

# Department of Physics & Materials Science

## Spring 2022

### Chair's Corner



My name is Dr. Firouzeh Sabri, an experimental materials physicist, and I have had the privilege of serving as the Chair of the Department of Physics and Materials Science (DPMS) since January 2020. We would like to introduce our department and provide reasons why you might consider pursuing a degree in

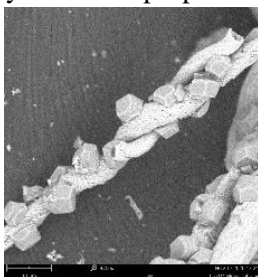
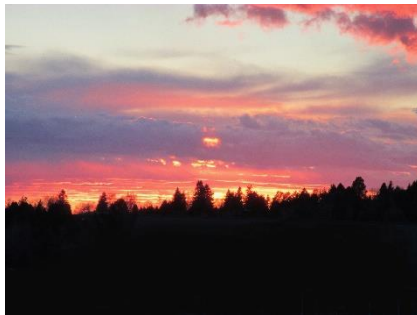
Physics from the UofM. We would love for you to visit us, and see what we do, and Physics may be a stepping-stone along your career path. On behalf of our department, I wish you the very best.

*Firouzeh Sabri, Professor-Chair*

### What is Physics and What Can I Do with Physics?

#### Have you...

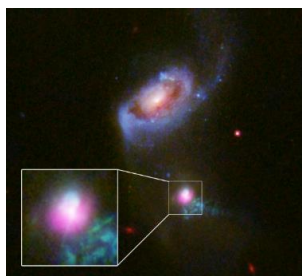
- Attempted to see how many paperclips in a chain you can suspend from the **magnet** on your refrigerator?
- Marveled about the **twilight** hues of red, orange, yellow and purple in a **sunset**?



- Puzzled over what allow **transistors and other electronic components** to power the computers, tablets and phones used for studying working and playing?
- Wondered what materials

might support the next generation of high-efficiency devices and data storage?

- Captivated by planets, stars, planets, galaxies and the supermassive black



holes you have been told that “hauntingly” occupy the centers of galaxies?

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*Be less curious about people and more curious about ideas.*

**-Marie Curie**

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Physics is a major that allows you to indulge your curiosity about nature!

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*We do not know what the rules of the game are; all we are allowed to do is to watch the playing. Of course, if we watch long enough, we may eventually catch on to a few of the rules. The rules of the game are what we mean by fundamental physics.*

**-Richard P. Feynman**

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Physicists experience above average job satisfaction ([source](#)), low rates of unemployment and earn a median salary of \$70,000 ([source](#)). The salary typically up with experience and education ([source](#)).

#### Physicists find fulfilling careers in ...

- Advanced Materials and Optimization
- Aeronautics and Aerospace
- Astronomy
- Artificial Intelligence and Robotics
- Computer Technology
- Finance and Investment
- Industry, Law, and Medicine
- Research (all areas)
- Teaching (at all levels)
- And many other areas.

#### Physics at the University of Memphis

- Astronomy / Space Sciences
- Materials Science
- Physics for Medical Sciences
- General Physics

More information is available on our [website](#).

Physics students at the UofM

- Take Physics classes (naturally)
- Perform research at the University of Memphis
- Participate in internships to apply their knowledge and learn new skills
- Make friends
- Join Society of Physics Students
- Play with nitrogen plumes (see video on website).



*There are children playing in the streets who could solve some of my top problems in physics, because they have modes of sensory perception that I lost long ago.*

**-J. Robert Oppenheimer**

You can also explore the career paths of some of our students at our [Alumni Spotlight page](#).



UofM Physics Alumna Michele Wilson (left) in front of the friction-stir welding fixture used to construct the dome ends on the LOX (liquid oxygen) and LH2 (liquid hydrogen) fuel tanks for the Artemis core stage at NASA's Michoud Assembly Facility in New Orleans.

## James Webb Space Telescope



Launch of James Webb Space Telescope



Calibration image from James Webb Space Telescope, with galaxies in the background.

You may have heard that a new space telescope recently launched in December 2021. It will image astrophysical objects that Hubble could not. Dr. Muller Sanchez, professor of physics at the UofM, has been granted the opportunity to use this telescope in his research. This is an incredible opportunity for his research group and his students, both undergraduate and graduate.

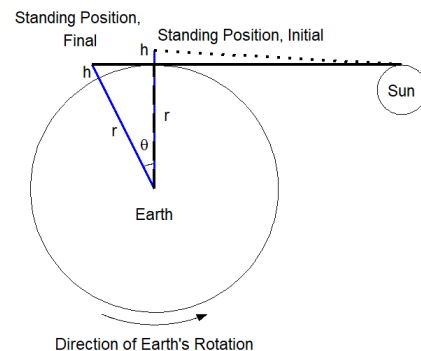
## The Voyage Scale Model Solar System



A scaled model of the solar system is coming to the University of Memphis main campus! Thanks to Joanne Rhodes for spearheading this initiative! Please check back for further details and exact implementation date at the [Voyage Solar System website](#).

## Challenge Problem

**Q: Do you think you can estimate the radius of the Earth vacationing at a beach on the Equator with only a stopwatch? The figure below might help.**



Drawing not to scale.

See solution [here](#) or under Newsletters on our webpage.

Please contact us to schedule a visit to Manning Hall, where you can see our research laboratories, and physics demonstrations and displays that are fun and interactive.

For content-related questions please contact Dr. G. Borstad at [gustav.borstad@memphis.edu](mailto:gustav.borstad@memphis.edu)