AD ASTRA KANSAS FOUNDATION

AD ASTRA KANSAS

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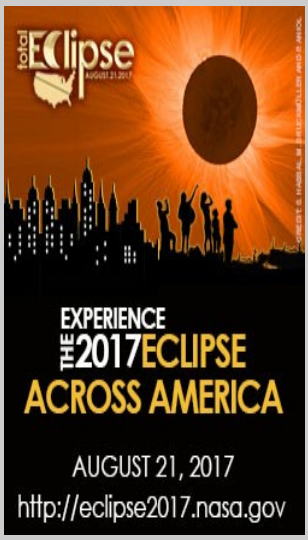

Upcoming Galaxy Forum offers triple the fun

This summer, space fans can get ahead of the curve on three topics that have the attention of scientists worldwide thanks to the Ad Astra Kansas Foundation's 2017 Galaxy Forum. It will be held Saturday, August 19, at the Kansas Cosmosphere and Space Center in Hutchinson. The event is free and open to the public. The hours will be from 1-3 p.m.

Corona, Corona

In Kansas, just two days after the Galaxy Forum, parts of the state will experience a total solar eclipse. Even those outside the totality zone for the August eclipse will have an 85% or more experience. So it doesn't matter where you live in Kansas, you'll have one grand view.

And Dean Stramel, professor of chemistry at Fort Hays State University, will enlighten us with **"The 2017 Total Solar Eclipse: What, When, Where and Why?"**

As a primer on this unique event, Stramel will look into why this is such a big deal that

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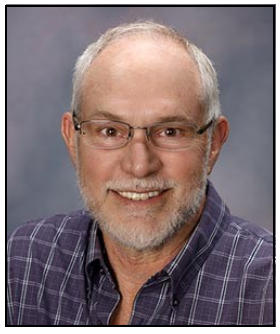

Credit:: FHSU website

Courtesy: Todd Barber

Lord of the Rings

In September, the Cassini spacecraft will swoop between Saturn and its innermost ring, finally crashing into the planet. Wichita native Todd Barber has been NASA-JPL's lead propulsion engineer on the Cassini Mission to Saturn since 2002. Who better to give you the scoop on its upcoming "Grand Finale"?

In the Forum's feature presentation, **"Lord of the Rings—the Cassini Mission to Saturn",** Barber will talk about this final mission of Cassini which will

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Curious Cam

Finally, Sarah Lamm, a Kansas State senior who has spent two summers at Los Alamos National Laboratory in New Mexico, will share information on the Curiosity mission to Mars in **"Mars: Through the Eyes (and Lasers) of Curiosity."**

Lamm has been working with data from Curiosity's Chem-Cam instrument. (it's the part that looks like the head and eye of Curiosity).

She has been studying the presence of manganese, an indicator of the past presence of abundant liquid water. On Earth high abundances of manganese are closely associated

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Courtesy: Sarah Lamm

Inside this issue:

The Great American Solar Eclipse of 2017

This website provides videos, images, posters, information cards, activities and downloadables. Much of this is also available in Spanish.

The "diamond ring effect" is often seen just before eclipse totality. Photo source: NASA

By
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Monday, August 21, 2017, a few minutes past 1 pm the shadow of the Moon will cross northeast Kansas and for those fortunate enough to be in the shadow's path an unforgettable, awe-inspiring event will be experienced: a *total* eclipse of the Sun!

A total eclipse of the Sun occurs when the phase of the Moon is new. It is then that the Moon can get between the Earth and the Sun. However, a perfect alignment to cause an eclipse occurs only every five or six months because the plane of the Moon's orbit is tipped relative to the Earth's orbit around the Sun, the plane of the ecliptic. Thus about twice a year somewhere in the world a total solar eclipse occurs. The key word here is "somewhere" because the path of the shadow is so narrow, the chance of it crossing a particular place is small hence the occurrence is very rare. The last total eclipse visible in Kansas was 99 years ago and the next for Kansas is in 2045.

Where in Kansas

The totality path as it crosses northeast Kansas will be narrow, about 60 to 70 miles wide. Some towns in its path include Marysville (barely), Seneca, Sabetha, Hiawatha, Highland and Atchison. St. Joseph, Missouri, is right on the centerline and only the northeastern parts of the Kansas City area will experience totality.

Outside the narrow path of totality, a partial eclipse will occur that will be visible across the entire state, and indeed most of the US. A partial eclipse is certainly interesting and much more common. In Kansas the partial eclipse will be 85 percent or more. But totality is very special; awe-inspiring in the truest sense of the word "awe" meaning to invoke a profound, even sublime, sense of wonder.

At about 11:40 am that day the Moon will take its first bite out of the Sun to begin the partial eclipse phase. This would be a good time to use a pinhole camera or simply stand under a tree to see little crescent suns cast in the shadows of the tree's leaves. During the partial phase, never look at the Sun directly; use a bona fide solar filter. As the eclipse advances, the daylight will grow less intense. Out of the path of totality you can never go without eye protection.

Just before Totality

Just after 1 pm but just before totality, shadow bands of fluctuation light and dark will appear on the ground. With the Moon nearly covering the solar disk, and while still using your solar filter, a tiny fragment of the edge of the solar disc will flare causing the diamond ring effect. A few seconds later, spots of light termed Baily's beads appear to encircle the moon. Then, finally, at several minutes past 1 pm, totality will begin.

Now you are standing in the shadow of the Moon! Now with your naked eye you can see that the Sun's disk is precisely masked by the dark moon, while around the dark disk the Sun's corona will shimmer with an ethereal beauty. Close to the disk pink flares and prominences might be seen. You will be bathed in an eerie twilight with sunset colors 360 degrees all around you. The wind will die down, and the birds will roost and stop singing to be replaced by the songs of the nocturnal insects.

You've got at most two and a half minutes to take it all in; to absorb and be part of one of the grandest spectacles of nature, and very possibly a once in a lifetime experience. Too soon Baily's beads and the diamond ring will reappear and the corona will vanish. Look away and put your solar glasses on. The Sun is now only 99.9% eclipsed, no longer grandly total.

Time to Recollect

Compliment yourself for having taken the day off, pulled you children or yourself out of school and traveled to be ableto stand in the shadow of the Moon.

Kansas State University is organizing two events for watching the eclipse: one in Highland, KS in collaboration with Highland Community College and the Flint Hills Discovery Center, and one in St. Joseph, Missouri, with the KSU Alumni association. For more information see: http://www.k-state.edu/eclipse/. Whether you join us or not, don't miss this chance to stand in the shadow of the Moon!

Photo credit: NASA

KU alum joins 2017 astronaut class

LAWRENCE—University of Kansas alum Loral O'Hara has been selected to join NASA's 2017 Astronaut Candidate Class. She is one of only twelve chosen out of over 18,000 applicants.

O'Hara earned a Bachelor of Science degree in aerospace engineering in 2005 at KU, then earned an MS degree in aeronautics and astronautics from Purdue University.

While at KU, she was active in NASA's KC-135 Reduced Gravity Student Flight Opportunities Program, the NASA Academy at Goddard Space Flight Center and as an intern at NASA JPL.

O'Hara is the fourth KU graduate to become an astronaut. The others are Joe Engle, Ron Evans and current KU professor of physics and astronomy Steve Hawley.

O'Hara begins training two years of training in August. "Every time I look at the moon, I think, 'Holy cow! I might be walking around up there someday'—That's actually a real possibility," she said.

—Saturday, October 14—

TOPEKA SCIENCE & TECH FEST

10 a.m. to 4 p.m.

700 block of S. Kansas Ave
Downtown

FREE
HANDS-ON SCIENCE
FUN FOR ALL

AD ASTRA KANSAS SPACE CELEBRATION

6 p.m. to 10 p.m.

Stoffer Science Hall
Washburn University

CHEMISTRY
AVIATION
MAKERSPACE
ROCKETRY
ASTRONOMY
ENGINEERING
TECHNOLOGY
SCIENCE
DEMOS
DNA
ENERGY
ROBOTICS
BIOLOGY
And MORE

With sponsorship from the Science Festival Alliance through funding from the Alfred P. Sloan Foundation

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people travel from all over the globe to see it. What is the science behind it? What are the logistics to watching it? This will provide information that you can take directly to the sky on Monday.

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occur on September 15, 2017.

Why is that being done? What has Cassini revealed over the years? What kind of close-ups, what kind of details, what do we hope to learn from this final mission?

Barber, a Wichita Southeast graduate, has worked on the Mars Exploration Rover Mission and the Mars Science Laboratory (MSL)mission, among other missions.

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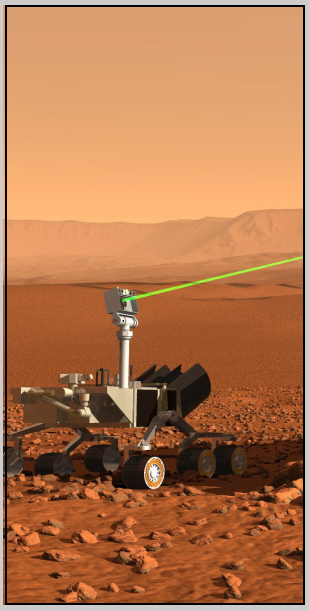
with microbes and the rise of oxygen in the atmosphere. Thus, manganese has important implications for the future habitability of that planet.

Sarah, a triple major in chemistry, geology and geography, is a Colby native and a great illustration of what young Kansans are doing in the space sciences.



The Curiosity ChemCam uses a laser for much of its information gathering. Illustration source: Los Alamos National Laboratory

INTERSTELLAR R & D

Featured in Spring and Fall issues