

The Ursa Minor Report



Newsletter of the Kutztown University
Planetarium & Observatory

Volume 2, Issue 2

Fall 2016

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KU

National Science Foundation
supports research at
Kutztown University Observatory!



Dr. Phill Reed, Associate Professor of Physics & Astronomy at Kutztown University, has been awarded a \$250,000 collaborative grant from the National Science Foundation. The award is in conjunction with Dr. Thomas Oberst, Associate Professor of Physics at Westminster College, Pa., and other members of the Kilodegree Extremely Little Telescope (KELT) exoplanet discovery project.

Kutztown University's \$113,450 share of the grant will fund Reed and six KU students for three years between 2017 and 2020. The students will work with Reed at KU's on-campus observatory during the Fall and Spring semesters and they will then become visiting researchers at universities in Italy, Australia, and elsewhere as they conduct paid internships with some of the world's leading experts in exoplanetary science – the study of planetary systems other than our own solar system. The students will learn cutting-edge research techniques and help discover and characterize new exoplanets.

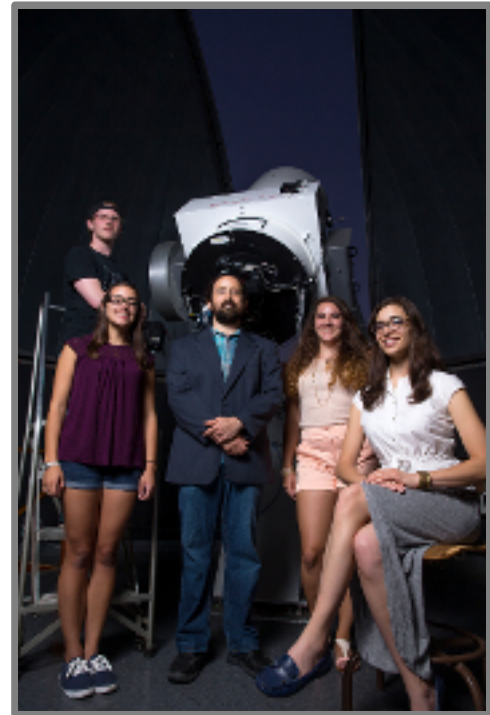
In the first year, students will visit the University of Salerno on Italy's famed Amalfi coast, where they will conduct research in gravitational microlensing. First published by Einstein in 1936, gravitational lensing refers to the brightening of a background object due to the bending of its light by the gravitational field of a foreground object, or "lens." Microlensing is a special case in which the lens is a star or planet, which has far weaker gravity than galaxies, the traditional lenses. Scientists at the university of Salerno have played a role in several important recent microlensing discoveries, including the detection of one of the first exomoon candidates.

In the second year of the grant, students will travel to the University of Southern Queensland, Australia, to study planets using the technique of Doppler spectroscopy. The third year destination is yet to be determined.

More information can be found here: <http://faculty.kutztown.edu/preed/NSF.html>

KU's full press release can be found [here](#):

<http://www.kutztown.edu/news-and-media/news-releases/august-2016/ku-professor-awarded-national-science-foundation-grant-for-exoplanetary-science.htm>

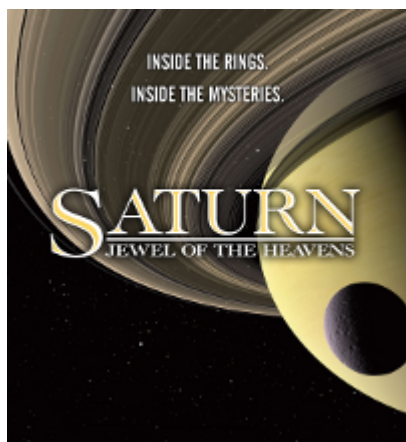


KU Astronomers in the Observatory.
From left: Luke Maritch, Bethany Tirrell, Phill Reed, Rachel Hammersley, Tiffany Visgaitis.



Fall 2016 Schedule of Public Planetarium Shows & Events

DATE	TIME	EVENT	COST
Thursday, September 22	7:00 pm	" Saturn: Jewel of the Heavens " planetarium show	FREE †
Tuesday, October 4	7:00 pm	NEW " Incoming! " planetarium show	FREE †
LASER Light Shows! every Thursday in October (see the ad on Page for the complete schedule)			\$5.00 ††
Thursday, November 3	7:00 pm	" Extreme Planets " planetarium show	FREE †
Thursday, November 17	7:00 pm	NEW " Incoming! " planetarium show	FREE †
Thursday, December 1	7:00 pm	NEW " Legends of the Night Sky: Orion " show this is an educational planetarium show produced with LASERs	FREE †
Tuesday, December 13	7:00 pm	" Season of Light " holiday planetarium show	FREE †
Tuesday, December 13	8:00 pm	" Laser Holidays " musical LASER light show	\$5.00 ††
Thursday, December 15	7:00 pm	" Season of Light " holiday planetarium show	FREE †
Thursday, December 15	8:00 pm	" Laser Holidays " musical LASER light show	\$5.00 ††



† These educational planetarium shows are free and open to the public. No tickets are required. Seating is first-come, first-served.

†† Laser light show tickets are available for cash at the planetarium. Tickets for all shows will be available at all KU planetarium & observatory events. Available tickets will also be sold at the door on the day of the show. Proceeds support the KU Planetarium Community Outreach Program.

More To Be Announced ...
www.kutztown.edu/planetarium

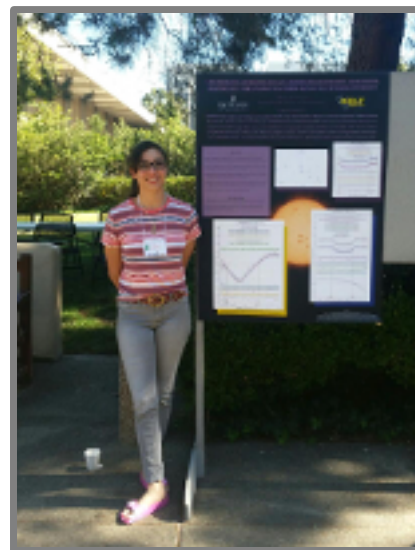
Student Highlights

Kutztown University students have been very active in the KU Observatory and Planetarium. The following are a few brief highlights of some KU students' achievements.

Tiffany Visgaitis – Exoplanet Discovery

Tiffany represented Kutztown University at the Sagan Exoplanet Workshop hosted by the NASA Exoplanet Science Institute (NexSci) on July 18-22, 2016 at the California Institute of Technology (Caltech) in Pasadena, CA. In addition to attending talks and participating in hands-on research sessions, she presented the work she did at the KU observatory to help discover at least one new exoplanet. In the photo to the right, Tiffany can be seen with her research poster during the Caltech conference.

The planet that Tiffany helped discover has been named KELT-16b and will be announced in an upcoming issue of *The Astronomical Journal* with an article that features Tiffany as a co-author!

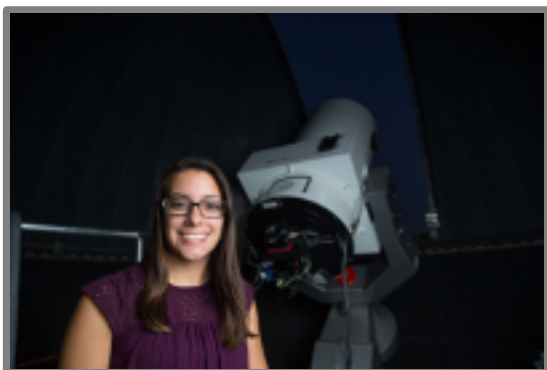


Bethany Tirrell – Space Grant Consortium Scholarship

Bethany, pictured to the left, was awarded a NASA Pennsylvania Space Grant Consortium (PSGC) Undergraduate Scholarship. She is the first KU student to ever win this award! The scholarship is worth \$4000 and applies to the 2016-2017 academic year. Bethany's undergraduate research experience, so far, includes collecting high-precision photometric data using KU's on-campus observatory.

More information about the award can be found here:

<http://pa.spacegrant.org/sylvia-stein-memorial-space-grant-scholarship>



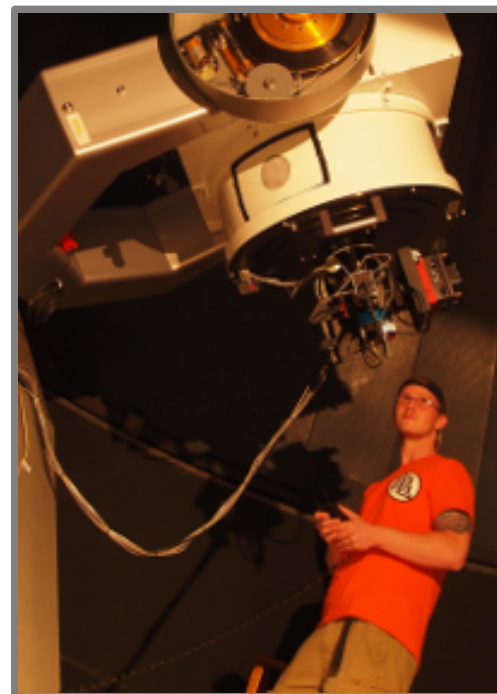
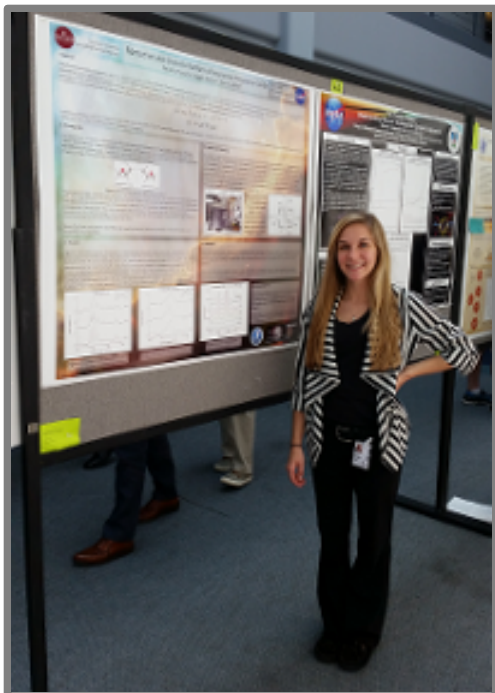
Katarin Yocum – NASA Internship

Katarina, a KU Chemistry major, participated in a 10-week internship at NASA Goddard Space Flight Center.

Katarina is continuing with observational astronomy research at KU and she plans to attend graduate school for astrochemistry after she graduates. Katarina is pictured to the left presenting her work at Goddard in August 2016.

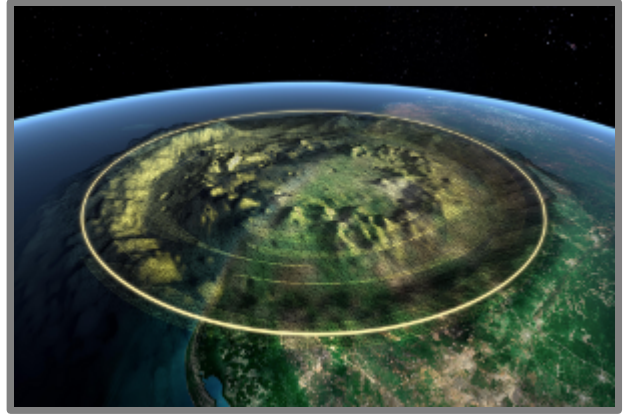
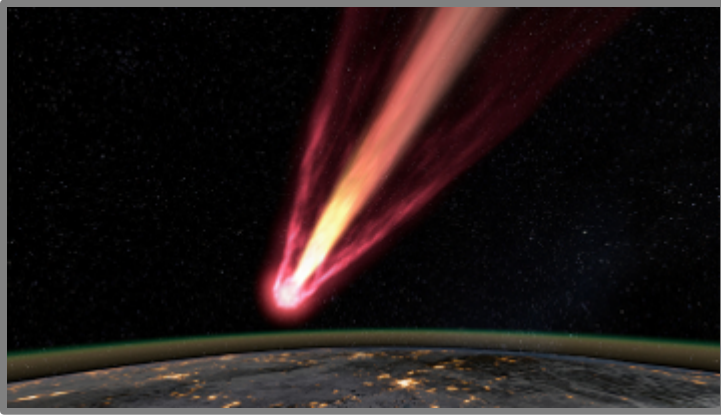
Luke Maritch – Research Grant

Luke, pictured to the right, was awarded a KU Bringing Experiences About Research in Summer (BEARS) research grant to search for new exoplanets using the KU Observatory. Luke's grant was for \$2,000 and it supported his research experience through the summer of 2016.



New Planetarium Show: “*Incoming!*”

Incoming! planetarium show debuts at the KU Planetarium in Fall 2016.



The latest planetarium production from the California Academy of Sciences, *Incoming!*, takes audiences on a journey to discover how asteroids and comets have shaped Earth as we know it by colliding with our planet throughout history. Narrated by George Takei, *Incoming!* explores the past, present, and future of our solar system and the landmark discoveries scientists have made by sending spacecraft to visit tiny worlds.

The show begins in the Arizona desert near Barringer Crater (also called Meteor Crater – pictured below), a kilometer-wide hole in the ground created about 50,000 years ago by a visitor from outer space. The visitor was an asteroid between 30 and 50 meters in diameter that released an estimated 10 megatons of energy upon impact. Since the creation of Earth, our home planet has been bombarded with many extraterrestrial objects ranging from the large asteroid or comet that contributed to the extinction of dinosaurs, to the sand-grain-sized objects that we regularly see as meteors as they fall through Earth's atmosphere.

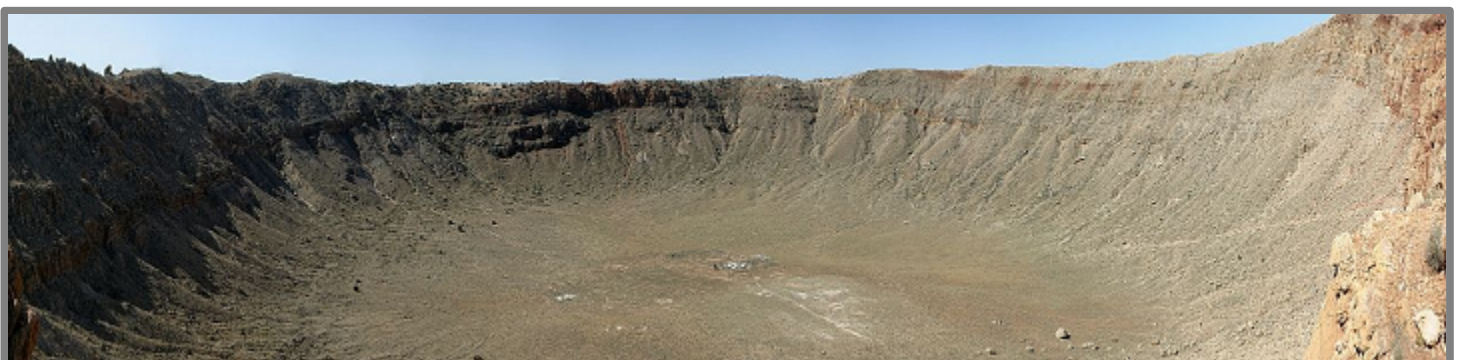
Incoming! provides the audience with a view of the early history of the solar system, computer simulations of the initial formation of planetesimals, and an immersive view of the time period that scientists call the “Late Heavy Bombardment.” The planetarium show also illustrates to the audience the distribution of the currently known “Near-Earth Objects” (or NEOs) and it describes what steps are being taken to locate new NEOs and to protect Earth from any large objects that might be found to be on potentially dangerous orbits and could impact Earth in the future.

Throughout the show, cutting-edge visualizations allow viewers to tag along with robot explorers, zooming by rocky asteroids and icy comets – and even the dwarf planet Pluto. While astronauts have only traveled as far as our nearest neighbor in space, the Moon, spacecraft continue to venture to mysterious worlds beyond to make landmark observations and collect valuable data about this final frontier.

Incoming! will be the feature of the public events at the KU Planetarium on Tuesday, October 4 at 7:00 pm and Thursday, November 17 at 7:00 pm.

For larger community groups (schools, scouting troops, clubs, etc.), special group showings of *Incoming!* can be accommodated. There is no cost for private group shows but they must be scheduled in advance. Interested groups can request private group shows using the on-line form located at the following link on the KU Planetarium's website:

<http://www.kutztown.edu/about-ku/administrative-offices/planetarium/request-a-private-group-planetarium-show.htm>



Computer Music & Visualization

Kutztown University's Department of Computer Science and Information Technology continues to make great use of the Planetarium as a venue for original research and community outreach.

UPCOMING EVENTS:

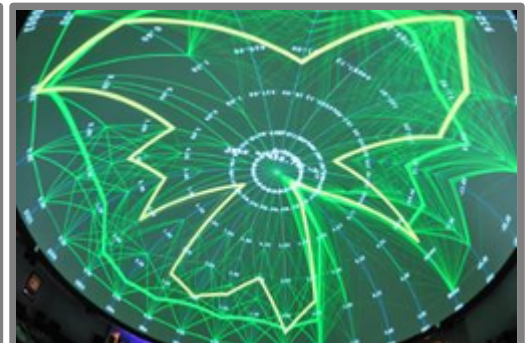
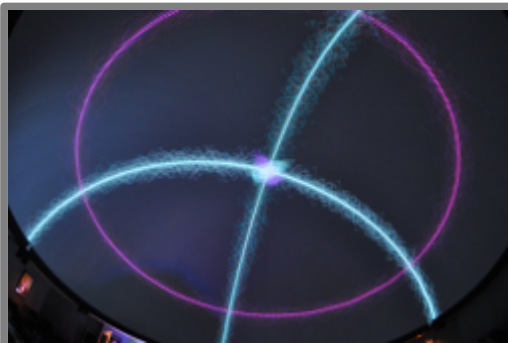
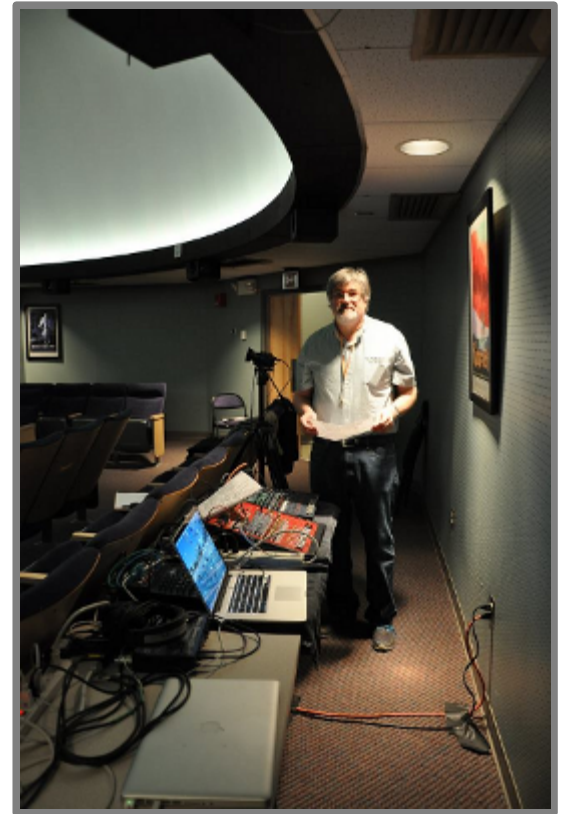
The Department of Computer Science & Information Technology will host a Girls in Computer Science Day for high school girls on October 19 from 10:00 am to 2:00 pm that includes an interactive session with computer music and graphical visualization in the Kutztown University Planetarium. For event information please contact Dr. Lisa Frye at frye@kutztown.edu or (610) 683-4340.



NEWS & RECENT EVENTS:

On March 19, 2016, Dr. Dale Parson of Computer Science & Information Technology hosted an evening Computer Music & Graphical Visualization Seminar, featuring invited guests Jaymie Strecker and Steve Mokris of <http://vuo.org/>, who gave an illustrated presentation on their Vuo software tool set for visualizing music, along with a performance.

Other KU performers included Professors Miles DeCoster and Josh Miller of Communication Design, Professor Rebekkah Palov of Fine Arts, Professors Boyer and Parson, and students Emily Hoch, Justin Rosado, Chelsea Smarr, and Genevieve Smith. The event was free and open to the public. Video recordings of the event are on-line at <https://vimeo.com/channels/cse2016>.



LASER LIGHT SHOWS

During the Fall 2016 semester, the KU Planetarium will present entertaining laser light shows featuring music by Pink Floyd, The Beatles, Led Zeppelin, U2, and more! Tickets cost \$5.00 and the shows will run every Thursday in October at 7:00 pm and 8:00 pm, with a special Halloween show on October 27 at 8:00 pm.

In addition, a special Holiday LASER Light Show will be featured on December 13 & 15. Both holiday shows will be at 8:00 pm. The complete schedule of LASER light shows can be found on Page 2 of this newsletter and on the planetarium's website:

<http://www.kutztown.edu/about-ku/administrative-offices/planetarium/laser-light-shows.htm>



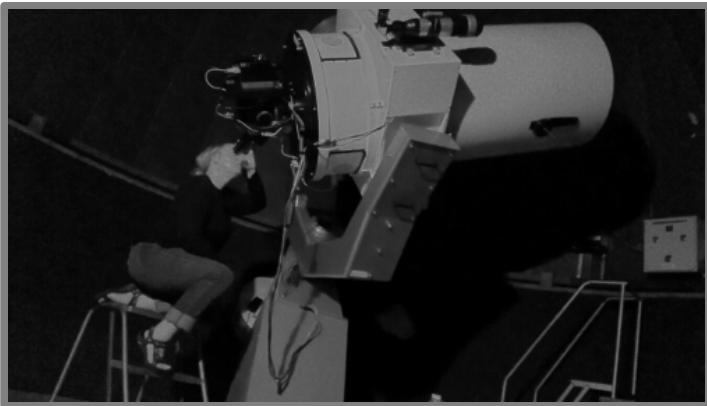
How to get LASER Light Show tickets:

Tickets are sold exclusively at the KU Planetarium – so they can be purchased at any KU Planetarium or Observatory event throughout the semester! If still available, tickets will be sold at the door on the day of each show.

The cost per ticket is \$5.00 and proceeds benefit the KU Astronomy Outreach Program. The planetarium currently accepts cash only for laser light show tickets.



Open House at the Observatory



ABOVE: A visitor looks through the eyepiece of the 24” research telescope – the KU Observatory’s main instrument.

The KU Observatory will continue to be open to the community during public observing events. Since these events require a clear sky and are heavily dependent on the weather, they are announced as the opportunities arise. Oftentimes, a public observing event will be announced on the morning of the same day. A sure way to get all of the announcements is to follow the KU Planetarium & Observatory on Facebook:

<https://www.facebook.com/KUPlanetarium>

Guests at the KU Observatory have been treated to live views of planets, star clusters, galaxies, and more!



ABOVE: These are typical views through the 24” telescope’s eyepiece of some common targets for visual observing. From left to right: a very small portion of the moon’s surface, the planet Saturn, the “Orion Nebula” (M42) – a star forming region, the planet Jupiter, and the “Hercules” globular star cluster (M13) – a collection of 300,000 stars in the Galactic halo.

Fall 2016



(Grim 100)

NEW planetarium show:
INCOMING!
Asteroids, Comets, and the Hard-Hitting
Stories of Our Cosmic Origins

FREE Planetarium Shows!
(7:00 pm)

- "Saturn: Jewel of the Heavens" - Sep. 22
- "Incoming!" - Oct. 4
- "Extreme Planets" - Nov. 3
- "Incoming!" - Nov. 17
- "Legends of the Night Sky: Orion" - Dec. 1
- "Season of Light" Holiday Show - Dec. 13
- "Season of Light" Holiday Show - Dec. 15

\$5 LASER Light Shows!
(every Thursday in October)

- Pink Floyd's "The Wall" - Oct. 6 & 20 @ 7pm
- "Dark Side of the Moon" - Oct. 6 & 20 @ 8pm
- "LASER Beatles" - Oct. 13 @ 7pm
- "LASER U2" - Oct. 13 @ 8pm
- "LASER Zeppelin" - Oct 27 @ 7pm
- "Fright Light" Halloween - Oct 27 @ 8pm

for tickets & more information:
www.kutztown.edu/planetarium





KU Planetarium Website: www.kutztown.edu/planetarium/



KU Astronomy Program Website:



<http://www.kutztown.edu/academics/colleges-and-departments/liberal-arts-and-sciences/departments/physical-sciences/astronomy.htm>
