

# PAStimes

Phoenix Astronomical Society  
[www.pasaz.org](http://www.pasaz.org)

April 2011  
Volume 62 Issue 8

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

## Richard Hill to be April Seven Speaker

Richard "Rik" Hill writes:

I was born on June 10, 1949, only a few hours after Antares was occulted by a nearly full moon.

My first observation was the May 15th, 1957 transit of Mercury. I was a schoolboy in a two-room schoolhouse in rural Oakland County, Michigan, when a substitute teacher brought a 1.6" telescope to school and projected the sun. I observed through the 1960's, first with the ubiquitous standard 2.4" refractor (Tasco) and later with an RV-6 scope that I bought with money I had earned by mowing lawns and washing cars. I occasionally attended evening astronomy classes at Cranbrook Institute of Science, though I did not have good grades in school because I spent all my study time with Sky & Telescope or girls. These poor grades led to my being drafted very quickly after grad-

uation, but instead I joined the Navy. In the Navy I served as a radar tech, but was frequently called up by the navigators to help identify stars for sextant fixes. (A very early form of GPS!)

After the Navy I became engaged to a woman who had little appreciation for astronomy. To accommodate her growing distaste for my telescope and the time I spent with it, I sold the RV-6 to a high school girl who was the only one in the whole Detroit area (then 2 million people) that answered the ad. I was surprised to find she lived in my neighborhood and went to school with my sisters. I bought a smaller telescope for myself. The young girl and her friend called on me to help them start an astronomy club at their school, the same high school I had attended. Eventually the engagement was broken off and a year and a half later I

married the girl who bought my old scope. That was 35 years ago. We're still married and I am committed to a lifetime maintenance contract on the RV-6!

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*Photo Courtesy Richard Hill*

## March PAS Meeting in Review

By Terri, Event Coordinator

This was an extremely interesting, quick moving, fantastic meeting and we had an attendance of 40. That's double our usual amount of attendees! Thank you all for joining us. Those who missed the meeting will just have to read about it here.

Rod opened the meeting, and then he turned it over to me for some quick announcements. Since we were in Room G-147, I reminded everyone that the library closes its doors and bathroom access at 9:30. A few more quick announcements and we began. First, while Dennis was still setting up, we started with the Night Sky Network Awards. I read the thank you letter NSN sent us about why we were being given NSN pins. Then Rod and I took turns handing out pins, awards, and congratulations to each PAS member who promoted public outreach in 2010. Three PAS members were chosen by NSN to get awards: Terri Finch, Sam Insana, and

Frank Insana. The rest were chosen by a small panel of PAS Members who ran the events in 2010. Twelve awards were given out. Eight of those awards included NSN pins. The awards were given to Don Boyd for all his work with the newsletter and for being at many star parties, to Joe Collins for his help with running the CTCA events, to Mike Marron who is at almost every event and star party, to Steve Palmer for his assistance through the year, to Bruce Wurst for being at many events, to Tim Jones and Bob Christ for helping out with star parties, to Chris Johnson for his assistance with the website as well as doing events with the Telescope Team, to Bob Senser for helping out with set up and clean up of events - kind of the background helper who doesn't get noticed. One award didn't get printed and was forgotten, but I'd like to congratulate Leah for all her work in helping to proof the newsletter, print copies of handouts, and be the question/answer part of PAS when the



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## April 2011 Upcoming PAS Events

**Apr 2:** Cuttin' Edge Observatory Dark Sky Star Party – RSVP is with Chris. Arrive before sundown. Sunset 6:30pm. Saturn is at Opposition this night. Chris gets up there Friday at noon, and you are welcome to stay the night to Sunday at noon. PAS Members only.

**Apr 7:** PAS Meeting in the Library at PVCC 7pm. Everyone welcome!

**Apr 8:** Wigwam School star party 7pm to 10pm. RSVP with Terri for this event. PAS Members Only.

**Apr 8:** Desert Botanical Gardens Star Party 7pm to 9pm. RSVP with Sam for this event. PAS Times Star Tours Members Only.

**Apr 9:** Desert Botanical Gardens Star Party 7pm to 9pm. RSVP with Sam for this event. PAS Times Star Tours Members Only.

**Apr 12:** Cancer Treatment Center Star Party 7:30pm to 9:30pm. RSVP with Joe for this event. PAS Times Star Tours Members Only.

**Apr 14:** ASU West Open House Star

Party 7:30 to 9:30. RSVP is with Paul Schmidtke (paul.schmidtke@asu.edu). Open to the public. Everyone welcome.

**Apr 15:** Washington School Star Party 7pm to 9pm. RSVP is with Terri. PAS Members only.

**Apr 22:** Wigwam School star party Back up date for Apr 8 event.

**Apr 22:** Desert Botanical Gardens Back up date for Apr 8 event.

**Apr 23:** Desert Botanical Gardens Back up date for Apr 9 event.

**Apr 23:** PAS Virtual Star Party at Chris's home in Goodyear 8pm to 2am. PAS Members only. RSVP with Chris to attend.

**Apr 26:** CTCA Back up date

**Apr 26:** Rancho Gabriela Daytime School event 8am to 3pm. RSVP with Terri to attend. Showing Moon, Venus & Sun. Need help with handout table. PAS members only.

**Apr 28:** PAS Meeting of the Minds at PVCC in Rm G-147. Everyone Welcome. This is the PAS Business meeting. No children please. Bring snacks to share & BYO Drinks. 7pm to 10pm. If there aren't enough topics to hold the meeting, the meeting will be canceled. Check with Terri as to whether the meeting will happen.

**Apr 29:** AZ Cardinals School Star Party 6pm to 9pm. RSVP with Terri. PAS Members only.

**Apr 30:** PAS Messier Marathon at Cuttin' Edge Observatory. RSVP with Chris. Arrive prior to sundown at 6:40pm. PAS Members only.

**Apr 30:** PAS Messier Marathon at Cow Track Ranch, Mike's home in Carefree. Potluck & star party beginning at 4pm. RSVP is with Mike for this event starting at 4pm. PAS Members only.

**May 5:** PAS Meeting at PVCC in Rm G-147, 7pm to 10pm. Pizza Party, Elections, Moon Marathon Awards – Everyone welcome!



Night Sky Network Awards were given to (pictured from left to right): (very front kneeling) Frank Insana & Tim Jones, (second row of 2) Terri Finch & Don Boyd, (third row of 5), Bob Senzer, Sam Insana, Joe Collins, Mike Marron, Bruce Wurst, (at the back) & Bob Christ. Also awarded but not shown: Steve Palmer, Leah Sapir and Chris Johnson.

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## Richard Hill to be April Seven Speaker

I joined the ALPO (Association of Lunar and Planetary Observers) and AAVSO (American Association of Variable Star Observers) in 1975 and have been active, to some degree, in both organizations since. That same year my wife and I founded (along with another person) The Sunset Astronomical Society in Midland, Michigan. It is still going strong today.

In 1979, I was hired by Warner and Swasey Observatory (Case Western Reserve University) to operate their Burrell Schmidt telescope that was being moved from Cleveland, Ohio to Kitt Peak. I worked there for 12 years until the grant was terminated. Two years after moving to Tucson, my wife landed a position at the Lunar and Planetary Lab (University of Arizona) as a meteoriticist, a life-long

dream come true. During that time Walter Haas (Director and founder of the ALPO) asked me to found the Solar Section, which I did. (See history of ALPOSS on the Solar Section main page of the ALPO website.)

In 1992, when Warner and Swasey's National Science Foundation grant failed to get renewed, I began work with the Planetary Atmospheres and Planetary Occultations groups at the Lunar and Planetary Lab of the University of Arizona. That job lost its funding in December 1999, at which time I was picked up by Steve Larson for work with the Catalina Sky Survey (CSS), a Near Earth Asteroid search project, where I am still working today.

With CSS I have been enjoying some of my greatest observing challenges, but the

rewards are high. So far I've found many asteroids that have passed closer than the moon, discovered 22 comets, and named a bunch of asteroids. The future looks good with new projects being planned, and I look forward to finishing my career with CSS.

At the March PAS Meeting, Rik will share information on the Near Earth Asteroid field and surveys, with emphasis on the Catalina Sky Survey and its plans and new happenings. CSS has a new 1-meter robotic follow-up telescope coming on line this year, and has proposed to use the six old mirrors of the MMT (multiple mirror telescope) to make three binocular telescopes. For this purpose they have received commitment from the Smithsonian, but not money.

## Cancer Treatment Center Star Party Review 3/8

By Joe Collins

At the March 8 CTCA Event, we had 14 attendees, half of whom were patients and half were care-givers. PAS members participating were Don Boyd, Steve Palmer, and myself. We did not do early solar viewing, but rather, after dinner, we ran a night program starting at 7:30pm. Don and Steve stayed at least until 10:30pm, and I stayed until 11:30pm.

It was actually a visually stunning night, very clear and very comfortable outdoors. I prepared a list of objects for viewing, but spent the most time on Saturn, M42 (the Orion Nebula), M45 (the Pleiades) and several binary stars. \*\*\*

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## March PAS Meeting in Review

public needs an answer. Her award was emailed to her. A photo of each awarded PAS member was taken by several photographers who will send the photos to me to put on the website in the PAS Photo Gallery. The awards ceremony took about 10 minutes, and then a quick announcement was needed about the upcoming March 11 Astrophoto meeting to be held in G-147 at 7pm. That's a Friday and we hope for a great turnout.

Next we turned the floor over to Pete Morrissey, who told us about his Peterson Built Bino Holder. That was truly interesting and he stayed under his allotted 10 minutes. Thank you, Pete. It was very interesting and we appreciate you sharing that info with us.

Jerry reminded me that he had one more 2011 Astronomical Calendar available, which I forgot to announce before the meeting ended, and he left before we concluded the meeting. So, an email about that went out.

Jerry also completed and brought with him the two plaques he made for PAS. The plaques will be stored at PVCC. We showed everyone what they will win for first place for the Moon Marathon as well as the Messier Marathon. Those awards will be given out at the May 5th and May 19th PAS Meetings in G-147. If you

are first place, be sure to come and claim your plaque.

Then Dennis took the floor. He started us out with a 45-minute video, "Black Sky", on the flight of SpaceShipOne, developed by Scaled Composites for Virgin Galactic. (Virgin Galactic is the company that is planning to provide space flights for anyone willing to pay the cost. Current cost is estimated at \$200,000 per passenger for a 3.5-hour flight, including a short time of suborbital flight and a few minutes of weightlessness.) The video covered the trials of getting the flight of SpaceShipOne successfully off the ground and working. Dennis was able to be present at its second flight.

After the video, Dennis took us through his collection of astrophotos he has taken, and told us - with entertaining stories - how he took each one. He then gave out some of his photos, one to each attendee of the meeting. (These beautiful postcard-size "astro scenic photos" are usually sold at \$4 each.) Then came show-and-tell. Dennis showed us some new eyepieces, told us of various cool deals for purchasing equipment, and then shared with us the green lasers he brought for those who were purchasing them that night.

In the process of his enthusiasm, he spilled his drink; many thanks to Steve Palmer and Frank Insana for quickly helping clean up the spill.

The meeting ran well past 10pm, as after Dennis was done, there was a lot of talking, asking questions, gathering stuff, and helping Dennis pack up his stuff. It was an awesome meeting. Many thanks to everyone who brought snacks. The water was provided this month by Ed Wurst. Read about the snack fund in a separate article in this issue. Anyone took photos of the awards is hereby requested to please send the photos to me so we can put them in the photo gallery for all to appreciate and enjoy! Thanks to everyone who showed up. New attendees who signed in were Dewell, Skip, Pete and Sue (PAS Member), Bruce and Sherry (PAS Member), Robert C, Phil D, and David O. Many of the PAS Members who came this night, haven't been seen at a PAS meeting in a long time. Welcome back! And welcome to all the new people who enjoyed this meeting with PAS! We hope to see you at our future events! Many, many thanks to Dave for keeping his doors open past 10pm to accommodate the needs of the speaker as well as those who were last to leave. \*\*\*

## Many Thanks to Joe for Guest Speaker

By Terri, Event Coordinator

I wish to thank Joe Collins for finding this month's Guest Speaker. In the October 2010 issue of our newsletter, Joe wrote a very good article about his trip to Tucson, and in it he mentioned that Rik Hill would

be an excellent guest speaker. While editing that issue, I saw the name, found Rik's email address and dropped him an email right away, for which, he returned the favor, and agreed to do a presentation for April. That is what we need more of. PAS

Members who see a presentation, give me the data needed to contact them, and I land us some new guest speakers for the club to enjoy at our monthly meeting. Many many thanks goes to Joe for finding this Gem speaker - Rik Hill! \*\*\*

## NOW IS A GREAT TIME TO VIEW SATURN!

by Terri, Event Coordinator

Early spring this year will be the best time to see Saturn, as it comes into opposition on April 3, 2011. Opposition is when the planet and the sun are on opposite sides of the Earth. So, when the sun sets, the

planet rises and it is up all night long. Throughout spring and summer 2011, as seen from the Earth, Saturn will be in the evening sky. Saturn will be working its way toward the sun until it goes behind the sun and sets when the sun does. This is called

conjunction and happens this year on Oct 13, 2011. So, get out and see Saturn in a telescope! How many moons can you see? PAS IS YOUR TICKET TO THE STARS and Saturn in 2011. \*\*\*

## Gavilan Peak Star Party Review 2/24

By Bob Christ

A star party was successfully held on February 24th at the Gavilan Peak School, a K-8 school located in the Anthem section of Phoenix. Its northern location delivers relatively good viewing conditions, considering it is an urban environment. The event was well-timed because astronomy is being taught to the school's 7th graders.

The expected turnout of 500 attendees was not realized, but those who attended were motivated and interested. It's hard to peg an attendance number because the attendees stayed, peregrinating from scope-to-scope multiple times as we changed the objects being shown. Our best guess is that about 60-70 folks showed up.

School officials thought the chilly weather kept some folks home, and there is probably some truth in that, because it was certainly chilly.

Aside from the families that attended, there was a clear preponderance of girls, versus boys, among the participants. Just prior to the event, the boys' baseball team lost (crushed, actually) and left in uniform – not dressed for the chill of darkness, and probably hungry.

Don Boyd, Chris Johnson, Mike Marron, Tim Jones, and I supported the event. Don's trek from Chandler is impressive, and Chris logged something like 59 miles from his house to the event. Each of us was wonderfully busy the whole time, and the school fueled our efforts with pizza and soda.

The sky was co-operative, and by nightfall the earlier, high wispy clouds exited. Transparency and seeing were soft, but the total lack of moonlight served up some very good views of the "typical suspects."

Surprisingly, I was able to show the super nova remnant (SNR) M1, albeit just a faint amorphous blob in the eyepiece. Showing the object served as the entre' to describe that the mass of the now-existent remnant neutron star is so great that a tablespoon of it on earth would weigh a billion tons! Each PAS member shared this level of information that bolstered each attendee's experience.

Mike Marron spoke to someone who related that it was his meeting Mike years ago that incited him to go into science. (Mike, this is not an indictment on your age – but you are not getting younger ... happens to us all.) This is why we support this type of events: the "payback" can be most rewarding for us from cases like this, and others that we will never know. \*\*\*



# How Can I Learn More About Astronomy?

by Leah Sapir and Terri Finch

A lady who recently moved to Phoenix wrote to PAS: "I know very little about astronomy and would like to take an introductory, Astronomy 101-type class somewhere, but am at a loss as to where to start looking. Are there any other alternatives to university courses in the area?"

Of course we had plenty of suggestions for her!

Leah wrote:

PAS has monthly meetings with interesting speakers who present various astronomy topics. Our next meeting will be held at Paradise Valley Community College, Rm G-147, on March 3, at 7 pm. We also have public star parties where you can view sky objects through the telescopes of PAS members, who will explain to you what you are seeing. Our calendar is here: <http://www.pasaz.org/forums/calendar.php>.

In the meantime, there are some good books and articles you can read to learn the basics of astronomy. One of the best is "Nightwatch" by Terence Dickinson. Some additional good books:

"40 Nights to Knowing the Sky" by Fred Schaaf

"Skywatching" by David Levy

"Star Watch" by Phil Harrington

"The Universe and Beyond" by Terence Dickinson  
and additional books by these authors.

Some of these are available at the public library; all are available at bookstores and/or amazon.

The websites of Sky and Telescope magazine ([www.skyandtelescope.com](http://www.skyandtelescope.com)) and Astronomy magazine

([www.astronomy.com](http://www.astronomy.com)) also have articles about "Getting Started in Astronomy", and how to observe various sky objects.

You can see a university-level astronomy course online for free, at whatever hours you choose, at the website of University of California, Berkeley: [http://webcast.berkeley.edu/course\\_details.php?seriesid=1906978460](http://webcast.berkeley.edu/course_details.php?seriesid=1906978460). It is taught by Prof Alex Filippenko, who is a really great instructor!

Terri added:

I know that the local colleges offer astronomy courses and some may do it as non credit. Paradise Valley Community College, Phoenix College, and Glendale Community College all have astronomy courses.

However, if you are looking for the best way to learn about astronomy and you don't care if it is a class, join an astronomy club. You can ask questions, learn about the sky, look through telescopes, and enjoy the science of it.

You can get a used astronomy text book and walk your way through it, at your own pace. Bookmans on 19th Ave and Northern has used books of all types, and the astronomy book section isn't too bad. There's also a Bookmans in Mesa and one in Flagstaff. You can find out more about Bookmans at [www.bookmans.com](http://www.bookmans.com).

A local astronomy club is the best way to enjoy the viewing and learning. Another way to learn about astronomy and feel like you are getting something from it is to pick up a small telescope and start observing. Come to our FREE telescope workshops and learn how to use your scope, then get

out there and view with us at our star parties. We are all willing to help you learn to use the scope and learn the night sky.

One advantage to the astronomy course at a college or university is that it will take you through the history of astronomy, and it will also have a lab class where you do hands-on figuring of astronomy principles, such as how old is the Crab Nebula, or how do you work the optics of a telescope, or what is a nebula, galaxy, etc. But you can learn those things on your own, with a good book, a small telescope, and PAS members to help you learn to use it.

I enjoyed my astronomy classes. I took a class at Phoenix College and then later on I talked to one of the teachers at ASU West to let me be her lab assistant. Once a week, I would go to her class, get the key, and set up the scope on the roof for her students to view through. It was volunteer but I sure learned the sky really well that way. I guess you could volunteer for an astronomy club or one of the colleges to help in the labs. If you volunteer, help PAS as I can use an extra hand now and then at our star parties.

Personally I think PAS is the best club. We aren't the biggest, but we are the original in the Phoenix area. We have more public outreach star parties than other clubs, and we love what we do, which I think makes it all the more fun for everyone involved. We don't feel it is a hassle to show the sky to the public. We involve the public in what they are seeing, and educate them with information about the objects. We have fun! I guess I'm just biased towards PAS.

Let me know what you decide to do. Maybe PAS can help you along.

## PAS Snack Fund

By Terri, Event Coordinator

At the March PAS Meeting, we had a bunch of really awesome folk join us. In fact, the attendance was double of any PAS Meeting yet this season (September to May). I wish to thank all who donated to the snack fund. It is with this donation that I am able to be sure to bring the case of water to the meeting each month. Ed Wurst has been donating cases of water over the past several months, but we are down to one case left for the April meeting. I have about \$12 in the snack fund to be able to purchase two cases of water for the May meeting, and maybe a snack or two. I just wanted to thank those

who donated at the meetings over the past several months, as it really helps in assuring we have some snacks to enjoy and some water to wash them down with. And many thanks to Leah and Matt for providing chocolate chip cookies, per request of Dennis (our guest speaker at the March meeting). At that meeting we only enjoyed Matt's batch of home made cookies, and Dennis took the remainder of them home with him, but the unopened box of cookies from Leah will appear at a future PAS Meeting. And super many thanks to everyone else who brought snacks. The brownies were delicious, and the popcorn - even though I only got a little - was

heavenly. The fig newtons were a great addition. Someone brought crackers which I thought was a wonderful idea. It's a change of pace from all the sweet stuff we usually have as snacks. We had plenty to munch on, and I believe we have a very thirsty group, as there were no bottles of water left at the end. Many thanks to all who contributed to make this meeting a party. And thank you for donating to the snack fund to be sure we are able to provide bottled water at each PAS Meeting and a few extra events throughout the year. Thank you all! \*\*\*

# The Planets This Month

by Leah Sapir

The planets this month are: Saturn, Saturn, and more Saturn.

Jupiter has disappeared in the west, and while Mercury might still be visible low in the west during evening twilight, it too will soon be gone from the evening sky. Mars is at the far end of its orbit, and is hidden by the Sun's glare.

But Saturn! That's another story. Saturn is now at opposition, which is the closest part of its orbit - when it is on the same side of the Sun as we are. At opposition, a planet is up from sunset to sunrise.

So now is a great time to admire Saturn's rings, and its largest moon, Titan. If your telescope is large enough, you might be able to see some of the other moons too. Titan is about 1.5 times the diameter of Luna (Earth's Moon), and has almost twice Luna's mass. It orbits Saturn once every 16 days. Titan has an atmosphere of nitrogen with a touch of methane. It has large lakes of liquid methane and ethane, and beneath the solid parts of Titan's surface it is believed to have a subsurface ocean of water and ammonia. At times this liquid might erupt as a "cryovolcano" - a volcano that ejects water, ammonia and methane. Active cryovolcanoes have not actually been seen

on Titan, but the Cassini spacecraft has photographed features that appear to be cryovolcanoes. This would also explain the continued presence of methane in Titan's atmosphere.

The next-largest moons of Saturn are Rhea and Iapetus (each about half the diameter of Luna), Tethys and Dione (about 1/3 the diameter of Luna), and Mimas and Enceladus (each about 1/8 the diameter of Luna). Saturn also has dozens of moonlets which can be detected only with long-exposure photographs, professional telescopes, or space probes. Some of the outer moons orbit in a retrograde direction - opposite to the direction of Saturn's rotation, its rings, and its major moons; they are possibly captured asteroids.

But of all the material orbiting Saturn, Titan makes up 96%. The next six moons make up about 4%, and all the other moonlets, along with the rings, are only about 0.04%. While the rings appear solid, they are actually made up of particles of ice, with a bit of dust, rock, and a few other stray compounds. The particles range in size from small sand-sized grains to chunks the size of a large building. A few of the chunks are as large as 1/2 mile in diameter.

Aside from Saturn, a few more planets will be visible for early risers. Venus rises at around 4:30 am and is visible in morning twilight. Neptune is a morning star all month, rising around 4:30 at the beginning of April and 2:30 at the end of the month. Uranus is a morning star in the second half of the month, and Mercury will reappear as a morning star in the dawn twilight at the end of April.

At the beginning of April, before Mercury disappears from the evening sky, the crescent moon will pass by on April 3 and 4: below Mercury on April 3 and about 7 degrees above Mercury on April 4. But both will be very low in the sky, and visible only during twilight, setting by around 7:30 pm.

As the Moon continues its trek across the sky, it passes by the Pleiades on April 6, between the Pleiades and Hyades on April 7, and near the Hyades on April 8. On the nights of April 11-12 and 12-13, the Moon follows the Beehive Cluster across the sky till around 2 am. On April 16-17 it accompanies Saturn across the sky all night. And on April 30, early risers will be able to see Venus, Mercury and the crescent Moon in the east before dawn.

## Telescope Workshop at Bookmans Review Mar 6

By Terri, Event Coordinator

It was an interesting meeting. Kraig joined us as the only RSVP. He didn't bring a scope but we talked about astronomy, physics, the members of the club, etc. and he joined PAS. I would like to thank Don Boyd and Bob Senzer for joining William and me, and helping with set up and take down of this event. We were there from 3:30 to past 5:30, deep in discussion. It was a successful event. Kraig learned a bunch about astronomy. \*\*\*

## Upcoming School Star Parties to Finish Out the School Year

By Terri, Event Coordinator

PAS will be holding the following star parties at schools. The events are listed in order of their occurrence. All RSVP is with Terri or on the PAS Private Calendar for the event.

**Apr 8:** Wigwam Creek Middle School in Goodyear, 7pm to 10pm.

**Apr 15:** Washington Elementary School, 27th Ave & Northern, 7pm to 9pm.

**Apr 26:** Rancho Gabriela Elementary School in Surprise, daytime event 8am to 3pm.

**Apr 29:** AZ Cardinals Prep School, Dunlap & 19th Ave, 6pm to 9pm.

**May 6:** Rancho Gabriela Elementary School in Surprise, 7:30pm to 9:30pm.

**May 12:** Arrowhead Elementary school around 75th Ave and Union Hills in Glendale, 6pm to 7:30pm.

**May 13:** Benchmark School around 42nd Street and Acoma Dr in Phoenix. Time: TBA \*\*\*

## Astrophotography Meeting Rescheduled

By Terri, Event Coordinator

The Mar 11 meeting of the North East Valley Imaging Group didn't happen due to health issues. Thus we have rescheduled this 1st meeting of the new SIG to be May 20. Meet on the PVCC campus in G-147 from 7pm to 10pm. The meeting will probably not last to 10pm, but Dave has offered his lab room for that time frame. Bring your own Drink. Bring a snack to share. Let's make it a party! You can RSVP in the calendar on that date. See you there!!! \*\*\*

# Why Some PAS Events Are "Private"

By Terri, Event Coordinator

When PAS got on the internet, it now became possible to post maps to PAS events. But in some cases the events were held in members' homes, or in schools, or places like Scout events. And that became a problem. The wide advertising of events to all, including strangers, even when the events were held at private locations, was scary to a few members. So, when Chris designed our website, he offered the opportunity to put the more personal info, such as maps, addresses, etc... into the Private Calendar, Private Downloads, or Private Forum section of the site, where only PAS Members could access it.

On our calendar, and in the Newsletter, events are marked as Private to protect the address / location of an individual's home or property. When a person from another club or the public RSVP's, we can choose to decline the RSVP if they are not a PAS member and NOT provide them with a map, address, or directions to a Members Only event.

Another reason we have private events to is to draw in new PAS Members. For instance, the CEO star parties and the Virtual Star Parties are all designed to offer something the other clubs do not have. Prospective members who might want to join, should consider joining PAS if they want to go to these events. Chris, and I agree with him, should not have to open his

home up to strangers, especially since the CEO location isn't totally his own. He's borrowing a portion of his parents' land, and therefore, has to abide by their rules. And one of their rules is that only PAS Members, people whom Chris knows and trusts, would be allowed on their property. We have a great opportunity to share in the dark skies of Mayer. I don't wish to ruin that chance by inviting just anyone to an event.

And of course, for all events at private homes, it is totally up to the owner of the home as to whether non-PAS members are allowed to attend.

Then there are schools. Some schools tell me they won't have PAS at an event if their info will be freely given on a website, such as the address of the school. When we hear about kidnappings and abductions, I don't think we want PAS to be an outlet that could allow a potential kidnaper the chance to get the info, pretend to be one of us, and lure away a kid to their demise. For the safety of the kids I feel it is important to keep the school info, contact info, address, etc, all on the "private" side of the PAS website.

We have gotten several emails from the public stating that we have too many "private" events and not enough public events, and that events shouldn't be private - they should all be public. Sorry, that isn't going to happen for events that are held at private locations.

So, when someone from the public contacts us, complains we don't have enough public events, and that all the events they see on the calendar are "private," let's remind them that being a PAS members has its benefits.

One more thing - I mentioned above about complaints that we don't have enough public events.... if you look at our calendar, we have several public events each month, which is quite a lot for a small club. I have discovered that the PAS Membership consists of about 4 or 5 scopes who attend public events, and the rest of the events we get more turnout if it is PAS members only. I don't see the sense in adding more public events to our calendar if we don't have the scopes / man power to cover those events. Right now, PAS is full of events, mostly schools for April and May, and they are not public, but they will be fun and well worth the PAS Members attendance. If you are a PAS member with a scope or binoculars, please RSVP to help out if you can!

I do hope this clarifies some of the misunderstanding we have been getting from the public. And I would love to see more PAS Members at all of our events, not just the "private" events! \*\*\*I do hope this clarifies some of the misunderstanding we have been getting from the public. And i would love to see more PAS Members at all of our events, not just the "private" events! \*\*\*

## Messier Marathon

By Terri, Event Coordinator

If you missed attending the Messier Marathon at Two Trees on March 4th, but still want a chance to win the Messier Marathon Plaque you saw at the March PAS Meeting.... you may wish to attend one of these upcoming Marathon events.

Reminder: The marathon is to be done in one night, from dusk to dawn. If you tried to do it at Two Trees and didn't get very far, feel free to try again, but start over.

Apr 2 is the All Arizona Messier Marathon. The location of this event and directions can be found on the SAC website at <http://www.saguaroastro.org/content/messier2011.htm>. They list the location to be Hovatter Airstrip (south of I-10 at Exit #53). SAC is hosting this event, so other details will have to be retrieved from their site.

PAS is hosting two Messier Marathons, at two different locations, both on April 30.

1) CEO. For the darker, better observing location where it is possible you may see more of the 110 objects you need to find that night... the Cuttin' Edge Observatory in Mayer is the place to be. It is suggested you arrive well before sundown, and RSVP is required with Chris. This event is for PAS Members only. BYO snacks, drinks, bedding, etc.

2) Mike's home in Carefree. For those of us who wish to try our skill at the marathon but do not wish to drive to Mayer, Mike will host a party at his home for the marathon. Arrive before sundown. We can make it a potluck at 4pm, and just before dark arrives, the marathon begins. You will want to be set up before sundown, and please do not arrive later than dark, as those

of us observing need to keep our eyes dark adapted. Bring a main dish and drink to share. It's a party!! Plan to spend the night. BYO sleeping bag.

Remember, the purpose of the marathon is to start just before sundown to catch the very first Messier object you can, while it is still light. Then, you stay up all night trying to see and identify all 110 objects until daybreak. That's when you get to go to bed that morning. Some of us will stay up and enjoy the whole night (better bring some energy drinks) and others will make it as far as they can, then pass out, hopefully comfortably in Mike's home.

It is better to have tried to for all 110 Messier objects and not made it, than to not have tried at all. For some of us, this will be our first Messier Marathon. I wish all of you luck in achieving your Messier goal! \*\*\*



# GOES-R, Zombie Fighter

by Dr. Tony Phillips

On April 5, 2010, something eerie happened to the Galaxy 15 telecommunications satellite: It turned into a zombie.

The day began as usual, with industry-owned Galaxy 15 relaying TV signals to millions of viewers in North America, when suddenly the geosynchronous satellite stopped taking commands from Earth. It was brain dead! Like any good zombie, however, its body continued to function. Within days, Galaxy 15 began to meander among other satellites in geosynchronous orbit, transmitting its own signal on top of the others'. Satellite operators scrambled to deal with the interference, all the while wondering *what happened?*

In horror movies, zombies are usually produced by viruses.

"In this case, the culprit was probably the sun," says Bill Denig of the National Geophysical Data Center in Boulder, Colorado. He and colleague Janet Green of NOAA's Space Weather Prediction Center recently led a study of the Galaxy 15 anomaly, and here are their conclusions:

On April 3<sup>rd</sup>, a relatively minor solar flare launched a cloud of plasma toward

Earth. Galaxy 15 had experienced many such events before, but this time there was a difference.

"Galaxy 15 was just emerging from the shadow of Earth when the cloud arrived and triggered a geomagnetic storm," explains Denig. Suddenly exposed to sunlight and the ongoing storm, "the spacecraft began to heat up and charge [up]."

Electrons swirling around Galaxy 15 stuck to and penetrated the spacecraft's surface. As more and more charged particles accumulated, voltages began to rise, and—zap!—an electrostatic discharge occurred. A zombie was born.

"At least, this is what we suspect happened based on data collected by GOES satellites in the vicinity," he says. "We'll be able to diagnose events like this much better, however, after GOES-R is launched by NASA in 2015."

GOES-R is NOAA's next-generation Geostationary Operational Environmental Satellite. One of the instruments it will carry, a low-energy electron counter, is crucial to "zombie fighting." Low energy-electrons are the ones most likely to stick to a spacecraft's surface and cause brain-fry-

ing discharges. By monitoring these particles in Earth orbit, GOES-R will provide better post-mortems for future zombie outbreaks. This could help satellite designers figure out how to build spacecraft less susceptible to discharges. Also, GOES-R will be able to issue alerts when dangerous electrons appear. Satellite operators could then take protective action—for example, putting their birds in "safe mode"—to keep the zombie population at bay.

Meanwhile, Galaxy 15 is a zombie no more. In late December 2010, after 9 months of terrorizing nearby spacecraft, the comsat was re-booted, and began responding to commands from Earth again.

All's well that ends well? True zombie fighters know better than to relax. Says Denig, "we're looking forward to GOES-R."

You and the kids in your life can learn about space weather at <http://scijinks.gov/space-weather-and-us>.

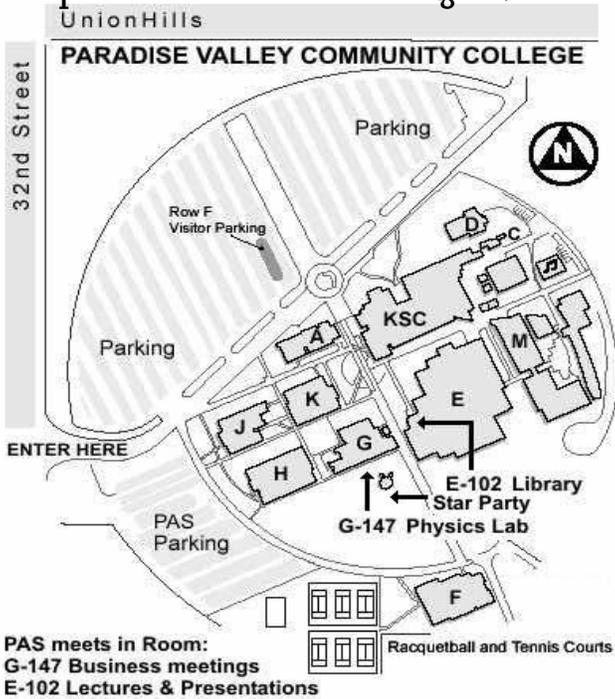
This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



The Galaxy 15 communication satellite was "brainless" for several months in 2010 after being exposed to a geomagnetic storm. The new GOES-R satellite will warn of such dangers.

# Map to PAS Meeting Location

# More Information on "Space Ship One"



By Leah Sapir

After hearing Dennis Young's amazing presentation as a guest speaker at the March PAS meeting, I decided to look for more information about SpaceShipOne. Here is a detailed article in wikipedia about the first commercial spacecraft: <http://en.wikipedia.org/wiki/SpaceShipOne> (<http://tinyurl.com/2jurse>). Of course, the video Dennis showed us was much more dramatic than this cut-and-dried article. In the video we watched how the pilots trained to endure the acceleration without a G-suit, we felt as if we were right there in the audience watching their wives and families cheering for them, we rose with them above the atmosphere and breathed a sigh of relief when they returned safely. For anyone who missed the meeting, or who wants to experience it again, it turns out that there is a similar video available at <http://www.amazon.com/Black-Sky-Winning-X-Prize-DVD/dp/B000E4K4XK> (<http://tinyurl.com/4ulwsfa>). In fact, there is an even longer video available at: <http://store.discovery.com/detail.php?p=84777> (<http://tinyurl.com/4ukx6wg>).

We are certainly living in a great day and age when things like this are possible!

Please see page 2 for more information

April						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2 CEO Private
3	4	5	6	7 PAS meeting	8 Wigwam School Star Party Private	9 DBG Private
10	11	12 CTCA Private	13	14 ASU West Star Party	15 Washington School Star Party Private	16
17	18	19	20	21	22 Wigwam School star party Back up / DBG Back up	23 Virtual Star Party
24	25	26 CTCA Backup / Rancho Gabriela	27	28 MOM	29 AZ Cardinals Prep School Star Party	30 PAS Messier Marathon at CEO and Mike's

## 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.

Don Boyd  
 PAsTimes Editor  
 701 W. Del Rio St.  
 Chandler AZ 85225

To:

## PAS Speaker Line-up for 2011

By Terri, Event Coordinator

**May 5 at PVCC in Rm G-147:** Dolores Hill + Pizza Party + Elections + Moon Marathon Awards Ceremony. Topic: "Meteorites: Keys to Understanding the Solar System". Everyone is welcome.

**May 19 at PVCC in Rm G-147:** Robert Piccioni + Party + Messier Marathon Awards Ceremony. Topic: "Einstein for Everyone". Everyone is welcome.

**Sept 1 in Library at PVCC:** Members Night. Sign up to do a 10-15 minute presentation at this meeting by email at [Events@pasaz.org](mailto:Events@pasaz.org). Anything about astronomy is welcome. Everyone is welcome.

We have an awesome line-up of guest speakers to finish out this PAS season. Should you have an idea for a future guest speaker, please send those suggestions to [Events@pasaz.org](mailto:Events@pasaz.org). I will do my best to get them as our next guest speaker. To find out more about our upcoming guest speakers, please visit this [link: http://www.pasaz.org/forums/downloads.php?do=file&id=8](http://www.pasaz.org/forums/downloads.php?do=file&id=8) \*\*\*

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## What's Up For April

By Rod Sutter, PAS President

Name	Date	Rise	Set
Mercury	04-1-11	06:37	19:41
Venus	04-1-11	04:44	15:57
Mars	04-1-11	05:46	17:45
Jupiter	04-1-11	06:29	18:57
Saturn	04-1-11	18:45	06:33
Uranus	04-1-11	05:52	17:52
Neptune	04-1-11	04:18	15:18
Pluto	04-1-11	01:01	11:26

All Times Arizona Time

April 15 2011

Sunrise: 0:54

Sunset: 18:54



New: April 3



Q1: April 11



Full: April 25



Q3: May 3