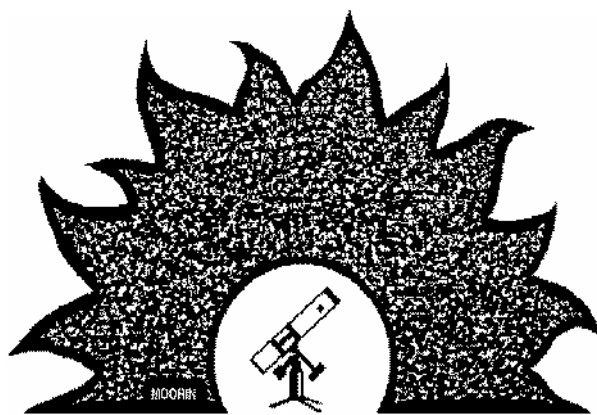




PAStimes

Phoenix Astronomical Society
www.pasaz.org

August 2007 Summer Edition
Volume 59 Issue 10

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948



Tones from the Deep

by Patrick Barry and Tony Phillips

Now is an exciting time for space enthusiasts. In the history of the Space Age, there have never been so many missions "out there" at once. NASA has, e.g., robots on Mars, satellites orbiting Mars, a spacecraft circling Saturn, probes en route to Pluto and Mercury—and four spacecraft, the Voyagers and Pioneers, are exiting the solar system altogether.

It's wonderful, but it is also creating a challenge.

The Deep Space Network that NASA uses to communicate with distant probes is becoming overtaxed. Status reports and data transmissions are coming in from all over the solar system—and there's only so much time to listen. Expanding the network would be expensive, so it would be nice if these probes could learn to communicate with greater brevity. But how?

Solving problems like this is why NASA created the New

Millennium Program (NMP). The goal of NMP is to flight-test experimental hardware and software for future space missions. In 1998, for instance, NMP launched an experimental spacecraft called Deep Space 1 that carried a suite of new technologies, including a new kind of communication system known as Beacon Monitor.

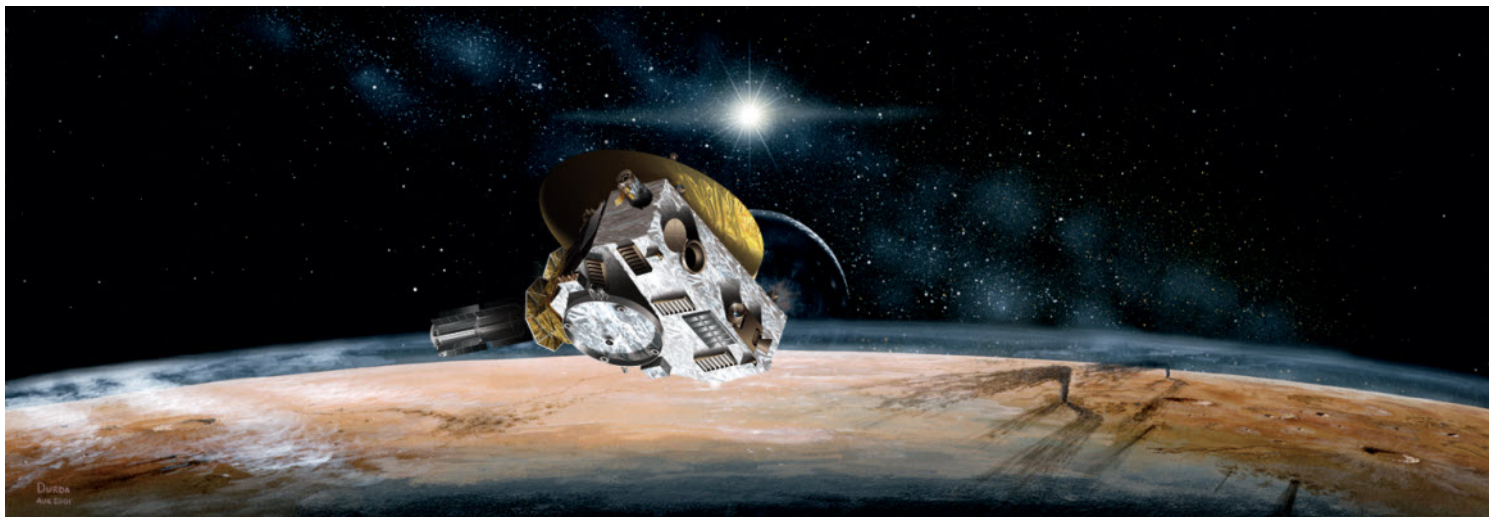
The system leverages the fact that for most of a probe's long voyage to a distant planet or asteroid or comet, it's not doing very much. There's little to report. During that time, mission scientists usually only need to know whether the spacecraft is in good health.

"If you don't need to transmit a full data stream, if you only need some basic state information, then you can use a much simpler transmission system," notes Henry Hotz, an engineer at NASA's Jet Propulsion Laboratory who worked on Beacon Monitor for Deep Space 1. So instead of beaming back complete data about the

spacecraft's operation, Beacon Monitor uses sophisticated software in the probe's onboard computer to boil that data down to a single "diagnosis." It then uses a low-power antenna to transmit that diagnosis as one of four simple radio tones, signifying "all clear," "need some attention whenever you can," "need attention soon," or "I'm in big trouble—need attention right now!"

These simple tones are much easier to detect from Earth than complex data streams, so the mission needs far less of the network's valuable time and bandwidth, Hotz says. After being tested on Deep Space 1, Beacon Monitor was approved for the New Horizons mission, which is currently on its way to Pluto, beaming back a simple beacon as it goes.

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



This artist's concept shows the New Horizons spacecraft during its planned encounter with Pluto and its moon, Charon. The spacecraft is currently using the beacon monitor system on its way to Pluto. Credit: Johns Hopkins University Applied Physics Laboratory/Southwest

Meeting of the Minds 6/28 Review

Text and photos by Terri, V.P.

The meeting started late because we were enjoying some good socializing. But, once started, Terri had put the list on the board, and Rod took over as president and ran the meeting. Rod did a spectacular job! We all congratulated him at the end of the meeting. Awesome! Thank you Rod!

We talked about several things. Here is a brief review. Matt thought it would be good to have a summer newsletter, and it was decided that the outgoing editor would do a last newsletter end of June, while the

new incoming editor then does the September issue, end of August. This was agreed upon, so Don is still editor for next year, he gets to do both. This will cut down on all the stuff that has to go into the newsletter in September.

The Sky Atlas's were passed out to those who attended. The change for those items will be given out as I see you. Yes, Terri forgot to bring the change. I feel rather silly but I do owe it to you and will get it to you. So, if you didn't get your atlas, the next several times we get together as a club or at some event, just remind me the day before to bring it with me.

So far, Sam, Don and Steve P picked up theirs. Come get yours, sometime soon.

Barbara introduced us to a 50 % off offer Deep Space Mysteries for 6.50, get in touch with Barbara to order it, 2008 wall calendar. Retail for 12.95, our club is 50%, cost is 6.50 and freight is covered by them. Just 6.50, order it today. The deadline to place this order is Sept 30th.

We talked about a letter from the Night Sky Network thanking us for our help with the Tool Kits, and giving us Solar Viewing Glasses and APS Suns to give out at future star parties. We passed out the suns and solar balls.

We talked about Astronomy Magazine essay contest. Barbara is working on it and wants ideas. We have to get it done by July 14th. If we win, we get \$2500 to put towards future stuff. We would love your thoughts. Contact Barbara about that.

Steve P brought up the idea for summer meetings, again it was shot down. It just doesn't work for PAS. We would rather put



our extra time to other star parties and outreach things than the 1 meeting a month.

Mike talked about his lectures, there are 2 more this summer. See the schedule for the dates, in July and August.

And we talked about removing some officer positions, and dissolved the Facilities Director position. Afterwards we had about an hour to socialize, and had a good time.

Rod was excellent! The meeting was a great success and everyone seemed to enjoy it. Hope you attend the next one, we always have a good time. ***



Equipment Testing Committee

By Terri, VP

Have you wanted to be a part of PAS where you aren't out front, like an Officer position, but rather in the background, but doing something important for the club and possibly the astronomical community? Well, we have just what you are looking for. You must be a current PAS member to be involved in the Equipment Testing Committee and you must sign up for it by contacting Terri (Acting President till August and then Vice Prez and Events Coordinator for next 2 years).

What do we do? I've contacted a bunch of companies. I've asked them if they need a committee of amateur astronomers to test their products. In exchange,

we will each write a review of what we thought of the product, send it to the company, and include it on line with their website address as a link within our site. This can be a fun group. Our first item for testing was received on June 11th. It was a Green Laser from Laser Glow.

If you sign up for this TEAM, you will be notified of when and where we are testing the item. We will test it at several star parties before writing our reviews. If you do not have email access, I will notify you by phone.

After we test it a few times at various star party locations, we will then put it up for auction at a PAS meeting. PAS gets

the proceeds. Watch in the newsletter for announcements of what we are auctioning off that month. We can only auction after we have tested the item to our satisfaction such that we can write an extensive review of the item.

So, to be part of this Committee, you must be a PAS member and you must be able to write a review to send to the company after you've experience the item. You do not have to have Internet access because I can email off your review for you, if needed, but you have to write it. I'm only going to pass it along, as written, to the company.

Thanks for being part of this NEW PAS TEAM. ***

Star Party at Two Trees on June 16, 2007

By Barbara Hartman

We arrived about a half hour after sunset. Plenty of light left to set up and greet my fellow stargazers by. Quite a few people were there doing astrophotography. JD, of the Sirius Lookers club was the first to come over and say hi. He remembered me from the Messier Marathon. The temperature was comfortable and the evening held much promise. My telrad broke a thumb screw so I used someone's duct tape to hold it on. It took me forever to get polar aligned and it was torture being on my knees, but finally I did it. Full darkness was settling in as the lovely crescent moon slipped behind the mountains.

I only found 3 of my Caldwell objects, but what awesome objects they were. Caldwell 26, The Silver Needle Galaxy (NGC 4244) is a long thin sliver of light that almost filled the field of view at 133x. A lovely edge on galaxy with a slight bulge off center. C 12 (NGC 6946) and NGC 6939, both fit in the

same low power field of view. NGC 6939 reminded me of a tiny Wild Duck cluster (M11). Though diminutive it has roughly the same V shape. C12 is a large faint mixed spiral galaxy. I could see the central hub quite easily and after much staring and some deep breaths (sending oxygen to your eyes while viewing helps a lot), I convinced myself that I could just barely make out the huge faint spiral arms. I had taken breaks now and then through the night to view some old favorites too, the Trifid, the Lagoon, the Ring, the Latch Handle Galaxy (NGC 3718) in Ursa Major. I never noticed that other galaxy near it before. It was a good night. I also went over to check out what the others were doing. JD was trying to find VZ13 LINEAR a 12th magnitude comet.

The very best object, though, was The Cocoon Nebula, C 19 (IC 5146). Which lies between Cygnus and Lacerta in a nebula rich area. I had no trouble finding it, just a bit with seeing it. The best view was at 46x with the OIII filter.

It was merely a few fairly bright stars with a very faint "mist" about them. It was large, but the really cool thing about this object is that it sits in a mote of darkness. This dark nebula is called Bernard 168. I had never seen a dark nebula before. The dark "stream" goes on for nearly 2 degrees. I followed it from the Cocoon to it's end and back again. There in a sea of tiny background stars was this lane of darkness that pooled around these few brighter stars with faint nebulosity. What an awesome object. But when I saw the bright red "star" rising I knew my night would soon to be over, because it was Mars and the sun was close behind it. I got a few last looks in, the Helix Nebula, M4, M80 and Jupiter low on the horizon. Then it was over, the last stargazer left. I woke Scotty up and we went to Denny's in Cottonwood for breakfast. It was a fabulous night, wish you could have been there.

Machan School Star Party 5/28 Review

By Steve Palmer

The star party at Machan school went rather well last night, sorry you missed it. The teacher (Hope) was well organized, plenty of parents and the was a good attempt to regulate the

flow of students. It got a little crowded a few times, but the kids quickly became patient and waited their turns. We had five scopes setup, (I bought my Orion 4.5" Short Tube Reflector &

a table for the ETX90-EC (for the smaller kids, lower viewing angle). There were kids & adults of all age groups and everyone was very excited and seemed to enjoy the event.

PVCC Star Party 6/21 Review

Text and photos by Terri, V.P.

With 83 people, including teachers and telescope operators, and 5 telescopes, we had a very successful star party at PVCC on the Summer Solstice. We viewed Saturn, Jupiter, Venus, the Moon and much more. It was a huge success and the volunteers were awesome. Chris joined PAS. He had just received, that day, his brand new scope. He didn't have time to set it up at home so brought it to the star party and found out that doing it at home would definitely be a better idea. He has a 12" Dob. I can't wait to check it out. So, he didn't get to put it together that night but we appreciate him being there with us. Great success, great fun, and I think everyone enjoyed it.



Calendar For August

No Changes for August, except that Adult's Night Out at the Arizona Science might be cancelled. Please call Terri Finch for details. Please see Summer Calendar included in the May issue for details on other August events.



Star Party At Black Canyon City June 9 2007

Text by Barbara photos by Igor Abitinoff

We had quite the crowd at this one. Frank and Mike came out with Frank's 16 inch kit scope. Chet, Don, Rod and Sue were all there (pretty much regulars at these). Dave O. and his two kids were there. Frank with his 80mm spotting scope and his son with a 10" Dobsonian push-to scope. A new member joined that night, Roger Rohback, he was using a refractor scope. There was a very nice couple from Vermont, it was a pleasure meeting them, Patty and Igor Zbitnoff. Igor got a pretty good picture of a half phase Venus, not bad for a spur of the moment first try, hand holding the camera

to the eyepiece. But the highlight (for me anyway) was Chris Johnson and his camera set up. He and the two fellas with him had it all, the nice digital camera with an array of lenses, the laptop and who knows what else that I couldn't see in the darkness. Some of us crowded around the back of his vehicle to get a look at his pictures as soon as the exposure was done – boom – the picture appeared on the screen. Rod was helping point the camera to some of the most populated areas of the sky around the Sagittarius/Scorpius border and also up into Hercules where the bright and beautiful M13 resides. We could just make out the lagoon nebula and M24 the Sagittarius Cloud in the one image and M13 in the other. It was hard to recognize the constellations in the photos as the camera picked up so many more stars than your

Received in email form Igor Zbitnoff

Patty and I appreciated the hospitality and experience last Saturday at High Desert Park. One of the things that I've been intending to see are phases of Venus. After all Galileo



apparently got to thinking, after comparing what he saw with respect to phases of Venus to the Ptolemaic model, that our solar system was heliocentric, not geocentric. I'm quite willing to follow in his footsteps and see what insight I get. Thanks to our visit I was able to follow in one of his footsteps.

I also got lucky. I pointed my camera at an eyepiece of one of the pieces of equipment set up, pushed the button and got this image of Venus. My best astrophotography by far. I wasn't so lucky on three other images. Better luck next time I guess. For the record my camera recorded that the picture was taken on 6/9/07 at 7:51:40 CST.



City of Phoenix WOW Program Wonderful Outdoor World June 29, 2007

By Rod Sutter

The City of Phoenix, and the Phoenix Astronomical Society put on an event for their annual kids camp. We started the morning with a Power Point Presentation called "How Big and How Far" presented by Rod Sutter. Trying to give the kids and idea of the size of our worlds. After the presentation we took some questions and then head-

ed to the parking lot for a view of the Sun thru our telescopes. We had Jeff Hopkins with his Meade reflector with a sun filter. Barbara Hartman had her 25x100 binoculars and sun filters. Chet Schuler brought out his home made spectrograph, the kids thought that was really cool looking at the different bands of the sun. Rod Sutter had

his Coronado PST sun scope, showing the kids what the sun looked like in Ha. The temperature started heating up real fast, it was over 101°, when we ended our viewing at around 10:00 am. We would like to thank the Park Rangers at The North Mountain Visitor Center for helping us with the presentation and viewing.



Sunset Ridge Elementary School Star Party Review 5/18

Text and photos by Terri,
Events Coordinator

It was a wonderful star party. We had many interested folks attend. Paul Strauss, 8th Grade Science Teacher, was our contact at the school. What an awesome time we had. The volunteers: Rod Sutter, Don Boyd, and Barbara Hartman started out with Solar viewing. The rest of us were setting up while the Solar Viewing was happening. We had the assistance of Jane von Schilling, a new PAS member who lives in Anthem. Jane helped by getting the handouts into people's hands. We really appreciated that! The handout we were passing out was a Star Chart for May so that once we leave from that star party, the attendees will have the star chart in hand to view the heavens without us in the future. Thank you Jane for your assistance! Bruce Wurst brought his brand new 20" telescope

along to try out at this star party. His scope was the attraction for the night. It was the first time Bruce has done a school star party with PAS and his scope was very impressive. Bette & Ed Wurst assisted by using an electronic game they had gotten me in a garage sale, having the kids try to answer the questions, and after answering, they got a PAS bookmark. The younger kids seemed to like that. Ed had a line of kids waiting to play the game. I had a table of handouts and activities I was working with all night. Our activity for that night was the Space Safari Treasure Hunt. We had trouble finding a few of the items because the location of the star party wasn't super dark, however, we got all the items on the list by the end of the night and it was a star party that everyone who attended and stayed to the end, really enjoyed. We had a few die hard observers (kids from the school and some adults) who really stuck it out and the kids won their Treasure Hunt prizes. They really stayed until the very end and I showed them we appreciated that by giving them some really awesome prizes to take with them like lithographs, and card games, and posters, etc. I wish to thank Paul, the wonderful teacher who set this up with us (his review is below) for not only inviting us but also springing for the pizza that we all enjoyed. There was pizza and drinks available

and we had a blast. The weather for the night was awesome! Couldn't have been better, no clouds, and only a little wind at first, but that went away shortly after we got started. Thanks, too, to Chet and Jewel for attending with his scope. PAS thanks Sunset Ridge for the opportunity to enjoy the night sky with a wonderful group of Teachers, Parents and Kids from that school.

From Paul Strauss:

Paul writes:

Terri,

Sorry it has taken me so long to get back to you but as you can imagine, the last week of school is always quite the stressful place.

I cannot begin to thank you enough for everything your group did with this



event. As I mentioned, I was kind of thrust into the middle of this in the 11th hour but I have to say that I had a BLAST!! And I have talked to many of the kids who went and they pretty much all told me that they originally were only planning on dropping by and then leaving and found that they could not pull themselves away (and for teenagers that is a HUGE compliment!).

I definitely want to do this again but it will not be until roughly the same time next year as that is when astronomy is covered. I will pass on your contact information to the new 7th grade teacher.

Again, thank you so much for your professionalism, patience and great attitude with the kids. I am attaching a couple of shots that I took of the night.

Paul



Next Bookman's Telescope Class August 12

The Most Fun You'll Have on a Sunday Afternoon.

Did you miss the last several Telescope Classes at Bookman's? Then, we expect to see you at the next one. This newsletter will go out just after the closest Bookman's class 7/8, however, the one you do not want to miss is the one after that which will be a **MAJORLY FUN EVENT!** Bring everyone you know, RSVP today and join us for **FILTERS AND FINDERS**. Bring with you your filters, finders and eyepieces for a discussion, show and tell, and more on 8/12! We will also be discussing Telescopes & helping those in need, too, but our main focus will be on the topic mentioned above. Everyone is welcome. If kids are joining us, please let me know. I've put together a **KIDS CORNER**, where there are activities and coloring pages for all ages to work on while the parents are enjoying the expertise of our club members. You won't want to miss this

event. RSVP goes to Terri 602-561-5398 or Events@pasaz.org. We will see you there! We expect a big turnout and are limited on seating, so RSVP early to reserve a seat for yourself. I believe there are 12 seats available. Some of which will be for the volunteers. Get your reservation in early. It will be loads of fun and just what you want to do from 3pm to 6:30pm on a Sunday afternoon. ***



The Hunt For Comet VZ13 LINEAR

By Barbara Hartman

I'd just about given up on seeing this comet at it's best. I had hoped to view it at the 3rd quarter moon star party on July 7th, but that was canceled due to the threat of thunderstorms. As it turned out the storm blew through raising a lot of dust and left the clouds. Bummer, ever hopeful I checked each night for clear skies, even just an opening to the north would be all I needed. But no - solid clouds each night. I had basically given up

the vigil, then last night (7/12) I went out to get my clothes off the line before going to bed because they said it would probably rain during the night. Lo and behold the sky was clear. Well forget the clothes, then, I'm going see a comet. Five minutes later I was outside aligning the finder scope on my 30 by 80 binoculars. I thought I would test the night and try to split Polaris. Nope, not

quite that good! I swung over to M51. The soft glows popped into view, nice! Just to practice and get myself ready for the possibility of the comet being faint, I searched out M109 in Ursa Major, couldn't see it. Maybe the nearby star was too bright. I searched out and found M108 and M97, ah yes. I could see them. Okay now I was ready to try for the comet, it was listed as 9.8, but you know how extended objects can look much fainter than what they're listed as. I panned over to Draco and hopped off from Edasich or Iota Draconis. Well I see a fuzzy, but shouldn't it be brighter? I looked at the custom star charts I'd printed from MegaStar 5, I made one that showed the field of view. There was a slightly arched line of 3 pretty bright stars to the upper left and a trapezium shape just above where the comet should be. I aimed again, going in a line from Alkaid in Ursa Major to Edasich and

looked for these shapes in the stars. Whoa, there it was! A much bigger and brighter fuzz ball than I had expected. It had to be the comet. Yep there was the arc of stars and the trapezium. The chart also showed two galaxies in the field of view both between 11 and 12th magnitude. After consulting the charts again, I searched the field of view. There, with averted vision I glimpsed a thin needle of soft light, that's the edge on galaxy. The other should be below and to the left of the comet. Just above a little hook of about 5 stars. Yes, I see it! What a lovely sight. The comet as the center with a tiny shaft of a galaxy above and to the left and another smaller round one below to the left, with a nice sprinkling of 9 to 12th magnitude stars all around. In fact 2 faint stars flanked the comet just barley inside it's soft outer glow. What a treat!

Full Moon Star Party 6/30 Review

By Terri, VP

It was a warm night, it started out very different than expected (Doesn't this sound like a fictional novel?). Don was first to arrive in the spot on the map marked X. We pulled in after him and told him, let's scout out the spot Steve showed us here at the Paradise Valley Park. So, we drove over and checked it out, and liked it better. Thanks Steve! So, then Rod arrived at the X. I called him (good thing we all have cell phones), and told him we moved to Steve's selection. He joined us and then I called Steve to let him know. All 4 of us parked our cars in a line down one side of the parking area to block cars from getting near our scopes. It was 7pm when this started, and soon, before we knew it was 8pm. Someone stopped to see what we were doing. He had noticed the really awesome large sign Rod had made and was sitting at the front of the vehicles. He had a dog and was very friendly. He stayed for a moment

and then went off to get his wife. While he was gone we got the rest of the stuff set up. Steve had 2 scopes and binocs set up, Don had his new scope, Rod had a small scope and I brought handouts and my Astroscan. My thought was, who needs a bigger scope because you are just looking at the moon. Well, I think I would have been better off with the Doctor, but the Astroscan did ok. This was only the third time Astroscan had been out to see the stars.

So, that gentleman and his wife hung around most of the night, and another gentleman and name was Don and his daughter was Trisha) stopped by to join us. Trisha was the only kid there all night, so she was spoiled. We found the items on the moon to show her. I believe she saw 4 features of the moon. We have 8 features on our Moon treasure hunt. But it was getting late, 9:30 and they wanted to leave, so we made sure they saw the planets and the features on the

moon and I awarded her 3 things for prizes for doing our Treasure Hunt.

The temperature was good for the evening, once the sun went down. The breeze was annoying at first but died down as the night went on. The people were great. There were quite a few others who didn't seem to come any farther than over by Rod. the order of the cars/scopes was Rod and the Don, then me with the PAS handouts, and then Steve. It was a fun night and I appreciate everyone who attended and everyone who volunteered. Afterwards we ended up going to 5 & Diner for a snack and were there till they closed at midnight, then stood outside the place with some great conversation till 1:30.

If you missed the Full Moon Star Party, you might want to attend the next one in October. Please see the flyer on line for more details, the map, and directions. ***

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 Editor who will forward them to the Treasurer.

Don Boyd PASTimes Editor
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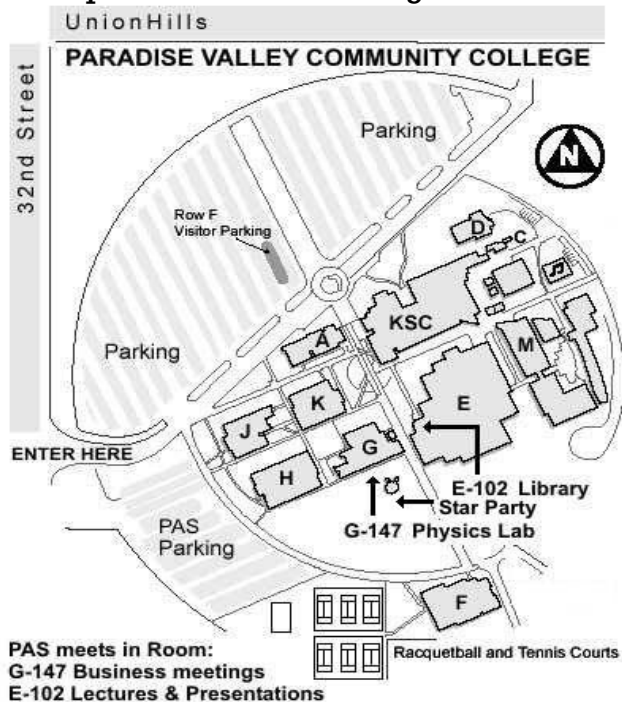
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Upcoming PAS Meetings

September 6th: Tony LaConte "Treasures of the Summer Triangle"
October 4th: Melissa Morris, ASU "Indirect Detection of Water in Forming Planetary Systems"
November 1st: Ross Tucker JPL SSA "Planetary Exploration"

Map to PAS Meeting Location



August 15 2007

Sunrise: 5:49

Sunset: 7:09



Full: July 30



Q3: August 5



New: August 13



Q1: August 21

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

Astro Events

August 3: Venus 6° south of Regulus

August 7: Mars 6° south of the Moon

August 11/12: Perseid meteor shower

August 18: Moon at apogee

August 28: Total Lunar eclipse