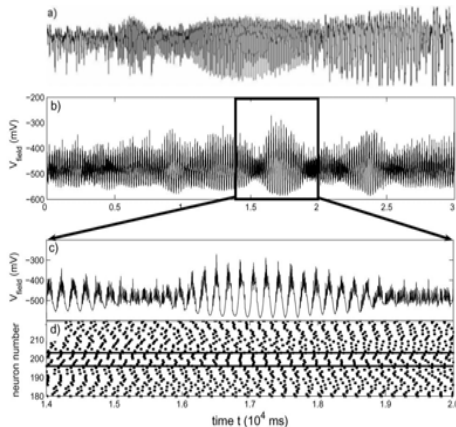


## ABOUT THE PROGRAM

The Department of Physics and Astronomy at the University of Missouri-St. Louis offers programs of study leading to a Master of Science degree and a Ph.D. degree in physics. The doctoral degree is in cooperation with the UM-Rolla Physics Department. Students may utilize resources of both campuses in their programs as well as the interdisciplinary Center for NanoScience and the Center for Neurodynamics on the UM-St. Louis campus.

The graduate physics programs are based on the premise that adaptation to the modern world will require a deeper fundamental understanding of experimental and theoretical physics as well as collaborations between researchers in physics and those in other disciplines. Faculty research programs include astrophysics theory and observation, biophysics, noise theory, elementary particle theory, nonlinear dynamics, materials and surface physics, and statistical physics. The degree programs are designed to prepare pre-career and mid-career students for advanced research and development or academic positions.



## Ph.D. IN PHYSICS

A minimum of 78 hours with satisfactory performance (i.e., B grade point average or better) is required for a Ph.D. in Physics. The following physics graduate courses (18 hours) are required, plus 6 hours of course work in physics or mathematics at the graduate level.

P6409 Theoretical Mechanics  
P6411 Electrodynamics I  
P6423 Electrodynamics II  
P6461 Quantum Mechanics I  
P6463 Quantum Mechanics II  
P6413 Statistical Mechanics

The remaining hours can be filled with a combination of physics courses, dissertation research units (minimum of 24 hours), and courses in related fields that are recommended by the student's advisor. There is no language requirement.

The dissertation may be written in absentia, but there is a three year residency requirement (metropolitan St. Louis or Rolla). Those joining the Ph.D. program at the Master's Degree level need only fulfill a residency requirement of two years and may be able to transfer some of the required courses already taken at another graduate school. The graduate course exemptions are to be decided by the student's Comprehensive Examination Committee.

## THE FACULTY

**Sonya Bahar**  
Ph.D. University of Rochester  
Biophysics/Nonlinear  
Dynamics/Neuroscience

**Ta-Pei Cheng**  
Ph.D., Rockefeller University  
Elementary Particle Theory

**Bernard J. Feldman**  
Ph.D., Harvard University  
Solid State/Surface Physics

**Ricardo A. Flores**  
Ph.D., Univ. of California-Santa Cruz  
Particle Physics/Cosmology

**Philip B. Fraundorf**  
Ph.D., Washington University  
Materials Physics

**Thomas F. George**  
Ph.D., Yale University  
Laser/Materials Physics

**Erika L. Gibb**  
Ph.D., Rensselaer Polytechnic Institute  
Observational Astrophysics/Planetary  
Science

**Peter H. Handel**  
Ph.D., University of Bucharest  
Noise/Condensed Matter Theory

**Bob L. Henson**  
Ph.D., Washington University  
Statistical Physics

**Jacob J. Leventhal**  
Ph.D., University of Florida  
Atomic/Molecular Physics

**Jingyue (Jimmy) Liu**  
Ph.D., Arizona State University  
Nanoscience/Nanotechnology

**Eric Majzoub**  
Ph.D., Washington University  
Energy Storage and Conversion  
Computational Physics

**Frank E. Moss**  
Ph.D., University of Virginia  
Nonlinear Dynamics/Biophysics

**Wilfred H. Sorrell**  
Ph.D., University of Wisconsin  
Theoretical Astrophysics

**Bruce A. Wilking**  
Ph.D., University of Arizona  
Observational Astrophysics

## STEPS TO THE PH.D.

Candidates for the Ph.D. must complete a Qualifying Examination in physics knowledge at the advanced undergraduate and beginning graduate level. This examination is scheduled in January just prior to the beginning of the Winter semester. Within a semester of passing the Qualifying Examination, the candidate is expected to form a committee of five faculty members and submit a proposed schedule of study. In addition, the Department requires all Ph.D. candidates to submit a written dissertation research plan, which should include extensive reference citations. Following completion of all required course work, a Comprehensive Examination is given by the candidate's committee. The Final Examination is the student's defense of dissertation.

## M.S. IN PHYSICS

For the M.S. in Physics, a student must complete 30 credit hours in graduate physics courses, with at least 15 of these at the 5000 or 6000 level. The writing of a thesis is optional. A maximum of 6 (3) credit hours of Research, P6490, may be counted toward the minimum 15 hours with (without) the thesis option. A comprehensive oral examination must be passed, which includes the defense of thesis if the student has chosen to write one. A grade point average of grade B or better must be maintained during each academic year. The requirements must be fulfilled within six years from the time of admission. At least 2/3 of the required graduate credit must be taken in residence. There is no language requirement.

## ADMISSION REQUIREMENTS

For admission to the graduate programs, a bachelor's degree in physics or a related field is required with an undergraduate and major field grade point average of B or better. The Graduate Record Examination is required. The Quantitative score must be 600 or more and the Analytical score 3.0 or more for a Ph.D. candidate. The Subject Exam in Physics is optional. Students from non-English speaking countries are required to demonstrate proficiency in English via the TOEFL test with a minimum test score of 570 (230 CBT).

## FINANCIAL SUPPORT

Graduate teaching and research assistantships are available to full time graduate students and qualify the student a 9 month stipend of about \$14,000 and a full tuition remission. Summer employment as a teaching or research assistant is usually provided.

## COMPUTING FACILITIES

All UM-St. Louis students are provided with a campus computer account with email and internet services. Students have exclusive use of several large computer labs equipped with Apple and Window-compatible systems and laser printers. The Department of Physics and Astronomy maintains a variety of UNIX, LINUX, and OSX systems with standard software packages for image and word processing.

## CAMPUS LIFE

UM-St. Louis is a campus with both traditional and non-traditional students. Students may choose to commute, live in the residence halls, or in on-campus apartments. The Metrolink has stops at both the North and South campuses and provides students access to a wide arena of St. Louis attractions, such as the Science Center, the Fox Theater, and Busch Stadium.

The Office of Student Life supports a number of student organizations and also hosts events at which students may augment their out-of-classroom experiences. UM-St. Louis is a culturally diverse campus that provides something for everyone.

## For Further Information Visit Our Web Site

<http://www.umsl.edu/~physics>

or

## Contact

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503J Benton Hall  
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St. Louis, MO 63121

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# Graduate Study in Physics



# University of Missouri-St. Louis

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