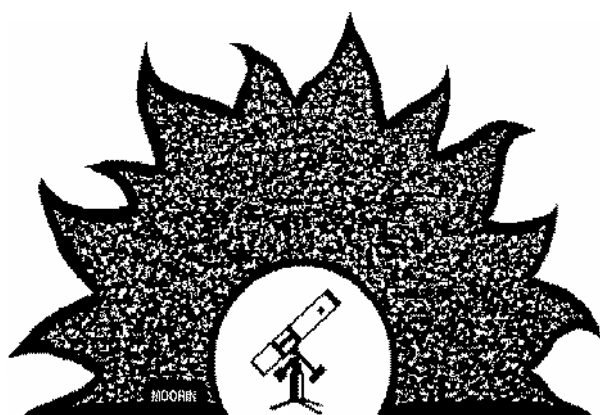




PAStimes

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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

May 1st PAS Meeting - Members Night

By Terri, V.P.

PAS Guest Speaker: In the process of trying to contact our schedule speaker for the May meeting to confirm his attendance, I have discovered that Kevin Mullins is currently retired and hard to get a hold of. I have emailed the USGS and they are trying to get me in contact with him. In the mean time, I have contacted other speakers who may wish to do a presentation for PAS on short notice. I am awaiting a response from them as well.

So, here is the proposed plan for the May 1st PAS Meeting. We will have the elections and if no speaker is found in time, we will do MEMBERS NIGHT. So, RSVP now, by phone or email, prior to Wed Apr 30, if you wish to do a mini presentation on some topic having to do with Astronomy. I'm hoping to get enough volunteers to give each person 10 minutes of time. You do not have to feel obligated to use the whole time, however, I ask that you do not exceed the set amount, if possible. If we don't have that many volunteers, we will give the speakers

15 minutes. The time frame will be adjusted based on the number of participants. This is your chance to share something with the group. It will be a Show n Tell. If I do get someone to fill in as a speaker, keep your topics handy because we are planning to bring back the January PAS meeting. If I find one in time, we will. Otherwise, it will be Members Night. Keep a watch on that progress in future announcements. So, if you do not get to do your talk on May 1st, hold on to it for January 8, 2009. We will see you at the meeting! ***

PVCC Indoor Event 4/11 Review

By Terri, Events Coordinator

This event turned out very well. We didn't have the turnout indoors as we would have liked but it was still a success. It was windy outside just as we were arriving but by later in the evening, the wind died down and it turned into an awesome viewing night.

Inside we had Mike with his meteorites & Chet with a filter demo. I had set up hand-outs, seen in the photos. We had one computer on the PAS website to show the upcoming events and another set up on TheSky to show what's up tonight. Mike and Chet were the hit of the night indoors. Photos 37 to 40 show the ceiling in G-147 in which Dave has made the constellations, accurate with the color of stars, with LED lights. He does this as a side job and can do it to your home, if you wish.

I wish to thank Althea Long from MCTV and Janice Semmel from Puma Press for attending. Althea went around and interviewed on video Me, Mike, and Dave. I told her she needed to talk to Einstein (Chet) but she ran out of time to do it. I'd say we had about 30 Rod, Steve, Chris, Dave and James. They were showing various items with the TV crew and their bright lights.

Overall, I think the night was a great success. We could have used the help of Barbara and just before I left the house Bobby McGehee called to say he had a demo he'd like to share that night but was leaving it tentative as to if he could make it or not. He didn't make it but it would have been good to have him as well. Thanks goes to everyone who participated and attended. More photos of this event:
<http://tinyurl.com/4u8y9c>***



Upcoming May & June Events

By Terri, Events Coordinator

As you know, PAS puts out a newsletter for the months of Sept - May. We just recently started adding one additional issue during the summer, to come out the first of July, which would be mid summer. So, I will be reviewing the Summer events in 2 parts. In this issue, we will cover May and June. And in the July issue we will do July and August, because in the Sept issue we will be back on track. Everyone is invited to all PAS events, unless otherwise noted. Please note that around Mid July to end of August is Monsoons and thus all star parties are WEATHER PERMITTING. RSVP is very much requested.

MAY 2008

We have an awesome line up for May. Please attend all events, they will be great!

May 1: PAS Meeting 7pm PVCC Library. We have a wonderful speaker joining us. We will also raffle off another meteorite. Bring the whole family.

May 2: Astronomy Day. This is a special day for 3 reasons. First we have PAS doing an awesome, all day event from NOON to 10pm on the PVCC Campus. We will be set up under canopies over by the telescope domes. We will be showing the Sun by day with some fun activities. These activities will be similar to what we are doing in Mayer on 4/12 and in Anthem for an all day event on 11/1. RSVP's are requested in case of weather issues, and Volunteers need to let me know they are attending. Venus and the Moon will be in the sky but Venus will be too close to the Sun to view, and the Moon will be mostly New, thus, unless we can find its crescent, that one will not be visible that day either. In the evening hours, we will enjoy these objects. Sunset is 7pm. Mercury, Mars and Saturn are visible around 7:30pm. Mercury sets 8:30, and Dark is 8:30 as well. Weather permitting, the skies should have a lot of really awesome objects to be viewed.

The second item happening that day is the dedication of the Solar System Model on campus. Come celebrate Astro Day with PAS this year.

A third event happening on this day is the Wow Star party at Reach 11 Park in north Phoenix. Chet is the RSVP and he needs your help that night. Reach 11 is on Tatum, north of Union Hills Rd. The star party is open to Telescope operators only, and Volunteers are needed. The address is 19224 N Tatum Blvd Phoenix, AZ 85050 and a map

can be seen at this link:
<http://tinyurl.com/5lz8t>.

May 3: There are 2 events to attend this evening. The 2 Trees site will be the PAS Dark sky site for a star party. RSVP with Barbara if you plan to attend. This is a site for serious viewing. Arrive prior to dark, plan to stay as late as you wish.

The second event for this date is a Meteor Shower party at PV Park from 6pm to 10pm. RSVP's are required. The event is canceled if no RSVP's. If you are wanting to learn how to use your telescope, this would be a good one to come to for that purpose. Let Rod or Terri know you are planning to do that and we will definitely be there for you. Visible that night will be: Sun & Venus set at 7pm. Mercury, Mars, Saturn visible 7:30pm. Dark at 8:15 and Mercury sets plus the Meteor Shower. Bring a chair to sit in and enjoy the meteors with us.

May 6th at sunset, Chaparral High School, 56th St south of Shea Blvd. We will be setting up on the football field. Volunteers needed. Contact Rod

May 8: PHOTO SHOOT. PAS is holding a star party at PVCC on the campus by the Telescope Domes. We will begin at 5pm to catch the setting sun and to do a photo shoot for those wishing to be on the photo for the Post Card being sent out to resorts to have them hire PAS for star gazing parties. That night the sun sets at 5pm Venus, the Sun and Moon will be up. Venus may still be too close to the Sun to safely view it. But the Moon will be a crescent and should be a good view. Venus & the Sun set about 6:30pm. 7:30 Mercury, Mars and Saturn show up. Dark is at 8:30 and that's also when Mercury sets. Mercury may not be a visible item that night based on where it sets in relation to the building of PVCC Campus. But if it is visible, Chet usually catches it really well before it sets.

May 9: The 3rd in a set of 3 events at N. Mountain Park Visitor Center. Set up is 5pm. The map to get to this location says you pull into the V.C. area just S of Thunderbird on 7th Street. You'd be turning to the West as you get to Cactus Rd. Use this URL to see the map: <http://tinyurl.com/6ldvz7>. We will be setting up in the circular area for the star party. That night the sun sets at 5pm Venus, the Sun and Moon will be up. Venus may still be too close to the Sun to safely view it. But the Moon will be a crescent and should be a good view. Venus & the Sun set about 6:30pm. 7:30 Mercury, Mars and Saturn

show up. Dark is at 8:30 and that's also when Mercury sets. RSVP with Terri to help or attend. RSVP is required for this event.

May 9th Volunteers Needed for Cub Scout Star Party 50 attendees are expected to be at the star party for the Cub Scouts at 3rd Street and Glendale Ave at 6pm. RSVP with Rod if you can assist & for more info.

May 29: Meeting of the Minds. This is the PAS Business meetings. We take the business out of PAS during the monthly PAS General Meeting where we have a speaker. Everyone is welcome, even non members, however, no children are allowed. We don't want to bore them with the details on how the club is run. Meeting begins at 7pm in G-147 on the PVCC Campus and goes till 10pm or until we are done with the discussion for the night. If there aren't enough topics to hold the meeting, we cancel it.

May 31: Star Party at Black Canyon City. A nice Dark Sky site that is open to PAS members who wish to do serious viewing. RSVP is required with Barbara. Arrive prior to sundown, stay as long as you like. Visible that night: Crescent Moon sets 4:15pm, Sunset is 7:30pm with Venus right next to the Sun, Mercury Mars & Saturn visible 7:45pm, Mercury sets at 8pm, Dark is 8:40pm, Jupiter rises 10:40, Mars sets 11:15pm, Saturn sets 12:30.

June 2008

June 7: 2 Trees star party. A nice Dark Sky site that is open to PAS members who wish to do serious viewing. RSVP is required with Barbara. Arrive prior to sundown, stay as long as you like. Visible that night: Sun & Venus set at 7:15pm, Moon Mars Saturn visible 8pm, Moon sets 10:45pm, Jupiter rises 10:45pm.

June 12: PVCC Star party 6pm to 10pm on campus by Telescope Domes. Everyone welcome. RSVP requested. Weather permitting. Visible that night: Sunset 7:30pm, Moon Visible by day, Mars & Saturn visible 7:40pm, Jupiter rises 9:50pm.

June 26: Meeting of the Minds. This is the PAS Business meetings. We take the business out of PAS during the monthly PAS General Meeting where we have a speaker. Everyone is welcome, even non members, however, no children are allowed. We don't want to bore them with the details on how the club is run. Meeting begins at 7pm in G-147 on the PVCC Campus and goes till 10pm or until we are done with the discussion for the night. If there aren't enough topics to hold the meeting, we cancel it.

Upcoming May & June Events

June 28: 2 events this night. First of 4 Lecture/Star Parties by Mike at his home in Carefree. Topic: Solar System. Arrive around 4pm, Lecture starts at 5pm and goes about 2 hours. Bring cash for pizza if we don't meet prior at Bad Donkey for dinner. BYO drinks. Star Party follows lecture. RSVP is required with Mike. PAS Members welcome. Others can contact Mike to get

map and directions to his home. Star Party ends when all fall asleep or leave. Plan to stay the night if you wish to view into the late hours of Sunday. Visible that night: Sun & Venus set 7:30pm, Mars & Saturn visible 8pm, Jupiter rises 8:30pm, Dark is 9pm, Mars & Saturn set 10:30pm, Moon rise 2am.

Second event is 2 Trees Star Party. A nice Dark Sky site that is open to PAS mem-

bers who wish to do serious viewing. RSVP is required with Barbara. Arrive prior to sundown, stay as long as you like.

That sums up May and June. RSVP where requested. We don't want you driving way out to some location only to find out we canceled the star party or event due to weather or lack of RSVP's. We hope to see you at ALL PAS EVENTS! ***

Important Announcement about Email Addresses

By Terri, Events Coordinator

Have you given PAS an email address and not received any messages from CosmicStarStuff@yahoo.com in the last month? There are 2 reasons why this may be happening and we need your help to resolve it.

Mike and I have been working on the membership list. Those members who are not currently paid up for 2008 will be removed right after the May PAS meeting. Pay your dues if you wish to stay connected to PAS. They have already been removed from my PAS Members email list. Thus, you may not be getting email from the above email address due to your dues being due.

The second reason, and the more important one is that somehow the info of your email address started as you writing on a dues sheet, giving it to Mike, who then has to translate your penmanship to figure out what your email address is, which then, may or may not be correct, and then it is sent out in the Roster to the officers, who, as I am one of them, then puts it into my email address book as being a PAS member. I did this recently, sent out some email and some of your email addresses bounce back at me. So Mike and I have been trying to figure out what the cause of the returned mail is. If you have not received any emails in the last month from Terri, please throw an email at me at the above address or at Events@pasaz.org so that we can straighten

out the missing PAS Members.

There are several reasons why you would want to be on the Members email. First, Members are sent emails having to do with PAS, the club.

Also, if something special comes up, like a vote is needed or your attention or input is needed, it is best to be able to be contacted by email when everyone else is getting that notice. Sometimes more up-to-date info is transferred to the membership by email than waiting for a notice by newsletter to go out.

Then we also have the fact that most of you are not on the PAS Digest Blog yet. This is your link to star parties and other info that goes out to the public. This is separate from the email I send out to the membership. The original PAS Digest that I used to send out once a week, has been dissolved. I no longer use that means to get the info out to everyone. You NEED to be on the Blog to get those notices. And YOU need to sign up. I can put your email address in for you but if you don't reply from your inbox as wanting to be part of PAS's blog, it won't accept you into the notification. Everyone who is a PAS member should be on the PAS Digest Blog and receive the notices of star parties, upcoming and/or canceled. Other great news items also get put on the blog. Please go to the PAS Digest Blog at <http://pasaz-digest.blogspot.com/> and on the right side there is a photo with the planets. Under that

is a white box for you to put your email address into the field. Enter email address you wish to use. Then a screen will come up asking if you want your blog info coming in as individual emails or as an RSS feed. You choose. Then go to your email inbox, and a confirmation from FeedBlitz will need to be replied to in order for you to be signed up on the blog. Then you are part of the PAS connection. If you don't want to be on the blog, bookmark the page above, and visit it daily to get the news of what PAS is doing and when. I feel it is important that everyone who is part of PAS be in contact with PAS through the blog I have set up. And you can change the way you receive the info, whether it be a daily digest, one email per day, or individual emails, or the RSS feed is a really nice option as well. That gives you a tab at the top of your web browser page that you just click on and see the topics listed, and go to the ones that interest you at the time. My goal is to keep posting to the blog individual emails such that there is no more than one topic per email, so that you can easily see what you want to read at that time.

So, if you haven't received any emails, please drop me an email so that I may update your email address both on the Roster, and in my Membership email list. I don't email the members that often, but when I do, it is something we all need to think about or that I'm looking for input on. See you on the PAS Digest Blog. ***

PAS Election of Officers

At the May meeting we will be doing elections. Yes, it is that time of year again when PAS needs to fill the positions of the Officers. Some positions become dissolved, new positions may be created and filled, but your attendance and vote is very needed. New blood in the Officer's list is requested.

Our current PAS Officers are:

- * Rod Sutter, President
- * Terri Finch, Vice President & Events Coordinator
- * Mike Marron, Treasurer
- * Don Boyd, Newsletter Editor
- * John Pulis, PAS Host

Should you be interested in filling

any of these positions, please be sure to be at the meeting. Also, if you wish to help choose a new officer, your attendance is needed. See you at the meeting. The PAS Elections will happen prior to the speaker, so come early to be involved in the future of PAS. ***

Arizona Sky



By Leah Sapir

Last month we explored the region of Leo and Hydra. Before leaving this area – and before it disappears into the sunset – let's visit the constellation Cancer the crab, located between Leo and Gemini. Its stars are faint and hard to see, with magnitudes ranging from 3.5 to 4.0 and fainter; but with a little effort we can distinguish the upside-down Y-shape about halfway between Regulus and Pollux.

The gem of this constellation, located at its center, is the Beehive Cluster, M44, an open star cluster about 600 light years away and about 16 light years across. It is best seen in binoculars, because its diameter (about 1.6 degrees) is larger than the usual eyepiece view of a telescope. The Beehive was known even in ancient times, when it was described as a "little mist"; Galileo, with his telescope, was the first to realize that it was a cluster of stars. The Beehive, estimated to be about 700 million years old, is thought to be two clusters in the process of merging.

The Beehive is flanked by two faint stars, Gamma and Delta Cancr, also known as Asellus Borealis and Asellus Australis respectively – the northern and southern donkeys, which are imagined to be feeding at a stellar manger represented by the Beehive. Gamma (Asellus Borealis) is a white giant about 160 light years away, and Delta (Asellus Australis) is an orange giant about 135 light years away. And this month, another orange visitor will be nearby – the planet Mars, which will pass right in front of the Beehive on May 22-23! That's an event that we won't want to miss!

Not far away from the Beehive is a lesser-known cluster, M67, located between the crab's claws (i.e. between the arms of the Y). It's visible in binoculars, but requires a telescope to resolve the component stars. M67 is about ½ degree wide, and it is much fainter than the Beehive because it's much farther away: about 3000 light years. It's actually a little larger than the Beehive (25 light years across, compared to the Beehive's estimated diameter of 16), and

it's a lot older – 4 billion years, one of the oldest star clusters known.

At the other end of the constellation – at the end of the Y's stem –

is a beautiful double star, Iota Cancr. Through a telescope we can see the contrasting colors of its yellow primary and blue/violet companion. The pair are about 300 light years away.

Now let's return to the Big Dipper, our "big signpost in the sky", and let its handle point out some more constellations for us. "Follow the arc to Arcturus, and then speed over to Spica." When we follow the arc of the Big Dipper's handle, it points towards the bright yellowish star Arcturus, an orange giant in the constellation Bootes (pronounced "boh-OH-teez"); and if we continue farther in the same direction, we reach Spica, the brightest star in Virgo.

The city of Chicago held a world's fair in 1893 known as the "Columbian Exposition", and another one in 1933, the "Century of Progress Exposition". The organizers of the 1933 exposition thought it would be a novel idea to light up the fairgrounds with starlight that had been produced at the time of the previous fair. They chose the star Arcturus, which at that time was estimated to be about 40 light years away. (Today, more exact measurements show it to be 36 light years away – but what's a few light years among friends?) On the first night of the fair, they focused the light from Arcturus onto a photoelectric cell, thus switching on the fair's floodlights by using light that was (approximately) 40 years old.

The constellation Bootes, which is supposed to be a herdsman, is somewhat kite-shaped; and just east of it we can see the arc of Corona Borealis, the northern crown. The three central stars of the crown – the bright star Gemma (also known as Alphecca) and its two neighbors – should be visible even in light-polluted areas; in darker skies we can see 5 or even 7 stars.

On the other side of Bootes, about halfway between Arcturus and Cor Caroli, is a nice globular cluster, M3, which is about 30,000 light years away and about 160 light years across. It's visible in binoculars, and a small telescope will resolve some of the stars.

Spica is a blue supergiant star around 260 light years away. It is supposed to represent a stalk (or "spike") of wheat held by the maiden Virgo; but it takes a lot of imagination to see the stars of Virgo as anything resembling a young girl. Between Spica and the southern horizon is a small,

distinctive trapezoid representing Corvus the crow.

Slightly to the east of a line joining Spica and Corvus is an interesting galaxy: M104, the Sombrero Galaxy, which requires dark skies and a telescope for best visibility. The Sombrero is an edge-on spiral galaxy about 30 million light years away. A dark dust lane at the edge of the spiral (across the front of the galaxy, from our viewpoint) gives it the appearance – and nickname – of a sombrero.

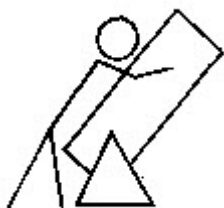
There are plenty more galaxies in Virgo, mostly along its northern border with Coma Berenices. Dark skies and a telescope will enable you to explore the Virgo-Coma galaxy cluster, located around 60 million light years away. Sixteen of the galaxies are on the Messier list, but the cluster includes many more galaxies of all shapes and sizes – possibly as many as two thousand. Our own Milky Way galaxy (and other nearby galaxies of our "local group") might even be outlying members of the cluster.

In May and June, the planet Mars will be wandering across the sky – starting out near Castor and Pollux at the beginning of May, then wandering across Cancer (as we've already mentioned), and into Leo. At the end of June, Mars will be less than 1 degree from Regulus, and heading towards a conjunction with Saturn in July. Mars will be high in the west at sunset, setting around 1 am at the beginning of May, at 11:30 pm at the beginning of June, and at around 10:30 pm at the end of June. Saturn, in Leo, will also be high in the west, and will set a little later – around 3 am at the beginning of May, and around 1 am at the beginning of June, and around 11 pm at the end of June.

Jupiter, currently in Sagittarius, will continue to rise earlier: at around midnight at the beginning of May, at around 10 pm at the beginning of June, and at around 8 pm at the end of June, staying up all night.

Venus is still a morning star at the beginning of May, but not really visible; it rises only a few minutes before the sun rises, and therefore is lost in the morning twilight. By the end of June, Venus will start to be an evening star, but still lost in the twilight. We won't see much of Venus till the fall.

We'll have a much better view of Mercury in May! Mercury will be visible in evening twilight a little north of west (i.e.



Arizona Sky

WNW), reaching its highest point above the horizon around May 15, and easily visible from around May 10 to 20, to the right of Orion, and below Gemini. It will be slightly below (and very slightly brighter than) the star Elnath in Auriga. After around May 20

it will rapidly sink into the sunset from day to day, reappearing as a morning star in June, but mostly lost in the morning twilight. May will be our best opportunity for viewing Mercury for quite a while.

Join us in July when we will begin to explore the summer constellations. And till then – wishing you clear skies, and happy observing!

SUNSET RIDGE ELEMENTARY SCHOOL 4/11 REVIEW

By Terri, Events Coordinator

Sunset Ridge this year was as awesome a star party as it was last year. They fed us pizza, which really helped us get going. Most of us skipped having food prior to coming up to the star party because we were counting on Pizza provided by our hosts. We also brought in tips that were collected by Kim. Kim is the 7th grade teacher we did this star party for. Her class as well as one other attended the star party. The tips will be divided among those who drove up and brought a telescope. \$60 was raised for our gas fund. Thank you Sunset Ridge!!!

We had quite a collection of telescopes this time. Thanks so everyone who volunteered and attended. We had Mike with his meteorites. He had a blast and so did everyone who listened to him. Bruce brought his 20" and was the hit of the night with a view of Saturn. Don did solar and evening. I had my scope mostly on the Orion Nebula. Frank and Tony, new PAS members, each brought their scopes. Frank is Tony's Dad. They had a nice set up and we'd love to see them at other events. They were very helpful and did an awesome job contributing to the star party. Rod and Sue had solar and evening and Chet did both as well. We had a great time. We missed Barbara who mentioned she was attending and then could not make it. We estimate there were 60+ kids and about 100+ in attendance. Many many thanks goes to Kim for inviting us. We definitely wish to do this star party again, in the near future. ***

Link to Sunset Ridge photos
<http://tinyurl.com/4umf2n>

THANKS TO PAS FROM SUNSET RIDGE STAR PARTY

From Kim, 7th Grade Teacher at Sunset Ridge

Thank you so much for coming out. The students had such positive comments to

say. It was interesting to hear a few of the students who were not able to attend say they really wish they could have been there because of the fun everyone else talked about.

Saturn, the moon, seeing the red and white sun and meteorite man were all favorites. Please pass that on to the others. I spoke to our principal and she said that would be great to schedule for next year. I think the AIMS week worked out well.

I am checking with the district office to find out when that is. I will let you know as soon as I hear. Thanks again.***



March Meeting of the Minds & 320 Bag Assembly Review

By Terri, Events Coordinator

Many, Many thanks goes to those who attended this meeting. We didn't have the entire Mayer TEAM turn out for the assembly of the last 320 bags for the event, but those who did, THANK YOU so very much!

We started the meeting by having Terri open it up with a brief idea of what we were to accomplish that night. So, the idea was to give a brief overview of what we are doing when we stuff the bags. Some of the attendees to this assembly party were not at the last one so a review was needed.

Then, A brief idea of what we were going to discuss that night while everyone was stuffing bags was discussed. So, we started with a few topics.... the main idea of the night was, how are we doing this? What is it we plan to do at Mayer and how do we

accomplish it?

First we discussed the map of the Mayer event. Where is PAS setting up and how and what are the daytime plans and the evening plans. This was gone over briefly but it seemed to get everyone on track. Then, we moved on to (and all the while the TEAM was stuffing the bags while we discussed this) questions about the info we were emailed, having to do with a mandatory meeting. So, a list was made as to who wants to attend that event. Then we talked about who is staying over night and who is leaving. A lot of questions came from that one, so I sent out the email and waited for a response. That made the decision easier for most of us. The main question was, can we stay up till 5am if desired to observe since the skies will be awesome up there? The answer

was YES.

Then we discussed what time we are leaving and where from to get there in time for Breakfast or not. This was interesting to see who wanted to get up earlier to make it to breakfast. Some of us prefer to have a meal to hold us over. Others would rather sleep in a little more. I'm a food person, so I choose to make it for breakfast.

Photos of the assembling of the 320 bags are on line. Feel free to view them at <http://tinyurl.com/2k8lft>. Would love to see you at a future PAS event where you get into the photos on line as well.

In all, I feel we accomplished a lot, not only with the bag stuffing but also with the discussion of what we are doing and how we are doing it to make the Mayer event go smoothly. See you at some future PAS events! They are all fun and a learning experience. ***



Planet Biddelon Photo by Richard Lee



Stellar Compass for Space Explorers

by Patrick L. Barry

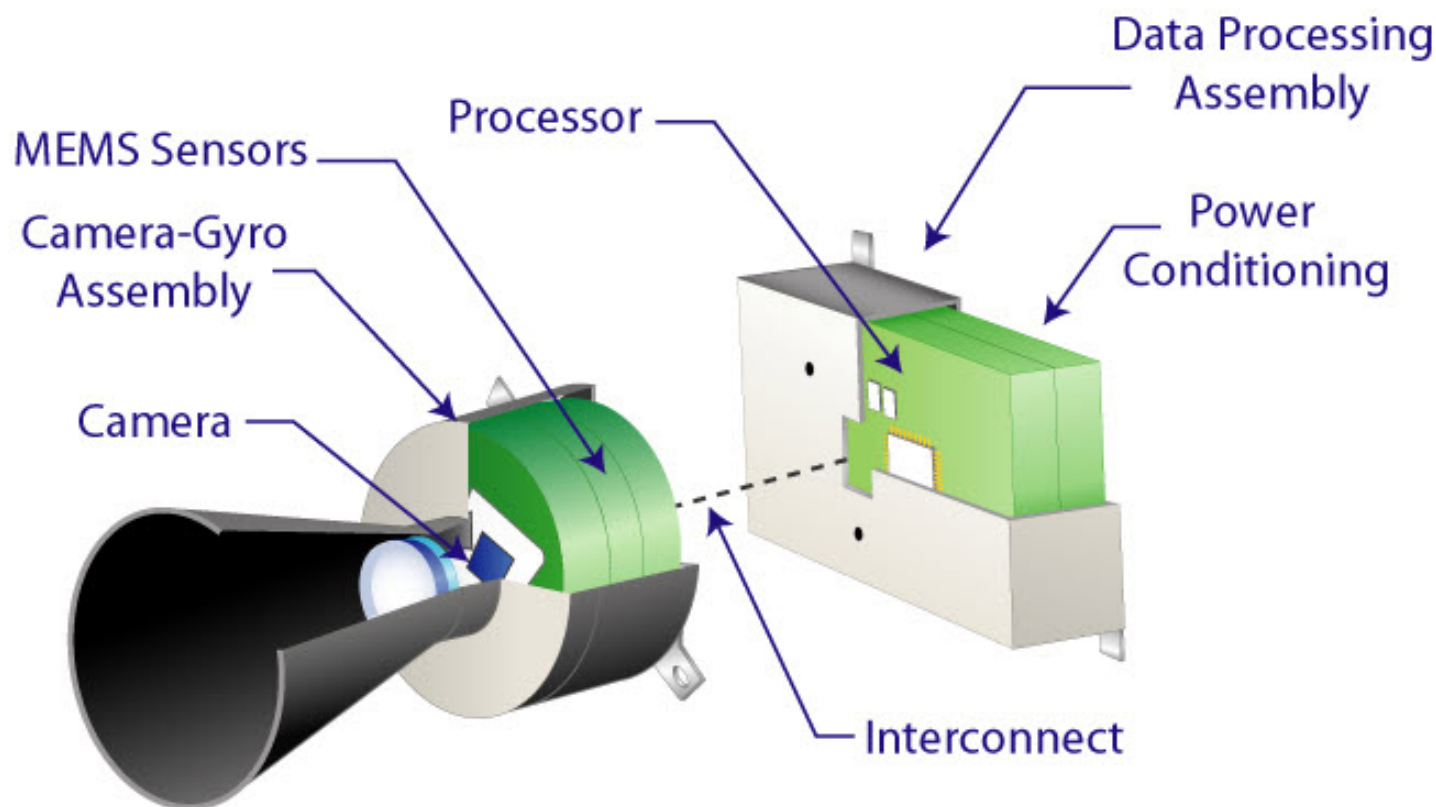
In space, there's no up or down, north or south, east or west. So how can robotic spacecraft know which way they're facing when they fire their thrusters, or when they try to beam scientific data back to Earth? Without the familiar compass points of Earth's magnetic poles, spacecraft use stars and gyros to know their orientation. Thanks to a recently completed test flight, future spacecraft will be able to do so using only an ultra-low-power camera and three silicon wafers as small as your pinky fingernail. "The wafers are actually very tiny gyros," explains Artur Chmielewski, project manager at JPL for Space Technology 6 (ST6), a part of NASA's New Millennium Program. Traditional gyros use spinning wheels to detect changes in pitch, yaw, and roll—the three axes of rotation. For ST6's Inertial Stellar Compass, the three gyros instead consist of silicon wafers that resemble microchips. Rotating the wafers distorts microscopic structures on the surfaces of these wafers in a way that generates electric

signals. The compass uses these signals—along with images of star positions taken by the camera—to measure rotation. Because the Inertial Stellar Compass (ISC) is based on this new, radically different technology, NASA needed to flight-test it before using it in important missions. That test flight reached completion in December 2007 after about a year in orbit aboard the Air Force's TacSat-2 satellite. "It just performed beautifully," Chmielewski says. "The data checked out really well." The engineers had hoped that ISC would measure the spacecraft's rotation with an accuracy of 0.1 degrees. In the flight tests, ISC surpassed this goal, measuring rotation to within about 0.05 degrees. That success paves the way for using ISC to reduce the cost of future science missions. When launching probes into space, weight equals money. "If you're paying a million dollars per kilogram to send your spacecraft to Mars, you care a lot about weight," Chmielewski says. At less than 3 kilograms, ISC weighs about one-fifth as much as traditional stellar compass-

es. It also uses about one-tenth as much power, so a spacecraft would be able to use smaller, lighter solar panels. Engineers at Draper Laboratory, the Cambridge, Massachusetts, company that built the ISC, are already at work on a next-generation design that will improve the compass's accuracy ten-fold, Chmielewski says. So ISC and its successors could soon help costs—and spacecraft—stay on target.

Find out more about the ISC at nmp.nasa.gov/st6. Kids can do a fun project and get an introduction to navigating by the stars at spaceplace.nasa.gov/en/kids/st6starfinder/st6starfinder.shtml.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Compass is built as two separate assemblies, the camera-gyro assembly and the data processor assembly, connected by a wiring harness. The technology uses an active pixel sensor in a wide-field-of-view miniature star camera and micro-electromechanical system (MEMS) gyros. Together, they provide extremely accurate information for navigation and control.

April PAS Meeting Review

By Terri, Events Coordinator

This was a particularly interesting meeting. Things weren't as smooth as they could have been but I hope that Dr. Dee comes back to us again and doesn't feel like it didn't work out like it should/could have.

The meeting began with me selling the raffle tickets for the Sky Scout. From the raffle of that item, PAS made \$1. That's about 10% of what we brought in. I had invited all of SAC, EVAC and Dan's club DFAC to join us. I didn't see anyone from another club there. The turnout was 32. \$71 was raised through this raffle to go towards gas - \$1 for PAS, so we have \$70 to split among the drivers who make the trip to Mayer. Current gas fund is at \$81 (raffle of meteorite previously).

Water has been purchased for the May meeting and the balance of the snack fund is at \$6.55. Sometimes, I feel like I'm doing a treasurer's report, but it is good to know how much we have left for snacks. The snack fund box brought in \$1.90 that night.

I opened the meeting because our Prez was dealing with a very fun thing to have happen just before the meeting.... a leaking water heater. There was no Rod and no Don this time. Don had other things he needed to get done. I opened with welcoming the guests, making a few quick announcements, and time flew so fast it was 7:50 before we turned it over to Dr. Dee.

Jerry announced an upcoming rocket launch. If you are interested in rocket launched, and believe me this is a very interesting hobby to do as well as watch, go

to the website and find out more. Jerry's group is the one that meets on the 4th Saturday of the month. It is the larger rockets. The site is AHPRA.org.

We also had a brief discussion about being in the PUMA Press. Janice finished her article about PAS and the 2 upcoming events we have on 4/10 and 5/2. Everyone grabbed a copy and I snagged a few extra to bring with me to the May meeting, for those who wish to have a copy. I only have about 5, so first come, gets it. PAS is on Page 8 of the April 2008 edition. Thank you Janice, for such a nice article. Let's hope for clear skies so that these 2 events happen as planned.

As some of you know, Dr. Dee is deaf. But she reads lips really well, as long as everyone she is listening to is facing her. We had a few difficulties with that. So, we took turns typing on the computer that was projecting onto the screen. That was for the Q & A afterwards.

To start the program, Dr. Dee had us pick from a collection of videos. So, we saw 3 total. The first one was about 35 minutes long called "On Robot Wings." It was interesting and did Flyby's of Mars, Venus, Earth's typography. Then we watched "Welcome to the Solar System" which introduced each planet, reviewed the moons and some other info that was good to know. As we were getting ready to do Q & A, Dr. Dee decided on one more video, 7 minutes long about Cassini. This got everyone's interest, and sparked some questions.

The meeting went well, it wasn't all that

smooth due to Q & A being rough. But Dr Dee did an awesome job of it and was very patient with us.

Then we did the raffle. The winner of the Sky Scout, of which he wouldn't sell it to anyone, was Mike Marron. Everyone can be envious now! I told Mike, either sell it to me or make sure you bring it to every star party so we can put it to good use.

To see photos from this meeting, please visit this link: <http://tinyurl.com/4zw343>

We hope to see you at the May PAS meeting in which we will do the 50/50 raffle and a Meteorite. We have plenty of Meteorites left to raffle off, so if you missed getting the first one we did, come to the next meeting and we will have another chance for you to get one. See you there! ***

MANY THANKS TO PAS

From Dr. Laurice Dee, April PAS Speaker

Terri, I would like to thank you and everyone else so very much for allowing me to show videos a couple weeks ago. I truly hope that everyone got to enjoy watching the videos and learning new things about robotic solar system exploration. I would like to let you know that I will be very happy to come out to PVCC to show videos when there is a cancellation in the speaker schedule or during a star party on campus where some people would like to come inside to watch videos. Please do let me know what more I can do for your group! My showing the videos to everyone on the 3rd of this month was definitely a lot of fun! Many thanks again! ***

Solar System Project At PVCC

By Sam Insana

We had 5 reps from PAS at today's luncheon, Rod, Sue, Mike, Bob and myself. There were reps from most of the organizations that donated for the solar system

project. PAS got the Kuiper Belt, the farthest objects from the Sun. The Dean of PVCC got Pluto. There was a nice Buffet lunch and brief slideshow of the solar system, and photos of the donors. The mounted

planets were also on display. I believe the official ribbon cutting will be May 2nd at 11 am I believe by Building F at PVCC. This should be just before our solar viewing at noon. ***

Mike's Summer Lecture Series 2008

All PAS Members are welcome to come to Mike's home, RSVP required with Mike, for a fascinating Physics Lecture / Star Parties Series this Summer. Below are the dates and topics of his presentation. Bring cash to get in on the shared pizza. Show up around 4pm-5pm. Lecture will begin at 6pm and run for about 2 hours. Afterwards there will be a star party in a really awesome, dark sky

location - Mike's home. On July 2, stay for the fireworks. Bring bedding if you plan to spend the night. We will see you there. RSVP at primefactory@q.com or 480-488-3031.

June 28: Solar System

July 5: Starparty and Fireworks with Dinner prior at Bad Donkey in Carefree at 5pm.

Aug 2 stars

Aug 30 Galaxies

Sept 27 - Quantum Physics

The whole family is invited to these events!!! ***

Mayer 900 Girl Scout Star Party 4/12 Review

I wish to send many, many thanks to the entire Mayer TEAM. Without them, we would not have had such a successful, fun, and very exhausting event.

Our day started with Don having spent the night with us. We got up and got out the door on time and met up with Sam and John at the Park N Ride. We then drove up to Cortez Junction where we stopped at a McDonalds and waited. Rod & Sue were stopping at Barbara's to pick up the bags we needed to give out to the Girl Scouts. They soon came up shortly after and we proceeded to the YMCA Chancey Ranch where we were to do the event. We got there and they had no clue where we were setting up, or how we would do it, etc. It was a very interesting morning.

After all was figured out, about an hour later, we started setting up for our event. By this time Bruce, Ed and Bette joined us. Then 7am came and we took off to breakfast. We were served waffles, fruit, and various cereals. Then we went back to finish the set up. We got the three canopies up and the tables ready a little after 9am.

We had Rod doing Solar through his Coronado PST onto a TV until the Sun became nothingness and then he switched to Lunar. Sue was assisting him, plus helping John and Bette pass out bags, and raffle tickets. Bruce was doing the Solar System game. Ed did the electronic game. I was doing Constellation Tubes until the Moon came up, and then I did some Moon Demos. John and Bette were doing bags and raffle tickets and William was assisting the girls in figuring out which prize, telescope or meteorite, they wanted to win. It was an exhausting time but everyone did an awesome job of assisting the girls.

The girls kept coming up to lunch time and then we were headed over to lunch. Breakfast, Lunch and Dinner were in the stone house. So, we piled into the back of Rod's pickup and Sue drove us over to the stone house so we could eat our meals. We then brought back food for Rod. Lunch was rolled meats, cheese, breads, and other fixings for sandwiches. Then it was back again for another session of girls.

As dinner approached, it slowed down, so we started to pack things up. We went to dinner and after dinner we drew the winning raffle tickets. Then, during the star party part of the evening, the girls were instructed to see if they won the telescope or meteorite. We have our Winners: The telescope

went to Nicole England (Pancake) and the Meteorite went to Alexis Watins. They were very excited to have won and their photos can be seen on line at the following link <http://tinyurl.com/3sdte9>

For the evening, we each had our objects assigned to show. When our object left the view, we were able to move to an object of our choice. Several of us were planning to stay the night and others to go home that night. It was so cold out there that Sam and John went to bed, leaving their scope set up for viewing later that night. They are the only ones who stayed. Rod and Sue packed up and left while William and I and Don were packing up. Mike went off to take a short nap and fell asleep in his car. Was asleep until about 20 minutes after we left. Chris and Steve packed up and eventually left as well. While we were driving out, Mike went speeding by us on the dirt road. I guess sleepy people want to get home fast.

The day was pleasant and busy. The evening, except for the temperature and breeze, was awesome viewing. Very dark skies were enjoyed by all! Thank you Mayer TEAM!!! ***

1,050 girls, leaders, volunteers and staff (850 from Arizona Cactus Pine and 250 from Sahuaro Councils) enjoyed a weekend of primitive camping, activities and making new friends at Jamboree 2008!

Jamboree 2008 more thank you's Received from Margaret Spicer

The event was held at YMCA Chauncey Ranch in Mayer, AZ and featured the following activities:

Fishing, canoeing, climbing tower, team building, drumming, archery, nature hike, astronomy, leather work, songs, games, crafts, theatre, dance, tractor ride, horse care, environmental activities, butter making, campfire and unlimited opportunities to share with Girl Scouts throughout our state.

To the many volunteers and staff who tirelessly worked to ensure the success of Jamboree 2008, THANK YOU!

We've received many verbal and emailed "thank you's" from participants. The one that really touched me came from two of our girls on the last day at camp; "We don't want to leave. We had a lot of

fun."

Jamboree Slide show sent in by troop 173:

http://www.slide.com/r/2KQjJdG6vT8_2VAnUz_IKxR5MbKSGCR?previous_view=112&mail=0&action_details=9%3A0

Thanks again for all your hard work,

I've forgotten to mention, if you happen upon one of the following Angels, please give them a big hug and listen to their long story about Jamboree with a patient look on your face ;)

Here's the list of very brave council membership and community agencies who took on the administration of Jamboree 2008:

Volunteers:

Hannah Schwartz, Alison Prosnier, Ed Haney, Kathleen Winans, Lee Theisen, Danae Theisen, Brandi Stillbower, Karen Hatter, Denise Chestnut, Trevor Gulley, Gabriel Reil, Susan Osman, Jerryse Kelly, Patti Murray, Monique McCaffry, Gina Silva, Laura Farkas, Lori Biondo, Lisa Bickel, Andrea Whelan, Yani Eder, Kathy Woodward, Paula Horn, Jennifer Rutkowski, Michelle Guest, Cathy Stone, Karen Stevenson, Jody Clausen, Denise Carter, Jona Costner-Behner, Mary Grisamore, Sue Schierbrock, Diane Fishman, Pam Schouten, Roberta Bruce, Gretchen Schlicht, Robin Hibbetts, Tracy Laidlaw, Stacie Burgos, Jo Arnett-Lungren, Judy Misko, Bethany Byerlein, Yolanda Edwards-Guerra, Kerrie Payne, Oona Mada, Courtney Mendoza, Peggy Beswick, Pam Baker, Amy Carlson, Victoria R., 25 girls and adults of our council Just Us program, and last but not least-16 GSACPC GIRL SCOUT Program Aides!

Community Partners:

Sahuaro Girl Scout Council
YMCA Chauncey Ranch
Phoenix Astronomical Society
St. Mary's Food Alliance
Department of Environmental Quality
Arizona Fish and Game Department
Rural Metro

Staff:

Pat Fugate, Norm Gilroy, Karen Cunha, Robin Haney, Julie Thomas, Amanda Monroe, Tracie Smith, Tara Ervin, Erin Stroud,

Katie Dailey, David Rivera, Barb Strachan, Melissa Lopez, Carolina Grimaldo, Wayne Houk, Buzz Philliber.

My personal thank you goes out to each of you. This event was successful because of you.

I look forward working with you at Jamboree 2010!

My Stay Overnight At Mayer

By Sam Insana

I viewed the deep sky objects at the scout camp from 2 am to 3:15 am since the moon was down. It was very dark out and the milky way looked awesome to the naked eye. I viewed the sombrero galaxy, the

tri fid nebula, lagoon nebula, the whirlpool galaxy and many more objects that looked great. The generator still worked. I don't know of anyone from PAS who stayed the entire night except John and I. The breakfast was good, and we loaded up and left the grounds by 8:30 am. It was a good event.***



Last Bookman's Review

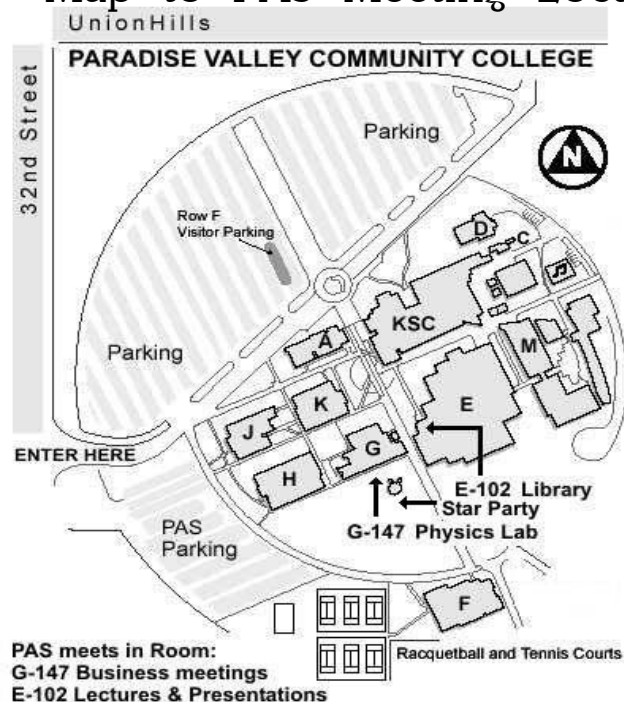
By Terri, Events Coordinator

Somehow, this item didn't get listed on the website and so no one showed up. However, we had a good time. I had 2 RSVP's for it, even though it wasn't on the site. My guess is they got the notice via the PAS Digest Blog <http://pasaz-digest.blogspot.com/>. They didn't show up after RSVP'ing. However, William & I did some internet stuff while we listened to Chet for a bit. He was telling us really cool imaging stuff. A gentleman and his daughter were in the room when we arrived. The good thing about this is that we didn't ask them to leave. We told them what we were there for and found out that a friend of his has a telescope. I gave him some handouts

and they stayed the whole time. He was playing his PSP while his daughter was looking at photos on their camera. Then Chet left & Kevin showed up. Kevin stuck around for a bit and then we all decided it was time to go to dinner. Before leaving the Anime group showed up a bit early and we invited them to sit with us since we didn't have anyone there. They pulled out their Nintendo DS's and were playing games while waiting for us to depart. They, too, will have to find another meeting location until Bookman's completes the renovation and invites us back. Off to Carlos O'Brien's we went and dinner was fantastic! Daniel took very good care of us and we left there stuffed and pleasantly happy. No photos

this time, but we had a good time anyway. I was hoping that Rod and Don would show up so that we could discuss the new location for the telescope classes. We will have to do that at the next MOM's. So, if you have any ideas on where to meet for future telescope classes that has wi-fi, and tables and chairs, please let us know. Kevin suggested the back room of Denny's at I-17 and Bell. We are going to check that out. The only thing that would be odd is having someone bring their telescope into Denny's. It might look weird, but if it has wi-fi, tables, chairs, we are set. So, watch for an announcement in the May issue of the newsletter for the new location. We will figure this out at the Apr 24th MOM. Come help us pick a new place.

Map to PAS Meeting Location



Black Canyon City Site



May

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 PAS Meeting	2 Astronomy Day. Wow Star party	3 2 Trees Star party PAS Meteor party
4	5	6 Chapparal High School	7	8 PVCC Star Party	9 North Mountain Park Visitor Center Cub Scout star party	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29 MOM	30	31 Black Canyon City Star party

June

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7 2 Trees Star party
8	9	10	11	12 PVCC Star Party	13	14
15	16	17	18	19	20	21 Black Canyon City star party
22	23	24	25	26 MOM	27	28 Mikes summer lecture #1 2 trees star party
29	30					

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To:

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What's Up For May?

By Rod Sutter, PAS President
Lunar Eclipse Wed 20th 20:29

Planets

Name	Date	Rise	Set
Mercury	05-1-08	06:27	20:34
Venus	05-1-08	05:17	18:19
Mars	05-1-08	10:35	00:48
Jupiter	05-1-08	00:24	10:27
Saturn	05-1-08	13:33	02:44
Uranus	05-1-08	03:30	15:13
Neptune	05-1-08	02:09	12:57
Pluto	05-1-08	05:41	19:11

All Times Arizona Time

Meteor Showers

Eta-Aquarids	May 5	60 per hour
Sagittarids	May 19	5 per hour

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<u>Rocketry Liaison</u>	Jerry Belcher	623-328-9290	http://ahpra.org/launches.html

May 15 2008

Sunrise: 05:29

Sunset: 19:21



Q3: April 28



New: May 5



Q1: May 12



Full: May 20