



NEWSLETTER

RITTENHOUSE ASTRONOMICAL SOCIETY

Founded 1888 WWW.RITTENHOUSEASTRONOMICALSOCIETY.ORG

February 2010

OPEN TO PUBLIC AND STUDENTS
Upcoming Meeting on February 10th at
7:15 PM
The Franklin
20th Street and Benjamin Franklin Parkway

February's Meeting: Dr. Julia Plummer

Assistant Professor: Arcadia University

Take an opportunity to browse over Dr. Julia Plummer's doctoral dissertation that is posted on our website. I think you will find she has done a fine job researching what young students can understand as they learn basic astronomical concepts. Her comparisons of students that learn astronomy in a planetarium environment verses those in classrooms will inspire those who work in planetariums. Dr. Plummer has established a framework of what astronomical concepts and celestial motions children can observe and understand at different ages.

Each of us assumes the role of the teacher when someone steps up and looks through our telescopes. It happens at star parties, it happens when your extended family visits, it happens when some of our members set up their gear at a local school or community event. Possibly a little background on what our youngest observers are capable of understanding will enable us all to assist those looking through our telescopes just a little more effectively. Dr. Plummer is the coordinator of Science Education at Arcadia University in Glenside PA.



January's Meeting

Derrick Pitts

We'd like to thank Derrick Pitts for his wonderful recap of all the events that occurred around the USA and the World during "The International Year of Astronomy: 2009".

The year of astronomy is hopefully being extended into the future with no deadline in sight. It is the hope of all astronomers, both professional and amateur, that everyone on this planet will start looking at the sky and become aware of the magical universe of which they are a part.

Derrick tied the IYA efforts to the special exhibit hosted by The Franklin Institute: Galileo: The Medici. In the United States, this exhibit was exclusive to The Franklin Institute and was received by many enthusiastic visitors.

Derrick mentioned in his dialogue the availability of the Galileoscope which was designed for the IYA for students to experience the type of telescope that Galileo used to discover the moons of Jupiter. These telescopes are still available and can be ordered from: <https://www.galileoscope.org/gs/>

Please keep spreading the news about checking out the beautiful skies to be viewed at night and experience the Solar System and Universe in which we reside.



Meeting Agenda

7:15 - Introduction
7:30 - Astronomy Lesson
President's Message
Sky This Month
Guest Speaker - Dr. Julia Plummer
Rooftop Observing - Weather Permitting

President's Message

Dr. Milton Friedman

Before we step into February we should look back at January. On Wednesday, the 27th, Mars is the closest it comes to Earth for the year. At 61.7 million miles from us, Mars appears smaller than in 2003 when the two planets were only separated by 34.7 million miles, their closest in nearly 60,000 years. We will get a better view of Mars in 2018 than this year but even in 2018, Mars will be farther from us than it was in 2003. The two planets will be even closer in 2287 so just wait by your telescope. Those of us who have looked at Mars must avoid seeing things that aren't there. In 1877, Giovanni Schiaparelli studied Mars and announced he had seen canali, a word that was translated into canals. Percival Lowell agreed and both pushed the canal story which was not proven wrong until NASA's Mariner 4 space probe flew by Mars in 1965 and found only craters; no canals, vegetation or signs of irrigation were photographed by Mariner 4.

In 2010, the full moon of January 30 is the closest and largest of the year. The Perseid Meteor Shower will occur on the night of August 12 continuing on the morning of August 13. The moon will be out of the way for the Perseids. On August 13, Venus, Mars and Saturn will be close together after sunset. On September 21 Jupiter will be in opposition as will Uranus on September 22 and the next day the Autumnal Equinox occurs. In 2010, Astronomy Day will be observed on April 24 and October 16.

Hopefully, good weather and excellent seeing will await the observer in 2010.



Visible Planets 02/10/2010

	Rises	Transit	Sets
Mercury	06:02 am	10:51 am	03:40 pm
Venus	07:26 am	12:44 pm	06:02 pm
Mars	03:44 pm	11:10 pm	06:37 am
Jupiter	07:41 am	01:08 pm	06:35 pm
Saturn	08:49 pm	02:53 am	08:58 am

Never Too Late for Resolutions

Dan McCormick

Well, we have finally made it to the new year of 2010. With a new year often come many resolutions for people. Astronomy related resolutions are always fun and most of them are often easy to accomplish. Perhaps you want to get out and check star parties that might be happening in your area. People often host star parties at public parks and are free to attend. At star parties, people are more than happy to tell you about their telescope, what kind of equipment they have, and what kind of equipment would be right for you. If you are new to astronomy, a star party is a great way to get hands on experience with high-end equipment and you can get a very good feel of what kind of astronomical equipment you would like to own.

Many objects that we talk about right here at Rittenhouse can often be seen in a pair of fairly well powered backyard binoculars. With a nice set of binoculars, you should have no problem picking out the bright double cluster, found in Perseus. A pair of binoculars will also allow you to view hazy details on planets revealing nice colors. However, if you are looking to step your game up and purchase a telescope, you should always do a fair share of research before making your final decision. A nice beginner telescope could have a 4"-8" mirror capable of viewing the rings of Saturn and you can start to make out the cloud bands of Jupiter.

So with a new year, come new challenges. Astronomy is a great new year's resolution that can be shared with your entire family. Take a camping trip to a dark site high up on the mountains and enjoy a nice clear and crisp winter sky. Pack a nice star map that includes deep sky objects. Sit back, and relax. As you become familiar with the night sky begin to think back on the objects you are looking at and how they are. Some objects have been shining for thousands of years. Take a wild journey into the great beyond and think what was happening at the time your favorite object in the sky was formed!

As always, let us know how you make out with your new observing adventures. Send us an email with your report and we would be more than happy to post it on our observing page, found on our "student page". Please include your Milky Way sightings as well for our 'Drive Me to the Milky way' Database.



Endeavour hauled to Launch Pad; NASA gives “Go” for Feb 7 launch to deliver ‘Tranquility’ Module to ISS

Dr. Ken Kremer

Space Shuttle Endeavour was rolled out to its seaside launch pad at the Kennedy Space Center on Jan. 6, officially starting the clock for the ‘Final Five’ flights. These five will close out the Space Shuttle era forever by the end of 2010 or early 2011 unless the program is extended for a few missions by President Obama.



I was totally thrilled to witness the trek in person, as a member of the press corps, from just yards away as central Florida was gripped by a rare and truly ‘bone chilling’ cold snap. Endeavour was bolted atop the mobile launch platform (MLP) and hauled out to the pad at about 0.5 MPH by the giant crawler-transporter which dates back to the Apollo moon landing Era of the 1960’s.

The frigid 3.4 mile journey from the cavernous Vehicle Assembly Building (VAB) along the crawlerway to launch pad 39 A began in darkness in the overnight hours, with ‘first motion’ at 4:13 AM. The massive 17 million pound stack was declared ‘hard down’ and secured at the pad at 10:37 AM about 6 and one half hours later.

Along the way we observed a remarkable clump of icicles that formed in the below freezing temperatures. So it felt more like sunny Antarctica than sunny Florida. And all us media and NASA technicians were outfitted with several layers of winter attire more appropriate for the recent ‘bone chilling’ Soyuz launch in Kazakhstan on Dec 20.

NASA has just given the “Go” to officially target liftoff for February 7, for what is currently planned to be the final nighttime shuttle launch and is targeted for 4:39 AM. I will be at the launch. Watch for my reports at Universe Today and The Planetary Society.

The goal of the 13 day STS 130 space station assembly

mission is to deliver the last of three interconnecting nodes, dubbed ‘Tranquility’, along with the seven windowed Cupola observation module.

‘Tranquility’ is the final major US element remaining for the International Space Station (ISS). The unique Cupola module will afford astronauts a spectacular 360 degree panoramic view of the Earth, the station and the cosmos.

See my Photo Album of Endeavour Rollout at my feature article on the Universe Today website. And check out the additional articles published throughout Jan and Feb to.

<http://www.universetoday.com/2010/01/06/shuttle-endeavour-rolled-to-pad-countdown-to-the-final-five-begins/>

Astronomy Outreach:

Dr. Ken Kremer

Please contact me for more info or science outreach presentations by email. My upcoming Astronomy talks in FL, PA and NJ include:

Plantation Astronomy Club: Leesburg, FL, Feb 15, 7 PM. “LRO & LCROSS: America Returns to the Moon”.
Website: <http://www.palhoa.com/id103.html>

ISCJ School: Monmouth Junction, NJ, Feb 28 “Twin Rovers Explore Mars (in 3-D)”

Villages Astronomy Club: The Villages, FL, Mar 16, 7 PM. “LRO & LCROSS: America Returns to the Moon”.
Website: <http://www.vlgastroclub.org/2101.html>

Gloucester County College Astronomy Club: Sewell, NJ, Mar, TBD, 7 PM. “Fixing Hubble: Eyewitness to Shuttle Atlantis Launch to save The People’s Telescope”
Website: http://www.gccnj.edu/news_and_alerts/rotating_ads/ken_kremer.cfm

Café Scientifique: Philadelphia, PA, April 6, 6 PM, Belle Cena Restaurant. “6 Years of Mars Rovers and the Search for Life (in 3-D)”
Website: <http://www.sciencecafephila.org/Home.html>

Dr. Ken Kremer Email: kremerken@yahoo.com
NASA JPL Solar System Ambassador & The Planetary Society

Website: <http://www.rittenhouseastronomicalsociety.org/Dr.Kremer/K.htm>

Lucy in the Sky Really is a Diamond: The Crystallization of a White Dwarf

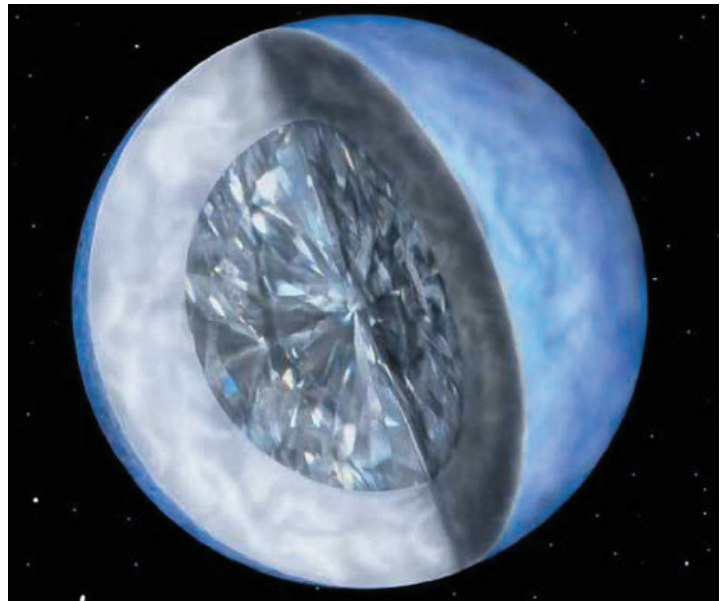
Ivin Williams

Valentine's Day is a time for gifts of chocolate, roses, all things red and for some lucky individuals, diamonds. Diamonds immediately conjure up images of elegance, luxury, sophistication and timelessness. They are also called a girl's best friend because of their mostly unchallenged combination of stunning beauty and rarity. There are however certain celestial bodies in the universe called white dwarfs where giving a lady a diamond might not get the desired reaction from her because these particular stars are composed almost entirely of crystallized carbon which is what diamonds are. Why give a lady a gift made out of something that she can easily find for herself everywhere she looks?

Stars have distinct life cycles depending on their original mass and their various stages are easily distinguishable from one another just like it is with humans. One can easily recognize the difference between a newborn baby from someone who is middle age or old in age and the same goes for stars. Medium size stars like our sun begin their life as a protostar after emerging from an enormous cloud of dust and gas known as a nebula. Our sun is currently cruising through middle age but in a few billion years it will collapse after exhausting its hydrogen fuel and then proceed to swell up to become what is known as a red giant while engulfing earth in the process. After this it will explode outwardly in all directions as a beautiful planetary nebula and over time all that will remain of our once heavily worshiped sun will be an extremely dense and hot corpse of a star called a white dwarf. In another few billion years after that, our white dwarf will then do something totally amazing as it cools down, it will crystallize.

Astrophysicists have long suspected that white dwarfs crystallize in their interiors over time but it was not until 2004 that such suspicions were confirmed. That is when a white dwarf with the scientific catalog number of BPM 37093 was found to be composed almost entirely of crystallized carbon. This white dwarf was soon awarded the nickname "Lucy" as a tribute to the popular Beatles song "Lucy in the Sky With Diamonds."

Lucy is the extremely dense and hot remnants of a star that once shined as brilliantly as our sun currently does. It is located at a very neighborly 50 light-years (1 light year is roughly 6 trillion miles) away in the southern constellation Centaurus and it has a mass of about 1.1 times that of our sun condensed into a volume slightly larger than our moon.



Lucy is approximately 2,500 miles in diameter and it is coated with a thin layer of hydrogen and helium. In addition to being extremely radiant, Lucy is also quite harmonious due to the pulsations that take place like a giant gong at its outer edges as it crystallizes in its interior. These pulsations are measured just like a seismograph measures earthquakes to study our earth's interior. The conclusion was that Lucy's interior had crystallized into a diamond. At 5 million trillion trillion trillion pounds or roughly 10 billion trillion trillion carats, Lucy truly eclipses all earthly diamonds in every possible way. The largest diamond ever found here on earth by comparison was an almost insignificant 3,100 carats.

White dwarfs have long been known as stars whose best days are long gone but perhaps that might not exactly be the case anymore considering that ending up as a celestial diamond can't really be all that bad. It is good to know though that Lucy and other celestial diamonds just like it are probably the only places in the whole universe where giving a lady a diamond would be considered an insult and perhaps a more appropriate gift of plastic roses or even some cheap dollar store chocolates instead would be what it would take to light up her eyes to the point where they themselves would appear as if they were composed of brilliant dazzling stunning diamonds.

Our Mailing Address:

Rittenhouse Astronomical Society
P.O. box 283
Feasterville, PA 19053-0283