



## Department of Physics

"Our research is focused on the fabrication and characterization of magnetic nanostructures with the goal of developing multifunctional materials for next generation sensors and devices."  
-Dr. Ruihua Cheng



**Ruihua Cheng**  
Associate Professor

"We study hypothetical corrections to Newtonian gravitation. We also investigate the effect of vacuum fluctuations on films and quantum dots."  
-Dr. Ricardo Decca



**Ricardo Decca**  
Professor

"My work focuses on how to improve the teaching and learning of physics. I am interested in how technology can be used to enhance the interactions among students and faculty to promote learning in physics classes."  
-Dr. Andrew Gavrin



**Andrew Gavrin**  
Associate Professor & Chair

"Our research aims to understand biological mechanisms in terms of the fundamental laws in physics and chemistry."  
-Dr. Fanggiang Zhu



**Fanggiang Zhu**  
Assistant Professor

"The research in my laboratory applies solid state NMR and complementary biophysical techniques to study molecular organization within membranes."  
-Dr. Stephen Wassall



**Stephen Wassall**  
Professor

"Our experimental and theoretical efforts on nonlinear dynamics of coupled semiconductor lasers focus on the realization of PT-symmetric systems, and the control of chaos. A second effort is on studying condensed matter effects in optical systems."  
-Dr. Gautam Vemuri



**Gautam Vemuri**  
Professor



**Horia Petrache**  
Associate Professor

"We use x-ray scattering and NMR spectroscopy to study the relative effects of van der Waals and electrostatic interactions on biological molecules."  
-Dr. Horia Petrache



**Zhe-Yu Jeff Ou**  
Professor

"My research concerns the quantum behavior of light with emphasis on quantum entanglement, quantum noise, precision measurement of phases, and interaction of photons with atoms"  
-Dr. Zhe-Yu Jeff Ou



**Le Luo**  
Assistant Professor

"We trap cold atoms and ions using electromagnetic waves. We use these isolated quantum systems in quantum simulation, control, and information experiments."  
-Dr. Le Luo



**Yogesh Joglekar**  
Associate Professor

"My students - from high-school to graduate level - and I use theoretical and numerical methods to explore how we can use light to simulate interacting quantum systems"  
-Dr. Yogesh Joglekar



**Marvin Kemple**  
Professor

"My research is in the general area of biological physics. We use various approaches including electron paramagnetic resonance to probe systems of biological interest. Spin labeling and spin trapping are among the techniques applied."  
-Dr. Marvin Kemple



**Tony Lee**  
Assistant Professor

"My research is about theoretically studying new quantum phenomena in atomic physics experiments."  
-Dr. Tony Lee





**Andrew Gavrin**  
Associate Professor & Chair

## MESSAGE FROM THE CHAIR

The Department of Physics at IUPUI welcomes students who are interested in pursuing a Masters or Doctoral degree in physics. We offer a variety of internationally recognized research groups, state-of-the-art labs, and access to some of the best computing facilities in the world. At IUPUI, you will learn with top students from around the world, teach in innovative undergraduate classes, and become an integral

part of a department that prides itself on its spirit of collegiality and inclusion.

Set in downtown Indianapolis, IUPUI physics students have access to all of the amenities of America's 12th largest city. We are within walking distance of the state capitol, 5 hospitals, hundreds of restaurants, and several major museums. Whether it is the opportunity to listen to jazz on the canal, or to work with students from Indianapolis Public Schools, IUPUI's central location makes it a great choice.

We offer competitive salaries for Teaching and Research Assistants, competitively awarded fellowships, and tuition remission for all PhD candidates.

In closing, I wish you the best in your exploration of physics, our department, and IUPUI.

**Andrew Gavrin**  
Associate Professor and Chair

## PHYSICS DEGREES AVAILABLE

- Master of Science (Thesis & Non-Thesis Options)
- Doctor of Philosophy (Ph.D.)

## DEPARTMENTAL GRADUATE PROGRAM CONTACT INFORMATION

**Administrative Office**  
**402 N. Blackford, LD 154**  
**Indianapolis, Indiana 46202**  
**317-274-6900**  
**317-274-2393 (fax)**  
**physics@iupui.edu**

## GRADUATE PROGRAM

The Department of Physics at IUPUI offers graduate programs leading to Purdue University Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

The Department has a flexible program of graduate study that can easily accommodate students with a wide variety of goals and backgrounds.

## ADMISSIONS

Students seeking to enroll in the program should have a background in the usual undergraduate courses in physics, mathematics and other sciences.

Graduates from related fields of study in pure and applied sciences, and engineering, may be accepted on a probationary basis until they have completed any necessary undergraduate courses in physics. The GRE general test is required of all applicants. The physics subject test is expected, but not required. Foreign applicants must also demonstrate English proficiency through the TOEFL or IELTS.

The department will accept a maximum of 12 transfer hours of graduate credit from approved institutions.

## RESEARCH

Areas of active research within the Department include biological physics, AMO physics, condensed matter physics, and physics education. Interdisciplinary research is common. Strong collaborations exist between our faculty and members of other departments of the School of Science, and with the School of Medicine, School of Engineering and Technology and the School of Informatics.

Our Department also hosts the Nuclear Magnetic Resonance Center and is a co-host of the School of Science Nanoscale Imaging Center.