A billion years ago, before the continents even formed on Earth, two black holes slammed together with unimaginable force, sending shocks called “gravitational waves” through the universe.

Black holes are not visible even with the most powerful telescopes. So how do we know this happened?

On Sept. 14, an international consortium of hundreds of researchers found the proof, sending shock waves of a different sort through the scientific community: They detected the gravitational waves radiating from that ancient collision – the first physical evidence of a phenomenon Albert Einstein predicted a century ago.

The detection of gravitational waves came after a nearly 20-year search – the largest and most ambitious project ever funded by the National Science Foundation – and physicists at the University of Wisconsin-Milwaukee played an essential role.

Confirmation of the waves’ existence opens a radically new window on the universe, said UWM Physics Professor Patrick Brady, director of the Leonard E. Parker Center for Gravitation, Cosmology and Astrophysics.

Until now, astronomical observations were made with forms of radiation, such as visible light, radio waves and X-rays. The long-sought gravitational waves offer an entirely new way to investigate the universe.

Joining Brady in the quest are faculty members Jolien Creighton, Xavier Siemens and Alan Wiseman, along with 26 UWM students and scientists. The UWM team is part of the LIGO Scientific Collaboration, an international consortium of 70 institutions and hundreds of researchers.

“The UWM group has been a key part of the project from very early on,” said Clifford Will, a distinguished professor of physics at Florida State University who is known for his contributions to Einstein’s theory of general relativity. “They were involved both in building the infrastructure and in resolving issues related to using the data. They were responsible for important calculations that were used to make the detection. Some of those formulas were built into the data-analysis protocol for LIGO.”
UWM confers honorary degree

By Michelle Johnson, University Relations

Former French Minister of Justice Christiane Taubira received an honorary doctorate at UWM in January, telling guests at the special ceremony that they must “maintain a constant vigilance” when it comes to human rights.

The former economics professor served as France’s justice minister from 2012 until Jan. 27, when she resigned in opposition to a proposal to revoke citizenship from convicted terrorists with dual nationality.

Taubira spoke in French, with an English translation available. Nominated for an honorary doctorate of laws and human rights by the UWM Department of French, Italian and Comparative Literature, she was recognized for embracing the role of a public intellectual and for her commitment to the values of liberty and equality for all. She received the degree at a special ceremony because she was unable to attend the December commencement.

Provost Johannes Britz introduced Taubira as an “uncommonly deserving candidate” who “has been a leading advocate for the most marginal and vulnerable.”

Born in 1952 in French Guiana, Taubira was the first woman elected as Guiana’s deputy to the French National Assembly. She served four consecutive terms from 1992 to 2012, when French President François Hollande appointed her Minister of Justice.

Taubira rose to national prominence in 1999, when she introduced a bill that became the Taubira Law, which challenges the French state to address its role in the slave trade and slavery. During her tenure as Minister of Justice, Taubira undertook the overhaul of France’s penal system, focusing on alternatives to incarceration for juvenile offenders. She is regarded as a leading champion of France’s “marriage for all” act, which legalized same-sex marriage.

“Her political engagement embodies an outstanding commitment and dedication to principles the UWM community holds dear: the struggle for human rights, human dignity and equal rights for all,” said Sarah Davies Cordova, a professor of French who helped coordinate Taubira’s visit.

Taubira said she was honored to be recognized for her human rights work. She also said it was an honor to be at UWM, where “the quality of its teaching staff shines” and students from around the world are welcome.
First Latino U.S. Poet Laureate coming to UWM

By Sarah Vickery, College of Letters & Science

For the first time in 79 years, a Latino writer has been appointed the United States Poet Laureate. Next month, that groundbreaking poet is coming to UWM.

Juan Felipe Herrera is an acclaimed writer spanning several genres, from poetry to young adult novels, to children’s books and mixed genre works. For the past two years (2012-2014), he served as the Poet Laureate for the State of California, and this year he’s making history as the first Latino U.S. Poet Laureate. He will read from his works at UWM in the Student Union Ballroom at 7 p.m. on March 3.

“It’s amazing when you consider that after Caucasians, Latinos are the second-largest ethnic population in the United States,” said UWM English professor Mauricio Kilwein Guevara. “That’s a long time for the second-largest ethnic group to be shut out.”

Kilwein Guevara recognized the dearth of representation for Latino poets, so when he was president of the Association for Writers & Writing Programs in 2003, he invited Herrera to be featured at the group’s annual conference. It was there that English Professor Brenda Cárdenas also first befriended Herrera, who later wrote the introduction to one of her poetry collections. It’s thanks to these long-standing relationships that Herrera is now visiting UWM as part of the Boudreaux Reading Series.

“It really is a testament of the quality of the graduate Creative Writing program at UWM, to be able to attract a transformational figure in poetry,” Kilwein Guevara said. “It is because the institution has invested in this program that we have access to some of the major figures working in poetry and fiction in the United States and internationally.”

Cárdenas is excited not only for UWM, but also for the residents of Milwaukee who will able to hear Herrera’s works.

“Many people think that poetry is inaccessible. They think it’s something they have to study formally, or they worry that they won’t know how to interpret it and are going to get it wrong. I think Herrera is one of the best poets to change that perception,” she said. “Without you even realizing what he’s doing, he’s going to have you believing that poetry’s not such a strange and foreign thing. ... That’s one benefit for Milwaukee: People who come out to this event will be able to access poetry through this person who really wants to share poetry with them.”

While neither Cárdenas nor Kilwein Guevara know what Herrera will read, the audience can expect to hear some bilingual poetry – Herrera often writes in both English and Spanish, and sometimes combines the two languages in one poem – and to participate in the reading.

“He’s truly a communitarian - that is, he wants to bring communities, all different groups together,” Kilwein Guevara added. “Juan Felipe thinks there’s a flavor and a joy whenever we have an opportunity to learn about different cultural perspectives. He really sees the function of poetry as bringing people together.”


The reading is sponsored by the Department of English through the Boudreaux Foundation, The Roberto Hernández Center, and the UWM Union Sociocultural Programming.

IF YOU GO

Juan Felipe Herrera will read selected works on March 3 at 7:00 p.m. in the UWM Union Ballroom (2200 E. Kenwood Blvd., Milwaukee).

The reading is free and open to the public. Books will be available for purchase.
Becky Bell jokes that she was “ancient” compared to the rest of her classmates when she went back to school at age 30. She already had two Associate’s degrees to her name and a job as an Environmental, Health, and Safety Coordinator with Benz Oil, but she knew she needed a Bachelor’s degree if she wanted to take her career further. UWM and a Conservation and Environmental Science major were the natural choice.

“I love the outdoors. I think protecting the environment and doing everything we can is extremely important,” she said. “It’s a passion of mine.”

Bell entered UWM in 2009 and the next three years were busy ones – she worked full-time and went to school full-time as well. The classes made it worth it. Bell remembers with fondness a fungi, algae and plants course that was particularly inspiring, and smiles when she recalls the professor who taught it.

She graduated in 2012 and went straight to work for Athea Packaging and Laboratories, which manufactures specialty chemicals and wet wipes.

“That was not the field I wanted to be in,” Bell said, “but my job focused on regulatory compliance. As part of my regulatory responsibilities, I worked closely with the DNR (Department of Natural Resources) and the EPA. I really enjoyed that aspect.”

In May, Bell found a job much more to her liking; she is now an Environmental Health and Safety Specialist at the Milwaukee branch of Novozymes BioAg, Inc., a Danish corporation in the business of producing enzymes and agricultural biologicals.

“The BioAg division ‘manufactures’ microbials that are derived from bacteria and fungi. At the Milwaukee facility, we are growing microorganisms that are taken from plant roots,” Bell explained. “We grow them fermentation tanks, mix them with water, clay, or peat, and then sell the final product as a bioyield enhancer. It’s completely natural and plant-based, and the final product enhances a plant's ability to uptake nutrients therefore allowing farmers to use less water on their crops.”

A plant-based product might not seem like it could harm the environment, but Bell is still kept busy by numerous health, environment, and safety regulations. Due to the nature of the manufacturing process, there is potential for unwanted material to enter the storm water system. It’s especially important for her to make employees aware of what could potentially end up going down the drain and how to prevent storm and groundwater contamination.

“It’s important for employees in any type of manufacturing environment, especially in Milwaukee, to understand that everything that gets poured down the drain will eventually end up in Lake Michigan,” Bell said. “I understand the significance of that now because I’ve gone to school for it, but I didn’t have much of a clue before I went to UWM.”

In addition to monitoring her company’s storm water and spill control programs, Bell tracks Novozymes BioAg water and energy usage. She also handles employee training and workplace safety regulations to keep the business compliant with Occupational Safety and Health Administration (OSHA) standards. Her work keeps her on the road quite a bit as she travels to other branches of Novozymes BioAg to study their environmental, health, and safety procedures. This year, she’s been tasked with helping to standardize environmental, health, and safety practices at all of the Novozymes BioAg branches in North and South America. It’s a big job, but Bell loves it.

“I would not be where I am without my degree from UWM. I knew what I wanted to do but I needed a degree to do it,” she said. “The classes made me appreciate what we have here in Milwaukee, and it made me want to spread that love and knowledge of the environment to others.”
L&S Salutes Mary Schumacher Witt, ’69

Every so often, Letters & Science likes to recognize a donor who has generously given to the college. This month, we salute Sociology major Mary Witt.

Witt attended UWM against the background of the Vietnam War and the Civil Rights movement. Sociology seemed a natural fit.

“My interest in the world and the issues that were taking place made me really want to dig into how people function, how groups function, how organizations function, partly with the idea that could provide a great platform if I wanted to do something in terms of changing things,” she said. “I thought Sociology would be a good base.”

Witt graduated in 1969 with a Sociology major, though she had nearly enough credits for a major in History and Political Science as well. She grew up in Wausau, Wis., and transferred to UWM from UW-Marathon County. She loved her time at UWM and still recalls her favorite classes.

“I had a history professor who taught French history, who was excellent. We always used to have interesting discussions there,” she said. “I thought the Sociology classes that I took were really great classes. Even today, they still serve me well because they covered things like organizational development and systems theory. I use that information every day in my work life.”

Witt is currently a health care consultant, but that’s the latest of many titles she’s held. After she graduated from UWM, Witt worked for the Department of Social Services for Rock County counseling unmarried mothers. She moved to Michigan for her Master’s in Social Work, and then spent her next few years as a social worker in Detroit, a frustrating but rewarding job.

“It was very interesting and I certainly liked it, but it definitely was a challenge. It was in the inner city of Detroit. A lot of the problems these kids were having were related to their dysfunctional families and not a lot of family support,” Witt said. “It was really challenging to me to be in Detroit in the early ’70s when the auto industry was facing its first major challenge from foreign auto companies.”

From there, she began working in the health care field, eventually moving to California. She began consulting in 1993 and is now an independent health care consultant. She’s never forgotten her roots, though, and regularly gives to the Sociology Department to fund student scholarships.

“If it hadn’t been for scholarships and work study at UWM, I wouldn’t have been there. To me, scholarships are very, very important,” Witt said. “If we don’t do that, we’re going to have a whole generation of kids who are not going to have the skills and the education they need to be successful long-term.”

UWM ranked tops for research

This month, UWM earned the top rating for a research institution from the Carnegie Classification of Institutions of Higher Education, the gold standard for assessment. The rating, known as “R1”, was granted to just 115 institutions out of over 4,600 universities evaluated. UWM and UW-Madison were the only Wisconsin universities to earn the designation.

The 2015 rankings were issued in February 2016. Rankings will not be issued again for another five years. The designation recognizes the caliber of UWM’s faculty and students and the research they conduct.

Home of the natural sciences, humanities and social sciences, the College of Letters & Science is the research powerhouse among the campus’ schools and colleges, bringing in just over half of the extramural research funding that flows to the university.
After having worked there for a semester, Molly Dexter and Ashveer Singh can safely say that the White House resembles *The West Wing* more than it does *House of Cards*.

The two UWM students recently returned from an internship that placed them in the heart of United States government. Singh, who is leaning toward an Economics or Political Science major, and Dexter, a Political Science and Women’s and Gender Studies double major, spent the fall semester learning about various aspects of the government as they worked alongside staffers and politicians inside the White House.

Though they are classmates, Singh and Dexter did not know the other was also interning in Washington, D.C. until after the internship started when a mutual acquaintance connected them. Each worked in different offices in the White House, leading to a unique – but rewarding – experience.

Dexter knew she wanted a White House internship ever since she was inspired to major in Political Science after attending the Democratic Women’s Leadership Forum in Washington, D.C. during her freshman year at UWM. Her interest in politics grew as she spent time volunteering, taking classes, and completing an internship with U.S. Senator Tammy Baldwin. She then applied, was accepted, and found herself in the Visitor’s Office under the umbrella of the White House Office of Management and Administration.

“The goal of that office, and also the goal of the President, is to make their (the Obama) White House the most open and accessible in history,” Dexter said. “We mostly coordinated White House tours and large events. A few of the events I got to work on were the Pope State arrival, the National Christmas Tree Lighting, the Fall Garden Tours, and Halloween at the White House.”

As an intern, Dexter was partially responsible for managing White House tours and assisting in the planning and execution of official events. “The National Christmas Tree Lighting was probably my favorite,” Dexter said. “The whole First Family was there, and the spirit of the event was so warm and memorable.”

Coordinating the White House tours had a humbling effect on Dexter. “It’s really cool to see how excited and happy people are, especially kids – ‘Are we really in the White House?’ You see it come to life when there are people there,” she said. “If you started to get used to the fact that you were at the White House and you got desensitized to it, people’s reactions would remind you that it’s so special.”

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White House internship

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Singh was coaxed into applying for a White House internship by a friend from high school. Singh admires political figures like President Obama and decided he had nothing to lose by applying. He found himself working in the White House Office of Presidential Correspondence.

“The Correspondence Office essentially facilitates the discourse between the President of the United States and the American people,” Singh explained. “I was on the email team. As an email intern, I helped read the incoming emails. The President reads 10 letters every day from the American people ... and I was one of the people who screened them.”

Singh can’t reveal the contents of the letters, but he’s thoughtful as he recalls the range of mail. Writers expressed everything from anger to gratitude and sometimes even requested help for personal situations. On occasion, Singh said, the office was able to pass the mail on to others who could help those particular letter-writers.

It wasn’t all business – Singh had time to meet some of Washington’s key political figures, including the First Family, Vice President Joe Biden, and Wisconsin Senator Tammy Baldwin.

“I’m taking an international relations class right now, and a lot of the things Biden talked about were textbook. It was fascinating. He gave a lot of real-world examples from his experience with foreign policy. He’s a truly incredible person,” Singh said.

Both Dexter and Singh flew home with a deeper appreciation and respect for civil servants, no matter their view on the federal government.

“Working for the government is not always the most glamorous thing in the world. You don’t get paid very well, and it’s not necessarily a prestige-driven thing; but I learned that’s not what’s important. The public servants I worked with are true patriots because they work every day in pursuit of something greater than themselves,” Singh said. “That, to me, is inspiring.”

Both Dexter and Singh said that they would like to work in government. Singh thinks he’ll work in the private sector before heading to D.C., and Dexter said she’s interested in working in campaign management. Who knows, she added – one day she might even run for office herself.
Eyes across the nation turned toward UWM on Feb. 11 as candidates for the Democratic presidential nomination Bernie Sanders and Hillary Clinton took to the stage in the UWM Zelazo Center for the latest in a series of debates outlining their policies and political agendas. UWM professors gave some insight into the political process.

Political scientist **Thomas Holbrook** has been studying presidential campaigns and voter behavior for more than 25 years. His forthcoming book, “Altered States: Changing Populations, Changing Parties, and the Transformation of the American Political Landscape” (Oxford University Press), looks at how voting patterns have changed from state to state. His research interests are rooted in understanding how factors such as the national economy influence election results.

**Is this election particularly challenging in terms of your work in forecasting?**

The Republican field is so different from what we’ve seen before, both in terms of numbers and the type of candidates. For one thing, it’s simply harder to poll. Moreover, two of the candidates, Donald Trump and Ben Carson, haven’t run for office before.

The Democratic side is fairly standard – a conventional candidate with a challenger who’s significantly farther to the left. So that’s easier to think about than the Republican side.

**Do you see any departures from how candidates have campaigned in the past?**

One big difference is that Donald Trump has hardly done any advertising at all. He hasn’t had to, he’s got the media advertising.

But in terms of what’s happening under the hood, most campaigns are continuing the trend

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Political scientist **Kathleen Dolan** specializes in the role of women in politics, and she shared her thoughts about the past, present and likely future of American women who run for elected office.

George McGovern famously said it would be easier to elect a black man president than a white woman. We’ve elected a black man…

And we may elect a woman. We will have to see. But it is important to keep in mind that Hillary Clinton didn’t lose the Democratic nomination in 2008 because she was a woman. There were lots of traditional political influences at work – alongside the race and sex of the candidates – that shaped that election.

With regard to electing a woman president, one important explanation is the “pipeline” theory of candidacy. In general, successful presidential candidates are people who have served either in the U.S. Senate or as governors, and who served in lower state offices prior to that. While we’ve had – and have – women in those offices, there haven’t been as many of them as there have been men and they haven’t been serving as long. So to have more credible women candidates for president, we need more women with experience as senators or governors.

**Do we have enough women running for office?**

Roughly 20 percent of candidates for Congress are women – 65 percent of women candidates are Democrats, by the way – and 20 percent of U.S.
Upcoming Events

Feb. 26
Ctr. for Gravitation, Cosmology and Astrophysics
Seminar: The Thirty Meter Telescope. 1 p.m. KIRC
Dr. Warren Skidmore from the Thirty Meter Telescope Observatory will provide a construction and project update.
http://bit.ly/1OorVz1


Philosophy Colloquium: Kant’s Stance on the Relationist-Substantivalist Debate and its Justification. 3:30 p.m. Curtin 175. James Messina, UW-Madison.

Physics Colloquium: Observation of Gravitational Waves from a Binary Black Hole Merger. 3:30 p.m. Lapham 160. The presenter is Patrick Brady, one of UWM’s researchers who helped detect gravitational waves as part of the Laser Interferometer Gravitational-Wave Observatory collaboration. http://uwm.edu/physics/event/colloquium-dr-patrick-brady/

Planetarium show: Glorious Galaxies. 7 p.m. Manfred Olson Planetarium. There are over 170 billion galaxies in the observable universe. Join us to explore the beautiful shapes, collisions, and black holes related to a galaxy. Tickets are $3. http://planetarium.uwm.edu

Science Bag: Dark Matter, Dark Energy and the Quest to Understand the Universe. 8 p.m. Physics 137. Dawn Erb from UWM presents. uwm.edu/letsci/sciencebag/

Mar. 3

Geosciences Colloquium : Where did it all come from? Exploring the Origin of Glacial Till. 3:30 p.m. Lapham 162. Kathy Licht from Indiana University-Purdue University Indianapolis.

U.S. Poet Laureate Juan Felipe Herrera: Poetry Reading. 7 p.m. Union Ballroom. Free and open to the public. Books will be available for purchase. Sponsored by the Department of English through the Boudreaux Foundation, The Roberto Hernández Center, and Union Sociocultural Programming. http://on.fb.me/1R0bfCv

Mar. 4
Craft Talk with U.S. Poet Laureate, Juan Felipe Herrera. 2 p.m. Bolton B52. Sponsored by the Department of English, the Boudreaux Foundation, the Roberto Hernández Center, and Union Sociocultural Programming. http://on.fb.me/1SmhhAy


Ctr. for Celtic Studies - Irish Language Immersion Weekend – Deireadh Seachtaine Gaeilge. 5:30 p.m. running through Sunday, Mar. 6. Milwaukee Irish Fest Center, 1532 N. Wauwatosa Ave., Wauwatosa, WI. Beginners welcome. Fees are $75 for whole weekend or $50 for Saturday attendance only. Free for registered UWM students. http://bit.ly/1O1pe6u

Planetarium Show: Einstein’s Last Prediction Confirmed. 7 p.m. and 8:15 p.m. Manfred Olson Planetarium. Tickets are $3. http://planetarium.uwm.edu

Mar. 4 through 25
Science Bag: Games of Chance: a (Fun!) Study in Probability. 8 p.m. Physics 137. Science Bag runs Fridays at 8 p.m. through March 25 and shows once March 13 at 2 p.m. uwm.edu/letsci/sciencebag/

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Distinguished Professor Emeritus of Geography and Urban Studies Harold M. Rose passed away in February at the age of 86.

Harold was a fixture in the Geography Department for 33 years, joining the faculty in 1962, serving as department chair from 1990-94, and retiring in 1995. His influence was felt not only in Geography, but in the Department of Urban Affairs (now Urban Studies) and in the Department of Afro-American Studies (now Africology).

Harold received his PhD in Geography from Ohio State University in 1960. When he joined the UWM faculty, he found himself in a deeply-segregated city trying to navigate the national push for Civil Rights. Inspired by his own experiences, he began challenging racism through community-engaged research at a time when few in the field of geography were willing to acknowledge racism or its consequences.

At UWM, Harold mentored and taught countless students and made significant contributions to the geographic understanding of segregation and racism. Outside of the university, he served as President of the Association of American Geographers (AAG) from 1976-1977, becoming the organization’s first – and to date, only – black president. He received an AAG Lifetime Achievement Honor in 1996, and, in 2012, AAG announced the creation of the Harold M. Rose Award for Anti-Racist and Practice in Geography. Harold also published four books, 16 articles, and made presentations at 64 universities across the United States.

Services for Harold were held on Feb. 12 at the Northwest Funeral chapel in Milwaukee.


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**Upcoming events**

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**Mar. 6**
The Urban Revolution on Aphrodite’s Isle – Searching for Cyprus’ Late Bronze Age Cities. 3 p.m. Kevin Fisher, University of British Columbia. Sponsored by the Archaeological Institute of America- Milwaukee Society and the UWM departments of Anthropology, Art History, and Foreign Languages and Literature-Classics. [http://bit.ly/1vTWjCU](http://bit.ly/1vTWjCU)

**Mar. 8**
Sam and Helen Stahl Ctr. for Jewish Studies Lecture: History and Catastrophe: The Secret Warsaw Ghetto Archive of Emanuel Ringelblum. 7 p.m. Harry and Rose Samson Jewish Community Center, 6255 N. Santa Monica Blvd. Samuel Kassow, Trinity College.

**Mar. 9**
English Department reading: United We Read. 7 p.m. Woodland Pattern, 720 E. Locust St., Professor Liam Callanan and graduate students Mark Brand, David Kruger, and Noel Pabillo Mariano read from original works. [http://on.fb.me/20Qv9rz](http://on.fb.me/20Qv9rz)

**Mar. 11**
Sam and Helen Stahl Ctr. for Jewish Studies Lecture: In Those Nightmarish Days: Ghetto Reportage and Holocaust Witnessing. 7 p.m. Golda Meir Library 4th Floor Conference Center. Samuel Kassow, Trinity College.

**Mar. 11**

**Mar. 25**
In the Media and Around the Community

Fox6 reported on the amazing discovery of gravitational waves, featuring interviews with Alex Urban and Jolien Creighton (Physics). [http://bit.ly/1KL8BkD]


Xavier Siemens (Physics) was quoted on the same subject in Wired, giving his take on what the discovery of gravitational waves means for the future of astronomy study. [http://bit.ly/1Q9CuY5]

Marc Levine (History) discussed the glaring problems in Milwaukee with racial inequality and segregation in the Toronto Star. [http://on.thestar.com/1nJGpo3]

Elena Gorfinkel (Art History and Film Studies) gave a keynote lecture entitled “Walking Still” at the Film Studies Symposium at the University of Florida’s Harn Museum of Art on Jan. 29. She also responded to UF Film Studies PhD student presentations on their dissertation research on Jan. 30.

Jean Creighton (UWM Planetarium) discussed the evidence for a possible ninth planet in our solar system on WUWM’s Lake Effect. [http://bit.ly/1nRzedq]

The FBI says it stopped an extremist Muslim terrorist plot to stage a mass shooting at a Masonic Temple in Milwaukee. Carolyn Seymour-Jorn (French, Middle Eastern Studies) said that she’s never found instances of Muslims being hostile toward Masons on Fox 6. [http://bit.ly/20bvaWO]

On the same topic, Fox 6 also talked to Islam Hindi ('14, MA Language, Literature and Translation), a Wisconsin court interpreter and translator, on the challenges of translating Arabic into English. [http://bit.ly/1RGKchQ]

Diane Reddy (Psychology) was profiled on OnlineEducation.com for her perspective on trends in the field of education. [http://bit.ly/1ZcMAyl]

Robert Smith (History) and Charmaine Lang (Africology) spoke at the Community Brainstorming Conference in January at the Saint Matthew C.M.E. Church concerning microaggressions, small instances of racism they have encountered in higher education. The event was covered by student journalist Dylan Deprey (Journalism, Advertising, and Media Studies) for the Milwaukee Courier. [http://bit.ly/1QCcFTm]

Daniel Bartholomay (Sociology) penned an article exploring the nuances of sexual identity and sexual attraction for the blog Gender & Society. [http://bit.ly/1SUb5j0]

Stephanie Baran (Sociology) called into questions PETA’s advertising, especially in how it uses violence against women to convey its message, on the American Sociological Association’s blog Section on Body & Embodiment. [http://bit.ly/1SyY1OJ]

Sarah Patch (Physics) was featured on Phys.org for her research into using ultrasound to detect cancer and improve cancer treatments. [http://bit.ly/1VvtvVm]

Shawn Cahill (Psychology) was cited in a Milwaukee Magazine article entitled, "Mind Matters," an exploration of the mental health issues that affect more than a million Wisconsinites.

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Einstein was right  

Anticipating a meaningful signal

Einstein saw space and time as a continuum and gravity as a curvature of that space-time. Like a bowling ball placed on a bed creates a deep indentation in an otherwise flat mattress, so massive objects like stars warp space-time. Their movement creates gravitational waves.

Hunting the elusive waves involves collecting measurements at two U.S. detectors of the Laser Interferometer Gravitational-Wave Observatory (LIGO), which feed data to several supercomputer clusters around the world, including at UWM.

Each LIGO detector has two perpendicular arms that extend 2.5 miles from a central station, each with a mirror at the end. A laser beam is split, with half traveling down each arm and reflecting back off the mirrors. When a gravitational wave passes, it stretches one arm while squeezing the other in an alternating pattern. This causes tiny mismatches in the beams’ round-trip travel time. The detector records this mismatch as an electrical signal which scientists sift through to identify gravitational waves.

To distinguish gravitational waves from millions of other events that also upset the beams’ arrival times, scientists calculate what the signal ought to look like for certain cosmic events – like the merger of two black holes, which scientists predict will cause the strongest waves.

Brady’s main contribution to the LIGO Scientific Collaboration was providing the framework to look for signals in the sea of data. Brady, who has devoted his academic career to studying black holes, became directly involved in the LIGO search while at Caltech on a post-doctoral fellowship in the mid-1990s. Wiseman and Creighton were doing research there at the same time. Brady joined the UWM faculty in 1998 and was present at the LIGO detector in Hanford, Wash., when it first took science data in 2002.

“Back then, we were inventing the methods to search that much data and inventing the computing methodologies to analyze it,” he said. “It hadn’t been done before.”

Between 2002 and 2010, the observatories found no signals that indicated a gravitational wave. They shut down for a five-year upgrade to increase their sensitivity and began operating again in September 2015. Within days the facilities uncovered a signal that scientists quickly identified as a gravitational wave.

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Doctoral student making waves

By Laura Otto, University Relations

Alex Urban’s space obsession began at age 5 when his dad introduced him to the original “Stars Wars” movie. Now Urban has his own role in the real-life cosmic discovery of the century.

A doctoral student in the Leonard E. Parker Center for Gravitation, Cosmology and Astrophysics at UWM, Urban had been working on the search for gravitational waves for five years when the international effort he was a part of hit the jackpot.

Even without a groundbreaking discovery, Urban’s fellowship with the LIGO Scientific Collaboration is a prestigious experience for a budding astrophysicist.

One highlight of his time at the LIGO facility in Louisiana was meeting and talking with popular physicist Neil deGrasse Tyson, host of the television series Cosmos.

“That was awesome. He asked me for advice on public outreach for gravitational waves. I thought, ‘You’re Neil deGrasse Tyson! What are you asking me for?’”

But it was his part in the search for the phenomenon that Albert Einstein predicted a century ago that will likely draw the attention of future employers.

In LIGO’s cast of 1,000 scientists, Urban played the role of a data analyst, using specialized computer resources to help pinpoint where a gravitational wave-generating event is located in the sky, allowing them to also gather data on the after effects.

“We do it inside of a minute,” he said. “A likely follow-up to a collision would be detectable X-rays and visible light within about a minute afterward. That’s why speed is the name of the game.”

After graduating at the end of this semester, Urban will look for a research post with the goal of eventually landing a faculty position. His first choice is Caltech, and he’s hopeful.

“And this happening in my last semester of grad school, I get to say that I was actually involved,” Urban said.
Einstein was right  
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“We were involved in the pre-run stage – the dress rehearsal – when the signal arrived and we had to stop what we were doing and begin analyzing,” Brady said.

The discovery is described in a Feb. 11 article in the journal *Physical Review Letters*. Twenty of the more than 1,000 scientists listed as authors were from UWM. Brady didn’t expect black holes to cause the first detection.

“We’ve never seen a pair of black holes before. This was the example that we all thought of as being the beautiful result of our experiment. We all hoped for it, but we never thought it would be the first thing we saw.”

The LIGO instruments also allow scientists to convert the gravitational wave signals into sound waves so that astronomical events can be heard. When two black holes merge, for example, a “chirp” or “whirl” represents the spiraling together of the holes just before they collide.

UWM postdoctoral researcher Sarah Caudill experienced this first-hand.

“We knew within three minutes that the detectors had seen something,” said Caudill, who ran the analysis that confirmed the signal came from two black holes. “Someone made a time-frequency spectrogram and when I first saw those plots, my heart skipped a beat. We are all trained to look for the chirp-like signature of a real gravitational wave in the spectrograms. And these showed a beautiful textbook example of a chirp signal.”

**Number crunching**

The LIGO group at UWM has been supported with sizable grants from the National Science Foundation. UWM has received nearly $29 million for the project in the past decade, with part of it going toward the construction and operation of a supercomputer cluster in the Physics Building.

Wiseman and Bruce Allen, who is now director of the Max Planck Institute for Gravitational Physics in Germany, were the main architects of UWM’s computer hardware.

Computing power was expected to be a critical need, and construction of the cluster at UWM began about the same time as the LIGO Scientific Collaboration formed in 1997, Wiseman said. Today, the UWM cluster is one of several that comprise the LIGO Data Grid, the network of supercomputers needed to scour the voluminous data accumulated in the search. Once LIGO data is recorded digitally, it’s transported to many computing locations. UWM scientist Scott Koranda developed the method now used to replicate the data so it can be sent to multiple sites.

The UWM physicists and their collaborators – many of them former students – also developed and implemented the analytical tools needed to retrieve gravitational wave signals from the LIGO data.

“The [detector] delivers an electric signal that’s related to a gravitational wave signal, but you need to calibrate the data to see it,” said Siemens, who co-chaired the LIGO Scientific Collaboration’s Calibration Team.

Calibration is the first part of the data handling system created at UWM, which also serves as the alarm system that notifies project members when the instruments have detected a signal worthy of closer examination. Promising data is uploaded to a database and team members around the world are notified. At that point, a painstaking process begins to verify the discovery.
of micro-targeting, using big data to try to find voters, match them with candidates, assess the probability of turnout.

Has big money changed politics?
I think a big change is that parties have started to realize that advertising is fine, but you really have to get voters out, and you have to get your voters out. In recent years, voter turnout has gone up. Some may say that it’s due to increased polarization, but I suspect this emphasis on mobilization.

Your recent work has been a state-by-state inquiry into changing voting patterns.

Some states have become more Republican, others more Democratic. Some have become more competitive. There are a couple of explanations for these changes. There are standard demographic assumptions. For example, Nevada has become more Democratic because there are more Latinos in Nevada than there used to be.

But the thesis I’m pursuing is that – using Nevada as an example – it’s not just that there are more Latinos, but being Latino now matters more than it used to. In other words, Latinos have become more likely to vote Democratic, so you wouldn’t need more Latinos to have the observed change.

Another example – increases in religiosity don’t seem to have been significant, but religiosity itself matters a lot. States that have greater concentrations of religious congregations have become more Republican, though the number of congregations hasn’t necessarily changed.

What that means is that the relationships between demographics and voting patterns have intensified in some cases, which can be helpful to both Democrats and Republicans, and this varies from state to state.

A lot of your work is concerned with predicting electoral outcomes. How does your work differ from that of analysts like New York Times blogger Nate Silver?

Most academics are trying to develop a model they can use to make a prediction. For the general election, they’ll make a prediction and stick with it to test their model. A lot of the models you see in the media are based on polls.

representatives are women. If 20 percent of the candidates are women, you can’t expect them to be 50 percent of the body.

Other nations have elected women to their highest offices: What makes the U.S. different?

First is our presidential system. Many other countries use a parliamentary system for selecting their leaders.

Secondly, in the U.S. individuals run in winner-take-all elections, while many other countries use proportional representation. If we elected our U.S. representatives in a proportional system, if the Republicans got 55 percent of the votes, they get 55 percent of the seats in the legislature.

In proportional systems, women can get more representation because it’s a smaller number of people who have to be convinced that women are viable candidates.

Finally, a lot of other countries have quota systems, in which a certain percentage of candidates have to be women.

This last feature suggests a cultural element.

Women are less likely to see their own characteristics as qualifications for politics, and men are more likely to see themselves as having the right qualifications and experiences. Women recognize the same qualifications in themselves as in men, but they weight them differently than men.

Now, we see that when women are approached and asked to run for office, they are much more likely to do it. That suggests that a quota system might have an impact.

What about women voters?

Lots of people assume that women vote for women because of some shared gender identity. There is no evidence to support that. Now, the vast majority women who run for office in the United States run as Democrats, and women voters are more likely to be Democrats. It might look like more women are voting for Hillary, but it’s because they are more likely to vote for Democrats.

If she does win the nomination, it will be because she is able to convince men and women to vote for her.
Laurels and Accolades

César Ferreira (Spanish and Portuguese) was elected to the Academia Peruana de las Letras (The Peruvian Academy of Language) in Lima, Peru. He joins a group of some 40 Peruvian intellectuals in what is a lifetime appointment. He has also been invited to join the Editorial Board of *World Literature Today*, an international literary journal published in the United States now in its 90th year of publication.

John Berges (Biological Sciences) was named a fellow of the Association for the Sciences of Limnology and Oceanography (ASLO) and will be honored at an ASLO meeting in Santa Fe, New Mexico, in June. [http://bit.ly/1QcTMDv](http://bit.ly/1QcTMDv)


You can blame your parents for your educational mobility, say Sarah Kroeger and Owen Thompson (Economics). Their work was featured on the World Economic Forum. [http://bit.ly/1KfWLZi](http://bit.ly/1KfWLZi)

Dr. Brian Bear (’80, Bachelor of Medical Science) regularly appears on WTMJ Channel 4 as part of their Ask the Expert Series, providing commentary on a range of medical questions.


Mohsen Bahmani-Oskooee (Economics) analyzed the rising price of oil and what that might mean for customers filling up at the pump for TMJ4. [http://bit.ly/1VzMdeS](http://bit.ly/1VzMdeS)

Alumni Accomplishments

Diana Ahmad (’74, ’79, BA and MA History) was selected to receive the Governor’s Award for Excellence in Education from the state of Missouri. Ahmad is the Curator’s Teaching Professor at Missouri University of Science and Technology. She will receive the award in April.

Gale Klappa (’72, BA Mass Communication) will retire as chief executive officer of WEC Energy Group and become the non-executive chairman. He joined Wisconsin Energy in April 2003 and was elected to the board of directors in December 2003. [http://prn.to/20veiXH](http://prn.to/20veiXH)