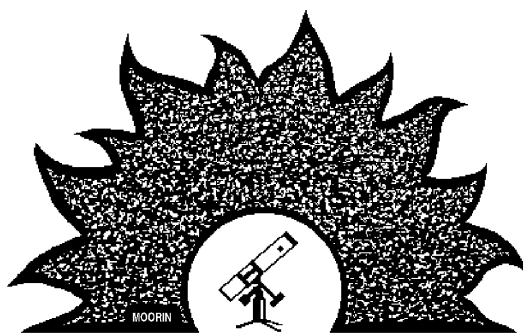




PAStimes

Newsletter of the
Phoenix Astronomical Society
www.pasaz.org

October 2005
Volume 58, Issue 2

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Next Meeting: 7:30 pm, Thursday, October 6th

You are reminded that PAS now meets at Paradise Valley Community College in Room E-102 (Library). A campus map is provided in this newsletter.

Our October lecture features Dr. Fulvio Melia of the University of Arizona. His topic is "The Supermassive Black Hole at the Galactic Center." Read more about Dr. Melia inside this issue!

PVCC's Library is open all day. PAS members with business to conduct, new members with paperwork to complete, or those who simply want to socialize, are asked to arrive early. PAS Officers are generally onsite by 7:00 pm. As a courtesy to our speakers, meetings will start promptly at 7:30 pm. ★

Last Meeting: Thursday, September 1st

Clay Thompson, famous for his "Valley 101" column in the Arizona Republic, spoke on the topic of "Being Amazed." Approximately 30 people attended.

Thompson's presentation was only tangentially related to astronomy, but nonetheless fascinating. He shared some of the unusual questions he has received over the years, explained how his column originated, and talked about the day-to-day details of writing for a major newspaper.

Of particular interest to our membership, he related a story about how PAS member Leah Sapir assisted him in the setup and operation of his new telescope. In fact, Leah is mentioned in his first book: *Valley 101—A Slightly Skewed Guide to Living in Arizona*. If you are a fan of his column, a newcomer to AZ, or simply enjoy reading interesting but obscure facts, his books are real gems and just might answer that question you've always wondered about.

The meeting concluded with a rare opportunity for members to speak personally with Thompson, and also obtain autographed copies of his two books. Thanks to Clay Thompson for a most entertaining and informative presentation! ★



Terri and Vera chat with Clay Thompson before the meeting. Vera, a longtime fan, got his autograph on her copy of a recent *Valley 101* column.



Clay Thompson addresses PAS on the topic of "Being Amazed" (amazed about questions he gets).

October Events:

- 10/1: PAS Deep-Sky Star Party at High Desert Park, BCC, 6 pm, \$2/car donation
- 10/6: PAS Lecture Meeting at PVCC, Fulvio Melia is our speaker, 7 pm
- 10/7: PAS Adult Night Out at ASC, 6 pm, volunteers and scopes needed
- 10/8: PAS Shallow-Sky Star Party at TBA, 6 pm, volunteers and scopes needed
- 10/9: School Star Party at Machan Elementary 2140 E. Virginia St., PHX 85006, 6 pm, volunteers needed
- 10/13: PAS Public Star Party at PVCC, 7 pm, volunteers and scopes needed
- 10/15: Private Star Party at South Mountain Environmental Education Center, volunteers and scopes needed, 6:30-8:30 pm, RSVP to Terri
- 10/27: PAS Meeting of the Minds at PVCC, 7 pm
- 10/29: PAS Shallow-Sky Star Party at TBA, 5:30 pm, volunteers and scopes needed

Captain's Log:

By Terri Finch

AWESOME SPEAKER: We have an awesome speaker coming to talk to us at our October PAS Meeting. You will want to bring everyone you know to this meeting. His topic is fantastic. I met him at the Arizona Science Center. He was doing a talk, which I think will be the same one he is doing for us at the October meeting, and it was fantastic. It was so interesting and good that I HAD TO get him for our speaker. You just have to be there and everyone is welcome. Bring some cash, as he will be selling his most recent book and doing a book signing that night, as well.

POSTER PROJECT: Volunteers needed. Volunteers needed. We need to find a Saturday or Sunday where we can meet at one person's house (probably mine) and make the 4 seasons posters. I have posterboard to do this project. What I need is people. And we will need to collect info ahead of time and just plan to paste them on the boards. I don't mind housing the boards after they are done. We also need a planet board. In fact, if we want to collect the needed items and give them to someone to do later on, I know that Katja does an awesome job with posters. Let's talk about it in email for a few days, and maybe we can collect the info we need and give it to Katja at the MOM's so that she can assemble. Katja, let me know if that is ok. Here is what I'm looking for. A large version of the

Planetsphere, set for 4 dates, Fall, Spring, Winter, Summer. Need 4 different wheels, showing the sky. Or, we could possibly find another way to do that, maybe a wheel that is brought for this purpose. I have a large one, if I can find it. Maybe we could not attach it to a poster board, but instead just make the explanations and such for the board. I'm thinking of mentioning the more prominent items during that time of year. For instance, this is a perfect time of year to see the Ring Nebula, high in the sky, visible most of the night. Soon, Orion will be visible, so we need some write up about it. That's the idea, so far. Then the planet version will have the visible planets through a telescope. We can have Mercury, because sometimes we do show it. Venus, Mars, Jupiter and Saturn. I wouldn't do any others, we just don't have the ability to do that at a public location, in downtown Phoenix, in light pollution. We could do distances to the planets, number of moons, a write up about the 4 moons of Jupiter. A photo of each planet, I have that from last year's project. Size comparisons of Earth to Jupiter, or Saturn. Things that the public will ask about. I want to use these posters for the school groups as well, not just PVCC. So, we have to make it at school grade levels so they can read it. So, for the next PVCC star party we can talk about Venus, Jupiter oh and we should also have the Moon on there, because it is part of the planets. ok, I have the idea going, now I need input on how to improve. And I need someone, like Katja, to volunteer to do it, or we can have a party at my house again to get it done. Plan on staying about 4 hours, and if we don't finish it, we can take it with us and do it at home, but if you have everything that is needed ahead of time, that would work out great. Input is requested.

STAR PARTY: William T. Machan Elementary School December 9th, Volunteers needed. We did a star party last year for this wonderful group of kids, and they just loved it. In attendance last year was Don, Leah, Mike, and Dennis. We would love to have a slew of scopes there as the whole school has been invited. Address is 2140 E. Virginia St. Phoenix, AZ 85006. We will be selling T-shirts at this location, so I need someone to run that table, please. If you can assist, please RSVP so we know we have enough telescopes to cover the star party. Thanks so much.

ALL OFFICERS: If you haven't already gotten your PAS business cards created by Dan, please get some done. They are \$2 a page and they are necessary to keep PAS looking professional. Every

chance you get, pass them out and get our name known. Especially if you can get a speaker for next year. Plus they look awesome. Dan has done such a fantastic job on the layout and planning of these cards, I believe they are the best cards out there.

YEAR IN SPACE CALENDAR: I currently have 7 calendars on order. We need 10 to get the good deal. Is anyone else interested in getting a calendar. They aren't very expensive and they make a great gift for those you really care about. Get back to me soon. The deadline to place your order is coming up quickly, I've extended the deadline for PAS members to Oct 5th. Then, send the check to me by the 15th. I'll let you know the total on the 6th so you can get that to me and i can get that order in, and we can receive the calendars 1) before they run out of calendars this year, 2) before Xmas incase someone is giving them as presents. RSVP your copy or copies today! 2+ copies @ \$9.95 or 10+ copies @ \$8.95 I'd love to save a \$1.00 more by having 3 more people order calendars. See them at: www.yearinspace.com.

DARK SKIES ON THE SPACE SHOW: From Flagstaff Newspaper. From 7 - 8:30pm U.S. Naval Astronomer Chris Luginbuhl is interviewed live from Flagstaff by Dr. David Livingston on "The Space Show," online at www.thespaceshow.com. Chris is one of the world's leading experts on the application and benefits of dark-sky friendly lighting. Free Online. Your computer, www.thespaceshow.com 928-525-6280. - My purpose in including this info in the newsletter isn't so you hear what Chris has said, since that was a week or so ago, but maybe you want to visit the website and see who else might be talking on The Space Show. Enjoy! Until next month, enjoy the beautiful evening weather and viewing we have! I was in Long Beach CA recently and the whole time I was there was cloudy, windy, cooler, nice for hanging out, outside waiting in long lines to get in the convention, but lousy for observing anything in the night sky. Arizona is so lucky to have clear skies the majority of the time. Enjoy it while we still can. Get out and observe.

Over and out. —Terri ★

Stars of PAS:

By Terri Finch

Do you know who the STARS of PAS are? These are the people who volunteer with or without a telescope to help PAS promote Astronomy to the public. Did you help out at the last star party? Then, you deserve many, many thanks.



Terri manages to talk one of our hosts into buying a 50/50 raffle ticket. Seated are Drs. Casey Durand, Professor of Physics, and Ed Rosenthal, Professor of Astronomy & Physics. They didn't win, but were good sports and purchased five tickets.

PVCC Aug 27, 2005: It was a very humid night, but the members of PAS and a few extra folk joined in the fun. We had about 9 scopes there (counted by Rod) and Barbara and I believe about 75 people visited that night. We were set up by the Observing deck on the PVCC campus. I wish to thank David Owings and Andrew for bringing their scopes. They are new to the PAS activities and their assistance and telescopes were appreciated. Barbara, Don, Rod, and Katja were also there to assist as well as Mike with his meteorites. We had several new folks with us, Mark, Andrew, Dave. Thank you for attending and bringing your telescopes. We got there prior to sundown and stayed until 10pm. We had a great turnout and many people enjoyed the views. Katja was extremely helpful at the PAS table with Sue. Barbara had Scotty with her to help out. I wish to thank everyone who attended and ask that they do it again if at all possible. **TEAM — TOGETHER EVERYONE ACHIEVES MORE.** PAS needs a good telescope team for all star parties.

PVCC PAS meeting Sep 1, 2005: I wish to thank Ted Finch for assisting us in getting the boxes into the Library for the meeting. I wish to thank Amanda Sallas, my daughter, for helping by being our Hostess for the night. She did a wonderful job having everyone sign in and greeting each person. Thanks goes to Dan who took tons of photos that night. Don boyd and Dan Heim also worked on getting the microphone on our PAS Lectern to work. Thank you for doing that. And I wish to thank everyone who attended the first meeting of the season. ★

Meet Dr. Fulvio Melia

Fulvio Melia is Professor of Astronomy and Physics at the University of Arizona. He is also the Series Editor for Theoretical Astrophysics at the University of Chicago Press, and the Associate Editor of the Astrophysical Journal Letters. His research focusses on the properties of black holes and the possibility of imaging them with radio and X-ray telescopes in the near future. A dedicated popularizer of this subject for the lay reader, he has recently published "The Black Hole at the Center of Our Galaxy" and "The Edge of Infinity: Supermassive Black Holes in the Universe," both of which will be available for purchase and autograph at the meeting.

Dr. Melia provides here a preview of his talk:

Could Einstein have possibly anticipated directly testing the most captivating prediction of general relativity, that there exist isolated pockets of space-time shielded completely from our own? Now, almost a century after that theory emerged, just such an entity, with a mass of about three million suns, has been found lurking at the center of our galaxy. Excitement is mounting in the astronomical community with the growing realization that we are now on the verge of actually seeing this exotic object within the next few years.

Learn more about his newly-released books: *The Edge of Infinity: Supermassive Black Holes* at www.cambridge.org/uk/catalogue/catalogue.asp?isbn=0521814057, and *The Black Hole at the Center of Our Galaxy* at www.pup.princeton.edu/titles/7480.html

Contact: Fulvio Melia
The University of Arizona
Department of Physics & Steward Observatory
Rm 447, PAS #81 (520) 621-9651
www.physics.arizona.edu/~melia

Don't miss this exciting lecture! ★

Astro Factoids

Contributed by Bette Wurst

The rates at which our planets spin vary greatly. Venus takes 244 days to spin once on its axis, while Jupiter takes just 11 hours. The giant planets probably acquired their spin from the motions of the gas in the solar nebula as they pulled in the gas. Mars and Earth probably acquired their spin by the impacts they sustained as they grew. The rotation of Venus and Mercury has been slowed down by the tidal effects of the sun. ★

New PAS Website:

By Dan Heim

If you haven't yet paid a visit to our new and vastly improved website at www.pasaz.org, check it out. You will find less clutter, easier navigation, faster load times, a consistent format, and several new features. Most of the revision was done by yours truly, but Barb Hartman, our new Webmaster, has now taken over regular updates and maintenance.

Check out our Astro Photos section, where several of our members have posted their images of a wide variety of celestial and atmospheric objects.

Another new feature is the History page, which includes the story of PAS from origin to present. If you are a member, you owe it yourself to be familiar with this story. If you aren't, you should read it.

As the History pages are still being revised (you will see several gaps in the record), any corrections or additions would be greatly appreciated. This appeal goes out to all members of PAS and any other readers who have historical content to contribute. Send you comments to Dan Heim, Editor. Thanks! ★

Earth Science Week 2005 Contrail Count-a-Thon

In recognition of Earth Science Week, the GLOBE Program and NASA invite you to join in a scientific exploration on Thursday, October 13, 2005, to observe the sky over your area and report on the presence or absence of contrails. Anyone interested in helping to develop a better understanding of Earth is welcome to participate.

Contrails are cirrus clouds formed when water vapor condenses and freezes around small particles (aerosols) in aircraft exhaust. Some of the water vapor comes from the surrounding air, some from the aircraft exhaust. Contrails, especially thin ones, are very hard to see from satellites, and may have an impact on Earth's atmosphere. In order to improve contrail prediction models, scientists need observations of contrail occurrence and absence. For more information, visit:

www.nasa.gov/audience/forstudents/k-4/home/F_Contrails_K-4.html

for more information on contrails and clouds. Instructions on how to participate in this event and report your information can be found at this Website. The observations that are reported will be tallied and analyzed by NASA scientists looking for clues to contrail prediction. A report on their findings will be posted to the website. ★

Scope For Sale:

FOR SALE: Celestron NexStar 5, NexRemote Computerized Go-To Telescope Kit w/Tripod & Extras I purchased this telescope last year and have not used it very much (4 or 5 times). The optics are great and the views are terrific for a scope of this size! It is perfect - no blemishes. I am selling the unit because I am continuing to downsize since we had the baby. So I will part with my little-used gem. Too bad, because this 5" telescope is so nice and portable and has goto capability to boot! The telescope comes with tripod, Nexstar computer controller, airline compliant fitted hard case, tripod, bob's knobs, 1x finderscope, manual, 1-1/4" mirror diagonal, a 25mm eyepiece; the factory box w/form-fitting foam box. There is no box for the tripod. This telescope, tripod and case cost almost \$1,200 new. I'll take the first \$600 OBO. My loss is your gain; thanks for looking and I hope you enjoy using this beauty! I can send you some pictures on request. If interested please contact Martin at 480-570-7163 or email to: mbonadio@cox.net ★

Remembering Sputnik:

By Dan Heim

Do you recall where you were when Sputnik 1 went over? Did you see it? I was six years old and remember it like it was yesterday. October 4th, 1957 was the date; Sputnik's 48th anniversary is this month. Let us raise a vodka toast to Sputnik! Here's a brief retrospective from NASA's website ...

Sputnik 1

Launch Date/Time: 1957-10-04 at 19:12:00 UTC

On-orbit Dry Mass: 83.6 kg

The Sputnik 1 spacecraft was the first artificial satellite successfully placed in orbit around the Earth and was launched from Baikonur Cosmodrome at Tyuratam (370 km southwest of the small town of Baikonur) in Kazakhstan, then part of the former Soviet Union. The Russian word "Sputnik" means "companion" ("satellite" in the astronomical sense).

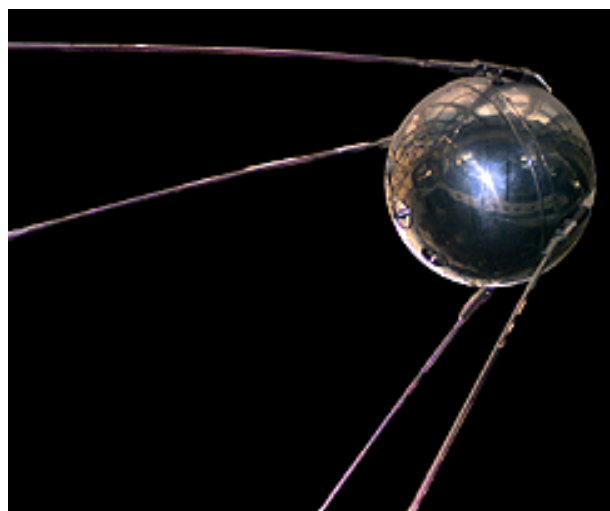
In 1885 Konstantin Tsiolkovsky first described in his book, *Dreams of Earth and Sky*, how such a satellite could be launched into a low altitude orbit. It was the first in a series of four satellites as part of the Sputnik program of the former Soviet Union and was planned as a contribution to the International Geophysical Year (1957-1958). Three of these satellites (Sputnik 1, 2, and 3) reached Earth orbit.

The Sputnik 1 satellite was a 58.0 cm-diameter aluminum sphere that carried four whip-like antennas that were 2.4-2.9 m long. The antennas looked like

long "whiskers" pointing to one side. The spacecraft obtained data pertaining to the density of the upper layers of the atmosphere and the propagation of radio signals in the ionosphere. The instruments and electric power sources were housed in a sealed capsule and included transmitters operated at 20.005 and 40.002 MHz (about 15 and 7.5 m in wavelength), the emissions taking place in alternating groups of 0.3 s in duration. The downlink telemetry included data on temperatures inside and on the surface of the sphere.

Since the sphere was filled with nitrogen under pressure, Sputnik 1 provided the first opportunity for meteoroid detection (no such events were reported), since losses in internal pressure due to meteoroid penetration of the outer surface would have been evident in the temperature data. The satellite transmitters operated for three weeks, until the on-board chemical batteries failed, and were monitored with intense interest around the world. The orbit of the then inactive satellite was later observed optically to decay 92 days after launch (January 4, 1958) after having completed about 1400 orbits of the Earth over a cumulative distance traveled of 70 million kilometers. The orbital apogee declined from 947 km after launch to 600 km by Dec. 9th.

The Sputnik 1 rocket booster also reached Earth orbit and was visible from the ground at night as a first magnitude object, while the small but highly polished sphere barely visible at sixth magnitude more difficult to follow optically. Several replicas of the Sputnik 1 satellite can be seen at museums in Russia and another is on display in the Smithsonian National Air and Space Museum in Washington. ★



Sputnik1 photo courtesy of NASA & SNASM

From the NASA Space Place: Where No Spacecraft Has Gone Before

by Dr. Tony Phillips

In 1977, Voyager 1 left our planet. Its mission: to visit Jupiter and Saturn and to study their moons. The flybys were an enormous success. Voyager 1 discovered active volcanoes on Io, found evidence for submerged oceans on Europa, and photographed dark rings around Jupiter itself. Later, the spacecraft buzzed Saturn's moon Titan—alerting astronomers that it was a very strange place indeed! —and flew behind Saturn's rings, seeing what was hidden from Earth.

Beyond Saturn, Neptune and Uranus beckoned, but Voyager 1's planet-tour ended there. Saturn's gravity seized Voyager 1 and slingshot it into deep space. Voyager 1 was heading for the stars—just as NASA had planned. Now, in 2005, the spacecraft is nine billion miles (96 astronomical units) from the Sun, and it has entered a strange region of space no ship has ever visited before.

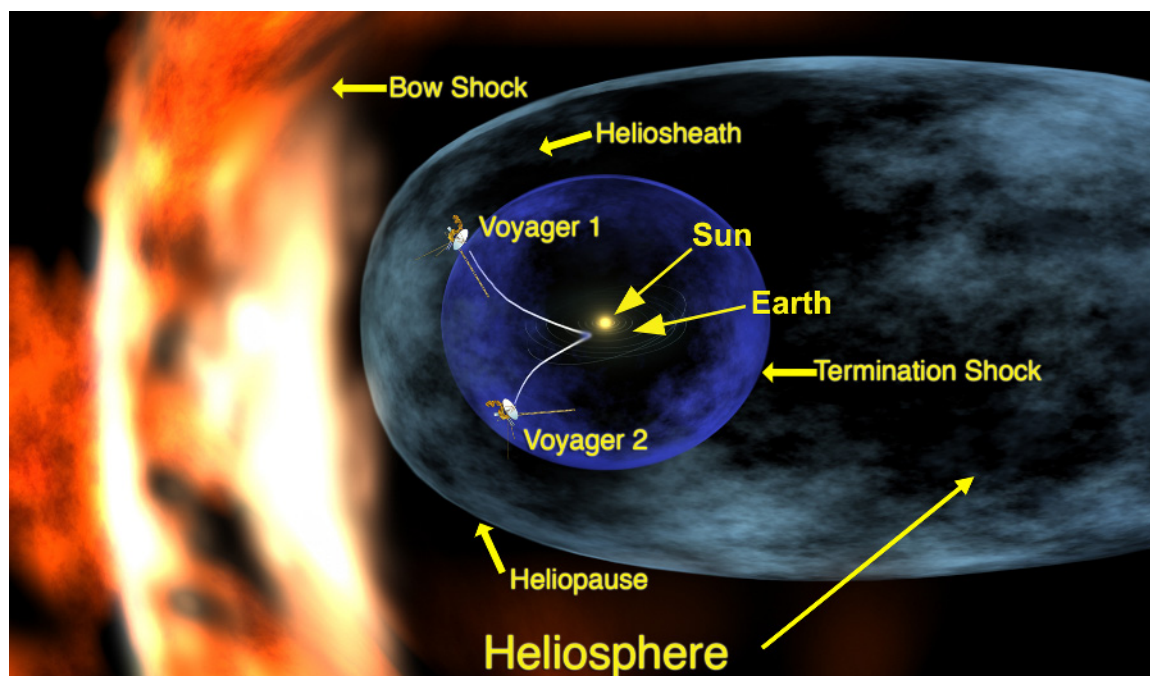
"We call this region 'the heliosheath.' It's where the solar wind piles up against the interstellar medium at the outer edge of our solar system," says Ed Stone, project scientist for the Voyager mission at the Jet Propulsion Laboratory.

Out in the Milky Way, where Voyager 1 is trying to go, the "empty space" between stars is not really empty. It's filled with clouds of gas and dust. The wind from the Sun blows a gigantic bubble in this cloudy "interstellar medium." All nine planets from Mercury to Pluto fit comfortably inside. The heliosheath is, essentially, the bubble's skin. "The heliosheath is different from any other place we've been," says Stone. Near the Sun, the solar wind moves at a million miles per hour. At the heliosheath, the solar wind slows eventually to a dead stop. The slowing wind becomes denser, more turbulent, and its magnetic field—a remnant of the sun's own magnetism—grows stronger.

So far from Earth, this turbulent magnetic gas is curiously important to human life. "The heliosheath is a shield against galactic cosmic rays," explains Stone. Subatomic particles blasted in our direction by distant supernovas and black holes are deflected by the heliosheath, protecting the inner solar system from much deadly radiation.

Voyager 1 is exploring this shield for the first time. "We'll remain inside the heliosheath for 8 to 10 years," predicts Stone, "then we'll break through, finally reaching interstellar space." What's out there? Stay tuned.

For more about the twin Voyager spacecraft, visit voyager.jpl.nasa.gov. Kids can learn about Voyager 1 and 2 and their grand tour of the outer planets at: spaceplace.nasa.gov/en/kids/vgr_fact3.shtml. ★



Dues Reminder:

All members are reminded that dues for next calendar year are due Oct 31st. Please be prompt with your renewal as it makes our Treasurer's job so much easier. All dues payments must be accompanied by an official dues sheet!

If you received this newsletter via USPS, there will be a dues sheet included in your mailing. If you receive the newsletter electronically, please download your dues sheet from our website. Just go to the "Join Us" link in the main menu and then click on the "Print This Page" button. ★

Another Scope For Sale:

Here's a great beginner's scope, a 6 inch hardin dob, roller bearing azimuth mount, right angle finder scope, 25mm eyepiece, quick collimation cap, all excellent condition. \$150.00 obo. David Hatch 480.854.1593 ★

Yet Another Scope For Sale:

Well, not really. But if you have items for sale or trade, let us know. Email your ads to the Editor. We always have space to run short ads free of charge to any PAS member! ★

Astronomy Quote of the Month:

"After I give lectures - on almost any subject - I am often asked, 'Do you believe in UFOs?' I'm always struck by how the question is phrased, the suggestion that this is a matter of belief and not evidence. I'm almost never asked, 'How good is the evidence that UFOs are alien spaceships?'"

— Carl Sagan, "The Demon Haunted World"

From your Editor:

by Dan Heim

Last issue I stated that my intention was to keep the newsletter to less than a Mb in size to make for easier downloads. It has been suggested that we post two versions, one in low-resolution and the other in high-resolution. Several other astronomy clubs do just that, but the compromise shows primarily in the quality of the images and graphics. My philosophy on that issue is: if you're going to take the time to do a download, you might as well do it right. Even at dialup speeds, what's another 5 minutes or so if you get the newsletter in the form it was intended. If you disagree, let me know. I'm open to your input and will accede to the majority rule.

Only 10 of our members still receive PASTimes via USPS. All other members are downloading it from our website, and I expect that latter category to grow ever larger over time.

The whole point is to save on postage and printing costs, leaving more of our treasury for discretionary expenses (not to mention Astronomy League membership, insurance, and incorporation fees). If you are currently on our USPS mailing list and are able to receive PASTimes electronically, please let me know so that we can update our records. We try to keep our records current, but more people get internet connected every day and we don't know that has happened unless you tell us. Thanks! ★

Astro Factoid:

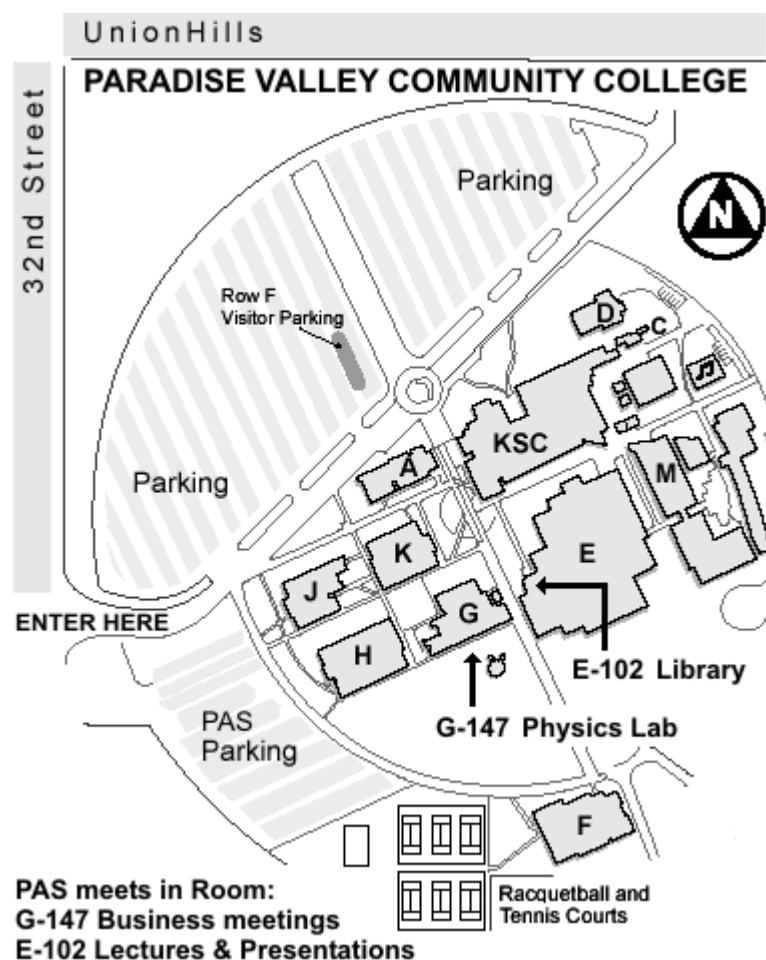
by Dan Heim

It is virtually impossible to present any interesting Astro Factoids within the space of two lines. ★



Comic provided free of charge by www.astronerds.com

MAP TO OUR MEETING LOCATION



October 2005

Sunset: 5:50 pm
Sunrise: 6:40 am



NEW: Oct 3rd



Q1: Oct 10th



FULL: Oct 17th



Q3: Oct 24th

Astro Events:

Partial lunar eclipse on the 17th.

The Orionid meteor shower will have its pre-dawn peak on the 21st. Alas, the 3rd Quarter Moon will interfere.

Mars is the "star" this month, with its closest approach on the 30th at which time it will present an angular size of 20.2 arcseconds. Its South Pole will be tipped 14° toward Earth allowing for great views of the polar cap.

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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 to learn more about PAS. All photos by Dan Heim unless otherwise noted.