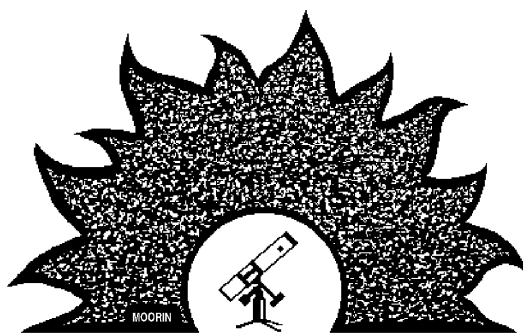




PAStimes

Newsletter of the
Phoenix Astronomical Society
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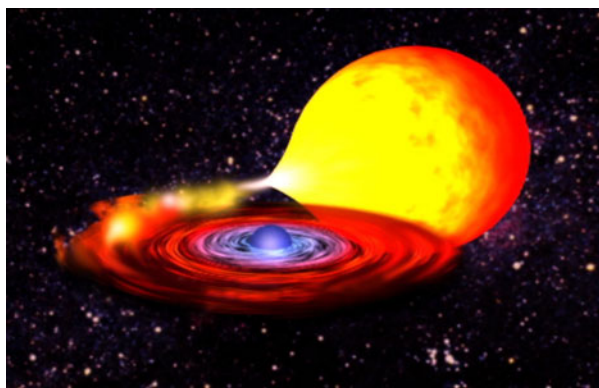
PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Next Meeting: February 3rd

☞ Note that this month's meeting will be on a Friday, at Foothills Academy, 7191 E. Ashler Hills Drive in north Scottsdale. This change of venue was needed to accommodate the schedule of our speaker. Doors open at 7:00 pm, and the meeting will start promptly at 7:30 pm. We will be in Room 204 in the East Wing. A map to the site is provided on the last page of this newsletter.

Our speaker will be Dr. Paul Schmidtke of ASU, who will be enlightening us on the topic of "Mysterious X-Ray Stars." Dr. Schmidtke has spoken to our group in the past, and his presentations are always outstanding. If you're not familiar with Dr. Schmidtke's work, here's his profile as posted on the ASU website:

Paul Schmidtke, Ph.D.
Senior Lecturer, Astronomy and Physics
Office: FAB N275
Phone: (602) 543-6068
E-mail: paul.schmidtke@asu.edu
Web: <http://www.west.asu.edu/atpcs/>
Education: Ph.D., Ohio State University
Courses currently taught:
IAS 415 LIFE IN THE UNIVERSE: Examination of the search for life in extreme environments on Earth and in remote locations beyond Earth.
IAS 416 BLACK HOLES AND BEYOND: Explores developments in understanding nature's most basic force (gravity) from Aristotelian concepts to modern theories of curved space-time.



This artist's conception shows a hypothetical x-ray source — the accretion disc in a binary star system. Image courtesy of NASA

Paul Schmidtke is an astronomer with professional interests in the broad area of binary stars. He is a recognized expert on the photometry (i.e. measuring the brightness variations) of X-ray binaries and works extensively with colleagues at the ASU Main campus and Dominion Astrophysical Observatory in Victoria, BC. His studies utilize telescopes around the world (for example, Cerro Tololo Inter-American Observatory in Chile) as well as in space (various satellites operated by NASA and similar organizations). He is a member of the American Astronomical Society, the Astronomical Society of the Pacific, and the International Astronomical Union.

Dr. Schmidtke is author or co-author of 62 articles in refereed journals, 59 other articles (chapters in books, conference presentations, or non-refereed journal contributions), plus 3 books and atlases. Since coming to ASU in 1984, he has participated in numerous externally funded grants, totaling more than \$85,000 as principal investigator and \$324,000 as co-principal investigator. He has taught both astronomy and physics classes at ASU, and currently teaches both general studies astronomy classes (lecture and lab sections) and Integrative Studies classes.

As you can see, Dr. Schmidtke has an impressive history of research and publication. We are honored to have him as our featured speaker for February. ★

February Events:

- 2/2: PAS/PVCC Public Star Party @ PVCC Track Field, volunteers needed, targets are Moon Mars, Saturn, 5 pm, viewing 6-10 pm.
- 2/3: PAS Lecture Meeting @ Foothills Academy, 7161 E. Ashler Hills Dr. Room 204, Friday, to accommodate our speaker's schedule, Dr. Paul Schmidtke of ASU, his topic is: "Mysterious X-Ray Stars." 7 pm
- 2/11: PAS Shallow Sky Star Party @ Chaparral Park, 57th Ave. & Grovers (N of Bell), Moon Treasure Hunt, sundown - 10 pm
- 2/23: PAS Meeting of the Minds at PVCC Room G-147, 7:30 pm. No children please, as this is our business meeting. Dinner prior to the meeting at the Paradise Bistro Restaurant, 3227 E. Bell Road, 6-7 pm.
- 2/25: Sally Ride Science Festival @ ASU, 11:30 am - 4:30 pm
- 2/25: PAS Deep Sky Star Party @ BCC High Desert Park, \$2/car donation requested, plan on cold weather, sundown - ? pm.

Astro Factoids:

Contributed by Bette Wurst

An occultation occurs when a celestial body (the moon, for example) passes in front of another body, such as a planet. Astronomers can take advantage of this event to learn about the bodies, as when Pluto passed in front of a star and revealed that the planet has an atmosphere. ★

Last Meeting: Saturday, January 7th

Our last "meeting" was actually our annual PAS Holiday Social at Heimhenge, the residence of Dan and Sandi Heim, way up north in New River. See more event photos inside.



Which Way is North?:

Contributed by Joe Fice, S.J.

Earth's magnetic north pole has begun moving so rapidly during the past several decades that it could drift from Arctic Canada to Siberia within the next 50 years. The movement could mean that residents of Alaska will no longer be able to see the vivid northern lights, which will become more visible in Northern Europe and Russia. Oregon State University paleomagnetist Joseph Stoner told the annual meeting of the American Geophysical Union in San Francisco that the shift may be part of a normal oscillation, and the magnetic north pole will eventually migrate back toward Canada.

Astro Factoids

Contributed by Bette Wurst

It is estimated that if one cubic kilometer of a mineral-rich asteroid were brought to earth, it would be worth about five trillion dollars.

It is estimated that if all the seas of the Earth dried up, they would leave about 4,419,300 cubic miles of rock salt.

More than a million Earth's would fit inside the Sun.

A pulsar is a small star made up of neutrons very densely packed together. If a piece of its material the size of a silver dollar landed on Earth, it would weigh approximately 100 million tons. ★



PAS members mingle at our annual Holiday Social. And yes, the weather was nice enough to leave the door open. Food is on the left, darts on the right. [Images courtesy of David Owings]

Captain's Log

By Terri Finch

THE UNIVERSE TRAIN

Borrowed from Astronomy 2006 Calendar,
Received from Brian Wurst, Prez note: I thought
this was interesting enough to share.

The universe is so vast that it's difficult to establish a scale of reference, but this freight-train analogy might help put it into perspective. Imagine each star in the known universe is represented by a grain of sand. A thimble would hold all the stars visible on a clear, dark summer night. A dump truck would contain the Milky Way, the galaxy in which the Sun resides. To demonstrate all the stars in the universe, we need a freight train with hopper cars filled with sand. The train begins to pass us at a level crossing. We count the cars as they roar by at one per second. The minutes pass, then hours, then days. We would have to keep count 24 hours a day for three years before the universe train would complete its pass. The universe train would use all the sand on all the beaches on Earth and would be long enough to stretch around the planet 25 times!

FEBRUARY'S PAS MEETING

At the February PAS meeting, there will be 3 raffles. We will have the normal 50/50 raffle. What is that you ask? Well, you donate \$1/ticket or \$5/6 tickets to PAS. Then a winner is drawn from the tickets sold right after the Guest Speaker completes their presentation. 50% of the money collected is given to the winner, and 50% goes to PAS. This helps raise funds for the club and lets some lucky winner take home a little more cash. Dan Heim keeps telling me he will buy a ticket but he won't win. I challenge him not to say that this time when I give him his ticket. He may just win. We will have 2 other special raffle items this month. Kevin Harcey missed the PAS Social this year. So, he wishes to raffle off his two gifts he had prepared for that event. One will be a 2006 Year in Space Calendar. If you missed out on your chance to purchase one back when I was collecting for the calendars, here's a chance, with \$1 or \$2 to win one in a raffle. The other item will be a mystery item. It is wrapped, it makes noises and it seems very unique. If either of these two items interest you, please join in the raffle. The money raised for these 2 raffles will go to PAS. The cost of tickets will be the same as above. You can choose to purchase 6

tickets for \$5 and put the tickets towards the 50/50, the Mystery gift, or the Year in Space Calendar. I will bring separate bins to put your raffle tickets in. Thank you for participating and Thank you Kevin for your donation to the raffle. See you at the SPECIAL meeting at FOOTHILLS ACADEMY for our wonderful speaker Paul Schmidtke. BRING EVERYONE YOU KNOW!

THE STARS OF P.A.S.

Each month we have a really cool collection of PAS members who go out of their way, to all extremes, to really try to enhance the life of children & adults with views of the night sky or information about it, such that there is major enjoyment for all involved. Here's a few examples of how the Telescope Team really made a difference this past month.

Friday Jan 6th, we did Adult Night Out at ASC. Jeff Hopkins, Don Boyd Rod Sutter, the Finches, & Chet joined us along with 2 other scopes, one belonging to ASC from 6pm to 11pm in which we had about 75 people stop by to see through our scopes.

Saturday Jan 7th, we enjoyed the PAS Holiday Social. The Stars of PAS for this event was David Owings' daughter, Ariel, who, along with Amanda Sallas & Ed Wurst, ran the 3 hour dart board game that saw 22 players. Another Star of PAS is Dan Heim & his awesome wife, Sandi, for hosting this awesome yearly event. Here is a thought from Dave about the party: Ariel and I had a great time; Ariel even commented on the way to car last night, "That was fun!" Thanks Dan; Beautiful house, and what a hill top location!

Sunday Jan 8th, PAS held it's first free quarterly telescope workshop at Bookmans in which Rod & Sue, William & Terri, Jeff, & Don assisted in answering questions for three attendees of the workshop. The evening session did not pan out, but the class went very well. I also want to mention how impressed I was listening to Rod, Don and Jeff about their knowledge of how telescopes operate. Thank you to you three wonderful Telescope Team members. We have a slew of events coming up in the next several months that will give our TEAM a chance to show off their skills & be an awesome asset to PAS. Wouldn't you like to be part of that team? Join in the fun anytime we ask for volunteers. ★

Images from the 2006 PAS Holiday Social
[Images courtesy of Terri Finch]



Two PAS officers welcome one of newest members.



Our hostess, Sam, contends with a hungry dog



Our host, Dan, shows off his new quantum physics tee shirt. He doesn't understand any of it either.



The outside deck was a popular retreat for many.



Brightly wrapped packages awaiting the start of the White Dwarf Gift Exchange.



The potluck buffet was delicious as usual, with lots of great food to choose from.

More Images from the 2006 PAS Holiday Social
[Images courtesy of David Owings]



Bruce steals a gift from Barb in the White Dwarf Gift Exchange. It was stolen away from him later.



The kitchen at Heimhenge is spacious, with lots of room for food and mingling.



Some of the guests preferred to sit and watch the HD satellite channel science programs.



Ariel takes her best shot in the darts competition.

A Message from the Astronomical League

Start an Astronomical League observing program tonight! You are a member, and we can help.

After finally finding some time under the stars, have you ever thought, "What should I observe? There's so much up there!"

The Astronomical League offers nearly 30 observing programs to help in just that situation. Some are designed for the novice such as Constellation Hunters, Universe Sampler, and Lunar Clubs. Other programs, including the Messier, Urban, and Planetary Observer Clubs, are better suited for intermediate observers. More experienced deep sky hunters can hone their skills with the tougher selections of the Herschel, Arp Peculiar Galaxies, and Galaxy Groups and Clusters Clubs. Truly, there is a program for everyone!

Upon completion of each club, the observer is presented a certificate suitable for framing and a nifty lapel pin. These lists are a low stress way to enjoy the many wonders of the night sky.

Check out which program is right for you! Visit www.astroleague.org/observing.html

Astro Factoids:

Contributed by Bette Wurst

In 1969, after astronauts first reached the moon, Pan American Airways announced the possibility of future commercial flights to the Moon. They received 80,000 requests almost immediately. But the future now belongs to Virgin Galactic. See: www.virgingalactic.com/ ★

From the NASA Space Place: Snowstorm on Pluto

By Dr. Tony Phillips

There's a nip in the air. Outside it's beginning to snow, the first fall of winter. A few delicate flakes tumble from the sky, innocently enough, but this is no mere flurry.

Soon the air is choked with snow, falling so fast and hard it seems to pull the sky down with it. Indeed, that's what happens. Weeks later when the storm finally ends the entire atmosphere is gone. Every molecule of air on your planet has frozen and fallen to the ground. That was a snowstorm — on Pluto.

Once every year on Pluto (1 Pluto-year = 248 Earth-years), around the beginning of winter, it gets so cold that the atmosphere freezes. Air on Pluto is made mainly of nitrogen with a smattering of methane and other compounds. When the temperature dips to about 32 K (-240 C), these molecules crystallize and the atmosphere comes down.

"The collapse can happen quite suddenly," says Alan Stern of the Southwest Research Institute. "Snow begins to fall, the surface reflects more sunlight, forcing quicker cooling, accelerating the snowfall. It can all be over in weeks or months."

Researchers believe this will happen sometime during the next 10 to 20 years. Pluto is receding from the warmth of the Sun, carried outward by its 25% elliptical orbit. Winter is coming.

So is New Horizons. Stern is lead scientist for the robotic probe, which left Earth in January bound for Pluto. In 2015 New Horizons will become the first spacecraft to visit that distant planet. The question is, will it arrive before the snowstorm?

"We hope so," says Stern. The spacecraft is bristling with instruments designed to study Pluto's atmosphere and surface. "But we can't study the atmosphere if it's not there." Furthermore, a layer of snow on the ground ("probably a few centimeters deep," estimates Stern) could hide the underlying surface from New Horizon's remote sensors.

Stern isn't too concerned: "Pluto's atmosphere was discovered in 1988 when astronomers watched the planet pass in front of a distant star—a stellar occultation." The star, instead of vanishing abruptly at Pluto's solid edge, faded slowly. Pluto was "fuzzy;" it had air. "Similar occultations observed since then (most recently in 2002) reveal no sign of [impending] collapse," says Stern. On the contrary, the atmosphere appears to be expanding, puffed up by lingering heat from Pluto's waning summer.

Nevertheless, it's a good thing New Horizons is fast, hurtling toward Pluto at 30,000 mph. Winter. New Horizons. Only one can be first. The race is on....

For more about the New Horizons mission, visit <http://pluto.jhuapl.edu>.



Photo Caption: This artist's rendering shows how Pluto and two of its possible three moons might look from the surface of the third moon. Credit: NASA/ESA and G. Bacon (STSci)

Astronomy Quote of the Month

“Think again of those astronomers who beamed radio signals into space from Arecibo, describing Earth's location and its inhabitants. In its suicidal folly that act rivalled the folly of the last Inca emperor, Atahualpa, who described to his gold-crazy Spanish captors the wealth of his capital and provided them with guides for the journey. If there really are any radio civilizations within listening distance of us, then for heaven's sake let's turn off our own transmitters and try to escape detection, or we are doomed. Fortunately for us, the silence from outer space is deafening. What woodpeckers (they are the only species on the planet to have developed means to dig holes in living trees to eat insects living under bark) teach us about flying saucers is that we are unlikely to ever see one.”

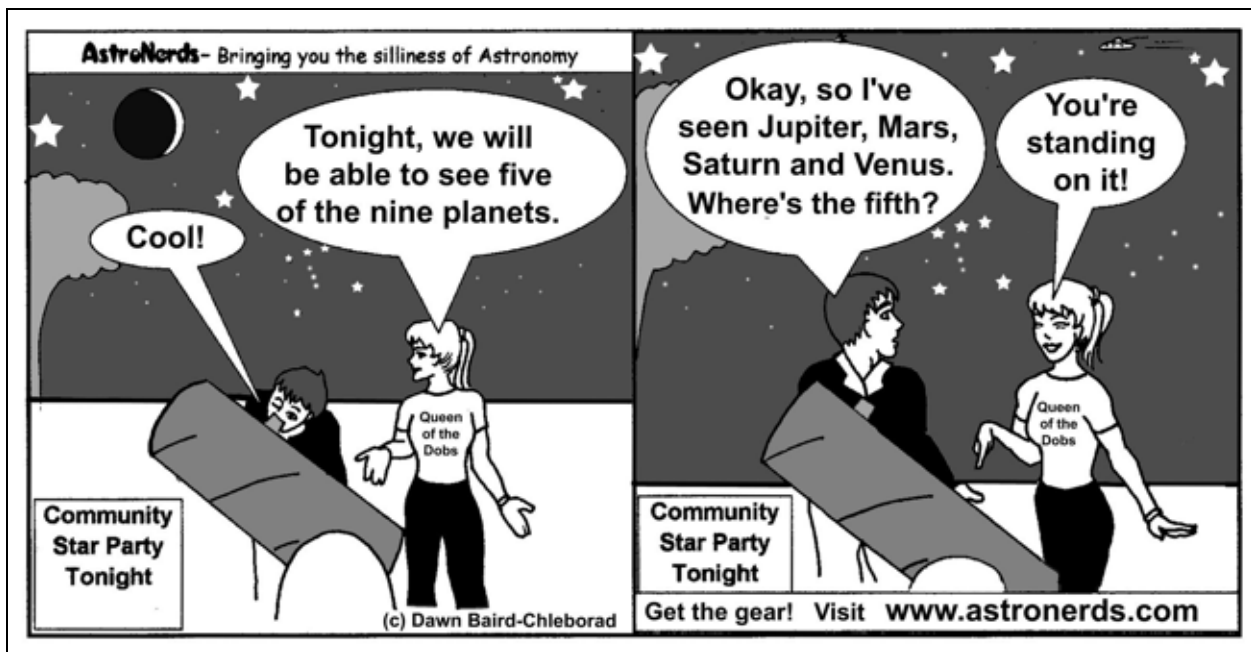
— Jared Diamond, “The Rise and Fall of the Third Chimpanzee”

From your Editor

by Dan Heim

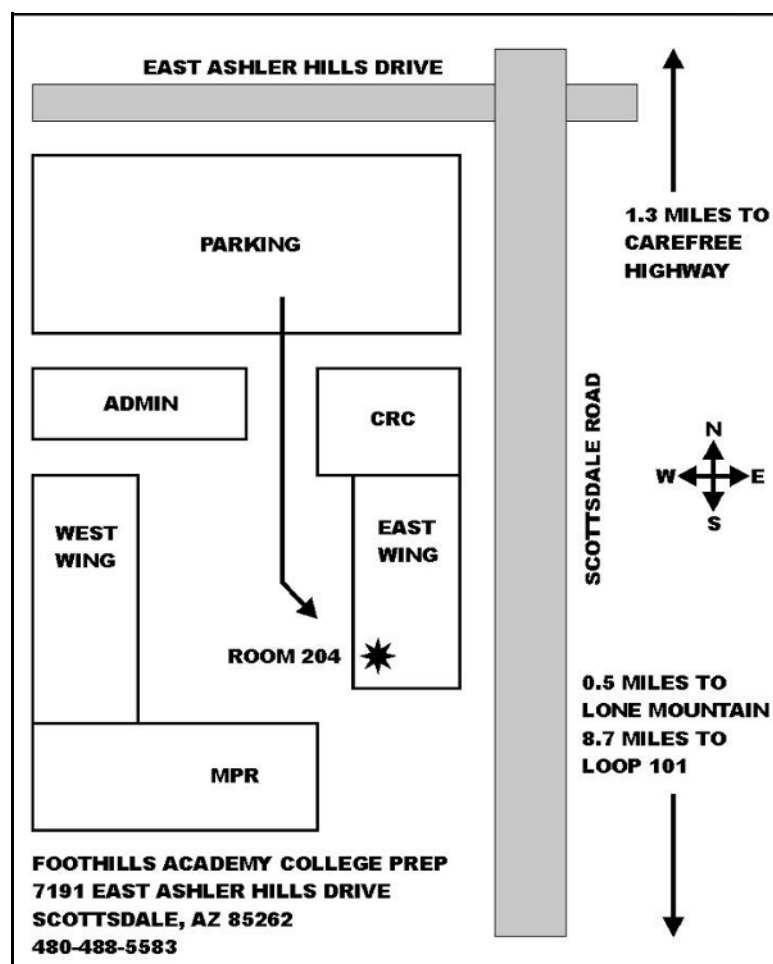
If you received this newsletter in the mail, a current roster of all PAS members has been included for contact purposes within PAS. This roster is not to be shared with non-members. If you download this newsletter from our website, you will be provided with a hardcopy of the roster at our next meeting. See Mike Marron to obtain yours if he doesn't find you first.

On a personal note, Sandi and I would like to thank all of you who attended the PAS Holiday Social last month here at Heimhenge. We had a great time hosting, as always. Unfortunately, the sky was too cloudy to set up my Takahashi and see Saturn, but you all know what it looks like anyway, right? And apologies to my first real dart competition, Jeff Hopkins, for my winning the dart contest (again). But I never win the 50/50 raffle at our meetings, so I guess it all evens out in the long run. ★



Comic provided gratis by www.astronerds.com

MAP TO OUR SPECIAL MEETING LOCATION



February 2006

Sunset: 6:10pm

Sunrise: 7:20 am



Q1: Feb 5th



FULL: Feb 12th



Q3: Feb 21st



NEW: Feb 27th

Astro Events:

Close approach of Moon, Mars, and the Pleiades on Feb 5, with Pleiades occultation visible from western US.

The Full Moon on Feb 12 occurs 1 day before apogee. Does it seem smaller?

Venus at greatest brilliance on Feb 17, with estimated magnitude -4.5.

Mercury reaches greatest elongation Feb 24, with an elevation of almost 18° at sunset. On Feb 28, you'll find this elusive target just to the upper-right of the young crescent Moon.

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PAS is incorporated in the state of Arizona as a non-profit, scientific and educational 501(c)(3) organization. Our newsletter, PASTimes is published monthly from September through May and distributed to PAS members via USPS and internet. All issues from the current season are available for download on our website at: www.pasaz.org. While you're there, browse the rest of the site and learn more about PAS. All photos by Dan Heim unless otherwise noted.