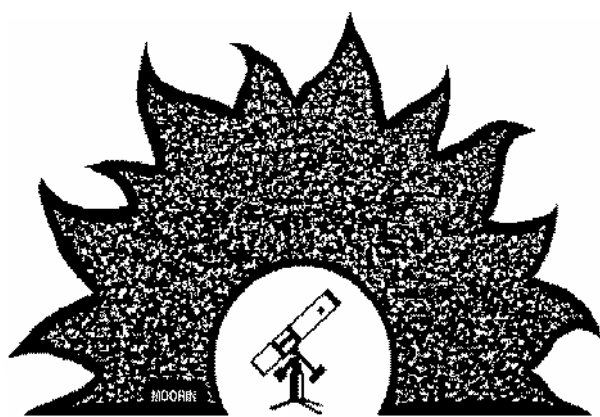




# PAStimes

Phoenix Astronomical Society  
[www.pasaz.org](http://www.pasaz.org)  
October 2008  
Volume 61 Issue 2

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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

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## Jeff Hopkins to speak at PAS Meeting October 2

Unlike last month...there will be a meeting this month. In an article later in this newsletter (see page 3) we explain why there was no meeting in September. The October meeting is at 7:00pm as usual. We hope everyone can make it this month.

Spectroscopy for Pre-Schoolers

By: Jeff Hopkins

Hopkins Phoenix Observatory.

Outline:

What is Light?

There are no White Photons.

What is Color?

Color is an Illusion.

Interactive Experiments with a Personal Spectroscope.

The Pickle Light.

What is Spectroscopy?

What can be learned?

Why Hydrogen Alpha?

BE Stars.

Epsilon Aurigae.

Jeff Hopkins resides on the West side of Phoenix with two backyard observatories. One is set up with a Celestron C-8 to do UVB photon counting photometry. The other is set up with a Meade 12" LX200GPS and Lhires III spectrograph for high resolution hydrogen alpha spectroscopy of epsilon Aurigae. Jeff has been doing photometry since the early 1980's, has over 3 dozen papers/books published and recently released his 4th book "Epsilon Aurigae A Mysterious Star System."

Copies of Jeff's new book "Epsilon Aurigae A Mysterious Star System" will be available. The book is soft cover and 287 pages.

Normal price is \$29.95 +S&H, but for

the meeting it will be \$25.00.

For more information see:

<http://www.hposoft.com/EAur09/Book.html>



Photo Courtesy Jeff Hopkins

<http://www.hposoft.com/Astro/astro.html>

## Mike's "Galaxies" Lecture of 8/31 Review

### Photos & Review by Terri

It was an interesting evening. It started with a decision... to go or not to go, due to the Rain that was supposed to happen. It never rained that night. Well, we decided to go. Don and Kevin rode up with William and I and we enjoyed the evening. Along the way up, as a last minute thought, we called Mike and asked if he wanted to do Bad Donkey for dinner. He and Stewart joined us. Later, before we left Bad Donkey, in downtown Carefree, John came along as well. Then we moved our party back to Mike's house. While Mike was setting up for the talk, wildlife was happening outside his window. Mike had told me that a few days prior the Quail had babies. So, I was there, with my camera, at the window

catching as many photos as I could of these awesome, cute little birds. There was a dove and one other unidentified bird also out there. I photographed everything that moved.

Then Mike was ready, so we all had a seat. Diane popped in shortly before Mike began and Frank and Tony joined us a few moments just before, as well. Mike did a brief review of his past 2 lectures and then went into the topic of Galaxies. This was very interesting. The info he shared was really awesome, informative, and he put together his slide show very well.

When it ended, about 3 hours later, quite a few of the Menza folk departed right away. A few of us stuck around and

snacked and talked. Diane was last to leave just before the 4 of us were ready to go. We got in the car, and no juice... the battery was dead. Mike found a way to get us going and off we went, back home.

I do want to thank Mike for an awesome presentation. I wanted to make it to the two previous ones, but couldn't due to other situations. I made this one and plan to make the next one, which is the last in the series, on Sept 27, Galactic Evolution. You won't want to miss this one. Remember to RSVP your attendance with Mike so he knows you are coming and can make sure to have enough seating for everyone.

Please see 26 photos of this event at this link: <http://tinyurl.com/6lb54f> \*\*\*

# Slooh Adventure

By Leah Sapir  
Photos courtesy Slooh

A few years ago, I saw an interesting item in one of Terri's astronomy digests: a company in New York had built a completely robotic observatory on a dark mountaintop in the Canary Islands, equipped with two 14-inch SCT's, two refractors, and SBIG CCD's to record the results. The company's name was Slooh, and full details were available on their web-site [www.slooh.com](http://www.slooh.com).

One SCT and refractor were dedicated to "editor missions" – a list of several hundred standard objects visible at each time and date – and the other SCT and refractor were used for "member missions" (also called "solos") – objects chosen individually by subscribers to the service. An annual subscription was \$49 and included unlimited viewing of all editor missions and member missions, and the ability to choose the target of ten member missions per year.

Pictures of all objects viewed could be saved and downloaded to your computer as JPEG's. Each mission was 5-10 minutes long, enabling the viewing of hundreds of objects each night; and due to the time difference (time in the Canary Islands is 7 hours later than Phoenix time) you didn't even have to stay up all night to do it! The first week was a free sample: your credit card would not be charged if you cancelled within the first week.

Now, admittedly, a 14" scope isn't huge, but it has more than five times the light-collecting power of my 6" reflector. And since my own scope has a Dobsonian mount, it can't do astrophotography. So I felt that \$49 wasn't a lot to risk for higher power and the ability to do astrophotography. And with the first week free, I wasn't even risking that.

It was the best \$49 I've ever spent. At the end of the year, I had no hesitation renewing my subscription. Soon after that, Version 2 was introduced, with unlimited solos for each member. Version 3 will be released in the coming weeks, and will allow control of additional locations.

With Slooh, I've been able to see objects that are way too faint and distant to see with my own scope, and I've been able to see amazing detail in the "common" objects too. For example, M51 and most other Messier galaxies are invisible from my backyard (the only visible one being

M31 of course). Even when I spend time driving out to a dark sky site like Black Canyon City or the Grand Canyon, I can see these galaxies as only faint smudges. In Slooh I can see details of dust lanes and HII regions in the spiral arms where star formation is taking place. If you would have told me three or four years ago that I'd be able to view and photograph emissions nebulae in other galaxies, or galaxy clusters a quarter billion light years away, I'd never have believed it. And that's not all. The nebulae in our own galaxy – emissions, reflections, planetary nebulae and even dark nebulae – are a special treat on Slooh, each one a unique and lovely pattern of shape and color. In my own scope, all deep sky objects (when they are even visible) look pretty much the same, whether they are nebulae, globular clusters, or distant galaxies. In Slooh, I've learned to recognize and distinguish dozens of deep sky objects by name – as in "look! isn't NGC 253 looking pretty tonight?"

Slooh also features a forum and chat room that turn Slooh viewing into a star party every night. In addition, there are "radio" broadcasts over the Internet, some presented by professionals (such as Bob Berman and Phil Harrington of Astronomy magazine) and some presented by ordinary Slooh members. The radio hosts talk about the objects being viewed, and respond on the air to questions in the chat room during the broadcast.

One thing people sometimes ask is, how does everyone get a chance to schedule solos when every member has unlimited solos? Actually it's not a problem. Each member can have up to six solos on the schedule at any given time. After these missions have run, you can schedule another six. Slots might not be available immediately (i.e. "tonight"), but are usually available for the following night and after. The reason for this easy availability is that not every member schedules solos every night. There is plenty to see, even if you just watch editor missions and other people's solos. Therefore, many of the members schedule solos only occasionally, and even the active members will usually schedule solos just from time to time, if there is a specific object that they want to image. The rest of the time they enjoy watching whatever is "on".

Does Slooh viewing replace outdoor observing with your own scope? Of course not. But think of it as an extra tool. Most

amateur astronomers have one or more telescopes, binoculars, and several different eyepieces, and they use each tool for the appropriate job. If you have a hammer in your toolbox, does that mean that you should never use a screwdriver or wrench as needed?

Many Slooh members have their own scopes and do outdoor observing as well. But since most people don't have really dark skies in their backyard, Slooh is a useful additional tool. It's available at the flick of a switch, even on week nights, without having to travel to a dark sky site. And you don't have to stand outside in the heat or cold, or battle mosquitoes!

And what about quality? Are 5-minute Slooh pictures equal in quality to pictures taken with a personal investment in thousands of dollars of equipment, using hours of imaging at a dark-sky site for each object, plus hours of stacking and post-imaging adjustment afterwards? Well, Slooh isn't seriously competing with the Hubble Space Telescope. But for the quantity of images that Slooh provides, and at a reasonable price, the quality of Slooh images is fantastic. Even a "wide field" Slooh image shows much more than the highest power on my own scope. And here are a few examples of high-mag views:

The Ring Nebula M57 (notice details in the outer shell):

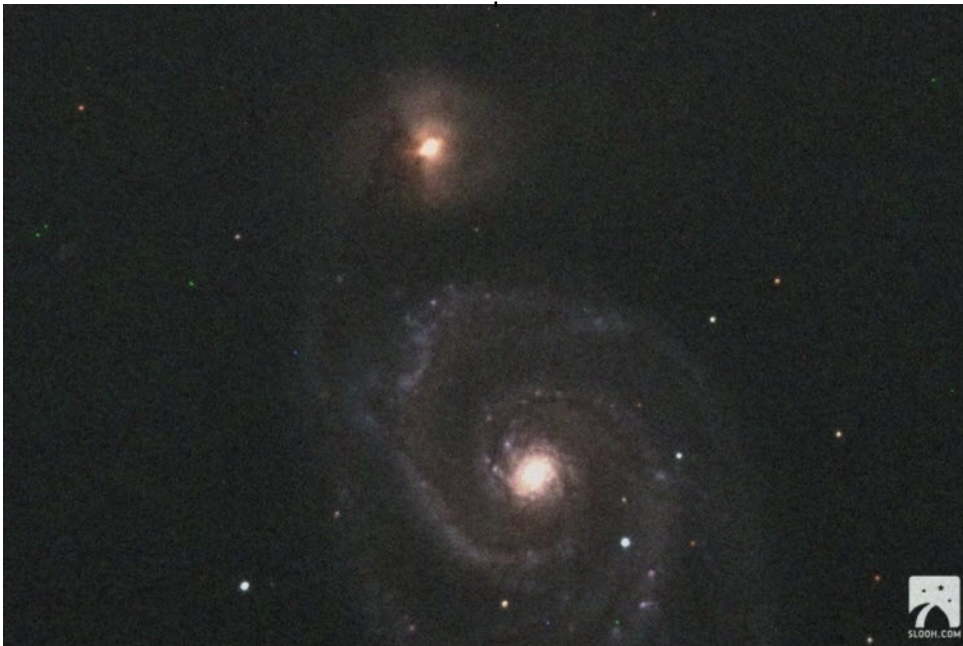


# Slooh Adventure

The Running Man Nebula NGC 1777  
(just north of the Orion Nebula):



The Whirlpool Galaxy M51 with NGC 5195:



Visit [www.myslooh.com](http://www.myslooh.com) to see many more samples of images snapped by Slooh members.

How does Slooh compare to the free website

APOD (<http://antwrp.gsfc.nasa.gov/apod/>)? The pictures on APOD are certainly beautiful, and I recommend to all astronomy fans to read APOD every day. But they're "coffee table pictures". You get just one picture a day, each one photographed under different conditions, sometimes even using false color. You can't compare one picture to another. With Slooh, you're on a first-name basis with dozens of deep sky objects. You don't get that with APOD.

In the near future, Slooh will be opening an additional observatory in Chile, and adding a 20" scope to the observatory in the Canary Islands. (I don't know about you,

but a 20" scope is much larger than any scope I could buy – or lift, even if I could buy it! And the southern hemisphere would be a really long drive for me on a Saturday night.)

My astronomy experience took a quantum leap forward when I joined Slooh.

## September's PAS Meeting

PAS would like to apologize for the lack of the September PAS meeting. In order for PAS to meet on the PVCC Campus, we have to get approval for the events we hold in that location. Previously, Ed Rosenthal took care of that for us. However, he no longer works at PVCC. So, this year, our Liaison is Dave Hellman. Rod and I were informed in mid August that we needed to meet with Dave & those from PVCC & present to them the schedule of PAS on PVCC Campus events. Along with that, we also needed to provide proof of insurance. So, we gathered the paperwork, Mike provided the insurance papers, Terri provided the proposed schedule of events, and Rod went down to PVCC to talk to Dave & PVCC personnel. It was accepted but not approved. Next it had to go to the President of PVCC's desk for which it sat for a little longer than we had anticipated, & right through our scheduled September PAS meeting. Then, finally, shortly after that meeting, we got the approval on Sept 12th to have our events on the campus. So, that is why, in case you were curious, we did not have the August Meeting of the Minds, the September PAS meeting, and the PAS/PVCC Campus star party on 9/11. Now that we are approved, the rest of 2008 to Dec 2009 should not be a problem & our events should flow smoothly. We will see you at the next PAS event!!! \*\*\*

## PAS Meeting of the Minds

Next meeting Sept 25, 2008 G-147 7pm

Topics for this meeting are:

- \*10/23 Indoor event Volunteer plans
- \*Star Party – in case of bad weather – back up plan – Presentations – List

\* Photo Shoot: Cancel idea of group photo and go with space & telescope images?

\* Which Hubble images to use for the PAS Stickers?

\*11/1 Anthem star party volunteer plans – Day and Night events

\*11/15 Prescott 100 GS star party – Volunteer plans \*\*\*



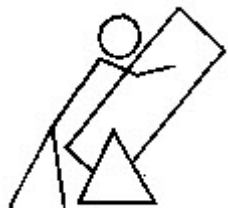
# Arizona Sky

By Leah Sapir

The summer triangle is still high in our western sky in October. Deneb, representing the tail of Cygnus the swan, is a little west of the zenith; about halfway down towards the horizon are Vega (in Lyra the harp) on the right and Altair (in Aquila the eagle) on the left. Halfway between Vega and Altair, and slightly above a line joining these two stars, is Alberio, a two-color double star that represents the swan's head. Alberio is a beautiful sight in a small telescope, with a 3<sup>rd</sup>-magnitude orange giant primary, and a 5<sup>th</sup>-magnitude blue companion. The pair are about 400 light years away.

Slightly to the left of Alberio is the constellation Vulpecula the fox, a modern constellation invented by the Polish astronomer Johannes Hevelius in 1690. Actually Hevelius imagined this as "Vulpecula cum Anser", the fox and the goose, but the only part of the goose left today is the star Alpha Vulpeculae, also known as Anser, about 3 degrees below/left of Alberio. Anser is a 4<sup>th</sup>-magnitude red giant star, about 300 light years away. In binoculars or a small telescope we can see another colorful star near Anser, the 6<sup>th</sup>-mag orange giant 8 Vulpeculae; but the two are just an optical binary. 8 Vulpeculae is about 500 light years away, almost twice as far as Anser.

If you imagine a line from Alberio to Anser, and continue for about 4 degrees past Anser, you come to another interesting binocular object, Collinder 399. This group of stars includes six stars in a straight row about 1.5 degrees long. Four more stars are arranged in a tiny arc a little left of the center of this straight line. The group is nicknamed "The Coathanger" due to its resemblance to that useful household object. It's also known as "Brocchi's cluster", after Dalmiro Brocchi, who drew sky charts for AAVSO (The American Association of Variable Star Observers) in the 1920's. However, Brocchi wasn't the first one to notice this group; it was observed without a telescope in the year 964 by the Persian astronomer Al Sufi, who described it as a "little cloud".



We now know that this group of stars is an asterism (a star pattern) rather than an actual cluster. The stars of the coathanger

vary in distance from 200 to 1000 light years, and are apparently moving in different directions, which means that they aren't really related to each other. However, near the northern end of the coathanger is an actual cluster, NGC 6802, about 4000 light years away, visible in a telescope. This is a very old cluster, about a billion years old.

A little higher in the sky than the coathanger is M27, the Dumbbell Nebula, about 2/3 of the way from Deneb to Aquila. This is a large planetary nebula about a thousand light years away. Planetary nebulae are a late stage in a star's lifetime: after the star has finished fusing its hydrogen into helium and its helium into heavier atoms such as carbon, oxygen, and nitrogen, the star's outer layers begin to expand. First it becomes a red giant, then the star's core contracts while the star's outer layers continue to expand and form a shell of gas around the dense core. Ultraviolet light from the star's core lights up the gas in this shell, and we see it as a planetary nebula. (The nebulae have nothing to do with planets; just the round shape of some planetary nebulae resembled the appearance of planets in early telescopes.)

M27 has a definitely bipolar shape. Besides its common name of "Dumbbell", it has also been compared to an apple core, a bowtie, or an hourglass. The current theory is that a solar wind from the aging star first created a dense ring of gas around the star's equator; and then a faster solar wind that appeared later, had more room to spread out at the poles where its expansion was not impeded by the already-existing ring.

It is interesting to compare M27 with another showpiece in that part of the sky: the Ring Nebula M57 in Lyra. M57 resembles a tiny smoke ring, contrasting with M27's bipolar shape. What could be the reason for the different shapes of the two nebulae, since both have a similar origin? Many planetary nebulae have a bipolar shape similar to M27; so this leads us to wonder whether M57 is really doughnut-shaped (as it appears) or spherical (and we are seeing just the edge), or barrel-shaped (and we are seeing it end-on); or maybe it is bipolar like M27, perhaps two connecting barrels that we are seeing end-on. The jury is still out on that question.

A little to the left of Vulpecula is Sagitta, the arrow. The four brightest stars

of this constellation are somewhat faint, all around 4<sup>th</sup> magnitude, but they form the recognizable shape of a tiny dart. Near the center of the arrow is M71, a globular cluster about 13,000 light years away.

For balance, there is another globular cluster on the right, too – M56, about halfway between Alberio and M57. M56 is much farther than M71, about 30,000 light years away. Since both appear around the same size (5 arc seconds) and the same brightness (8<sup>th</sup> magnitude), it means that M56 must be in reality much larger and brighter than M71. Both are visible in a small telescope, and maybe even as a faint spot in binoculars, in a dark sky.

A little further to the left from Vulpecula and Sagitta is another tiny constellation, Delphinus the dolphin. Four stars form a tiny diamond shape – the dolphin's body – and a fifth star below them forms the dolphin's tail. The two brightest stars are around mag 3.6, and are named Sualocin and Rotanev.

When these two names first appeared on a sky chart published by the Palermo Observatory in Italy in 1814, astronomers wondered what Greek or Arabic roots they might have come from. Most star names are based on Greek or Arabic names, but these two names didn't seem to resemble any known roots. The puzzle was solved when it was discovered that the director of the observatory, Giuseppe Piazzi, had a dedicated assistant named Niccolo Cacciato – a nice Italian name that could be translated as "Nicholas Hunter", or in Latin "Nicolaus Venator". Either Piazzi or maybe Niccolo himself, had written Niccolo's Latin name backwards on the sky charts.

This month Venus is still visible as a nice evening star till around 7:30 pm. Mars and Mercury are already fading into the sunset, but Mercury will reappear as a morning star by midmonth, rising about an hour before sunrise.

Jupiter will be high in the south at sunset, setting around 11 pm at the beginning of the month, and around 10 pm by the end of the month. Saturn is a morning star, rising earlier each day: around 4:30 am at the beginning of the month, and around 3 am by the end of the month.

Join us next month when we continue to explore the autumn constellations. And till then – wishing you clear skies, and happy observing!

# Some Light Humor

**Astronomy Joke 1:** It is reported that Copernicus' parents said the following to him at the age of twelve: "Copernicus, young man, when are you going to come to

terms with the fact that the world does not revolve around you."

**Astronomy Joke 2:** The Official Unabashed Scientific Dictionary defines black holes as what you get in black socks.

**Astronomy Joke 3:** "Whatever the missing mass of the universe is, I hope it's not in cockroaches." – a New York City tenant.

## Upcoming October PAS Events

by Terri, Events Coordinator

The month of October has some very interesting and fun events you may wish to attend. We even have a school event and 2 Paid star parties. RSVP where requested. We will see you there!

**Thu 10/2** - 7pm - 9:30pm PAS General Meeting with Guest Speaker: Jeff Hopkins. Jeff will be sharing the topic of Stellar Spectroscopy. This is a love of his and his enthusiasm will make you want to go out and enjoy this wonderful field within astronomy. Bring a Friend! Water will be provided but snacks are requested. The snack fund is low, so I will not be spending anything on snacks this month. Please donate to the snack fund for next month's meeting. Thanks.

**Sat 10/4** - 5pm to 9:30pm North Mountain Park Visitor Center Star Party - RSVP is required with Terri. This is a major event. The park service has advertised this heavily and we need as many telescopes there as we can get. We will be setting up in the circle area right in front of the Visitor Center. Parking will be on the opposite side of the V.C. in an area Allyson has reserved for the PAS Telescope TEAM. Snacks and drinks

will be provided by the park service. Your help is appreciated.

**Wed 10/8** - 6pm to 9pm Desert Cove Elementary School will have a star party from 6pm to 9pm for their 5th graders. I asked that the whole school attends so we may have more than just the 5th graders, siblings and parents attending. The location of the star party will be at Christy Cove Park which is at 24th street between Shea and Cholla. RSVP is with Rod and Volunteers are needed.

**Thu 10/9** 6pm - 10pm PVCC Star Party on the PVCC Campus by the Telescope Domes outside of G-147. RSVP attendance with Rod. Volunteers are needed.

**Wed 10/15** - Time: TBA - Paid Star Party. PAS Star Tours Telescope Operators (<http://pasaz.org/forums/downloads.php?do=file&id=85>) are urged to check the Private Calendar on line for info on this star party. Volunteers may still be needed. Details are still being worked out and RSVP is with Terri.

**Sat 10/17** - 5pm to 9:30pm - PAID star party. PAS Star Tours Telescope Operators are urged to check the Private Calendar on

line for info on this star party. Volunteers may still be needed. RSVP is with Terri.

**Thu 10/23** 7:30pm - 9:30pm - PAS/PVCC Indoor/Outdoor Astronomy Event. Volunteers are needed with ideas of what hands on activity you will be doing. Please Share that info at the Sept 25th Meeting of the Minds. PAS set up will be 7pm in G-147. Public arrives 7:30pm. Indoor event is Rain or Shine. Outdoor event is Weather Permitting. RSVP is with Terri.

**Sat 10/25** Sundown to ? - High Desert Park in Black Canyon City Star Party. RSVP is with Rod. No RSVP's cancels this event. Event is Weather Permitting. It should be an awesome star party. Come share the night sky with us!

**Thu 10/30** 7pm - 10pm - PAS Meeting of the Minds. This is the monthly PAS Business meeting. Please, no children. Bring ideas to share. If there aren't enough topics to make a worthwhile meeting, the meeting will be canceled. Everyone is welcome to attend to discuss the future of PAS. Please see flyer for this event, with topics at: (<http://pasaz.org/forums/downloads.php?do=file&id=60>). \*\*\*

## Prescott 100 Girl Scout Star Party 11/15

by Terri, Event Coordinator

Volunteers are needed! RSVP is with Terri for this event.

A Girl Scout troupe is having their Jamboree. This is similar to the event we did for the Mayer Girl Scouts in that they have a few things they need to accomplish at this star party. So, below I've made a list of what items they are seeking help with and thus, we need volunteers to provide this info to them.

The event is set for Nov 15 at a camp just outside of Prescott. The troupe will reimburse for gas, so do the same thing we did for the Mayer event: Collect your gas receipt from the trip up and back. Fill up your tank prior to leaving Phoenix and then fill again when you get back to Phoenix, and give the receipt to me with your name

on it so we know who to pay when we receive the check. They will also be providing dinner to those who arrive by 5pm. The drive up there is about 2 hours, so those attending should leave no later than 3pm to make it in time for dinner. Our event is scheduled from 7pm to 10pm. We need all the volunteers we can get with or without telescopes. Below is the list of what we wish to accomplish. When you volunteer, please tell me what topic you'd like to share with the group.

- \* Parts of the Telescope
- \* Meteorites (we hope Mike will attend this event)
- \* Stories about ancient cultures (share a story?)
- \* 5 Constellations & North Star (show

in sky or star chart - you decide)

\* Physics: Black Holes, Quasars, Pulsars, Novas, Super Nova, Dwarf Stars, Giant Stars, Proto stars, Neutron stars, variable stars, cosmic clouds, globular cluster.

\* Solar & lunar Eclipse

\* Beliefs - superstitions about the Sun & Moon

\* Careers in Space Program: Biomedical Engineering, Meteorology, Photography, Metallurgy, Chemistry, Optical Engineering.

Volunteers we have thus far are: Rod & Sue, Don, Maybe Matt, Maybe William & Terri. More volunteers are definitely needed. RSVP today. Come to next MOM to discuss the plans for this event. \*\*\*

# Extreme Starburst

A star is born. A star is born. A star is born. Repeat that phrase 4000 times and you start to get an idea what life is like in distant galaxy J100054+023436.

Astronomers using NASA's Spitzer Space Telescope and ground-based observatories have found that the galaxy gives birth to as many as 4000 stars a year. For comparison, in the same period of time the Milky Way produces only about 10. This makes J100054+023436 an extreme starburst galaxy.

"We call it the 'Baby Boom galaxy,'" says Peter Capak of NASA's Spitzer Science Center at the California Institute of Technology in Pasadena, CA. "It is undergoing a major baby boom, producing most of its stars all at once. If our human population was produced in a similar boom, then almost all people alive today would be the same age."

Capak is lead author of a paper entitled "Spectroscopic Confirmation of an Extreme Starburst at Redshift 4.547" detailing the

discovery in the July 10th issue of *Astrophysical Journal Letters*.

The galaxy appears to be a merger, a "train wreck" of two or more galaxies crashing together. The crash is what produces the baby boom. Clouds of interstellar gas within the two galaxies press against one another and collapse to form stars, dozens to hundreds at a time.

This isn't the first time astronomers have witnessed a galaxy producing so many stars. "There are some other extreme starburst galaxies in the local universe," says Capak. But the Baby Boom galaxy is special because it is not local. It lies about 12.3 billion light years from Earth, which means we are seeing it as it was 12.3 billion years ago. The universe itself is no older than 14 billion years, so this galaxy is just a youngster (Capak likens it to a 6-year-old human) previously thought to be incapable of such rapid-fire star production.

The Baby Boom galaxy poses a challenge to the Hierarchical Model of galaxy

evolution favored by many astronomers. According to the Hierarchical Model, galaxies grow by merging; Add two small galaxies together, and you get a bigger galaxy. In the early years of the universe, all galaxies were small, and they produced correspondingly small bursts of star formation when they merged. "Yet in J100054+023436, we see an extreme starburst. The merging galaxies must be pretty large."

Capak and colleagues are busy looking for more Baby Boomers "to see if this is a one-off case or a common occurrence." The theory of evolution of galaxies hangs in the balance.

Meanwhile... A star is born. A star is born. A star is born.

See more breathtaking Spitzer images at [www.spitzer.caltech.edu/Media/mediainages](http://www.spitzer.caltech.edu/Media/mediainages). Kids can play the new Spitzer "Sign Here!" game at [spaceplace.nasa.gov/en/kids/spitzer/signs](http://spaceplace.nasa.gov/en/kids/spitzer/signs).

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



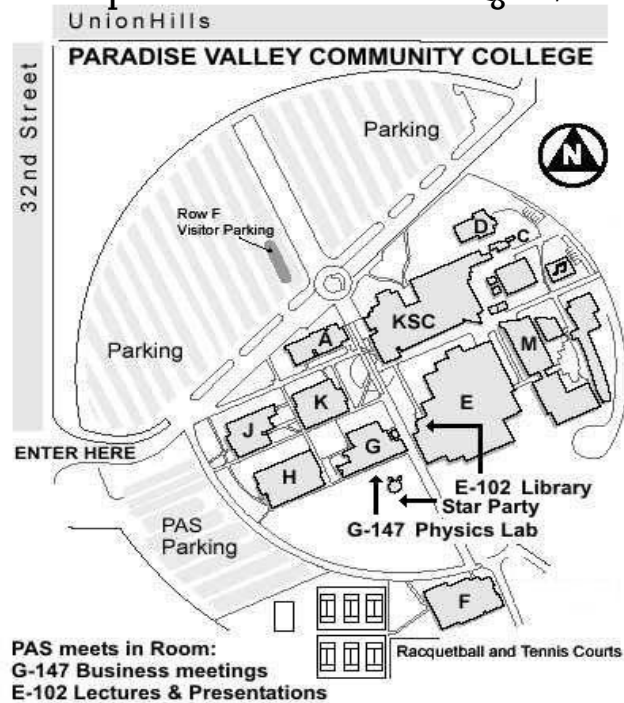
The "Baby Boom" galaxy loosely resembles the galaxy shown here, called Zw II 96, in this Hubble Space Telescope image. This galaxy is only 500 million light-years away, while the Baby Boom galaxy is 12.3 billion light-years away.

## JULES VERNE IS ABOUT TO BECOME A FIREBALL

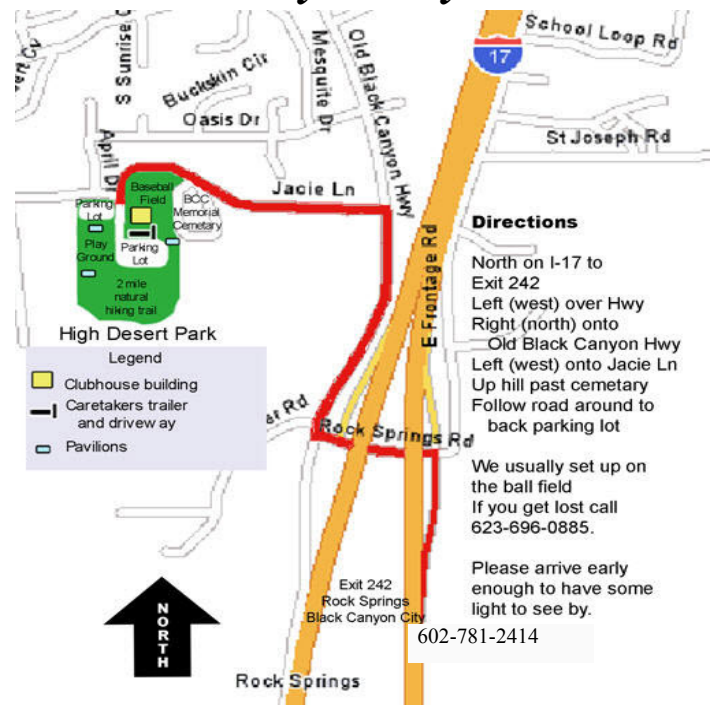
Received from Space Weather News  
<http://spaceweather.com>

**DOOMED SPACECRAFT:** Jules Verne is about to become a fireball. On Sept. 29th, with NASA aircraft looking on, the 22-ton European spacecraft will plunge into Earth's atmosphere over the south Pacific Ocean and harmlessly disintegrate. Jules Verne recently spent five months docked to the space station where it delivered supplies, used its engines help the station avoid a piece of space junk, and served as an impromptu bedroom for the ISS crew. Mission accomplished, the doomed spacecraft is now making its final orbits around Earth glowing about as brightly as Polaris (the North Star). US and European observers are favored with flybys this weekend. If you'd like to see Jules Verne, check the Simple Satellite Tracker for viewing times: <http://spaceweather.com/flybys/>. \*\*\*

# Map to PAS Meeting Location



# Black Canyon City Site



For More Information on events See Page 5

# October

| Sunday | Monday | Tuesday | Wednesday                                                           | Thursday                                         | Friday                                       | Saturday                                                  |
|--------|--------|---------|---------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------|-----------------------------------------------------------|
|        |        |         | 1                                                                   | 2 PAS General Monthly Meeting with Guest Speaker | 3                                            | 4 North Mountain Park VISITOR CENTER Star Party           |
| 5      | 6      | 7       | 8 Desert Cove Elementary School Star Party 10/8 - Volunteers Needed | 9 PVCC Star Party by Telescope Dome              | 10                                           | 11                                                        |
| 12     | 13     | 14      | 15 PAID Star Party - PAS Telescope TEAM only                        | 16                                               | 17 PAID Star Party - PAS Telescope TEAM only | 18                                                        |
| 19     | 20     | 21      | 22                                                                  | 23 PAS/PVCC Indoor/Outdoor Astronomy Event       | 24                                           | 25 3rd Quarter Moon Star Party at High Desert Park in BCC |
| 26     | 27     | 28      | 29                                                                  | 30 PAS MEETING OF THE MINDS (Business Meeting)   | 31                                           |                                                           |

Don Boyd PAStimes Editor  
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Chandler AZ 85225

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{MM:First Name} {MM:Last Name}  
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## What's Up For October?

By Rod Sutter, PAS President

### Planets

| Name    | Date    | Rise  | Set   |
|---------|---------|-------|-------|
| Mercury | 10-1-08 | 07:20 | 18:24 |
| Venus   | 10-1-08 | 08:50 | 19:35 |
| Mars    | 10-1-08 | 07:56 | 19:04 |
| Jupiter | 10-1-08 | 13:46 | 23:39 |
| Saturn  | 10-1-08 | 04:33 | 17:15 |
| Uranus  | 10-1-08 | 17:21 | 05:01 |
| Neptune | 10-1-08 | 15:56 | 02:41 |
| Pluto   | 10-1-08 | 12:24 | 22:52 |

All Times Arizona Time

October 1 2008

**Sunrise: 06:22**

**Sunset: 18:12**



**New: September 29**



**Q1: October 7**



**Full: October 14**



**Q3: October 21**

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