

Deadly Planets



Patrick L. Barry and Dr. Tony Phillips

About 900 light years from here, there's a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

Interested? Don't be. Going there would be the last thing you ever do. The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles.

"It would be like trying to live next to Chernobyl," says Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.

Our own sun emits small amounts of pulsar-like

X-rays and high energy particles, but the amount of such radiation coming from a pulsar is "orders of magnitude more," he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet's atmosphere, and even vaporize sand right off the planet's surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico's giant Arecibo radio telescope. At first, no one believed worlds could form around pulsars—it was too bizarre. Supernovas were supposed to destroy planets, not create them. Where did these worlds come from?

NASA's Spitzer Space Telescope may have found the solution. Last year, a group of astronomers led by Deepto Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

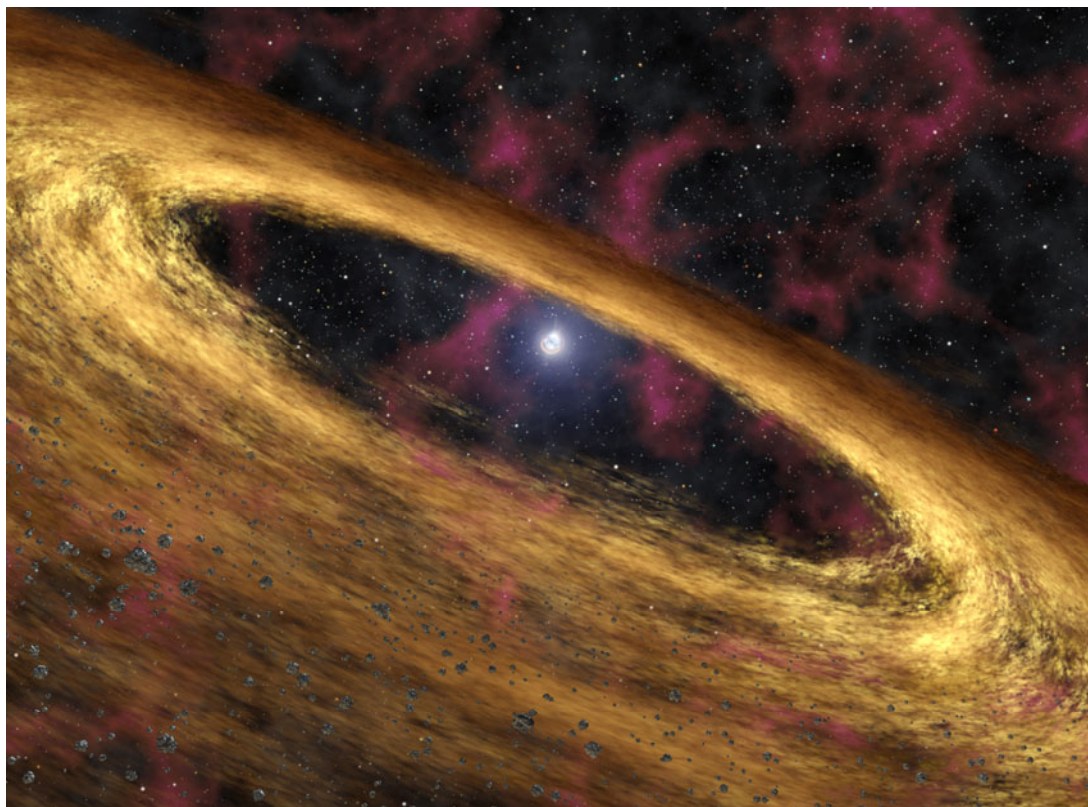
As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets' surfaces could be ionized by the incoming radiation, creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by

radiation particles as they curve in the pulsar's strong magnetic field.

Wasted beauty? Maybe. Beichman points out the positive: "It's an awful place to try and form planets, but if you can do it there, you can do it anywhere."

More news and images from Spitzer can be found at <http://www.spitzer.caltech.edu/>. In addition, The Space Place Web site features a cartoon talk show episode starring Michelle Thaller, a scientist on Spitzer. Go to <http://spaceplace.nasa.gov/en/kids/live/> for a great place to introduce kids to infrared and the joys of astronomy.

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



Artist's concept of a pulsar and surrounding disk of rubble called a "fallback" disk, out of which new planets could form.

How to Join the Delmarva Stargazers: Anyone with an interest in any aspect of astronomy is welcome

NAME _____

ADDRESS _____

CITY, STATE & ZIP _____

E-MAIL ADDRESS (If any) _____

Do you need the newsletter snail mailed to you (Y/N)? _____

Please attach a check for \$15 made payable to Delmarva Stargazers and mail to Kathy Sheldon, 20985 Fleatown Rd, Lincoln, DE 19960. Call club President Jerry Truitt at 410-885-3327 for more information.



We are pleased to announce our eleventh annual

No Frills Star Party

from Friday September 22nd through Tuesday the 26th 2006 at
Tuckahoe State Park near Queen Anne, MD.

The registration fee includes camping fee for the observing area, ALL NIGHT STARGAZER COFFEE, a Stargazer soup each night except Saturday when we'll host a fish fry. Sodas and hot dogs will be available at minimal cost. Campers will be permitted to park and set up by their scopes, but there are no hookups or electricity in the observation area.

All attendees are encouraged to register in advance for this event due to limited space and growing popularity of the No Frills Star Party. Your badges and entrance parking permit will be sent to you on receipt of payment.

NOTICE!

This year's No Frills will again be at the **Equestrian Center**

For details, visit:

<http://www.delmarvastargazers.org/archive/nofrills2006/index.html>

for a registration form, visit

<http://www.delmarvastargazers.org/archive/nofrills2006/NoFrillsReg06.pdf>

For more information call or e-mail:

Event Host: Keith Lohmeyer (410) 482-6744
Registrar: Joe Cain, Jr. (302) 998-4534

E-mail: kcl@dmv.com
E-mail: joecainjr@cs.com

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Solar System in September

Pj Riley

On the 22nd, The **Autumal Equinox** arrives, and you have equal day and night on **Terra ☉**. **Sol ☉** reaches an apparent Dec. of -23° as it crosses the equator. The Jewish year 5767 starts at sunset.

Mercury ♿ isn't easily observed this month, unless you travel to the southern hemisphere. **Venus ♀** will be lost to the glare of **Sol ☉** by the time we have 'No Frills'. **Mars ♂** is lost to twilight until Decembr!

Jupiter ♃ sets 2 hours after **Sol ☉**. **Saturn ♄** is just north of **Luna ☾** in dawn's early light on the 19th. **Luna ☾** will be dim (11%), so I know you can find **Saturn**. **Uranus ♅** is in opposition on the 5th, hanging out in Aquarius. **Neptune ♆** is in Capricornus. **Pluto ♇**, alas, is no longer a full fledged planet. Should we keep reporting on it? Email your thoughts to pjr127@juno.com. I'll publish the g-rated ones in a summary article. If you want to look for this minor planet, **Pluto ♇** is near Ophiuchus

(*'Science' Cont'd from page 1*)

sun.

Size, which proved a stumbling block in 2004 when the IAU last tried to address Pluto's status, is no longer a stated factor in defining a planet. Pluto is smaller than our moon; for a sense of scale, if the sun were shown here 3.6" wide – the length of the underline -- Pluto would be the size of the period at the end of this sentence.

The planet definition adopted this month by the IAU, besides orbiting a star, includes that it "has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape" and that it "has cleared the neighborhood around its orbit". This definition leaves us in our solar system with the familiar 8 planets, the 4 rocky inner planets (Mercury to Mars) and the 4 giant planets (Jupiter to Neptune). It would also apply to planets in other solar systems.

By contrast, dwarf planets, essentially dirty ice balls (so far), have "not cleared the neighborhood around its orbit" and "are not satellites". And, by implication, are smaller than Mercury, the smallest (4879 km) uncontested planet here. Ceres (950 km), once considered the 8th planet when it was discovered in 1801 by Giovanni Piazzi, is the largest asteroid belt object but has certainly not cleared its orbital neighborhood. And neither have Pluto or Xena (which will be officially named later by the IAU); they roam in the relatively crowded Kuiper Belt Object and Ort Cloud regions beyond Neptune.

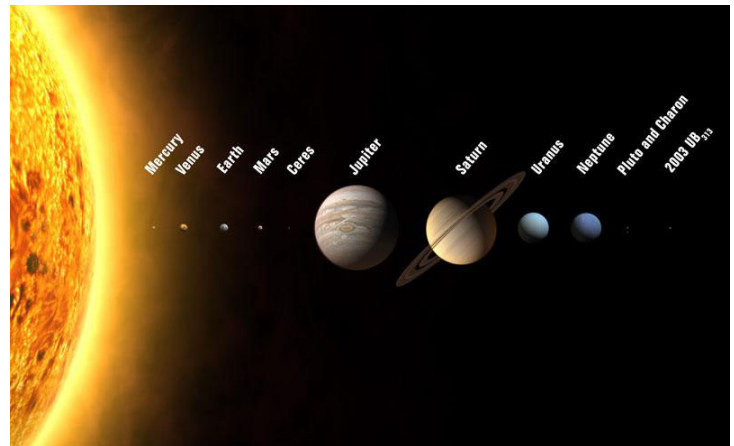
The move to name trans-Neptunian objects "Plutonians", however, failed in a close IAU vote. Despite being demoted, Pluto continues to intrigue. It is a

challenging viewing target in most scopes, requiring a multi-night viewing to confirm it has actually been observed. It is also a double (dwarf) planet: its companion, Charon, no longer qualifies as a Satellite under IAU definitions and will likely become a Dwarf Planet in its own right.

The IAU Satellite definition is "anything orbiting a planet as long as the mutual center of gravity (the barycentre) does not fall outside the planet". Thus, Gannymede is a satellite of Jupiter despite being larger (5262 km) than Mercury. But Charon & Pluto's common center of gravity lies between the two, not inside Pluto, so it is no longer a moon of Pluto.

Besides Charon, other candidate Dwarf Planets already in the wings include Vesta, Pallas and Hygiea (asteroids) and 2005 FY₉, Sedna, Drcus, Quadar and Varuna among 9 KBO's, one of which, 2003 EL₆₁ is cigar shaped and may flunk "nearly round". And what if a known SSSB object now turns out to be round? Will size re-emerge as a distinction between Dwarfs and SSSB's?

So, the textbooks and reference books covering the solar system that are already in print are out-dated. But they may be valuable souvenirs from when we once had 9 planets. Meanwhile, it's unlikely you'll see an answer about planet count on *Jeopardy*, since the correct question could be 8, or 12, or, by tomorrow, up to 24 and beyond. Isn't it a great time to be an astronomer!



The Delmarva Stargazers Announces a Writing Contest.

The DMSG will raffle away astronomy gifts to members who submit articles to the Star Gazer News.

How to enter:

- 1 Open to DMSG members.
- 2 Members may submit original articles at least 500 words (1/2 page) for publication in the Star Gazer News.
- 3 Articles **must** be authored by the member.
- 4 Pictures can be included, but they do not count towards word count (1 picture ≠ 1000 words).
- 5 Must be astronomy related.

Each article = one chance in the raffle. The drawing will be made at the star parties based on the previous 6 issues – need not attend to win (but it would be nice to see you there). The editor of the Star Gazer News qualifies articles submitted.

Tim Milligan

I was born and raised in Philadelphia, PA., my family is a typical Irish-Catholic family from the inner-city. I learned to play the guitar at an early age and love



music. As a kid growing up I played the Eagles, Crosby, Stills and Nash, Neil Young, James Taylor, etc. My parents purchased a house in Wildwood NJ in the early seventies and I spent most of my summers as a beach bum, playing soccer on the beach and picking up girls.

At eighteen years of age I joined the Air Force and my career in Air Force Intelligence began. I studied Mandarin Chinese at the Defense Language Institute in Monterey CA. I went to a few survival schools and my first assign-

ment as an Airborne Cryptologic Linguist, flying in RC-135 aircraft, was Kadena AB in Okinawa, Japan. I flew recce missions in the South China Sea, East China Sea, and South Korea/Yellow Sea. The missions were long but what a great job. I picked up soccer again and played for a few Base teams and got to travel around the Pacific playing tournaments. I also was an avid runner. Most of my Air Force career was spent at the National Security Agency located in Maryland. I spent nine years in the Air Force, leaving in 1988.

Then things happened fast... Meeting my future wife (Mary Jo), attending college, having a baby, getting married, graduating from college, and finally getting my first job as a Software Engineer in 1992. I am currently a Senior Software Engineer for a very successful company in Maryland called Integral Systems. We primarily develop software for Satellite Command and Control. I am involved in Data Archiving and Web access for satellite telemetry.

Mary Jo and I have three wonderful children, Sarah (18), Amy (14), and Connor (2). Sarah is off to Washington College in Chestertown MD at the end of August 2006, Amy starts High School, and Connor wants to go to Monster truck driving school.

I have been interested in astronomy since the early eighties. My first "telescope" was a 60mm department store refractor that I bought while I was in Monterey. A few years later I upgraded to my first real scope, a Meade 10 inch Newtonian reflector. I never seemed to have the time or motivation to be a hardcore amateur astronomer though (THE WHOLE "...future wife, attending college, having a baby, getting married, graduating from college, and my first job..." THING!). In 1997 I got the astronomy bug again really bad. I purchased an eight inch Dobsonian telescope and went to town. I joined Delmarva Stargazers and started observing at Tuckahoe State Park. I quickly out-grew my 8 inch Dob and moved up to a 17.5 inch Truss Dob from Dis-

Member's Page

covery Telescopes. My primary interests are Deep Sky and Cosmology. I love being out under the stars and visual observing.

I am currently trying to get back into playing the guitar (If you remember I sold some astro gear and bought a Martin 12-string guitar) and running. But other things always seem to get in the way. I'm busy with a new home and new son. I hope to get more involved in the club when things settle down for me.

Tom Pomponio

I transferred to Delaware from my job in New Jersey in 1989. I spent several years working for a cell phone company. My job involved spending a lot of time working at night in remote tower locations. I found some really dark places in Sussex County, DE and Cecil County, MD. I'm now working for the State during normal working hours.

I didn't have much exposure to astronomy as a kid, except for learning the constellations. I actually remember being able to see the Little Dipper. It wasn't until September 11th 2001 that I got back into astronomy. That night after being overloaded with media coverage, I had to turn off the TV and went outside. It was a clear dark night, with no flashing plane lights. I spent a few hours outside getting reacquainted with the night sky. There must have been a drought that year because I remember a lot of cloudless nights. Soon after I bought a ETX-90 scope. It had nice contrast, but the small aperture and long focal length made it difficult to find targets, even with Goto. In 2002 I joined the Delmarva StarGazers. My first trip to Tuckahoe in February 2002 there must have been 30 people out on the ball field. This was the first time I had seen the Milky Way, since I had grown up not too far from NYC and now live with Dover's light pollution.

Since then I've tried imaging with modified webcams and a small SBIG ST-5C CCD camera. I liked the amazing deep sky images that are possible with long exposures. The CCD cameras were good at overcoming my local light pollution. Now I'm using a modified Canon Rebel DSLR on Takahashi Sky90 refractor. I'm still learning about how to process these large multi-megabit images. I still have images from the spring Star Gaze I have to process. I'm looking forward to the No Frills Star party coming up. Hopefully these drought conditions will continue and we have the same incredible skies we had at the spring Star Gaze. I'll be looking around to see who's up for another 5 mile hike along Tuckahoe Creek at the No Frills.



Magazine Subscriptions

As a paid member of DMSG, you can sign up -or- renew your S&T or Astronomy magazines through the club for a discount over private rate. S&T, reg. \$42.95, is \$32.95 thru DMSG, Astronomy, reg. \$44, is \$34 thru DMSG. See Tony Codella for details.

A Finished Scope

Craig Nance

When I returned home from the seminar in late March we suffered through a couple of weeks of poor weather here. Eventually the skies parted and the views of the Moon were promising enough to send the mirror for a coating. I sent the mirror to Spectrum Coatings, which is, I've heard for years, a highly reputable coatings company. The mirror arrived back home on June 30. The long turnaround was the only drawback to Spectrum. I've been around a lot of coatings in my career, and the coating on the 10" is flawless in every respect. It was definitely worth the wait. Once back, the mirror was put into the telescope. It was subjected to a few "engineering tests" in the driveway with promising results. The telescope itself was mostly completed prior to MMM6. It is an ordinary Dobsonian-style telescope - sonotube with wood construction. It has a Telrad 1.25"/2" R&P focuser, a University Optics secondary, spider, and mirror cell. It is painted to look like marble. The inside is textured with sawdust and painted flat black to gobble up misdirected photons. I can configure it for both solar and night-time observing. It passes the minimum test of not being "ugly".

Soon enough it was time for "First Light" and see what it could do in the dark skies. On July 15 myself and a few astro-buddies went observing at the 9,300-ft level of Mauna Kea for a short night of stargazing. We began with a bit of solar observing upon arrival. The telescope was great, but the Sun was only showing three tiny spots. We gave up on the Sun, took a few pictures of the telescopes, and enjoyed a pre-sunset dinner of hot dogs and other grinds (food) waiting for the sky to go dark and the telescopes to acclimatize to the temperatures.

The official First Light for the telescope was Omega Centauri, perhaps the finest object in the summer evening sky here. The globular seemed so large and rich that it is beyond words to describe it's "countless" numbers of ancient stars, after all it is the largest globular cluster in the Milky Way; 2nd largest in the entire Local Group. The adjacent, peculiar galaxy NGC-5128 (Centaurus A) was quite a treat as well. We saw the dust lanes across the central bulge of that galaxy. To the far north, the Whirlpool Galaxy with its spiral arms obvious in this 10". We spent the evening exploring "Best of the Milky Way" from the summer triangle, down through Sagittarius and the central bulge, into Ara and Centaurus. After about three hours the Moon rose to take away the dark. I've included a few pictures for you. The pictures were primarily taken during solar observing. So, you'll see the solar filter, the silver ring at the top end of the telescope. I had not installed the finder at this point in the evening; I have a Telrad finder. I may send you a picture of the telescope in night-time

mode soon. I hope that these pictures give you a sense that, yes, the mirror we worked on in March found its way into a serviceable telescope!

So, the telescope works!...and works very well. My buddies were saying that for a 10", it sure packs some power. I was congratulated for making the mirror. I kept having to tell people that all I had to do was show up at MMM6, pay attention, and work hard. The MMM6 wizards (you, Bill H. and Steve S. and others) made it possible. After the Saturday night observing session one of my observing buddies wrote me about the night: "That was good food and fun. Your new telescope is awesome! Those deep space objects don't look real. Imagine how they would look from a closer vantage point."

Thanks again to everyone that worked so hard to put on MMM6!! .

Aloha Nui Loa!

Craig



Moondark for September: Rediscovering the American Sky

Doug Miller

What's better than [standing beneath the Milky Way](#) on a cool, crisp, late summer evening? For star gazer's today, this is an awesome, yet unfortunately far too infrequent, experience. What if you were able to see such a sky on every clear night? That would indeed be inspiring!

Long ago, the first Americans saw the sky as a canvas. For [native story tellers](#), the sky was the stage for explaining all manner of celestial phenomena: why there is day and night, [shooting stars](#), the waxing and waning of the moon, seasons, and the permanence of the pole star. In much the same fashion as the [classical constellations, indigenous asterisms](#) represented their [mythical figures](#), though ones very different from our own. No doubt great [legends and myths](#) have been lost in the intervening centuries.

Native Americans recorded their own [worldview on the sky](#). Cosmology explains why they are here, mythology why things happen, often with conflict, dancing, feasting, even the humor of the [mischievous coyote](#). Stars are celestial beings and reflect a male-female duality. [Four](#) is a sacred number, and the natural colors of [red, black, yellow, and white](#) (and sometimes blue) represent the cardinal directions. Celestial influences even extend to architecture, for example, [Navajo hogan doors face east](#) (ours face the street). The [Sun's path](#) defines the year, in turn, agricultural cycles and social activities.

In today's electronic / wired / web "age"—changes happens too quickly to merit a fixed label—it is hard to experience such a world. It is easier to download an [image far grander](#) than in any eyepiece. We settle for an "on demand," [realistically simulated sky](#), unconcerned with weather, geography or calendar. Nowadays [wikis](#) explain phenomena in scientific and technical detail. Our mythology is fossilized in static constellations by the [International Astronomical Union](#). The most recent additions are not heroes, villains and tricksters, but instruments and artifacts of European cultures. What celebrities today deserve to be immortalized in the sky—even if we could find room for them?

To [step beyond your own time and place](#), take a daytrip to the "Our Universes" exhibit at the Smithsonian's [National Museum of the American Indian](#) (left) on the Mall (near the Capitol) in Washington, DC. Closer to home, enjoy living native culture at the [29th Nanticoke Powwow](#) (right) in Millsboro, Delaware on the weekend of 9-10 September 2006. And hopefully, I'll meet you under the Milky Way at the [No Frills Star Party](#) a fortnight later, 22-26 September at Tuckahoe's Equestrian Center.

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