

UT astronomer part of NASA mission that discovered famously furious star system shoots cosmic rays

By Christine Billat

he average person encounters cosmic rays when the fast, tiny particles shoot through the clouds and cause bright pixels on photos. Very few actually reach the ground, and they are not known to be harmful

Astrophysicists long believed those lightweight protons or electrons moving close to the speed of light reach Earth's atmosphere after supernova explosions, deflecting off electromagnetic fields in their scrambled path through space that ultimately masks their origin.

However, a groundbreaking new study involving NASA's NuSTAR space telescope shows the most luminous and massive stellar system within 10,000 light years also is a source of cosmic rays that sometimes reach Earth, no explosion necessary.

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COSMIC DISCOVERY: The left panel shows the Hubble image of Eta Carinae, and the right shows an X-ray image from the Chandra X-ray Observatory on the same scale. The green contours show where NuSTAR detected the very high-energy source, which also proves that the cosmic rays are from Eta Carinae and not another source in the region. The images are courtesy of NASA.

UT team wins research award at international Biodesign Challenge Summit

Bv Vicki L. Kroll

and inside — the hive won the Outstanding Field Research Award June 22 at the Biodesign Challenge Summit in New York.

"Apigiene Hive: Rethinking Bee Hygiene" was selected for the honor that recognizes a team that takes the initiative to go into the field and interview experts as well as potentially affected communities in order to find and understand the social impacts of their project.

Members of the UT team are Madeline Tomczak, who graduated with a bachelor of science degree in environmental science in May; Domenic Pennetta, a sophomore majoring in art; Jesse Grumelot, who graduated in May with a bachelor of science degree in bioengineering; and Lucya Keune, a senior studying visual arts.

The four were in New York for the award ceremony and exhibition with Brian Carpenter and Eric Zeigler, assistant professors in the Department of Art in the College of Arts and Letters, who taught the Biodesign Challenge class spring semester.

"We are very proud of our UT students," Carpenter said. "This challenge is fantastic. It encourages students to think creatively, take risks, and gather science and data. They realize their designs can work.'

"This competition was such an incredible opportunity for our students," Zeigler said. "For UT to win an award our first year in the challenge shows the dedication and creativity of our students."

Solving problems creatively is what the Biodesign Challenge is all about. The Genspace NYC program offers college students the chance to envision future applications of biotechnology by working together interdisciplinarily.

At UT, the Biodesign Challenge class

brought together students majoring in art,

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BIG WIN IN THE BIG APPLE: Members of the UT team — from left, Madeline Tomczak, Jesse Grumelot, Domenic Pennetta and Lucya Keune — posed for a photo with the Outstanding Field Research Award they won June 22 at the Biodesign Challenge Summit, which was held at the Museum of Modern Art in New York

LOOK FOR THE NEXT ISSUE OF UT NEWS JULY 23

Mandatory compliance training course work required

All faculty, supervisors, staff and student employees are required to complete annual compliance training to help the University advance its commitment to provide a supportive, inclusive and safe working environment.

Effective July 1, this online course work includes:

- Tools for an Ethical Workplace to be completed annually by all faculty and staff (except those who have taken the in-person course delivered in 2018 by the Ohio Ethics Commission); and
- HIPAA Update to be completed annually by all Health Science Campus employees, individuals who work with patients, and employees who work in clinical areas on Main Campus. (These employees also may be required to take additional compliance training courses to satisfy Joint Commission and other regulatory requirements.)

"In direct response to employee feedback last year, we've streamlined the courses so they're easier to complete this year, plus employees will no longer need to print certificates of completion because EVERFI — formerly LawRoom — will maintain completion data for us," said Dave Cutri, executive director for internal audit and chief compliance officer. Beginning Monday, July 2, you may access course work assigned to you by logging in to myUT, clicking on the Employee (or Affiliate) tab at the top of your screen, and scrolling down to the Training and Career Development section. Please read the instructions prior to starting.

You will be sent notification and reminder emails from the address "University of Toledo [mailto: donotreply@lawroom.com]" before your course work completion deadlines, and so you also may use the link provided in these emails to access your course work.

Twelve-month faculty and staff should complete their assigned compliance course work by Friday, Aug. 31, and nine-month and part-time employees should complete it no later than Wednesday, Oct. 31.

Allow approximately one hour to complete each course, although it may take you less (or more) time because course work is conveniently offered online and so you may work at your own pace.

If you have questions or need assistance accessing your assigned course work, contact Keenen Fisher in Human Resources at 419.530.1435 or keenen.fisher@utoledo.edu, or Cutri at 419.530.8718 or david.cutri@ utoledo.edu.

Cosmic rays

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The Eta Carinae discovery, which was published last week in the journal Nature Astronomy, was made by an international team, which includes an astronomer at The University of Toledo.

Dr. Noel Richardson, postdoctoral research associate in the UT Department of Physics and Astronomy, analyzed data from NuSTAR observations of Eta Carinae acquired between March 2014 and June 2016. The space telescope, which was launched in 2012 and can focus X-rays of much greater energy than any previous telescope, detects a source emitting X-rays above 30,000 electron volts at a rate of motion approaching the speed of light.

"Most stars can't produce that much energy," Richardson said. "Eta Carinae is one of only three star systems NuSTAR has been able to observe. The new technology allowed us to push what we understand about the high-energy universe. And we discovered that we don't always need an exploding star, but rather two stars with massive winds pushing out cosmic rays."

The raging winds from Eta Carinae's two tightly orbiting stars smash together at speeds of more than six million miles per hour approximately every five years. Temperatures reach many tens of millions of degrees enough to emit X-rays.

"Both of Eta Carinae's stars drive powerful outflows called stellar winds," Dr. Michael Corcoran, team member at NASA's Goddard Space Flight Center, said. "Where these winds clash changes during the orbital cycle, which produces a periodic signal in low-energy X-rays we've tracked for more than two decades."

"We know the blast waves of exploded stars can accelerate cosmic ray particles to speeds comparable to that of light, an incredible energy boost," said Dr. Kenji Hamaguchi, astrophysicist at NASA's Goddard Space Flight Center in Greenbelt, Md., and lead author of the study. "Similar processes must occur in other extreme environments. Our analysis indicates Eta Carinae is one of them."

Eta Carinae's primary star is almost 100 times more massive and five million times more luminous than the sun. That star also is famous for losing 10 suns worth of material — huge amounts of gas and dust — into space in an enormous explosion in the 1830s that briefly made it the second-brightest star in the sky.

Richardson studies massive stars and also was part of the international team that captured the first sharp image of Eta Carinae's violent wind collision zone and discovered new and unexpected structures in 2016.

In addition to UT and NASA's Goddard Space Flight Center, researchers from the University of Maryland in Baltimore County, Catholic University of America, California Institute of Technology, University of Leeds, Hiroshima University, University of Utah and San Jose State University contributed to the new study.



Members of Alpha Phi Alpha's Alpha Xi Lambda Chapter led by Brandon Tucker presented a check to David Young, director of Toledo Excel and special projects, and Dr. Sammy Spann, interim associate vice president for student affairs and dean of students, as part of the 30 for 30 campaign celebrating three decades of the college preparation and scholarship incentive program. Those who wish to help Toledo Excel reach the \$30,000 goal should contact Young at 419.530.3815 or david.young@utoledo.edu, or go to tinyurl.com/toledoexcel.

<image>

Richardson

Check it out

Biodesign Challenge Summit

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bioengineering and environmental science, as well as peers from the Jesup Scott Honors College.

UT went head to head against 29 schools from the United States, Australia, Belgium, Canada, Colombia, France, Guatemala, Japan and Scotland. Six awards were presented at the challenge.

"This was an incredible win on a world stage. Our students competed against teams from New York University, Rutgers, the University of Sydney, the Illinois Institute of Technology, Ghent University, Rensselaer Polytechnic Institute, Georgetown. It was our first time out of the gate, and UT took an award," said Barbara WF Miner, professor and chair of the UT Department of Art. "We are ecstatic!"

"[The 30] finalists were selected from a pool of 450 participants," Daniel Grushkin, founder and director of the Biodesign Challenge, said. "I firmly believe that they are leading us into a sustainable future with their visions." The UT team wanted to help the bee population and created additions for the popular Langstroth hive to fight one of the insect's biggest foes: mites.

A fibrous brush filled with zebra mussel powder at the hive entrance targets Varroa destructor mites on the surface of adult bees. The insects will clean off the powder — and the mites — and leftover powder will help kill the intruders inside the hive.

And to tackle the Acarapis woodi mites, which invade the hive and lay eggs, the team turned to a natural deterrent: mint, which was infused with beeswax for the starting frames.

At the Museum of Modern Art in New York, the UT students presented their project to more than 200 scientists, designers, entrepreneurs and artists.

"Our students' design is economically feasible; beekeepers would just add two simple modifications to their existing hives," Zeigler said. "It's a happy solution,



and one that could have tremendous market impact all over the world."

"Eric, the students and I want to thank the University for its support," Carpenter said. "We wouldn't have been able to develop this class without assistance from the College of Arts and Letters; the Jesup Scott Honors College; the College of Engineering; the Department of Art; and the Department of Environmental Sciences. We're already looking forward to next year's challenge."



Mellow yellow

John Parker's "Ornythopterus" lumbers near the entrance of UT Medical Center. The 1,500-pound yellow creature is one of 10 new works installed for the University's 13th annual Outdoor Sculpture Exhibition.

Photo by Daniel Miller

SPORTS

Rockets to host 'Football 101 — Ladies' Night Out' July 26

By Chris Cullum

UT Football Coach Jason Candle and his wife, Nicole, will host "Football 101 - Ladies' Night Out" Thursday, July 26, from 6 to 8 p.m. at the Glass Bowl.

The event will be a night of football, food and fun, and include the opportunity to get a behind-the-scenes tour of the Larimer Athletic Complex.

Those in attendance will have the opportunity to hear the coaches discuss the upcoming season, try on the team's Nike uniforms, meet the coaches and their wives, and sit in on a team meeting.

A wine and cheese social will be held during the event, and participants will receive a Rocket football T-shirt.

Tickets for the event are \$100.

All proceeds from the event will benefit the Human Trafficking and Social Justice Institute at The University of Toledo.

To register, fans can go online to UTRockets.com, call 419.530.4653, or visit the UT Athletic Ticket Office. The deadline to register is Friday, July 20.



Former men's basketball team manager passes away

By Paul Helgren

ormer UT Basketball Manager Bobby Graney of Dunedin, Fla., died June 30. He was 58.

Graney served as head ball boy for the men's basketball team from 1979 to 2000, and could always be found in his seat at the end of the scorer's table next to the Rocket bench at every home basketball game. He also worked with the football and women's basketball teams.

In the late 1980s, Graney increased his duties and began attending every UT men's and women's basketball practice where he would run the scoreboard and the clock. He also helped out in the equipment room.

In 2000, Graney, who had Down syndrome, retired with his family to Florida, where the climate was better suited to his condition

He was inducted into The University of Toledo Varsity 'T' Hall of Fame in 2000.

"All of us who knew and worked with Bobby came to love him," said UT Deputy Athletic Director Dave Nottke, who worked with Graney during his time as a basketball manager in the 1990s. "He was a fixture at UT basketball games and practices. The UT Athletic Department extends its deepest sympathies to Bobby's family during this difficult time."



Graney

The family gives special thanks to all their friends who knew Bobby, to the UT basketball staff, coaches, players, and everyone who made his life normal and complete.

Memorials are suggested to the UT Foundation at https://give2ut.utoledo.edu for the basketball program.

Trio of Rockets named to Scholar **All-America** Team

By Will Edmonds

oledo women's swimming and diving student-athletes Izzy Jones, Maureen O'Sullivan and Alida Ramden have been named to the College Swimming & Diving Coaches Association of America Scholar All-America Team.



The award recognizes students who have achieved a GPA of 3.50 or higher and competed at their respective National Collegiate Athletic Association. National

Association of Intercollegiate Athletics, and National Junior Athletic Association Swimming and Diving Championships.

In total, the College Swimming & Diving Coaches Association of America selected 1,069 swimmers and divers for its Scholar All-America Team.

The trio of Rockets also were honored for having achieved at least a "B" cut time at an NCAA regional meet.

"I'm very proud of Izzy, Maureen and Alida for achieving greatness in the pool



Head Coach Jonas Persson said. "They are leaders in and out of the pool, and are great role models for our team, especially for our incoming freshmen "This is what

and classroom,"

O'Sullivan

student-athlete: having success academically and athletically. I'm thankful for our coaches' association for working so hard to promote the sport of collegiate swimming and diving. Our goal is to increase this

> number every vear³



swimming and diving team earned a combined 3.59 GPA in the spring, the thirdbest mark in the Mid-American Conference.



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NEWS

Tradition continues: National Youth Sports Program brings kids to campus

un and learning — that's what the National Youth Sports Program (NYSP) is all about.

A total of 140 income-eligible children came to campus last month for the free three-week program that provides recreational and educational opportunities.

Along with sports programs, the students learned about nutrition, enhancing their self-image, the value of communication, healthy behaviors, and how to resist peer pressure.

Starting in 1968, UT was one of the first universities in the country to offer the federally funded program sponsored by the National Collegiate Athletic Association.

After federal funding for the program was cut, the University has continued to operate the camp through fundraising, in-kind donations, and commitment from the University to provide some support and facilities.

"We are very fortunate that The University of Toledo continues to support the NYSP as it aligns with the University's mission, and UT is able to provide a safe and nurturing environment for the children to have fun while learning at the same time," said Dr. Ruthie Kucharewski, professor and chair in the School of Exercise and Rehabilitation Sciences, and NYSP administrator.

"Our program provides structure, offers age-appropriate activities, and it promotes a healthy lifestyle and a constructive use of leisure time. We also encourage the children to study hard in school, associate with positive people, find good adult role models, and to make good choices."

To give a gift to the National Youth Sports Program Fund, contact the UT Foundation at 419.530.7730 or go to give2ut.utoledo.edu and search for NYSP.



ON THE SIDELINE: Children watched others play volleyball and waited for their turn on the court.





HOOPLA: Jaylen Furphy, a student at Springfield Middle School, right, dribbled during a basketball session in the Health Education Building Gym.



COOL CLASS: Amarion Jordan, a student at Harvard Elementary, left, took a swim in the pool at the Student Recreation Center.

FRIENDS: Keimiyah Wilson, left, and Morgan Carnes smiled for the camera in the Health Education Building Gym.



JUMPING IN: Braylin Elam, a student at St. Francis di Sales High School, jumped in the pool at the Student Recreation Center.

OPINION

Craft beer, international festivals: A Pint of Science

By Dr. Neil Reid

n May, I spent a couple of days in L'Aquila, Italy. I was there as a guest of the Gran Sasso Science Institute (GSSI), which had invited me to give a couple of talks. This was my second visit to L'Aquila. I had been there in September 2017, also as a guest of the institute. To get to L'Aquila, you fly into Rome, and then travel by bus for two hours. L'Aquila has a population of approximately 70,000 people.

The purpose of my visit this time was to give two lectures — one to this year's cohort of Gran Sasso Science Institute doctoral students in regional science and urban studies, and one to members of the general public as part of the Pint of Science Festival that was taking place in town.

My presentation to the GSSI students focused on the theme of consolidation and fragmentation in the global brewing industry. Both processes are impacting the industry simultaneously. For example, the \$106 billion acquisition of SABMiller by AB InBev in 2016 resulted in an industry that is considerably more consolidated at the global scale. At the same time, at the local scale, the industry becomes more fragmented every time a new craft brewery opens it doors.

My presentation at GSSI was in the afternoon. In the evening, I was back at the podium again. This time the audience took on a very different composition — it was the good citizens of L'Aquila. The town had been chosen as one of the venues for the three-day Pint of Science Festival; a festival at which scientists present their research to members of the public in the informal setting of a bar/pub.

Pint of Science was started in 2012 by Dr. Praveen Paul and Dr. Michael Motskin, two research scientists at Imperial College in London. At the time, Paul and Motskin were postdoctoral researchers working on motor neuron and Parkinson's disease, respectively. While working in London, Paul and Motskin organized a meet the researchers event, in which they invited individuals impacted by the disease (both those with the disease and their families) to their laboratories to see, firsthand, the research in which they were engaged. It was a huge success and very quickly the idea of taking scientific research to the people emerged - hence, a Pint of Science was born.

According to the Pint of Science website: "The Pint of Science Festival aims to deliver interesting and relevant talks on the latest science research in an accessible format to the public — mainly across bars and pubs. We want to provide a platform that allows people to discuss research with the people who carry it out, and no prior knowledge of the subject is required."

In 2018, Pint of Science Festivals were held in more than 260 cities across 21 countries. In Italy, 20 cities hosted Pint of Science events. All Pint of Science events across the world were held on the same three days — May 14-16. Three venues hosted the events in L'Aquila. Over the three days, in L'Aquila, 16 lectures were presented.





The topics were wide-ranging and included "Chasing Gravitational Waves," "Who's Afraid of Social Media?" and "Living Together: From Municipalities to Cohousing and Beyond." My own lecture was titled "Making Your Beer Great Again."

The venue for my lecture was Fratelli Il Bacaro, which describes itself as "a Venetian tavern with a wide selection of wines by the glass and small snacks, a few seats and ... a place where dishes from the local and Italian culinary tradition are also served ... a place to make culture, where young singers and musicians, who want to express themselves and grow through music, alternate with great artists."

My lecture started at 9:30 p.m. The venue was cozy and comfortably full with somewhere between 35 and 40 people. Recognizing that the audience's knowledge of English was probably highly variable, my colleague Giulia Pezzi had translated my entire PowerPoint presentation into Italian. I covered five themes in my lecture:

- The rise of large breweries and the homogenization of beer;
- The emergence of home brewing and the rise of craft breweries;
- The craft beer drinker and what attracts him/her to craft beer;

- The craft brewery as a unique drinking space; and
- The geography of craft breweries.

While most of my material came from the United States, I did incorporate some examples from Europe. The talk seemed to go well, and the audience appeared engaged. After I had finished, audience members were invited to ask questions. There were six or seven questions, and I was really impressed with their overall thoughtfulness and insightfulness.

My participation in L'Aquila's Pint of Science Festival did garner some attention in the Italian press, including a mention in La Repubblica, one of the country's most influential daily newspapers. The local L'Aquila website, NewsTown, also covered my visit.

I was also interviewed by Fabio Iuliano, who runs the website virtuquotidiane.it. Fabio's interview touched on a number of interesting issues, including the reasons behind the success of craft brewing in the United States and status of craft beer in Italy. He also noted that Bob Dylan was a recent co-investor in a craft whiskey distiller, Heaven's Door. Fabio was interested in the similarities behind craft distilling and craft brewing industries.

CHEERS! Dr. Neil Reid, third from left, posed for a photo with some of his Italian colleagues before his talk at the Pint of Science Festival in L'Aquila.

Fabio's final question had to do with the president of the United States. He wanted to know if the title of my lecture, "Making Your Beer Great Again" had been inspired by President Donald Trump's slogan "Make America Great Again." I explained that while my presentation's title was a clear nod to the president's slogan, it was not intended as a political statement; I was simply having a little fun with my title.

As I reflected on my interview with Fabio, I must admit that I had not anticipated being asked about Bob Dylan and President Trump in an interview about craft beer.

So that was my trip to L'Aquila. I had a wonderful visit and was, yet again, overwhelmed by the generosity of my Italian hosts. Fortunately, it will not be long before I am back in L'Aquila. I will be there in July to participate in a workshop on "The Geography of Craft Beer Brewing and Consumption: Local Entrepreneurialism and Tourism Development," an event that I am co-organizing with my Italian colleagues, Alessandra Faggian and Giulia Pezzi.

Until then, saluti!

Reid is a professor of geography and planning, who is known as UT's "beer professor." He writes a blog about beer thebeerprofessor.com.

NEWS

UT program awarded grant to support students with developmental disabilities

n \$8,000 grant from the Toledo Community Foundation Inc. will support The University of Toledo in expanding rewarding college experiences for students with intellectual and developmental disabilities.

As the only program of its kind in northwest Ohio, Toledo Transition helps students develop skills to enhance their quality of life and prepare them for gainful employment. With the grant funding from the Helping Hens Fund of the Toledo Community Foundation, the program will be able to complete the final component of its curriculum: College Orientation and Assessment of Transition Skills.

The four-day, four-night residence hall experience is designed to provide opportunity and assessment for new and current Toledo Transition students across four key transition areas: independent living, self-determination, vocational and social. The program ran last month and concluded with orientation for the new cohort of Toledo Transition students beginning fall 2018.

"Because of the Toledo Community Foundation's support, we will be able to assess students' readiness for dorm life, which will start for students in the program beginning spring 2019," said Dr. Patricia Devlin, program director and UT associate professor of early childhood, physical and special education. "College Orientation and Assessment of Transition Skills exposes students to various aspects of college life and assessment of student strengths and needs'

Additionally, the program provides a learning lab-style experience for traditional college students in disciplines across campus. This year, graduate students studying speech and language assessed the Toledo Transition students in the areas of communication and socialization.

Devlin began the pilot program for Toledo Transition in 2012 with collaboration from Ohio State University. As parents and advocates recognized how it met community needs, the program continued to develop a federally recognized curriculum with support from the University. The first cohort of 20 students completed the program in the



IN THE CLASSROOM: Shaun Ochs led a session with students in the Toledo Transition program.

2017-18 academic year. Toledo Transition aims to grow its capacity to be able to accommodate up to 30 students by 2019-20.

The program offers both two-year and four-year non-degree certificate tracks for students to audit college courses and cultivate career development and

independent living skills.

In memoriam

Marilynn K. Fulton, Toledo, died June 27 at age 83. She graduated from UT with a bachelor's degree in pharmacy in 1957 and worked in the MCO/MUO/UTMC Pharmacy from 2000 until her retirement in 2009. Fulton received a bachelor's degree in pharmacy from the University in 1957. She is survived by her husband, Robert H. Fulton, a retired pharmacist from the hospital.

William A. "Bill" Jones, Hilliard, Ohio, a mechanic at UT from 1990 until his retirement in 2008, died June 20. He was 75.

Coletta J. Watchell Lewandowski, Melbourne Victoria, Australia, who was a secretary in the Counseling Center for 15 years until her retirement in 1989, died May 25 at age 93. A UT alumna, she received an associate's degree in marketing and sales technology in 1988 and a bachelor of science degree in 1990.

Kathy L. Pawloski, Toledo, a former employee of UT Medical Center, died June 16 at age 62. Over the years, she was a secretary in Nursing Services, a technical typist in Food and Nutrition, and a secretary in Family Medicine and Medicine. Pawloski retired in 2015.

Margaret A. Weber, Sylvania, a former member of the faculty of the Department of Music, died June 15 at age 101. In 1961, she joined the University as a parttime teacher and was named adjunct assistant professor in 1965. Weber, who was certified for piano and organ by the Music Teachers National Association, was a notable composer.

Marr'Del Maria Werder, Archbold, Ohio, who for a time taught continuing education classes at the University, died June 17 at age 76.

Janice E. Wessendorf, Toledo, a former secretary at the University, died June 24 at age 88. She retired from UT in 1995.



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ARTS

