

Western Michigan University
Department of Physics Colloquium

Speaker: Al Rosenthal, Ph.D.

Associate Professor, Department of Physics
Western Michigan University

**“Induction from Experiment: A Suggestion About Teaching
the Laws of Motion”**

Open to the public, free of charge

Monday, October 4, 2021

Virtual Talk: 4 p.m.

Meeting link: <https://wmich.webex.com/wmich/j.php?MTID=m6b4084d56ea143a1fab0f5e3c315a9b9>

Meeting number: 2623 449 5812 Password: physics

Abstract: The standard curriculum usually teaches the laws of motion axiomatically. Although these laws are always presented with illustrative examples, there is little to no description of how the laws could have been deduced. This has two unfortunate consequences.

The immediate consequence is a failure of students to understand the concepts at a level appropriate for beginners. The applications teach them to play the game (or pretend to play the game) of applying the laws of motion, but the absence of a grounded understanding of these laws diminishes the ability of most students to analyze novel mechanical problems. The long-term consequence of failing to provide a satisfactory derivation of the laws of motion is a feeling among students that scientific thought contains a large measure of arbitrariness, that we are merely playing games with applied mathematics. This contributes to the loss of confidence in science seen in contemporary times.

This talk will suggest teaching the laws of motion inductively from experiment. It will be claimed that this can be done in a reasonable amount of class time.

More information: (269) 387-4941 [Department of Physics email](#)



Western Michigan University

Department of Physics Colloquium

Speaker: Michael Khazhinsky, Ph.D.

Silicon Labs

“Electrostatic Discharge Protection in Semiconductor Industry”

Open to the public, free of charge

Monday, November 1, 2021

Virtual Talk: 4 p.m.

Meeting link: <https://wmich.webex.com/wmich/j.php?MTID=m6b4084d56ea143a1fab0f5e3c315a9b9>

Meeting number: 2623 449 5812 Password: physics

Abstract: This presentation provides the fundamentals of the Electrostatic Discharge (ESD) phenomena and the impact on integrated circuit (IC) reliability. An insight into ESD device physics, failure modes and design options to achieve required ESD protection levels are going to be discussed.

ESD protection network design and verification methodology on both device and circuit level will be shown.

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Western Michigan University

Department of Physics Colloquium

Speaker: Jessica Barnes

Assistant Professor, Lunar & Planetary Laboratory
The University of Arizona

“Sampling an asteroid with the OSIRIS-REx mission”

Open to the public, free of charge

Monday, November 22, 2021

Virtual Talk: 4 p.m.

Meeting link: <https://wmich.webex.com/wmich/j.php?MTID=m6b4084d56ea143a1fab0f5e3c315a9b9>

Meeting number: 2623 449 5812 Password: physics

Abstract: NASA’s Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer (OSIRIS-REx) Mission seeks to explore and return samples from an ancient asteroid. The OSIRIS-REx spacecraft surveyed near-Earth asteroid Bennu from 2018-2021. The asteroid is hydrated and C-rich and represents some of the most primitive material leftover from the birth of our solar system and formation of the planets. In October 2020, the spacecraft performed its touch-and-go maneuver and collect material from the surface of the asteroid. That sample is now on its way to Earth and will arrive in September 2023. In this talk I’ll walk through the key mission milestones, what we learned about asteroid Bennu from orbit, the work we are looking forward to doing on the returned sample, and what all of this means for our understanding of the chemical evolution of the solar system and habitability of Earth.

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