

CONSTELLATION

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This Year at Stella Della Valley

Cratering the Moon—a Double Suicide

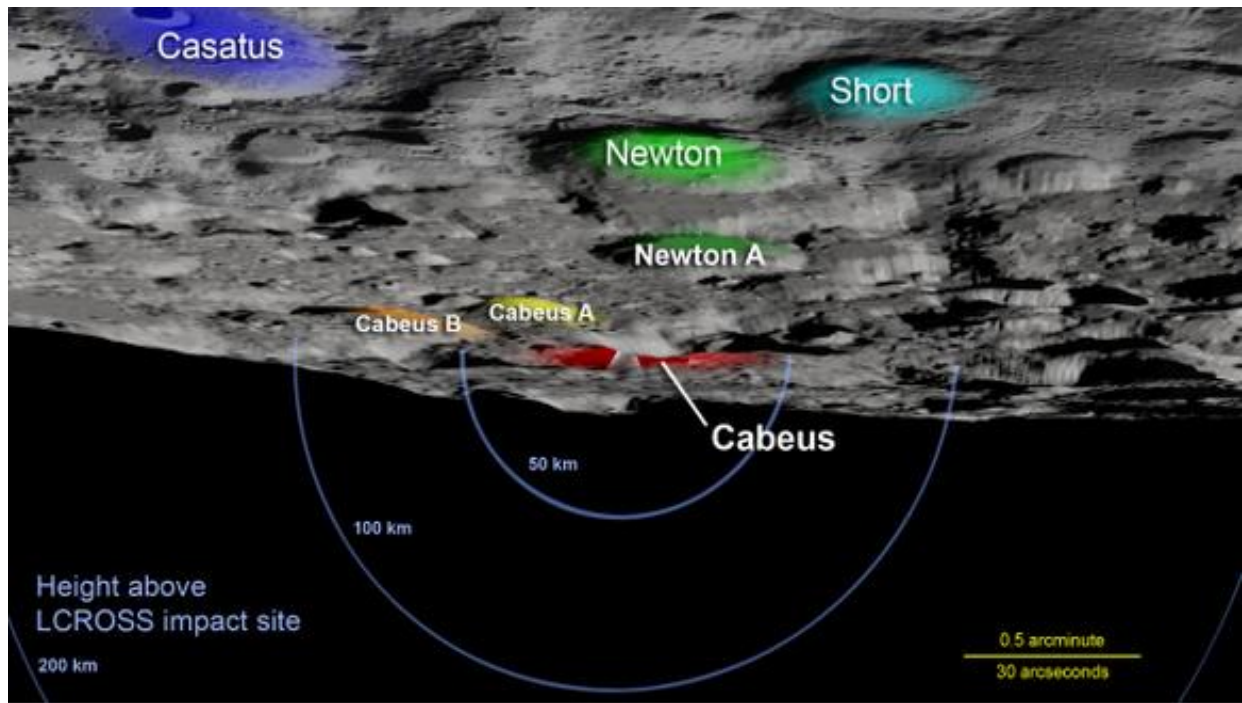
➤ Ann Schmiedekamp, Ph.D.
NASA Solar System Ambassador
Professor of Physics
Penn State University, Abington

A couple of new craters will appear on the Moon on October 9, 2009. If all goes well, NASA's LCROSS (Lunar Crater Observation and Sensing Satellite) will impact the Moon at 7:30 am EDT. The LCROSS mission is hoping to answer the question of whether there is water ice in the crater Cabeus located at the Moon's south pole. Amateur astronomers will be on hand to observe the event west of the Mississippi but unfortunately for us on the east coast, daylight will prevent us from viewing this historic impact through our instruments. The sequence of events begins the night before, approximately 9 hours and 50 minutes in advance of impact, with the separation of the shepherding satellite which is still attached to the Centaur rocket shell. This hollow tube, now emptied of its fuel, will separate from the shepherding satellite which is loaded with instrumentation. The detached spacecraft will do a 180° maneuver so it faces the Centaur shell with its cameras. The shepherding satellite will tail the Centaur by 4 minutes and photograph its descent and impact. After this first choreography, the shepherding satellite will have to perform even more amazing feats. Within four minutes, it will photograph and fly through the rising impact ejecta, sampling the material and then quickly send all its data to Earth before it too impacts the Moon. If all goes well during this double suicide mission, scientists will have some data on the contents of their selected target, crater. If you aren't on your way to work or school on Friday morning October 9 at 7:30 am, check out NASA TV where live coverage from the shepherding satellite's camera will be the featured programming.

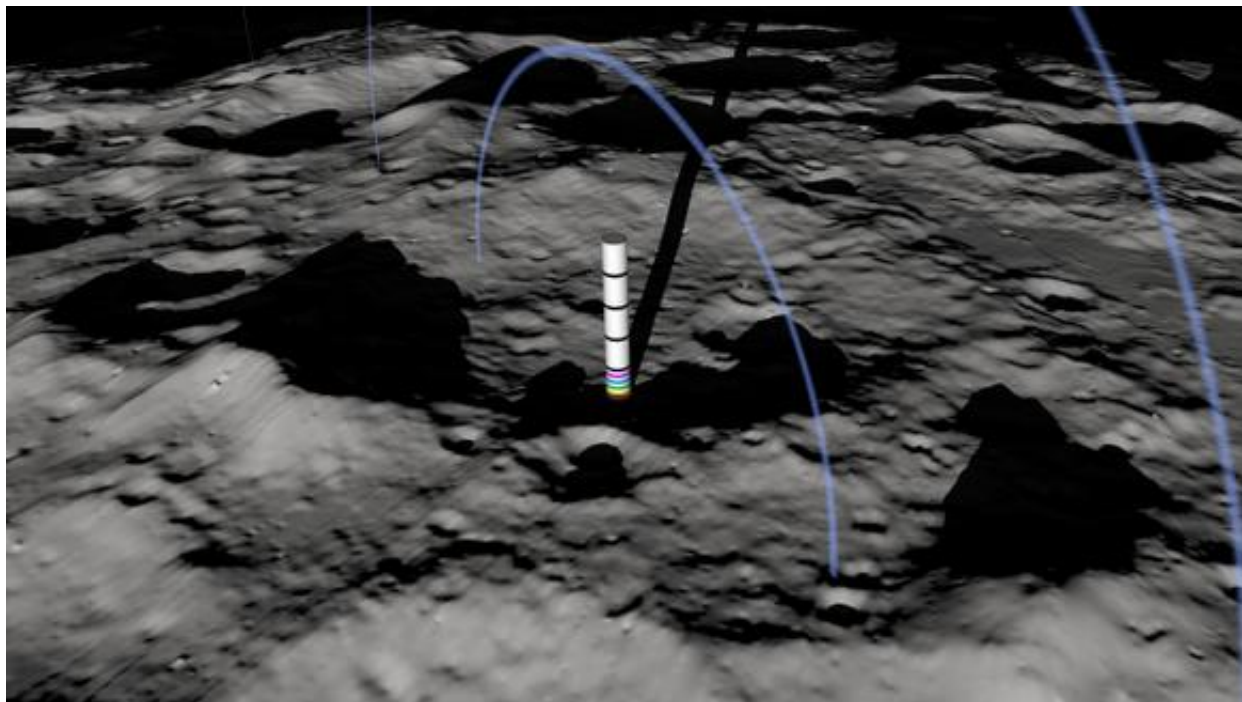
<http://www.nasa.gov/multimedia/nasatv/index.html>

or arrange for twitter updates
http://twitter.com/LCROSS_NASA

NASA scientists are keeping fingers crossed that, in their own words, this will be a “smashing success”.



Map of Lunar Craters: Courtesy of NASA



Close up of Cabeus Crater and Impact Site: Courtesy of NASA



LRO (gray) and LCROSS (yellow) lunar spacecraft stacked adjacent to Atlas V payload fairing at Astrotech Payload Facility on May 15, 2009. Credit: Ken Kremer and the Planetary Society.

Shuttle Atlantis and Astronaut Crew Return Safely to Earth after Rejuvenating Hubble

➤ by Dr. Ken Kremer

I recently returned from a wonderful experience witnessing the May 11, 2009 launch of Space Shuttle Atlantis direct from the Kennedy Space Center Press Center. That is as close as humans are permitted to observe. I obtained NASA press credentials and was reporting in real time for *The Planetary Society* and *Spaceflight magazine* on Atlantis entire mission to repair and upgrade the Hubble Space Telescope for the 5th and final time.

Altogether I published over 20 reports online at *The Planetary Society* (see below) covering the entire Hubble repair mission, NASA's recently launched lunar probes, LRO & LCROSS which I observed up-close in the clean room, and my interviews with top NASA officials on Hubble, Shuttle, LRO & LCROSS and the Future Exploration of Mars and Saturn. See my Shuttle reports collected below.

Space Shuttle Atlantis and her crew of 7 astronauts glided in to a smooth and triumphant touchdown on Sunday, May 24 at 11:39 AM EDT at Edwards Air Force Base in California. The high stakes flight of STS-125 completely renovated and rejuvenated the iconic Hubble Space Telescope and enables a new chapter of breathtaking science discoveries, most of which we can only barely imagine today. Popularly known as 'The People's Telescope', Hubble is now at the "Apex of its Capabilities".

The landing had been delayed by two straight days of very poor weather at Cape Canaveral which improved only slightly on the last possible try. I was at the Kennedy Space Center Press Center awaiting the landing in the midst of the deluge. To insure a safe landing, the NASA entry team ordered a diversion in Atlantis return trip from the primary landing site at the Kennedy Space Center (KSC) to the alternate landing strip at Edwards AFB. During the flight I gave two astronomy presentations in Florida, one of which was attended by the parents of Hubble spacewalking astronaut Andrew Feustel. Pictures and details from my talk titled "*Mars, Saturn, Asteroids, Hubble and Beyond in 3 D*" at The Villages Astronomy Club can be found at these links to the club and a local Florida newspaper here:

<http://www.vlgastroclub.org/31601.html>

<http://www.thevillagesdailysun.com/articles/2009/05/20/news/news01.txt>

Read more about my personal tour of LRO, LCROSS and their Atlas V booster rocket in an upcoming BMAA newsletter.

For complete details on the Hubble repair mission, please read my reports online covering the entire flight from start to finish with numerous pictures at *The Planetary Society* below and at Spaceflight magazine. Hear my first hand account of the flight by attending my upcoming lecture at the Stella Della Valley Star Party on October 17, 2009 hosted by BMAA:

The Planetary Society: Hubble Articles Online

Atlantis and Crew Return Safely to Earth after Rejuvenating Hubble

<http://planetary.org/blog/article/00001962/>

Memorial Day: Remembering the fallen who gave their lives exploring space

<http://planetary.org/blog/article/00001963/>

Farewell to Hubble, Obama Calls, Astronauts Testify to Congress as Shuttle is Set to Land

<http://www.planetary.org/blog/article/00001958/>

Hubble Astronauts Boldly Go Where No One has Gone Before!

<http://www.planetary.org/blog/article/00001954/>

LRO & LCROSS Up-Close Tour

<http://www.planetary.org/blog/article/00001947/>

Hubble Spacewalks: 2 Down, 3 to Go, Never Routine

<http://www.planetary.org/blog/article/00001945/>

Atlantis Astronauts Rocket into Space and Grab Hubble

<http://planetary.org/blog/article/00001943/>

One-on-One Chat with Ed Weiler on Hubble and the Future of Mars Exploration

<http://planetary.org/blog/article/00001940/>

Atlantis Launches on a Final Mission to Hubble

<http://planetary.org/blog/article/00001938/>

Fueling Atlantis! T Minus 6 Hours and Counting

<http://planetary.org/blog/article/00001936/>

Atlantis Exposed to the Heavens -- T Minus 14 Hours from Blast-off to Hubble

<http://planetary.org/blog/article/00001935/>

"Go" at T-2 days from launch -- Hubble Science Instruments Preview

<http://planetary.org/blog/article/00001934/>

Astronauts Fly into Cape. Countdown Clock Ticking for Mission to Save "The People's Telescope"

<http://planetary.org/blog/article/00001932/>

NASA's Final Servicing Mission to the Hubble Space Telescope

<http://planetary.org/blog/article/00001931/>

Spaceflight Magazine: Hubble articles

“Hubble’s Final Refit in Orbit”: August 2009 issue

<http://www.bis-spaceflight.com/sitesia.aspx/page/183/id/2046/1/en-gb,en-gb,en-us>

Space Shuttle Processing Facilities: April 2009 Issue

<http://www.bis-spaceflight.com/sitesia.aspx/page/183/id/1976/1/en-gb,en-gb,en-us>



Ken Kremer and Space Shuttle Atlantis at Launch Pad 39 A on the day before Blast-Off on May 11, 2009 to the Hubble Space Telescope. Read my reports on the entire mission online at The Planetary Society and my website listed herein. Credit: Ken Kremer

Dr. Ken Kremer, NASA Ambassador & The Planetary Society

Email: kremerken@yahoo.com

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

Astronomy Outreach

Please contact me for more info or science outreach presentations by email. My upcoming Astronomy talks include:

Rittenhouse Astronomical Society (RAS) at the Franklin Institute: Philadelphia, PA, Wed, Oct 14, 8 PM.

“Eyewitness to LRO & LCROSS Post Impact Update: America Returns to the Moon”

Website: <http://www.rittenhouseastronomicalsociety.org>

Stella Della Valley Star Party & Bucks-Mont Astronomical Association (BMAA): Ottsville, PA, Oct 17, Sat, 3 PM. *“Fixing Hubble: Eyewitness to Shuttle Atlantis Launch to save The People’s Telescope”*

Website: <http://www.bma2.org/Sdv.html>

UACNJ Astronomy Symposium: Hope NJ, Oct 18, Sun, 2 PM. *“Eyewitness to Hubble/Shuttle Launch & Personal Postcards from Mars”*

Website: <http://www.uacnj.org/>

<http://www.uacnj.org/pages/Starquest%20&%20Astronomy%20Symposium%202009%20-flyer%201.pdf>

NJ Gifted Children at Mercer County Community College: West Windsor, NJ Oct 24, Sat, 9 AM. *“Twin Robots Exploring Mars (IN 3-D)”*

Website: <http://www.njagc.org/>

Gloucester County College Astronomy Club: Sewell, NJ, Nov, 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

Riverside Elementary School, Family Astronomy Night: Princeton, NJ, TBD, 6 PM. *“Phoenix and the Twin Mars Rovers (in 3-D)”*

Dr. Ken Kremer Email: kremerken@yahoo.com

NASA JPL Solar System Ambassador & The Planetary Society

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

“Fixing Hubble: Eyewitness to Shuttle Atlantis Launch to save The People’s Telescope” by Dr. Ken Kremer, NASA Ambassador and The Planetary Society. Stella Della Valley Star Party Lecture: 17 October 2009

NASA’s final human spaceflight mission to the iconic Hubble Space Telescope was dramatically accomplished by Shuttle astronauts in May 2009. Dr Ken Kremer will present an up close eyewitness account of the thrilling launch of Space Shuttle Atlantis from the Kennedy Space Center on its historic mission to restore and upgrade Hubble to the apex of its scientific capabilities. Ken will speak on the highlights, purpose and success of the daring shuttle flight STS -125 to save ‘The Peoples Telescope’. He will present a behind the scenes perspective with top NASA and Hubble scientists while reporting in real time for The Planetary Society and Spaceflight magazine. Read Ken’s first hand press reports online exclusively at The Planetary Society and the Rittenhouse Astronomical Society.

Dr. Kremer is a research scientist and science journalist whose articles and space exploration images have appeared in magazines, books and on websites, including *Astronomy Picture of the Day*, *ABC News*, *Spaceflight Now*, *New Scientist*, *International Year of Astronomy*, *The Planetary Society*, *Universe Today* and the covers of *Aviation Week & Space Technology*, *Spaceflight* and the *Explorers Club* magazines. His numerous presentations at educational institutions, civic & religious organizations, museums and astronomy clubs aim to educate and excite kids and adults about science and space exploration.



Ken Kremer and Shuttle Atlantis at Launch Pad 39 A at the Kennedy Space Center, FL on 10 May 2009 on the day before blastoff to Hubble. Credit: Ken Kremer



Floridians including the parents of Atlantis astronaut Andrew Feustel attend astronomy club lectures by Ken Kremer, during the STS-125 mission, to learn about Hubble and NASA's Solar System exploration missions as they are transported "Beyond Earth" and standing "On Mars" through the power of 3 D imaging techniques. Over 180 attended my talks at The Villages Astronomy Club and The Plantation Astronomy Club titled "*Mars, Saturn, asteroids and Beyond in 3 D*".

Credit: Ken Kremer



Moments after Atlantis and seven member crew blast-off at 2:01:56 on Monday May 11 on a bold flight to save "The People's Telescope".

Credit: Ken Kremer

Constellation-Instructions to Authors

You need to be a BMAA member to submit an article. Articles are typically ½ to 2 pages in length. They can vary in topic from reviews of books, star parties, observing, equipment, issues of general astronomical interest, etc. Go to the BMAA website and take a look at *CONSTELLATION* back issues and you will get the idea. Another good example for articles is on the Cloudy Nights web site (<http://www.cloudynights.com>).

As to the format for articles, please adhere to the following:

Word Processor: MS Word.

Font: Times New Roman

Margins: 1 inch all sides.

Title Font Size: 14 pt

Text Font Size: 10 pt

Spacing: Single Space

Original Figures: Gray scale or color, jpeg format, and please save the file as the size as it would appear in the article (about 2" x 3"). The figures should be original due to copyright issues.

The Editors will modify the article as needed to fit the format.

Email articles to: constellation@bma2.org

The *CONSTELLATION* is the official publication of the Bucks-Mont Astronomical Association, Inc., a 501c3 non-profit organization incorporated in the Commonwealth of Pennsylvania and exists for the exchange of ideas, information, and publicity among the BMAA membership, as well as the amateur astronomy community at large. The views expressed are not necessarily those of BMAA, and those of contributors may be edited to fit within the format and confines of the publication. The contents this publication, and its format (published hard copy or electronic) are copyright of ©2006 BMAA, Inc., and may not be reproduced or distributed without express written consent of BMAA, Inc.

Bucks-Mont Astronomical Association Membership Application

Name and address _____ _____ _____ _____ Telephone Home _____ Cell _____ E-mail _____	Renewal (<input type="checkbox"/>) New Member (<input type="checkbox"/>) Renewal Dues are \$25.00/year and are due starting in November Dues for new members are: <table style="width: 100%; border-collapse: collapse;"> <tr><td>January</td><td style="text-align: right;">\$25.00</td></tr> <tr><td>February</td><td style="text-align: right;">\$23.00</td></tr> <tr><td>March</td><td style="text-align: right;">\$21.00</td></tr> <tr><td>April</td><td style="text-align: right;">\$19.00</td></tr> <tr><td>May</td><td style="text-align: right;">\$17.00</td></tr> <tr><td>June</td><td style="text-align: right;">\$15.00</td></tr> <tr><td>July</td><td style="text-align: right;">\$13.00</td></tr> <tr><td>August</td><td style="text-align: right;">\$11.00</td></tr> <tr><td>September</td><td style="text-align: right;">\$9.00</td></tr> <tr><td>October</td><td style="text-align: right;">\$25.00</td></tr> <tr><td>November</td><td style="text-align: right;">\$25.00</td></tr> <tr><td>December</td><td style="text-align: right;">\$25.00</td></tr> </table>	January	\$25.00	February	\$23.00	March	\$21.00	April	\$19.00	May	\$17.00	June	\$15.00	July	\$13.00	August	\$11.00	September	\$9.00	October	\$25.00	November	\$25.00	December	\$25.00
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December	\$25.00																								

Additional members from the same household are 1/2 price.

Your name, city of residence, telephone number and e-mail will be posted in the member's area of the website that can be viewed by using a club issued name and code word. The code is changed periodically and issued to club members only.

() Do not list my name or any personal information on the website.

The Association saves considerable money each year through electronic delivery of the Constellation. Printed copies will always be available at the meetings. You will receive the Constellation by being notified by E-mail when it is available on the website.

() Check here to receive the Constellation by Traditional mail.

Your e-mail address will be added to the e-group list and you will receive one e-mail a day containing all the mail that is sent to the group address by other members that day. This will allow you to be aware of current activities and discussions, and you may respond to any message by addressing your response to the e-group address. You must be a member to send to or receive messages from the e-group. You may cancel or change this option by contacting Jim Moyer, info@bma2.org.

BMAA Web site - <http://www.bma2.org>

Please return this form, with a check payable to BMAA, to:
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 36 Far View Rd.
 Chalfont, PA 18914