

Department of Physics Newsletter



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Message from Dr. Kirk Korista, Department Chair

Welcome to another edition of our newsletter, the last in my role as department chair, a position I've held for the past seven years. Dr. Paul Pancella became department chair on July 1, 2018 and I will take over as graduate advisor in January 2019 after my fall sabbatical.

We hope you enjoy reading about the successes and milestones of our faculty, staff and students.

From the new department chair, Dr. Paul Pancella

Let me add my welcome to the readers of this newsletter. I am re-taking the reins this summer after ending my first term as chair seven years ago. (It was nice while it lasted...) I can say that Kirk Korista has left the department in very good shape, and we owe him many thanks. During his seven years at the helm, he improved the operations of our department in several ways, advocated for and supervised upgrades to our physical facilities, and led us to consensus on some very useful strategic plans for our future direction. Because of the good reputation he built for Physics around campus, and the positive relationship he fostered with our dean, it has been very easy for me to take over. I hope I will be up to the task of continuing his excellent work. Enjoy these updates and thanks for reading.

2017 Alumni Achievement Award, Physics



The WMU College of Arts and Sciences recognized **Dr. Ali Sami Alnaser** (Ph.D. 2002) with its 2017 Alumni Achievement Award in Physics. Alnaser is a professor and head of the physics department at American University of Sharjah in the United Arab Emirates. Alnaser's research interests are centered around probing and controlling atomic and molecular structure and dynamics in matter on the femtosecond and attosecond time scales. Over the past 15 years, the findings of his research have appeared in the top physics journals such as Physical Review Letters, Nature Photonics, Nature Communication and others.

He has published more than 60 peer reviewed articles, 70 conference papers and received the Distinguished Arab Scholar Award from the State of Kuwait in 2011. Alnaser has been a visiting professor at the Max-Planck Institute for Quantum optics and the Ludwig Maximilian University in Garching-Germany, and at the King Saud University in Saudi Arabia. In addition to his refereeing service for different physics journals, he serves on the international advisory board of Journal of Physics B; and as guest editor for two special issues in Physica Scripta and Journal of Physics: Conference Series.

2017 Solar Eclipse

Thanks to glasses from Dr. Korista, many in the department were able to safely view the partial solar eclipse on August 21, 2017. Dr. Korista also led a public viewing at Celery Flats in Portage, Michigan.



Department of Physics

Award Ceremony

On April 19, 2018, our department honored undergraduate and graduate students during our annual awards ceremony. Students were selected based on their outstanding work during the 2017-18 academic year. The winners are listed below. Our department is proud to have so many dedicated students.



GRADUATE AWARDS/SCHOLARSHIPS

George and Jean Bradley Graduate Physics Scholarship – **Matthew Cook, Manqoba Hlatshwayo, Khushi Bhatt, Ben Guerin**

David Carley Memorial Award – **Dev Sadaula**

Leo R. Parpart Physics Scholarship – **David La Mantia, Herlik Wibowo, Shahid Iqbal, Rasanjali Jayathissa, Om Khanal, Prashanta Niraula, Masoud Shabani**

Haym Kruglak Graduate Student Teaching Excellence Award – **Michael Bischak, Herlik Wibowo**

UNDERGRADUATE AWARDS/SCHOLARSHIPS

Presidential Scholar – **Katelyn Waters**

Charles J. Wilcox Memorial Award – **Katelyn Waters**

Haym Kruglak Undergraduate Student Teaching Excellence Award – **Benjamin Babcock**

Nathan L. Nichols Physics Scholarship – **Autumn Graves, Conor Doig, Levi Klan, Cristien Arzate**

Paul Rood Physics Scholarship – **Marie Bridges**

PHYSICS COURSE AWARDS

PHYS 1000 – **Jonathan Kropp** PHYS 1020 – **Corey Tall** PHYS 1040 – **Sean Reynolds**

PHYS 1060 – **David Mikovits** PHYS 1070 – **Maclain Canfield**

PHYS 1130 – **Tiffany Chiang, Kelsey Cusway, Kayli Holmes**

PHYS 1150 – **Benjamin Kolar, Maninder Randhawa**

PHYS 2050 – **Noel Milam, Jacob Boza, Austin Salome, Jonathan Scare, Ethan Reid, Zach Ruppenthal, Jonah Wojnar, Yonatan Beyene**

PHYS 2070 – **Joseph Backe, Cammi Schneider** PHYS 2500 – **Cristien Arzate**

PHYS 3090 – **Charles Taylor, Noah Franklin** PHYS 3300 – **Katelyn Waters**

PHYS 3420 – **Andrew Messecar** PHYS 4200 – **Cristien Arzate**

PHYS 4400 – **Charles Taylor** PHYS 4660 – **Justin Swaim**

Katelyn K. Waters is the Presidential Scholar in Physics



Katelyn is from Mattawan, Michigan and majored in physics with minors in mathematics, astronomy and biology. She graduated in April 2018. Katelyn plans to pursue a physics career with an environmental focus. Her undergraduate research focused on iron in the Earth's atmosphere and on yttrium barrier copper oxide—YBCO—crystal growth, which involves high-temperature, superconducting properties. Katelyn worked with Drs. Bautista and Paulius in her research.

As you can see above, Katelyn has been honored with many awards and scholarships during her time in our department. We wish her well as she embarks on her next journey.

Our alumni are invited to submit updates via our website. Here are a few recent updates:

<https://physicstoday.scitation.org/doi/10.1063/PT.3.3870>

In the article found via the link above, you'll find the following quote that mentions a department alum: *We acknowledge our friend and colleague Ramón Barthelemy, for contributing to an early outline of this paper and for years of invigorating and productive conversations on these topics.*

Sabbir Hossain, Ph.D., 2004

After completing my Ph.D. in Atomic and Molecular Physics in 2004 (Supervisor: John Tanis, Ph.D.), I worked at JPL/NASA-Caltech as a Research Associate. In November 2006, I decided to work in Medical Physics and started my postdoctoral fellowship in Medical Physics at the University of California San Francisco (UCSF). After my training at UCSF and Medical Physics Residency at the Texas A&M Health Science Center, I started working as a Medical Physicist in Radiation Oncology. In 2012, I joined University of Oklahoma Health Sciences Center as an assistant professor at the Department of Radiation Oncology. There I was involved in both clinical and academic components. At the beginning of 2017, I accepted chief physicist position at the Oklahoma City Veterans Affairs Medical Center. I'm also serving as an adjunct faculty of Department of Radiological Sciences, University of Oklahoma Health Sciences Center. Under my supervision, several MS and PhD level medical physics students/residents published papers and conference abstracts in peer reviewed journals.

We love to hear from our alumni. Visit our website, via the link below, to submit your update for inclusion in an upcoming newsletter.

<https://www.wmich.edu/physics/alumni-feedback>

If you've had the chance to visit the second floor of Rood Hall, you've likely encountered our *Faces of Physics* posters. We take great pride in sharing the accomplishments of our graduates.

We do our best to prepare our students for success after graduation and we hope you'll take some time to read about all our graduates have accomplished with their degrees from WMU the next time you visit campus. Insider tip: Many of our graduates are featured on our website.

<https://www.wmich.edu/physics/alumni>

<https://www.wmich.edu/physics/careers>

Congratulations to our recent graduates!

Jacob Burke

Austin Kellogg

Andrew Messecar

Justin Swaim

Katelyn Waters

Benjamin Babcock

Jonathan Yelton

Evan Moore

Eugene Kopf

Manqoba Hlatshwayo (M.A.)

Madhushani Wickramarathna (M.A.)

Ali Dibeh (M.A.)

Jagjit Kaur (Ph.D.)

Jianqing Yang (M.A.)

Physics major Andy Hobelsberger was one of four Western Michigan University students to be named a 2018 University Innovation Fellow by Stanford University's Hasso Plattner Institute of Design. The program is designed to empower students to become agents of change on their own campuses and ensure their peers gain the knowledge, skills and attitudes required to compete and make an impact on the economy of the future. More information can be found via the link below:

<http://www.wmich.edu/news/2018/03/45923>

Herlik Wibowo, Fulbright fellow and physics graduate student, received a 2017-2018 Graduate Research Physics departmental scholar award.

Physics major Justin Swaim was one of seven Arts and Sciences students who received research and creative activities scholarships from the Lee Honors College. His research scholarship is in support of his project titled, "Detection of charged particles in nuclear physics experiment." He, along with physics major Cordero Soto, also received the OVPR Undergraduate Research Excellence Award for fall 2017.

Early success for alumnus Ian Brown

One of the big physics stories in the last year was a simultaneous detection of gravitational waves and visible light from the same source. Previously detected gravitational wave events had not been associated with any visible source. But observations made in August of 2017, first announced in October, proved to be a cosmic event that sent ripples across the electromagnetic spectrum to go along with one of the first confirmed gravitational wave detections. This first association of gravity waves with more traditional astronomical "messengers" opens the way to greatly increasing our understanding of the violent, infrequent events which may be responsible for producing most of the heavier elements in our universe. The event in this case was the merger of two neutron stars, now dubbed a "kilonova".

It turns out that one of our recent graduates, Ian Brown (B.A. 2016), was lucky enough to play a small role in this discovery. After being named our Presidential Scholar in the spring of 2016, Ian began his graduate studies at the University of Wisconsin-Milwaukee. He joined UW's Leonard E. Parker Center for Gravitation, Cosmology, and Astrophysics for his research, and is working with a widefield radio telescope array located in Western Australia. No signal was detected at the low frequencies covered by this array, but such a null result is also important to furthering our knowledge of such a new phenomenon. Despite this absence of actual data, Ian was able to work with collaborators to make the observations, and get his name on two of the first papers published on the kilonova observations.



He tells us it was a very exciting experience being on the frontiers of astrophysics, during a time of embargo against sharing any news publicly, while virtually all available instruments were trained on the same small region of the sky trying to get some data. Theory predicts that they may still be able to detect a radio frequency "afterglow" from this event in the coming months. Congratulations, Ian!



Dr. Arthur McGurn's second book, *Nanophotonics*, was recently published by Springer. This book is part of the Springer Series in Optical Sciences book series.

McGurn is a Fellow of the Institute of Physics, a Fellow of the American Physical Society, a Fellow of the Optical Society of America, a Fellow of the Electromagnetics Academy and an Outstanding Referee for the journals of the American Physical Society. He has taught physics at WMU since 1981 and is currently a Professor and a WMU Distinguished Faculty Scholar.

His first book, *Nonlinear Optics of Photonic Crystals and Metamaterials*, was published in 2015 and is a graduate text. McGurn has just started a new book which will be for graduate and advanced undergraduate students.



After 18 years in the department, Rick Welch retired as machine shop specialist in February.

Josh Byers has been hired to replace Rick. If you are visiting the department, make sure to stop by and say hello to Josh.

Dr. Michael Famiano was awarded a Fulbright Award to Japan. He is an associate professor of nuclear astrophysics and his primary research interest is in stellar nucleosynthesis. His Fulbright award proposes to evaluate the effects of relativistic electron-positron plasmas on astronomical observables, then taking the results and applying them to advanced computational techniques in which hot stellar environments are simulated.

Dr. Manuel Bautista received an award from the California Institute of Technology regarding the project "Atomic Data for Modeling X-rays in High-Density Plasmas."

Dr. Asghar Kayani received an award from the Argonne National Laboratory regarding the project "Implementation of Low-Energy Irradiation Procedures."

Dr. John Tanis will be spending his fall sabbatical mostly at Jagiellonian University in Krakow, Poland. His doctoral graduate student David La Mantia will be spending almost a year at the same university.



Dr. Elena Litvinova, assistant professor in our department, earned a coveted National Science Foundation CAREER award and associated five-year grant, a top prize for early career scientists who show promise as leaders in their disciplines.

Her award and accompanying \$475,000 grant support a project titled "From fundamental interactions to emergent phenomena: geometrical aspects of nuclear dynamics."



Dr. Thomas Gorczyca was awarded the 2017 WMU Distinguished Faculty Scholar Award. Gorczyca is a first-rate theoretical atomic physicist specializing in the area of photon and electron initiated collisions. His impressive publication record lists more than 110 peer-reviewed articles, as well as more than 30 invited talks. To support his research, he has had continuous funding for more than 15 years, largely from NASA, as the principal investigator. Notably, Gorczyca was elected to Fellowship in the American Physical Society in 2016, a recognition awarded to less than 1 percent of the active members.

Yes, I want to support the WMU Department of Physics!

In a time when state funding is increasingly restricted, the support we receive from friends and alumni is vitally important. Thank you for considering a gift to the WMU Department of Physics.

The WMU Foundation processes all gifts that come to the University and forwards 100 percent to the department.



Department of Physics
1903 W Michigan Ave
Kalamazoo MI 49008-5252

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