



NEWSLETTER

RITTENHOUSE ASTRONOMICAL SOCIETY

Founded 1888 WWW.RITTENHOUSEASTRONOMICALSOCIETY.ORG

March 2010

OPEN TO PUBLIC AND STUDENTS

Upcoming Meeting on March 10th at

7:15 PM

The Franklin

20th Street and Benjamin Franklin Parkway

March's Meeting: "Astronomical Web Resources"

Terry Underkoffler

Technology Trainer and Implementer

Astronomy resources and new ways of communication have exploded on the internet in the past 10 years. Applications to assist us in observing the heavens, forums for discussion, and downloadable resources abound. Terry Underkoffler has worked for the past 10 years training teachers and implementing technology in classrooms across Montgomery County. He is the guiding influence that helped us start our networking site through the folks at Ning.com.



Meeting Agenda

7:15 - Introduction

7:30 - Astronomy Lesson

President's Message

Sky This Month

Guest Speaker - Terry Underkoffler

Rooftop Observing - Weather Permitting

February's Meeting

Let it Snow! Let it Snow! Let it Snow!!



Dr. Julia Plummer, Assistant Professor at Arcadia University was scheduled to present at our February meeting, but alas, mother nature decided to give us a Nor'easter for the record books. Dr. Plummer has graciously agreed to come back in April to present the results of her doctoral dissertation on what young students can understand as they learn basic astronomical concepts. Please be sure to join us in April to finally explore the fascinating discoveries from her research.

Guest Speaker Events

Ted Williams

There is not one member I conferred with that did not say the Christopher Ferguson event this past December 2, 2009 was successful and enjoyable. The event marked the culmination of the International Year of Astronomy. Our board felt it was a fitting ending to an amazing year of astronomical involvement by the general public around the globe. We followed the December event with Derrick Pitts, National Spokesperson for the International Year of Astronomy speaking to us in January. It was also good timing since Derrick was able to point out initiatives that were started during the past year that can be carried forward. Members of the audience suggested another possible month of observing across the various observatories around the Philadelphia area as was held in October-November of 2009.

There was a major difference between the two events. Derrick Pitts is a member of our organization and volunteered to speak with us as have all our past speakers throughout the history of the organization. The Christopher Ferguson event marked a radical change in the way we do business since we were required to cover the cost of transportation, lodging and meals involved with Commander Ferguson's appearance. Although Ferguson makes no money from the speaking engagement his costs are covered. Those costs amounted to \$700, which RAS paid with its treasury funds.

At past similar events we invited the Franklin Institute to attend (including their paid members) and they have previously picked up the tab for the speakers. In our new economy, there is basically no funding available to continue this practice.

Our \$20.00 membership covers the cost of our web site server, our newsletter mailing (paper, copy costs, postage), the Abrams sky map included in each month's mailing, a cheese steak dinner for the guest speaker and contributing officers the night of the meeting, and office supplies needed to get the job done. We think it is a fair membership price and we'd like to keep it at that amount. Our income each year is just about equal to our expenses.

We have no real income to cover future guest speakers similar to Christopher Ferguson when monetary support is required for the event. Although we only plan these events one time per academic year, we will quickly deplete any funds in our savings if we have to incur this cost in the future.

Ken Kremer has recommended that we establish a "Speaker Fund" that would earmark funds that could be donated from members or possible future sponsors for future speakers.

Fund raising may be another alternative to consider. That would require people that would dedicate some time to check into how we might go about this and to follow up with the fundraising itself. I do not feel the officers that currently do the legwork behind the scenes have enough manpower and time to carry on this function without assistance.

Our elected board members are seeking feedback from our members. If you have any suggestions, please consider sharing them with your elected officers so that we may get a feel for how to proceed with events like this in the future.



President's Message

Dr. Milton Friedman

Twelve Apollo astronauts walked on the moon. It is unlikely that will happen again with the new change in direction by President Obama and his administration. A moon colony and a lunar base are no longer in our future.

The president, with backing by NASA Administrator Charlie Bolden, has different plans for America's future in space.

The president has canceled the Constellation Program and further development of the Ares I and V rockets. Also included in the cut is the Orion Crew exploration vehicle. Instead, NASA will partner with and rely on the Aerospace industry to play a major part in our space program.

Administrator Bolden expects the Commercial Crew industry to generate up to 5,000 new jobs. NASA will award approximately \$50 million to the industry to transport a crew to and from low Earth orbit. Meanwhile, NASA will focus its aim "on the cosmic horizon" beyond Earth.



The International Space Station (ISS) will be in use to 2020 and beyond serving as the National Lab. According to Bolden, "All kinds of educators, colleges, science institutions, and other government agencies will be using ISS for research."

Bolden expects innovations will make trips to Mars take only weeks instead of nearly one year. There will be more trips to explore the inner solar system, the moon, Mars and asteroids.

NASA's budget for 2011 will have a \$6 billion increase over five years. The budget of 2011 will allocate \$7.8 billion over five years for producing in-orbit fuel depots and new docking technologies. \$3.1 billion over five years for development of heavy lift research and development of new engines and propellant materials. \$4.9 billion over five years for communications, sensors and robotics. \$3 billion over five years for robotic exploration paving the way for

later human exploration. An additional \$2 billion will be included to study and observe Earth to help determine climate change.

NASA has planned the Summer of Innovation for this year. This will be a collaboration of thousands of middle school teachers and students to be involved in hands-on math and science programs.

By definition, low Earth orbit extends from 160 miles to 1,240 miles above Earth's surface. The space shuttle and ISS travel in low Earth orbit. These orbit Earth at speeds a little over 17,000 mph and circle the planet every 90 minutes.

Reinstatement of Officers 2010 - 2012

At our January 13, 2010 meeting Ted Williams announced a call for RAS officers. Our president Milt Friedman also posted a call on our web site between January 1 till February 1. Our officers are selected from our Members at Large. Our next term of office is 2010-2012. We are happy to share that we will be reinstating our current officers to continue in service to RAS. Dr. Milton Friedman has agreed to continue as president, as has Alan Daroff for vice-president, Ted Williams continues as our Secretary and Ruth List has agreed to continue the responsibility as Treasurer. We thank them for their past service and look forward to their future efforts to assist in the running of our organization.

Member-at-Large is a two year term. The member becomes a liaison officer between the RAS and other groups and organizations. Their purpose is 1) To enlighten the community and others about RAS, 2) To gather information related to astronomy for the RAS that we can share with members and the public and 3) To greet and welcome new prospective members at our meetings, and engage with current members to ascertain expectations of what they would like to see and do at our meetings.

Member-at-Large functions will be divided up among the members accepting the positions. We will help you interact. The workload will be light and rewarding. As a Member-at-Large, you will be listed on the RAS officer page. You will receive our RAS Certificate that will also have your name specially listed. You will be included in RAS Board Meetings and part of RAS decision making.

If you would like to be involved or contribute your time to our group, consider contacting Dr. Milt Friedman to become a Member-at-Large. It is through service to our organization as a Member-at-Large that you can learn what is required and expected of our elected officers.

STS 130 Shuttle Endeavour and the Solar Dynamics Observatory (SDO) Launches: Reporting Live from the Kennedy Space Center

Dr. Ken Kremer

During this past month of February 2010, I was incredibly lucky to be an up close eyewitness to 2 significant NASA space launches; The STS 130 mission of Space Shuttle Endeavour to the International Space Station (ISS) and the Solar Dynamics Observatory (SDO) to study the sun in unprecedented detail.

I had a front row seat to watch both blast off from the Kennedy Space Center (KSC) Press Center, which took place just 3 days apart on Feb 8 and Feb 11. That is as close as humans are permitted and viewing conditions were excellent. And they were completely different in every respect. Endeavour lit the sky on fire for the final night time launch of a space shuttle. SDO roared to space on an Atlas rocket in the late morning. Then I saw Endeavour return to land at KSC, also at night, on Sunday Feb 21.

But the liftoffs were quite alike in another respect. Both experiences were thrilling beyond belief. And I was able to see the Endeavour astronauts close up twice and interview the top SDO mission scientists.

For complete details please read my online articles posted at The Planetary Society and Universe Today websites. Many are on the RAS home page and will be transitioned to my home page as well.

Endeavour lands Safely at KSC

Despite an extremely poor weather forecast, I witnessed Endeavour's penultimate trip to space conclude with an exciting Sunday night landing at 10:20 PM EST at the shuttle landing strip (SLF) at NASA's Kennedy Space Centers on Feb 21. The 14-day journey of more than 5.7 million miles brought the astronauts full circle from their pre-launch arrival here on Feb 2 aboard the Shuttle Training Aircraft (STA).

Visible Planets 03/10/2010

	Rises	Transit	Sets
Mercury	06:21 am	12:01 pm	05:41 pm
Venus	06:59 am	01:04 pm	07:09 pm
Mars	01:30 pm	08:59 pm	04:27 am
Jupiter	06:07 am	11:43 am	05:19 pm
Saturn	06:50 pm	12:57 am	07:04 am

During the two week flight, the STS 130 crew brought aloft and installed the Tranquility habitation module and the Cupola observation dome and conducted three totally successful spacewalks. Tranquility houses critical ISS life support systems. The Cupola possesses 7 spectacular windows and has exceeded its pre-flight billing by affording dazzling vistas of the earth below and the cosmos above.

The station is now 98 percent complete by volume and 90 percent complete by mass. The station itself exceeds 800,000 pounds and the combined weight with the shuttle exceeds 1 million pounds for the first time.

The threatening rain showers scooted by, the winds calmed and the totally soaked in cloud deck miraculously thinned out



*Endeavour and Ken Kremer at Pad 39 A after retraction of the Rotating Service Structure prior to Feb 8, 2010 launch from KSC
Credit: Ken Kremer*

Abruptly and with absolutely no forewarning, Endeavour's twin sonic booms shocked the daylights out of us spectators near the shuttle runway, announcing her impending arrival at runway 15 in about 3 1/2 minutes. Her sweeping 234 degree left turn approach from the north and above the Atlantic Ocean was fully masked under the cover of darkness until the final moments.

Suddenly, I caught first sight of the swiftly descending and barely visible phantom beauty as she swooped down from the sky at the far end of the runway barely above the tarmac. Only her magnificent fuselage, tail and braking drogue parachute were illuminated. In mere seconds she passed directly in front of us. Her wheels touched down as she sped along and disappeared down the far end of the runway, with just her tail in view at night above the tree line traveling from the northwest to the southeast.

The crew departed Endeavour for the traditional runway walk around. Commander Zamka said, "STS 130 is mission complete. We're safe on deck here at KSC and that's due to

the work of a lot of people. We had tremendous hardware to bring up. Node 3 was pristine, Cupola was beautiful. And Endeavour ... My goodness, what a machine! She was perfect throughout the flight and we brought her back safe and sound due to a great mission control team. So thanks to all who were involved."

Launch Director Mike Leinbach summed up the sentiments of many, saying "One of the most magical things we get to do here is to walk around the orbiter on the runway after a mission to space. The shuttle looks outstanding out there. We're going to start the final processing flow of Endeavour tonight. So that will be a milestone for the space shuttle program, and we will go into that with our heads held high and we're going to process the vehicle as we always do and be ready to fly her last mission. A little bit of a sad note, but a great ending to a great mission and we're looking forward to the next one."

If you can, try to witness one of the final 4 launches before these magnificently capable vehicles are retired at the peak of their capability later this year.

Check these 2 reports for links to all my STS 130 online articles

Endeavour Launch Ignites Night Sky

<http://planetary.org/blog/article/00002340/>

Endeavour Crew Preps for Sunday Landing as Showers Threaten Delay

<http://www.universetoday.com/2010/02/20/endeavour-crew-preps-for-sunday-landing-as-showers-threaten-delay/>

SDO Roars to Space

NASA's "crown jewel" probe to explore the sun and its complex interior mechanisms in unprecedented detail, the Solar Dynamics Observatory or SDO, roared into space on Feb 11 atop a powerful Atlas V rocket at 10:23 AM EST from Cape Canaveral Air Force Station in Florida.

I witnessed the blast off of the pencil like rocket into beautiful blue skies and scattered wispy clouds from the Press Center at NASA's Kennedy Space Center which lies adjacent to the iconic Vehicle Assembly Building and about 4 miles from the launch pad. Top SDO science team members were on hand to view the culmination of their work which began over a decade ago.

The full fury and reverberation of the blast off of the 191 ft tall rocket reached us at the press site a few seconds after ignition of the mighty Russian made first stage engines, as the booster cleared the launch tower and soared straight upwards to space destined for geosynchronous orbit more than 21,000 miles high. I was quite excited to be with the SDO science team.



Blast off on Feb 11 of mighty Atlas V rocket and SDO from Pad 41 at Cape Canaveral as viewed from the KSC press site
Credit: Ken Kremer

SDO had been rolled out to its seaside Florida launch pad on Feb 9. I watched the rocket rollout under gloomy skies and observed the erected Atlas V rocket and SDO directly at the pad in the midst of a rainstorm. It was absolutely thrilling to see this nearly \$1 Billion spacecraft hardware up close in its final hours left on Earth before the planned launch.

SDO is a cornerstone science mission that will truly revolutionize our basic understanding of the dynamic behavior of how the sun functions from its deep interior, how storms propagate to the surface and are then ejected violently outwards towards the entire solar system. The resulting "space weather" impacts every aspect of life here on Earth.

Following liftoff, SDO project scientist Dean Pesnell from NASA Goddard told me at the press site that "SDO will acquire movies of the entire surface of the Sun on a 24/7 basis with 10 times greater resolution than High Definition". The three science instruments (HMI, AIA, and EVE) will collect a staggering 1.5 terabytes of data per day, equivalent to 500,000 song downloads or 380 full length movies per day.

Check these 2 reports for links to all my SDO online articles:

Revolutionary NASA Solar Explorer Roars to Space

<http://planetary.org/blog/article/00002346/>

NASAs Solar Crown Jewel Bolted atop Atlas Rocket

<http://www.universetoday.com/2010/01/29/nasas-solar-crown-jewel-bolted-atop-atlas-rocket>

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:

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". Web site: <http://www.vlgastroclub.org/2101.html>

Joy Lutheran Church: Ocala, FL, Mar 20, 11 AM. "6 Years of Mars Rovers and the Search for Life (in 3-D)"

Littlebrook Elementary School, Astronomy Night: Princeton, NJ, Mar 25, 6 PM "Twin Mars Rovers (in 3-D)"

STAR Astronomy Club: Brookdale Community College, Lincroft, NJ. May 6, 7 PM. "LRO & LCROSS: America Returns to the Moon".

Gloucester County College Astronomy Club: Sewell, NJ, TBD. "Fixing Hubble: Eyewitness to Shuttle Atlantis Launch to save The People's Telescope"

Web site: http://www.gccnj.edu/news_and_alerts/rotating_ads/ken_kremer.cfm

Café Scientifique: Philadelphia, PA, June, TBD, 6 PM, Belle Cena Restaurant. "6 Years of Mars Rovers and the Search for Life (in 3-D)"

Web site: <http://www.sciencecafephila.org/Home.html>

Dr. Ken Kremer Email: kremerken@yahoo.com

NASA JPL Solar System Ambassador & The Planetary Society

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

<http://www.universetoday.com/author/ken-kremer/>

Our Mailing Address:

Rittenhouse Astronomical Society

P.O. box 283

Feasterville, PA 19053-0283