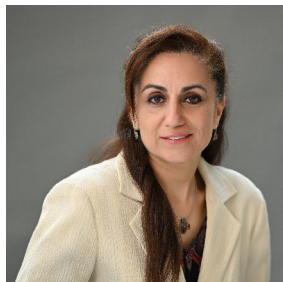


Department of Physics and Materials Science

Spring 2023 Newsletter

Dear friends, colleagues, and alum,



While approaching the end of the semester can be a bit busy and sometimes overwhelming, it is something I look forward to because it gives us an opportunity to reflect on the semester as we put together our semester-based newsletter. Each semester I am more impressed than the one that past about what our faculty and students have been able to accomplish! From outreach to research, we did it all. Check it out below:

Firouzeh Sabri, Professor-Chair

Physics Faculty Awarded NIH Grant



Dr. Thang Hoang, in collaboration with Dr. Xiaohua Huang (Department of Chemistry), has been awarded an NIH grant to support a project titled “Surface exosome integrin profiling to predict organotopic metastasis of breast cancer.” The goal of this project is to validate and extend the depth of exosomal integrins for metastasis prediction by developing a dual imaging single vesicle technology, which allows for the detection of breast cancer at early stages. The project will accelerate the translation of exosomal biomarkers for cancer diagnostics, prognostics, and monitoring. Congratulations to Dr. Hoang!

UofM Professor Explores Implications of JWST Data



Dr. Benjamin Keller published a letter in *Astrophysical Journal Letters* examining claimed inadequacies in existing theories of cosmology and galaxy formation. based on data from the James Webb Space Telescope (JWST). Dr. Keller and his coauthors found, however, that JWST data to be consistent with

results from large simulations of galaxy formation, supporting the validity of the current theory. The quality and wealth of data coming from JWST makes it is an exciting time in astronomy and cosmology, which will test current ideas of galaxy formation and cosmology.

Significant Discovery of Dual Black Holes



Dr. Francisco Muller Sanchez and collaborators reported a recent discovery of two supermassive black holes growing simultaneously near the center of a newly coalescing galaxy. These results were published in *Astrophysical Journal Letters*. **Mason Ruby**, Dr. Muller Sanchez’s graduate student, presented these results at the 241st meeting of the American Astronomical Society in Seattle, Washington, in a talk entitled, “A Young AGN-Driven Outflow in the Dual AGN Mrk 266.” This research yields insight into the frequency and nature of galaxy mergers, and this observation features the nearest black holes every observed in multiple wavelengths.



UofM Professor Supervises High School Student

Logan Reich, a high school student supervised by Dr. Muller Sanchez, competed in the NYC regional science fair (a qualifier for the prestigious International Science and Engineering Fair). Logan placed second in the physics and astronomy division and won the Yale Science and Engineering Association Award for the best project presented by a junior in high school. His project was “A Detailed Model of the AGN in NGC 7469.”

Student Awards

Graduations and Awards

It is always a pleasure to celebrate our graduates: **Jacob Mims** (*Best Undergraduate Researcher in*

Physics), **Nicholas Nolen**, **Nicolas Kyle Lam** (*Best Undergraduate Researcher in Physics, Chi Beta Phi Science Award in Physics, and Physics Service Award*), **Kenneth Rymanowicz** (*Outstanding Physics Student Award*), and **Robin Nool**.

We also would like to recognize **Joseph Duncan**, Recipient of the *Highest GPA Award* and the *Dr. Robert R. Marchini Scholarship*, and **Jacob Stewart**, Recipient of the *Dr. Albert H. Woollett Scholarship*.

UofM Physics Students Recognized at APS



Two UofM Physics graduate students have been recognized in connection with 2023 March Meeting, held in Las Vegas, Nevada from March 5 - 10.

- **Abash Sharma**, recipient of the Distinguished Students Award. He attended the Forum on International Physics reception.
- **Liyan Jacob**, recipient of the APS GMAG (Topical Group on Magnetism and its Applications) student travel award.

UofM Physics at Local Educator Event



Dr. Samuel Mensah and Justin Brutger represented the UofM Department of Physics and Materials Science at the Educator Community Partner Fair at the Memphis School of Excellence in Cordova, TN. About 125 educators were able to learn about the education programs offered by the

UofM DPMS. Here they are demonstrating the liquid nitrogen plume.

Campus Events

Solar System Grand Opening

On March 24, 2023, the Memphis Voyage Scale Model of the Solar System opened! This model reveals the actual sizes and separations between the planets on a 10 billion-to-1 scale. We encourage you to visit both the model as well as the Memphis Voyage Solar System Website (www.memphis.edu/physics/memphis_voyage/introduction.php)



He gave a tour of the Memphis Voyage Solar System. This tour was recorded and the videos are available on the Memphis Voyage Website.

2023 Endowed Lecture in Physics

The DPMS again hosted the 7th Lois McGlothlin Donaldson Endowed Lecture in Physics on March 24, 2023. Dr. Jeffrey Bennett delivered the lecture "Pathways to a Post Global Warming Future" (available on the website).

New Alumni Spotlight



We are pleased to announce that we have spotlights on two additional alumni: **Mr. David Thomas** and **Mr. Marlon Ridley**. It is exciting to see how the Alumni have used their educational experiences at the UofM in their careers and to impact the lives of people around them. To see our current and past featured alumni, please visit our **Alumni Spotlight** page.



Remembering Former Chair, Dr. Michael Garland



Dr. Michael Garland, retired faculty member and former Chair of our Department, passed away on Jan 1, 2023 in Florida. He was one of the original Physics faculty members when the UM Department of Physics was established on July 1, 1966. We are grateful for his dedicated service to the Department and his positive impact on his colleagues, students, and members of our campus community.

For up-to-date information, please visit our News page at memphis.edu/physics/news/index.php.

For content-related questions, please contact Dr. G. Borstad at gustav.borstad@memphis.edu.