	480-269-3355	President@pasaz.org
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<u>Member at Large</u>	Dave Hellman		david.hellmann@paradisevalley.edu
<u>Rocketry Liaison</u>	Jerry Belcher	623-328-9290	http://ahpra.org/launches.html

July & August Upcoming PAS Events

By Terri, Event Coordinator

Jul 4: (Private party) Fireworks in Carefree at Mike's home with Potluck at 6pm & Star Party for PAS Members Only. No Moon, bring your scope, a main dish for the potluck, a chair to view the fireworks and come have a ton of fun with a great group of people!

Jul 6: Dark Sky Antenna's Star Party (Private) Event begins at sundown and goes to dawn. RSVP is with Eric for this event. Bring you own everything.

Jul 6: Estrella Observatory Star Party (private) 5:30pm Potluck, 7:30pm Star Party. RSVP is with Yves or Terri for this event. Sign up in Potluck & bring your scope!

Jul 13: Mike's Lecture Series #2 of 4. Potluck is at 5:30pm. Lecture begins at 7pm. This is a public event. RSVP is required with Mike PrimeFactory@q.com or 480-488-3031 to get directions to his home. Parking is limited. Everyone welcome! This event is a Potluck, Lecture & Star Party. Dates of these lectures are Jun 22, Jul 13, Jul 27, and Aug 24.

Jul 14: Bookmans FREE Telescope Workshop. 3:30-5:30pm. PAS Members, let Terri know you are attending. If you are attending to find out how to use your telescope or learn about telescopes, 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. We meet in the front window of the store, in their Cafe' section.

Jul 16: CTCA (Private) 9pm to 11pm. RSVP with Joe. PASTimes Star Tour Members only.

Jul 25: Tentative PAS Meeting of the Minds. In LS-201. This event is only held if there are enough topics to hold the meeting. If it is held, a notice will go out by email, and it will be a party, so bring a snack to share. 7pm to 10pm.

Jul 27: Mike's Lecture Series #3 of 4. Potluck is at 5:30pm. Lecture begins at 7pm. This is a public event. RSVP is required with Mike PrimeFactory@q.com or 480-488-3031 to get directions to his home. Parking is limited. Everyone welcome! This event is a Potluck, Lecture & Movie Night. Dates of these lectures are Jun 22, Jul 13, Jul 27, and Aug 24.

Jul 30: CTCA Back up date for Jul 16.

Aug 3: Dark Sky Antenna's Star Party (Private) Event begins at sundown and goes to dawn. RSVP is with Eric for this event. Bring you own everything.

Aug 3: Estrella Observatory Star Party (private) 5:30pm Potluck, 7:30pm Star Party. RSVP is with Yves or Terri for this event. Sign up in Potluck & bring your scope!

Aug 6: CTCA (Private) 8:30pm to 10:30pm. RSVP with Joe. PASTimes Star Tour Members only.

Aug 10: Perseids Meteor Shower party at Mike's in Carefree. Potluck is at 6pm. Public event. Sign up for potluck, and RSVP with Mike Primefactory@q.com to attend.

Aug 11: Bookmans FREE Telescope Workshop. 3:30-5:30pm. PAS Members, let Terri know you are attending. If you are

attending to find out how to use your telescope or learn about telescopes, 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. We meet in the front window of the store, in their Cafe' section.

Aug 20: CTCA Back up date for Aug 6.

Aug 24: Mike's Lecture Series #4 of 4. Potluck is at 5:30pm. Lecture begins at 7pm. This is a public event. RSVP is required with Mike PrimeFactory@q.com or 480-488-3031 to get directions to his home. Parking is limited. Everyone welcome! This event is a Potluck, Lecture & Movie Night. Dates of these lectures are Jun 22, Jul 13, Jul 27, and Aug 24.

Aug 29: Tentative PAS Meeting of the Minds. In LS-201. This event is only held if there are enough topics to hold the meeting. If it is held, a notice will go out by email, and it will be a party, so bring a snack to share. 7pm to 10pm.

Aug 31: Dark Sky Antenna's Star Party (Private) Event begins at sundown and goes to dawn. RSVP is with Eric for this event. Bring you own everything.

Sep 3: CTCA (Private) 8pm to 10pm. RSVP with Joe. PASTimes Star Tour Members only.

Sep 5: PAS Meeting 7pm to 10pm PVCC Main Campus LS-201. Bring a snack to share. Bring a friend! Everyone welcome! ***

PAS Social Jan 26

By Terri, Event Coordinator

It was a rainy afternoon / evening. In attendance was Earl & Anita DeLong, Bruce, Bette & Ed Wurst, Chris & Tiffany Johnson & their three children, Nathan, Jacob & Katy, Darlene Ahlefeld, Don Boyd, Sam, Vera, & Frank Insana, Jerry Belcher, Kevin Harcey, Matt Kohl, Mike Marron, Ofelia Waters, Rick Cunningham, & William & Terri Finch.

The food was awesome and there was plenty to go around. Some dishes that were in attendance for this meal was Anita's Rice, Matt brought Baconized Salad, William had brought a super hot Queso Dip, Terri brought Pinto Beans & Chocolate Peanut Butter Candy (for which Chris & Tiffany just loved), Chris provided pizza, many types of chips were in attendance, Bette brought Green Bean Casserole, Sam brought Church's Chicken, Jerry brought Sardella's Hot Wings, Rick brought a heavenly Scalloped Potatoes and it was gone really fast, Darlene brought grapes, Kevin brought chili, Don brought apples, and the food was awesome. Thanks to everyone who brought food to share and for those who created their food, or brought something different than last potluck. It is always nice to try something new, and also nice to have a return item, such as Rick's Scalloped Potatoes or Bette's Green Bean Casserole or Jerry's Hot Wings. Bruce brought a case of water and Ed brought many desserts and a special Happy New Year ½ sheet of cake, for which Mike took off with at the end of the event. Variety is the spice of life.

So, the event started with a rainy day, and ended with a cooler, wet, soggy night. William, Terri & Kevin arrived a little before 3pm, and helped Tiffany and Chris move the house around to accommodate the guests. Everyone was given a raffle ticket for the main door prize. Everyone signed 1 or 2 thank you cards provided by Terri. And those playing the White Dwarf Gift Exchange were given a raffle ticket to play the game.

Dinner was enjoyed and then the Dart Game began. It was drizzling rain during the game but the players all braved the cold, the slight breeze and enjoyed the game. Here's the results of the Dart Game: Last place was won, and the booby prize given to Terri. Yes, I took last this year. I had high hopes of taking first, because the trophy for 1st place is beautiful! In 6th place, we had Jacob and Sam in a tie. In 5th place we had

Anita, Earl, Darlene and William. In 4th place Don. I believe the game we play is called Around the Clock, in which you shoot for number 1, then when you get it, you go for number 2, etc. Then, we had 3rd place was Ed with 7. 2nd place was taken by Mike who scored 11. Then Bruce took first place, for the 3rd year in a row, with a score of 14. Congratulations to everyone who played through to the end of the game. We did the dart game for just over 2 hours, allowing the indoor party people to enjoy the movie "Sunshine."

Also indoors, Ed had brought a shuffle board game for which Frank and Vera had started out playing darts with the group, but then dropped from the game to go play Shuffle Board. Several other non dart party people were seen playing Shuffle Board. Along with the Shuffle Board, I had brought the Tetris Puzzle again this year. We were looking for a winner, but no winner was found.

After the Dart Game we gathered around one of Chris's many TV screens and watched the video taken by Frank, at the PAS Music Jam held on Dec 22 at Mike's house. Many strange comments were made. Mostly, it appeared that the attendees didn't think the people playing sounded that great, but I believe that was mostly due to the speakers on Chris' computer. At the Jam, I thought we sounded pretty good, for the first time of playing together.

Then we got ready to play the White Dwarf Gift Exchange Game. This game was about an hour long and we were all laughing our heads off. Bette won a "Dictionary of Astronomy" and the "Atlas of the Universe" books. Bruce won a very disguised box of various astronomy magazines. Chris won, through Jacob taking his place because Chris was called to work during the game, "Sci Fi Invasion" DVD. Darlene won Rocks that looked like Meteorites, an astronomy related Mug and a sign that read "Warning - Objects in the telescope are further away than they appear." Ed won Sun Glasses (solar viewing), a globe of the Earth and Jerry won my favorite flashlight made by Coast, in which you have button for the white light and a button for the red light. Matt won the Case that Jerry brought, it was soft shell this year, an Astronomy Calendar and some books. Mike won a Night light and a book, "Sky Guide." Ofelia won a Tele Extender for doing astrophotography, a T-

Shirt and some filters. Sam won a night light and a Year in Space Calendar. Tiffany won an Einstein shirt and a book "Seeing Farther," and Vera won a Saturn puzzle, an Astronaut Pen and another puzzle. William won the RC UFO Saucer. Vera gave her Astronaut pen to Jacob. Sam gave the Year in Space Calendar to me, as it was identical to the one Frank has won. Thank you so much Sam. Many thanks to everyone for disguising their gift very well. What's funny is Darlene wrapped her gift very pretty, then fought to keep it all through the game, and then won it, so that she could be entertaining when opening it. The rocks she pulled out she claimed were meteorites, and through the game she teased Mike with it, saying there had to be meteorites in one of the boxes. They were just rocks, but the entertaining part was how she delivered the message and then opened her box. She is just the funniest lady! I appreciate people with a great sense of humor. Thank you Darlene for attending this event and making it so much fun. I also wish to thank Vera and Tiffany and Ofelia for making this event that much more fun by having you attend. Hope to see you at next year's event! At the Gift Exchange table, several gifts were exchanged after the evening's events concluded.

Then we did the door prizes and Trophies. Announced was the booby prize for Darts, given to Terri. We listed the rest of the positions for the Dart Game, and then 2nd place was awarded to Mike, with a Trophy. And First place was awarded to Bruce, with a trophy. Many thanks goes to Jerry for providing the trophies. A card was sent around for everyone to sign, as Jerry was not originally going to attend this year's Social. Everyone signed the card, and then I gave it to Matt, who presented it to Jerry at the February meeting along with a framed photo Jerry wanted, to say thanks for all he does for the club.

We all signed a thank you card to Chris and Tiffany for hosting the party. Many thanks to everyone who signed. That card was presented to Chris & Tiffany before the Door prizes were awarded.

For attending, everyone received a Door Prize ticket. There wasn't a main door prize provided this year, however, the first door prize ticket drawn, the winner got to choose from these door prizes. A door prize was donated by Mike. (Continued on page 4)

PAS Social Jan 26

(Continued from page 3)

Thank you Mike. Another door prize was donated by Jerry, thank you Jerry. Then 2 door prizes were provided by Paul Schmidtke of ASU West, for the assistance PAS provided in 2012 at the 2 ASU West star parties. Thank you Paul. Winners were: Kevin was drawn first and chose a book "How old is the Universe" from Paul. Rick was chosen next and also chose a book from Paul, "Einstein's Telescope". Frank took the third door prize donated by Mike, and Don took the 4th door prize "Year In Space" Calendar donated by Jerry.

After the door prizes were awarded, we cleaned up, packed up, and everyone left within about 45 minutes. William, Don and I stayed behind to help Chris and Tiffany clean up a bit more. I loaded the car, and then we chatted with Chris until 2am. Since Chris's trash can was full and we didn't have Kevin riding home with us, we took 4 huge bags of trash back with us to our complex, to help out Chris, and put them in our dumpsters. We totally enjoyed the event and hope that everyone else did as well. Let's start planning for next year's event. Where do you want to hold it? What dates work for you? Let's make next year's event another great PAS Social to remember. I'm looking forward to everyone's photos. Send them my way so they can be added to the PAS Photo Gallery. Thanks to all who attended and participated in the games, food and fun!

Darlene writes: A good time was had by all....A lot of firsts for me. Abandoning the wet freeways to the crazies, I chose to take surface streets from Deer Valley to Goodyear. Not a problem till someone pulled Litchfield Rd out from under me. None of my maps answered the 'what next' question but with perseverance and lots of 180 turns I did find Chris' lovely home (at least had a street level picture for ID), just in time for a perfect potluck. Locked myself out of the house retrieving white dwarf gift (!) and was rescued by the son of the house (Chris's), Jacob. Another first for me was darts. Sometimes I threw the other end, didn't seem to make a lot of difference, at least I didn't kill or maim anyone. We even saw a few stars in between the clouds! And I still tied several others for 5th place; my goal was to hit the board. What numbers, there were numbers???? Third first (okay so it sounds strange, so am I) was white dwarf. I could not imagine the overwhelming need to possess a telescope size box, a tiny fluff of blue tissue paper, 2 prettily



Anita doing the unsolvable Tetris puzzle while waiting for all the guests to arrive at the Social. In this photo: Earl & Anita DeLong, Terri Finch, Bruce, Ed & Bette Wurst.

wrapped concrete blocks, a mangy computer case and, especially, a great big silver box with seemingly nothing in it. The great reveal came and I have to admit my favorite was the telescope box full of magazines. Finally came the awards for darts, Bruce really needs to devote himself to dart retrieval and score keeping (hey, couldn't we create another award for that???), he's just too \$%^&* darned good. And I just got home before my pumpkinification hour. ***

Want More Photos?

By Terri, Event Coordinator

To see more photos of any event, visit the PAS Photo Gallery at this link: <http://www.pasaz.org/forums/gallery.php>.



Darlene Ahlefeld throwing the winning dart! The dart game always has an interesting outcome. It's lots of fun to try to win the trophy.



Photo by Terri Finch. A new game was seen at the 2013 Social. Vera is taking her shot. Anita & Frank watch.

(Continued from page 1)

PAS Awards Ceremony Apr 25

By Terri, Event Coordinator

other way you could earn an award was for doing something super important for the club, such as the Editor, the Proof Reader & the Copy Editor, Treasurer, or other hard working member, who went above and beyond, during 2012.

With that info in mind, here are the PAS Members, who were at this Awards Ceremony and received their awards on this evening. Kevin Adams, a student at PVCC, provided many photos of PAS events, so I awarded him for supplying these photos to me for the PAS Photo Gallery. Kevin did 5 public outreach events and received 1 nomination. Jerry Belcher has done a lot for PAS. He received 1 nomination and did 1 public outreach event. Don Boyd, our Editor did 33 Public Outreach Events and received 2 nominations. Don was not at this

meeting to get his award. Bob Christ received an award the day before this event, delivered to his place of work, along with the award for Tim Jones for their participation during 2012. Bob did 7 Public Outreach Events, & Tim did 11 Events. Joe Collins, also not at this meeting, & Renee Collins were given an award for their liaison work between PAS and CTCA. They each did 1 Public Outreach Event and Renee had one nomination. Along with them, Dr Laurice Dee, not a current PAS member, did some extra volunteering to help out at CTCA, and was given an award too, but she too, did not attend this event. Earl DeLong did 4 Public Outreach Events without a telescope. Now that he has one, he can really help out at events in 2013. Robert Ewing, who was not at this event, received an award for his assistance at the Black Moun-

tain Campus Star Parties. William & Terri Finch each got an award for 33 Public Outreach Events in 2012. Terri also received 4 nominations. Dave Hellman received an award for 2 Public Outreach Events and 1 nomination. Frank & Sam Insana received an award for their activities in 2012. Frank did 5 Public Outreach Events and Sam did 10. Sam received the award for Frank who is currently enjoying his dream job at the Grand Canyon. Rockie Hervieux did 1 public outreach Event and was nominated 3 times to receive this award. She also received an award for being the youngest PAS Member in 2012. Matt Kohl did 1 public outreach event and an awesome job of Proof Reader for our newsletter. Eric & Ora Steinberg each received an award. Eric did 20 Public Outreach Events and Ora did 3 events & received 2 *(Continued on page 6)*



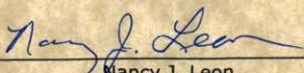
Certificate of Appreciation

NASA's Space Place,
a NASA public education and outreach program,
recognizes

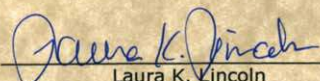
Phoenix Astronomical Society (PAS)

for its valuable contributions to its community
in the areas of science, technology education, and inspiration.

2012


Nancy J. Leon
Space Place Manager




Laura K. Lincoln
Communication Coordinator

PAS Awards Ceremony Apr 25

(Continued from page 5)

nominations. Marc Levinson, who wasn't at this event did 5 public outreach events. Mike Marron received an award for his 20 public outreach events and 2 nominations. Loretta Mondragon, our Liaison at PVCC Black Mountain Campus received 2 nominations to receive an award. Leah Sapir did 2 outreach events and received 8 nominations to receive this award. She was not present at this meeting. She provides the AZ Sky article to our newsletter, monthly. Paul Schmidtke, ASU West received this award, but was not present, for doing 2 outreach events and received 1 nomination. Chet Schuler received 1 nomination & did 4 public outreach events with PAS. Rod Sutter did 3 public outreach events with PAS. He was not present to receive his award.

Albert Tucker did 8 public outreach events. Jenny Weitz, our liaison at PVCC Main Campus, received 5 nominations & did 8 public outreach events with PAS. She was not at this meeting. Bruce Wurst did 5 public outreach events & received 2 nominations. Ed Wurst did 9 public outreach events. Chris Johnson was awarded for maintaining the PAS Webpage. He also received an award for 1st Place in the Messier Marathon with 105 of 110 objects photographed. After we gave him this award, we took a break to watch the ISS fly by.

After the break, Chris did a presentation which included his Messier Marathon photography as well as info on the upcoming CEO & VSP events. Many thanks to Chris for his presentation. And many thanks to

those who brought snacks. The water was provided by President Bruce. Not Present, but deserving an award, Darlene Ahlefeld will be receiving 1st place for the Halloween Contest we held at Mike's home. She has a beautiful photo page done up for her award. She will also receive a prize, from the prize box. Many thanks to Ed who brought plates and napkins because I left the house without them. Thanks also to Eric, who jumped in when I couldn't take a photo with my camera and be in the photo at the same time.

Those who have not yet received their prizes and award will have to make arrangements to get them from me.. Thank you all for your hard work throughout 2012. ***

A Review of Scot Spencer's Messier List App for Apple iPhone

By Alex Vrenios, PhD

June 2013: Like a lot of amateur astronomers I've still not completed the Messier List. Back in the mid 1700s Charles Messier recorded 110 objects that appeared to be comets, but were not. His catalog was intended to be a warning to other comet hunters to avoid them. We are still interested in his catalog of objects today but because of what they are, not because of what they are not! These objects are remnants of exploding stars, open and globular clusters, galaxies and other formations that are far more interesting than comets. To the amateur observer they represent a challenge, and the means by which they may learn their way around the night sky, while discovering some of the wonders that it holds.

This being June, there are a lot of Messier objects visible at night so I decided to make a concerted effort to finish the list.

In my first pass I set up the telescope, a laptop computer and a notebook to record my findings – too much stuff. The next night I made a list of the objects I knew to be visible and left the laptop inside. I realized pretty quickly that I'd need to keep track of my sightings to avoid any duplicates so I made an ad hoc list and scratched off each number as I recorded it. I also made a point to verify what I saw against a photo afterward, lest I record seeing a fuzzy blob when the object is actually an open cluster. This seemed to be a good working format for me but there still seemed to be a lot of "stuff" to manage.

I own an Apple iPhone 4 and I happened to notice this Messier List app on iTunes. It has a complete list of objects with links to a photo and stats for each. The stats include the object type (open cluster, etc.),

location (RA and Dec), magnitude, distance from Earth, and whether or not it's "up" right now. There is also a detailed description of each object and a screen labeled Fun Facts. Along the bottom of each screen is a mode button for "Objects" (just described), "Checklist" to keep track of which objects are recorded, and a "Bio" of Charles Messier. There are also other buttons for "Settings" and "About" that are self-explanatory.

I still need the notebook to log my sightings, and of course the telescope. But I can verify my sighting against a photo immediately now, and check it off with the tap of a finger. Scot Spencer, the author, seems to have anticipated my every need with his Messier List app, and best of all it's free. I highly recommend it! ***

Exciting Fall Events to put on your Calendar

By Terri, Event Coordinator

Sep 5: PAS Meeting 7pm to 10pm
 Sep 7: Estrella Observatory Star Party
 Sep 12: Telescope Workshop & Star Party
 Sep 26: PAS Indoor / Outdoor Astro Event
 Sep 28: Night Sky Training Session
 Oct 3: PAS Meeting 7pm to 10pm
 Oct 10: ASU West Star Party

Oct 12: Astro Day in Carefree
 Oct 17: Telescope Workshop & Star Party
 Oct 24: BMC Star Party
 Nov 1: Estrella Observatory Star Party
 Nov 7: PAS Meeting 7pm to 10pm
 Nov 16: Leonids Meteor Shower Party
 Nov 21: BMC Star Party

Nov 29: Estrella Observatory Comet Party
 Nov 30: Carefree Comet Party
 Dec 5: PAS Meeting 7pm to 10pm
 Dec 12: Telescope Workshop & Star Party
 Dec 14: Geminds Meteor Shower Party



High-energy Spy

By Dr. Martin C. Weisskopf

The idea for the Chandra X-Ray Observatory was born only one year after Riccardo Giacconi discovered the first celestial X-ray source other than the Sun. In 1962, he used a sounding rocket to place the experiment above the atmosphere for a few minutes. The sounding rocket was necessary because the atmosphere blocks X-rays. If you want to look at X-ray emissions from objects like stars, galaxies, and clusters of galaxies, your instrument must get above the atmosphere.

Giacconi's idea was to launch a large diameter (about 1 meter) telescope to bring X-rays to a focus. He wanted to investigate the hazy glow of X-rays that could be seen from all directions throughout the sounding rocket flight. He wanted to find out whether this glow was, in fact, made up of many point-like objects. That is, was the glow actually from millions of X-ray sources in the Universe. Except for the brightest sources from nearby neighbors, the rocket instrument could not distinguish objects within the glow.

Giacconi's vision and the promise and importance of X-ray astronomy was borne out by many sounding rocket flights and, later satellite experiments, all of which provided years-, as opposed to minutes-, worth of data.

By 1980, we knew that X-ray sources exist within all classes of astronomical objects. In many cases, this discovery was completely unexpected. For example, that first source turned out to be a very small star in a binary system with a more normal star. The vast amount of energy needed to produce the X-rays was provided by gravity, which, because of the small star's mass (about equal to the Sun's) and compactness (about 10 km in diameter) would accelerate particles transferred from the normal star to X-ray emitting energies. In 1962, who knew such compact stars (in this case a neutron star) even existed, much less this energy transfer mechanism?

X-ray astronomy grew in importance to the fields of astronomy and astrophysics. The National Academy of Sciences, as part of its "Decadal Survey" released in 1981, recommended as its number one priority for large missions an X-ray observatory along the lines that Giacconi outlined in 1963. This observatory was eventually realized as the Chandra X-Ray Observatory, which launched in 1999.

The Chandra Project is built around a high-resolution X-ray telescope capable of sharply focusing X-rays onto two different X-ray-sensitive cameras. The focusing ability is of the caliber such that one could resolve an X-ray emitting dime at a distance

of about 5 kilometers!

The building of this major scientific observatory has many stories.

Learn more about Chandra at www.science.nasa.gov/missions/chandra. Take kids on a "Trip to the Land of the Magic Windows" and see the universe in X-rays and other invisible wavelengths of light at spaceplace.nasa.gov/magic-windows.

Dr. Weisskopf is project scientist for NASA's Chandra X-ray Observatory. This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Composite image of DEM L50, a so-called superbubble found in the Large Magellanic Cloud. X-ray data from Chandra is pink, while optical data is red, green, and blue. Superbubbles are created by winds from massive stars and the shock waves produced when the stars explode as supernovas.

Arizona Sky

By Leah Sapir



Look, what's that up in the night sky? Is it a bird? A plane? No! It's a speck of alien space-dust. Otherwise known as... a meteor!

This year the Perseid meteor shower, which peaks on the night of August 11-12, will occur a few days after the New Moon, the ideal time for viewing. The Moon will set around 10 pm, leaving the rest of the night for watching meteors.

The best time to look for meteors is actually after midnight. Just as you will catch more raindrops on your car's front windshield than the back one as you drive through a rain shower, we'll see more meteors on the "forward" side of the Earth as it moves through a meteor shower. The "forward" side of the Earth, as it orbits the Sun, is the side going from midnight to noon, with the 6 am point most directly forward. However, we won't see too many meteors after dawn, because of the Sun's glare, so let's concentrate on the midnight-to-dawn part. The closer we get to dawn, the closer we are to that forward point. Sunrise in August is around 5:50 am, so the best time to search for Perseid meteors is from 3 to 5 am. However, you will probably be able to see some meteors even earlier in the evening, and even on other nights – Perseid meteors can be seen any time from August 9 to 14; sometimes even from July 17 till August 24.

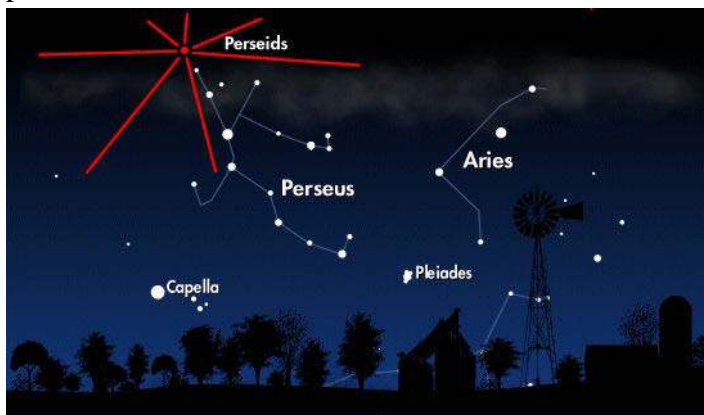
If we wait till the pre-dawn hours, the constellation Perseus is also quite high in the sky, making it easier to see the meteors. Perseus is the "radiant" which gives its name to this meteor shower. The meteors can appear anywhere in the sky, but their paths all seem to originate at a point in the constellation Perseus. If we trace back the paths of several meteors, the lines will all intersect in Perseus. Of course the source of the meteors is in our own solar system, while Perseus is many light years in the background; but it serves as a good landmark (or skymark) to indicate the direction of the meteors' origin. The meteors are actually entering our atmosphere on parallel paths; however, perspective makes them appear to radiate from a single point, just as perspective makes the parallel sides

of a road or railway appear to narrow to a single point in the distance.

On any night, in a dark sky, we can see a few meteors even when there is no meteor shower. Sometimes we can even see a few per hour, if the sky is dark enough. These meteors are random bits of space dust that the Earth encounters as it moves along. But during a meteor shower, the dust specks are more frequent because the Earth is moving through a more dusty part of space – usually the dust trail left behind by a comet. A comet is a "dirty snowball", composed of ice and dust. As it approaches the Sun in its orbit, the outer layer of ice melts and leaves the dust behind. These dust specks spread out along the comet's path, continuing to orbit the Sun in the same orbital path as the original comet. When the Earth crosses this path, always at a specific time of the year (corresponding to a specific location in Earth's orbit), we get a meteor shower.

The "parent" of the Perseids is Comet 109P/Swift-Tuttle, which orbits the Sun once in 133 years. It was discovered by Lewis Swift and Horace Tuttle in 1862; was rediscovered by Tsuruhiko Kiyuchi in 1992; and will be seen again in 2126, when it will probably be visible to the naked eye. (Mark your calendar...)

In the meantime, we can see leftover bits and pieces of the comet coming towards us every year when we watch the Perseid meteors.



The constellation Perseus is the radiant of the Perseid meteor shower. (Picture credit: NASA.)

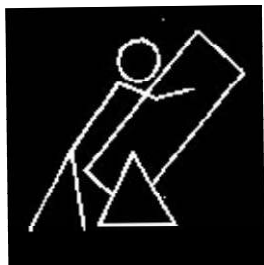


Perseid meteor as seen from the International Space Station over China. (Picture credit: NASA.)



Perseid meteor, photographed in Japan in 2004. The constellation Perseus is in the center of the picture; Cassiopeia is at top left; the Pleiades and Taurus towards the lower right of the picture; and Capella and "the three baby goats" at bottom center. (Picture credit: Katsuhiro Mouri & Shuji Kobayashi (Nagoya City Science Museum/Planetarium) and NASA.)

The frequency of meteors during a meteor shower is measured in the "zenithal hourly rate" (ZHR). The ZHR for the Perseids is 50-100 meteors per hour! Wow! Is



Arizona Sky

that how many meteors you will see? No. The ZHR is a theoretical, ideal number of the maximum meteors that would be visible if you were watching from a completely clear, dark sky (which very, very few of us have), when the meteor shower's radiant is at the zenith (which is almost never the case; for the Perseids, the radiant will be at the zenith only after dawn). Therefore, watch out for newspaper articles at the beginning of August telling you that you will be seeing 100 meteors per hour on August 11! They are, shall we say, stretching the truth. However, in reasonably dark skies you can expect to see a meteor every few minutes, and to see quite a few during your viewing session.

The best way to watch for meteors is to set yourself up in a comfortable lawn chair, with snacks, drinks, and a few friends nearby. A telescope or binoculars are not necessary. It's best to be able to scan the whole sky, and the optical equipment would simply limit your field of view.

Weather permitting, PAS will be holding a potluck and meteor party in Carefree on Saturday night, August 10, courtesy of our very own Meteor Man, Mike Marron. While there might be a bit of waiting between meteors, the view and company will be well worth it.

In the meantime, Venus will continue to grace our evening sky, till after 9 pm throughout July, and setting slightly earlier in August; but since the Sun will also be setting earlier, Venus will be up well after sunset. Saturn will be in the southwest at sunset, and will be up till 1:30 am at the beginning of July, 11:30 pm at the end of July, and only 9:30 pm by the end of August.

Uranus and Neptune will continue to rise earlier. Neptune rises at 10:40 pm at the beginning of July, 8:40 pm at the end of July, and 6:40 pm at the end of August (when it will be at opposition, and up all night). Uranus rises about two hours later.

Mars continues to be a morning star, rising at 4 am at the beginning of July, 3:30 at the end of July, and 3 am at the end of August. Jupiter and Mercury, which disappeared into the sunset at the end of June, will reappear as morning stars in mid-July. Mercury will be visible only in morning twilight from around July 20 to August 12, with highest visibility in the last few days of July and first few days of August. Jupiter will gradually rise earlier, at 4 am on July 15, 3:15 am at the end of July, and 2 am at the end of August.

On the morning of July 3, the crescent Moon will meet the Pleiades in the east before sunrise. On July 4 it will be between

the Pleiades and Hyades, and on July 5 near the Hyades. On July 10 it will switch to the early evening sky to join Venus in the west. Then, on July 16, the first quarter Moon will accompany Saturn in the west from sunset till midnight.

Jupiter and Mars will be moving towards a conjunction in the dawn sky after July 15. They will be closest on July 21-24.

On July 31, the Moon will be near the Pleiades in the east from 1 am till sunrise, and on August 1 it will join the Hyades from 2 am till sunrise. On the morning of August 3, the crescent Moon will visit Jupiter in the east before sunrise, and on August 4 it will be between Mars and Mercury low in the east.

On August 9 the crescent Moon switches to the evening sky and will join Venus in the west after sunset, and on August 12 the Moon will accompany Saturn in the west from sunset till 10 pm.

The Moon will visit the Pleiades in the east on August 26-27 from 11 pm till sunrise, and on August 28 it will be close to the Hyades from midnight till sunrise.

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

Ads in PAStimes

Ads in PAStimes run for a month and may be renewed on a month-by-month basis, if submitted by deadline, space permitting. Ads in PAStimes are FREE to members. All others are asked to make a small donation. Donations are to be sent to the Vice Prez who will forward them to the Treasurer.

Celestron 8" Telescope for sale.

Asking \$799 or Best Offer with lots of accessories & hard case. Call Michael at: 623-399-9989 or Email inquiries to snmzap@gmail.com. See flier at this link: <http://www.pasaz.org/forums/downloads.php?do=file&id=203> Cash & Local Pickup ONLY.

8" Meade SCT & Astro-Physics 400 Mount

For Sale: I live in Rio Rancho, New Mexico, which is just north of Albuquerque. Contact Rodger (505) 349-3686 or email rodger.mayeda@gmail.com. Here's the items for sale: 8" Meade SCT & Astro-Physics 400 Mount - \$3,500; 1 - 8" Meade SCT w/15" AP sliding bracket, dew shield & 2" Astro-Physics eyepiece adaptor, 1 - 400 Astro-Physics Equatorial head with Dual Axis Quartz Drive (not goto) with optional Precision Encoders and Hand Controller, 1 - 15" Astro-Physics Dovetail Plate, 1 - Astro-Physics carrying case for 400 AP Mount, 1 - Davis and Sanford Tripod for 400 AP Mount with Tamrac soft carrying case, 1 - 9 lb. Astro-Physics Stainless Steel Counterweight with Hand Knob for AP 400 Mount, 1 - 6 lb. Astro-Physics Stainless Steel Counterweight with Hand Knob for AP 400 Mount, 1 - SKY COMMANDER digital setting circles with cables for AP 400 mount. For more details & photo, see ad at this link: <http://www.pasaz.org/forums/showthread.php?p=2014#post2014>

Nikon (35mm film) Camera System

Also for sale: Nikon (35mm film) Camera System \$500 Nikon Photomic FTN (Black Body) fitted with Beattie Intenscreen PLUS (for astrophotography - have original split focus screen too). Lenses include 24mm f2.8, 50mm f1.4, 135mm f2.8, 300mm f4.5, 500mm f5! reflex (all Nikon lenses - all are in cases including camera). Nikon waist level finder with magnifier. ***

Black Mountain Campus Star Party Apr 11

Attendance at this event from PAS was: Don Boyd, Earl DeLong, Terry Dancer, Sam Insana, Darren Johnson, Terri & William Finch, Lou Roberts, Eric & Ora Steinberg, Chris Johnson, Bob Ewing & Chet Schuler. Originally we had about 150 RSVP's, but due to the clouds, about 60 actually attended the event.

I wish to thank the PAS Telescope Team for their attendance & perseverance while having to cloud hop all night long. The temperatures at the event were just right, with a slight cold breeze that by 9pm, some of us were looking for a light jacket. But the clouds, they were another story. Almost the whole event, only 1/2 the sky was seen, and other half was hidden behind clouds. Then about 9:30pm, the sky cleared, totally, and we were able to show a few more items until about 9:50 when PVCC Security came by to turn on the lights. I'd say it was a successful event. I wish to thank the Weather Watchers who helped make the decision to do the event. Many thanks to

by Various attendees of this event

Loretta Mondragon for arranging the advertising, cone set up, light maintenance, and other items to help make this event a success. Many thanks to Jenny Weitz for providing the Telescope Team with flashing orange lights to help guide the public to their scopes. We had 2 people attend who I was very pleased and surprised to see there: Chris Johnson and Chet Schuler. Many thanks to the newest members of PAS, Terry Dancer and Darren Johnson for bringing their telescopes and joining the fun event.

Thomas Hines writes: Thanks a lot for letting me look through your scopes and explain the basics of stargazing to me last night. I learned a lot and enjoyed speaking to all the members of the PAS.

Earl DeLong writes: The April 11, star party at the Black Mountain campus was first light for my new telescope. I purchased a 10 inch Orion Intelliscope dobsonian telescope like Williams. My wife Anita and I took our time with the assembly and initial adjustments and the telescope

performed extremely well. Even with the broken clouds, I was not disappointed. This telescope is well made and is a good bargain for the money. My only disappointment is the included eyepieces. They are not of the best quality, but this is not unusual. Lower quality eyepieces are normally included with telescopes to keep the cost down. I have ordered 32mm and 13mm wide angle eyepieces. Now to the star party. I arrived at 5:15pm set up my telescope and visited with Darien while we waited for other members to arrive. Once dusk arrived, the clouds continued to be patchy. Our first view of Jupiter showed the seeing to be poor. Approximately 10 visitors stopped at my scope. We looked at Jupiter, the Orion nebula, the double star Mizar and the Beehive cluster. I also enjoyed views of galaxies M51, M81, M82. While the weather could have been better, it was still an enjoyable evening. There was a good turnout from the club. I'm looking forward to observing at Mike's tonight.

Desert Botanical Gardens Star Party Apr 12

By Terri, Event Coordinator

This was a wild star party. The weather said "Cancel" but our contact at DBG said not to cancel, and if we couldn't do an outdoor viewing session, she wanted a presentation in the room for the patrons. So, I called Bruce Wurst, who was scheduled to do this event with William Finch and I, and told him it was too cloudy, and that we were thinking of canceling. Then, I called Mike and asked if he could fill in with a presentation in case we were clouded out. He agreed, so this event was done, in the end, by William Finch, Terri Finch and Mike

Marron. So, we get down to DBG & it is cloudy, but not bad. We tell Mike, do a short presentation of about 1/2 hour. The lady helping us at this event, who works for DBG, was wondering if Mike was going to end his presentation. He did a 20 minute presentation and then had about 40 minutes of questions. So, the group of about 18 Adults, gathers around the telescopes. Mike came out, too, to help out and answer questions. And so for about 1.25 hours, we were showing some objects. The crowd left early, by about 8:45. A few people stuck around

and so we waited it out for Saturn to rise from behind the trees. It was an awesome sight. And those who stayed later, totally enjoyed it. We didn't start packing up until about 9:30, and were ready to be picked up about 10pm, by the carts that move our equipment for us. It was a good event. I'm glad we didn't cancel. But the weather sites, including Skippy Sky said to cancel the event. We look forward to the next Adult Star Party at DBG. ***

PVCC Private Party Apr 26

By Terri, Event Coordinator

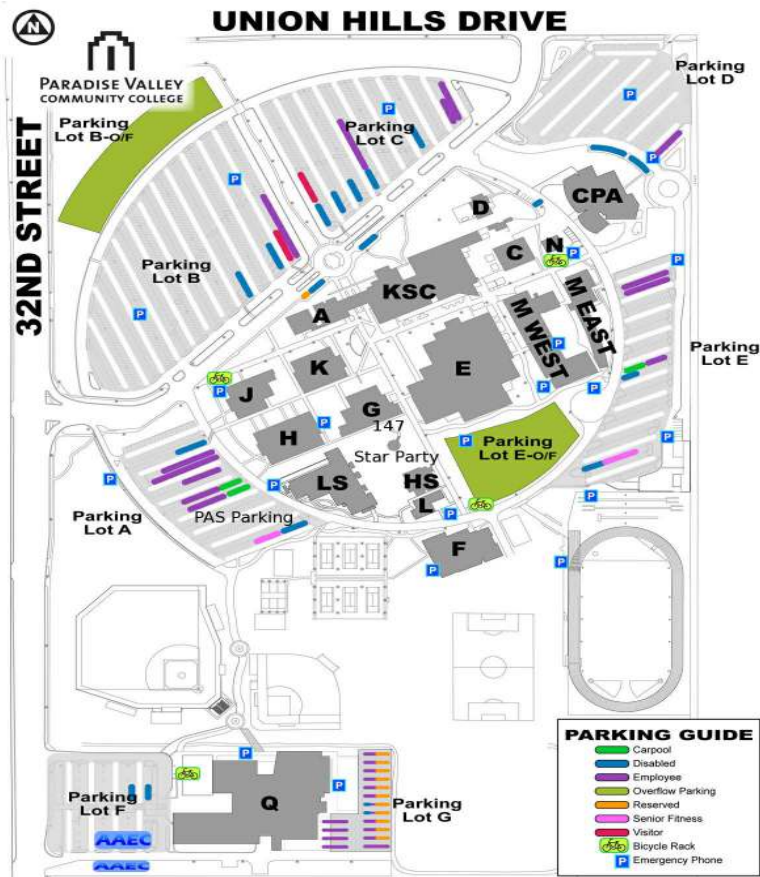
Jenny Weitz had asked us, last year, to do this event, again this year. PVCC was holding a fund raiser to be able to build the astronomy pad at the PVCC Black Mountain Campus. It's a private party, but for it, she asked Bruce with his 20" scope, and William and I with my Solar Filter, to do this event. The event was a great success. We set up in the heat of the Sun around

4:30. The food was fantastic. The host of the party, who is also the chef, did a fantastic job on all the food he cooked for this event. There was a harpist playing, and our 2 telescopes for entertainment. Bruce brought a smaller scope to show the Sun. For the first few hours it was the Sun, then as the Sun left, we saw Jupiter, and I caught the Orion Nebula. Then, after it rose high

enough, Saturn came into view from behind the mountain. As we packed up that evening, the Moon also snuck from behind the mountain. Very enjoyable. While there, Bruce & I presented Jenny with an NSN Award & Pin for all the hard work she does for PAS & Public Outreach. Congrats Jenny! Thank you, Jenny, for having us at this party. ***

Map of PVCC Main Location

18401 N. 32nd Street | Phoenix, AZ 85032



Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



ASU West Star Party Apr 18

By Terri, Event Coordinator

In Attendance at this event was Darren Johnson, Don Boyd, Earl DeLong, Darlene Ahlefeld, William & Terri Finch. Each brought a scope and helped Paul Schmidtk show the night sky to about 350 visitors. Once the evening got underway, it was busy. I chose not to be set up until I could see the North Star, so while I waited for the North Star, I greeted the people as they

arrived, gave them a little idea of how to proceed and Signed / Stamped homework sheets for those who were attending from another school. It was so busy that I finally found the North Star, and couldn't get set up with how many pages I needed to stamp. I gave out all the handouts I had brought, including a pile of PAS Membership forms. The sky was cooperative from 6pm set up

time to about 8pm, and then it became a bit mushy to work with. We showed Jupiter, the Moon, Orion Nebula and Saturn, among other items. It was a very successful event. Many thanks to Paul for inviting the PAS Telescope Team to join in the fun. We met a bunch of really nice people while doing this event. We look forward to the next one in the Fall of 2013. ***

Tumbleweed School Star Party Apr 19

By Terri, Event Coordinator

In attendance at this event were Mike Marron, Ofelia Waters, Don Boyd, Earl DeLong, William & Terri Finch. We had 4 scopes and Meteorites. All of us arrived, except Mike & Ofelia, and started eating the pizza. We got set up and our contact at the school, Christina Johnson was asking if we could start early. Since the other three

scopes were setup, I let mine go and did Q & A with the kids and showed them how to use a planisphere until I could see the North Star. Once I had the North Star, I was able to align my scope. I took Orion Nebula and stayed on it all night. Jupiter was lovely on this evening. We had clear skies most of the evening and then some clouds came over

and hid the Nebula for about 20 minutes, in which I did Q & A again with the kids. We were thanked many times by the school teachers. We had a great evening. Many thanks to those who attended. We enjoyed this school and are looking forward to a return visit. ***

Don Boyd
PAStimes Editor
3039 W. Peoria Ave 102-188
Phoenix AZ 85029

To:

2013 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.

Summer Break

Sept 5: Members Night: Sign up to do a mini astronomy related presentation with Terri Events@pasaz.org.

Oct 3: Rick Tejera "Beyond M42 (what to look at after you've found all the easy stuff)"

Nov 7: Eric Steinberg "What's Up? The Night Sky & Basic Celestial Mechanics"

Dec 5: Astronomy Swap Meet: Earl DeLong "Chemistry of the Cosmos***

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What's Up For The Summer

By Rod Sutter, PAS Past President

Name	Date	Rise	Set
Mercury	08-01-13	04:14	18:12
Venus	08-01-13	08:19	21:05
Mars	08-01-13	03:34	17:51
Jupiter	08-01-13	03:15	17:28
Saturn	08-01-13	12:28	23:32
Uranus	08-01-13	22:17	10:47
Neptune	08-01-13	20:36	07:48
Pluto	08-01-13	17:18	03:36

Planets in bold are visible during evening hours.

August 1 2012

Sunrise: 05:41

Sunset: 19:27



Q3: July 29



New: August 6



Q1: August 14



Full: August 20