

The Ursa Minor Report



Newsletter of the Kutztown University
Planetarium & Observatory

Spring 2017

Volume 3, Issue 1



Kutztown University Students
Discover Exoplanets!



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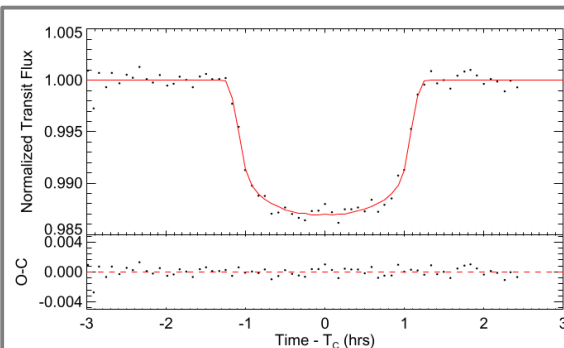
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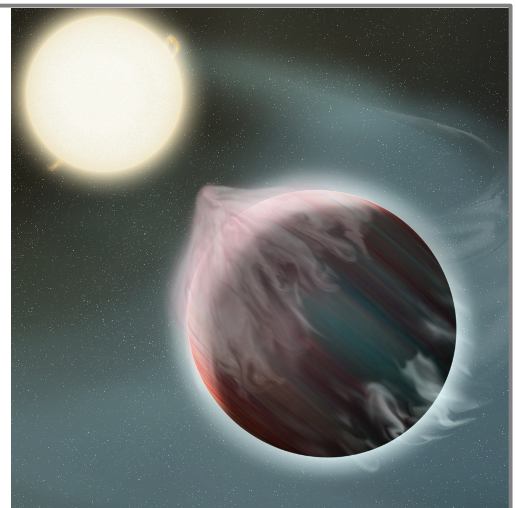
Kutztown University (KU) physics/astronomy majors Tiffany Visgaitis and Bethany Tirrell have spent many nights searching the galaxy for new exoplanets (planets outside of our solar system). As members of KU astronomer Dr. Phill Reed's undergraduate astrophysics research group, Visgaitis and Tirrell use KU's on-campus observatory to perform follow-up observations for the Kilodegree Extremely Little Telescope (KELT) exoplanet survey. KELT is jointly administered by The Ohio State University, Vanderbilt University, Lehigh University, and the South African Astronomical Observatory, and relies on a large network of astronomers like Reed, Visgaitis, and Tirrell to help confirm and co-discover new exoplanets.

A new paper co-authored by Visgaitis and Reed, and published in *The Astronomical Journal* (153:97, March 2017), announces a discovery in the article titled [KELT-16b: A Highly Irradiated, Ultra-short Period Hot Jupiter Nearing Tidal Disruption](#). KELT-16b is just the fifth giant planet to be discovered with an orbital period of less than one day. Another exoplanet discovery paper titled [KELT-18b: Puffy Planet, Hot Host, Probably Perturbed](#), co-authored by Tirrell, Visgaitis, and Reed, was recently submitted to *The Astronomical Journal* and is currently under peer review. Copies of these papers are available upon request at the KU Planetarium and Observatory.



Above: The follow-up light curve of KELT-16b (Oberst, et al. *The Astronomical Journal*, 153:97, March 2017), clearly showing the shallow "dip" in the star's apparent brightness as the planet passes in front of the star.

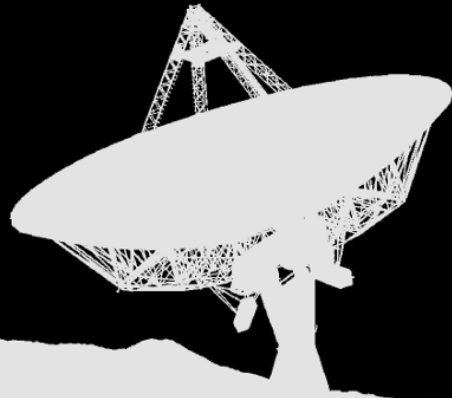
Right: An artist's depiction of an early stage in the tidal destruction of a hot Jupiter by its star. Credit: NASA/GSFC/Frank Reddy



Visgaitis and Tirrell have also both been selected to participate in an international research experience funded by the National Science Foundation (NSF). They will continue their exoplanet discovery work at KU through May 2017, and will then be employed as visiting researchers at the University of Salerno Observatory in Italy, working with experts in the field of exoplanet discovery via gravitational microlensing. Looking forward to her summer, Tirrell gave the following statement:

"This summer I have the amazing opportunity to conduct research using gravitational microlensing. I will be able to identify rogue planets and other exoplanets that are deeper in space. I can't wait to learn new researching techniques while being immersed in another culture. This is an experience I will be able to apply for the rest of my life!"





**Kutztown
University
Planetarium**

Spring 2017 Planetarium Shows

FREE and Open to the Public
(7:00 pm)

Feb 16 - "Ice Worlds"

Feb 23 - *Special Guest Lecture**

*"A Fortunate Universe:
Life in a Finely Tuned Cosmos"*
featuring Dr. Luke Barnes

Mar 9 - "Legends of the Night Sky:
Perseus & Andromeda"

Mar 30 - "Secret Lives of Stars"

Apr 13 - "From Earth to the Universe"

Apr 27 - "Black Holes"

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

* The guest lecture by Dr. Luke Barnes is co-sponsored by the KU Philosophy Department.

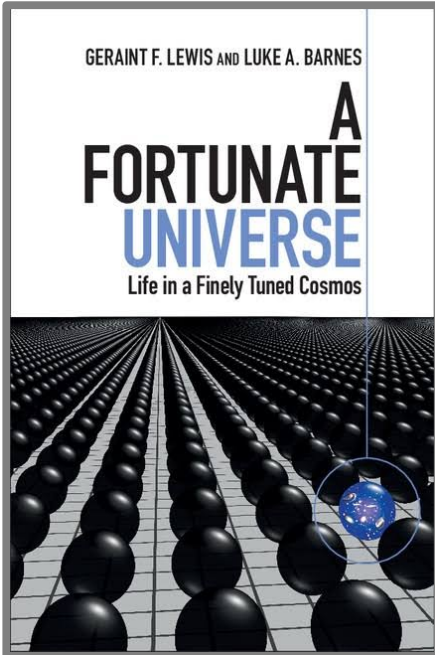
More To Be Announced ...
www.kutztown.edu/planetarium

Special Events in Spring 2017

Guest Lecture by Dr. Luke Barnes: “A Fortunate Universe: Life in a Finely Tuned Cosmos”

Thursday, February 23

7:00 pm



Dr. Luke Barnes, a postdoctoral researcher with the Sydney Institute for Astronomy at The University of Sydney in Australia, will visit Kutztown University on Thursday, February 23 to speak about his work on cosmology, galaxy formation, and the fine-tuning of the universe for life. This public lecture is free and open to everyone in the community.

“The planets, stars, and galaxies that fill the night sky obey elegant mathematical patterns: the laws of nature. Why does our Universe obey these particular laws? As a clue to answering this question, scientists have asked a related question: what if the laws were slightly different? What if it had begun with more matter, had heavier particles, or space had four dimensions?”

In the last 30 years, scientists have discovered something astounding: the vast majority of these changes are disastrous. We end up with a universe containing no galaxies, no stars, no planets, no atoms, no molecules, and most importantly, no intelligent life-forms wondering what went wrong. This is called the fine-tuning of the universe for life. After explaining the science of what happens when you change the way our universe works, we will ask: what does all this mean?”

Nobody's Fools Concert

Saturday, April 1

6:00 pm – 8:30 pm

The April 1, 2017 Nobody's Fools Concert will be a mix of jazz-inflected bluegrass and folk music, including numerous musical surprises. Faculty and students from five Kutztown University Departments will be playing guitars, banjos, a harp, an electronic bagpipe set, and other acoustic and processed instruments. We will sing! Graphical displays on the dome will highlight our music! Our featured performer for the evening is the regional multi-instrumentalist Ken Gehret, who has had a long and varied musical career playing Jazz Fest, bluegrass and folk festivals, and many other venues in eastern PA. Dr. Dale Parson of the Computer Science Department took his first banjo lesson from Ken Gehret in 1971. The concert starts at 6 PM. Doors open at 5:30, and the event is free and open to the public.

Nobody's Fools Concert, Saturday 1 April 2017
Kutztown University Planetarium, 6 - 8:30 PM

Chelsea Smarr
Andrew Koenig
Laura Sherrod
Phill Reed
Miles DeCoster
Dale Parson
Dan Talley
Brandon Scott

Ken Gehret

Featuring Berks Multi-Instrumental Genius Ken Gehret
Free & Open to the Public, contact parson@kutztown.edu
banjos & guitars & fiddles. oh my! bagpipes & harps & computers. oh my!

New Planetarium Show: “From Earth to the Universe”

From Earth to the Universe planetarium show debuts at the KU Planetarium in Spring 2017.



European
Southern
Observatory



“The night sky, both beautiful and mysterious, has been the subject of campfire stories, ancient myths and awe for as long as there have been people. A desire to comprehend the Universe may well be humanity’s oldest shared intellectual experience. Yet only recently have we truly begun to grasp our place in the immensity of the cosmos. To learn about this journey of celestial discovery, from the theories of the ancient Greek astronomers to today’s grandest telescopes, we invite you to experience *From Earth to the Universe*.

Directed by the young Greek filmmaker Theofanis N. Matsopoulos, and featuring a sweeping soundtrack from Norwegian composer Johan B. Monell, viewers can revel in the splendor of the various worlds in the Solar System and the ferocity of the scorching Sun. *From Earth to the Universe* then leaves our home to take the audience out to the colourful birthplaces and burial grounds of stars, and still further out, beyond the Milky Way, to the unimaginable immensity of myriads of galaxies. Along the way, the audience will learn about the history of astronomy, the invention of the telescope, and today’s giant telescopes that allow us to probe ever deeper into the Universe.

Director Theofanis N. Matsopoulos described the film as 'a colourful and inspiring journey... the visuals are stunning and really speak for themselves in showing just how far humanity’s ambition has taken us in terms of observing and understanding the Universe'.”

From Earth to the Universe will debut at the Kutztown University Planetarium on Thursday, April 13 at 7:00 pm. The show is free and open to the public. For larger community groups (schools, scouting troops, clubs, etc.), special group showings of *From Earth to the Universe* 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>

