

# DEPARTMENT OF PHYSICS



Stimulating instruction and research are hallmarks of the Department of Physics at Montana State University, which has been educating creative and productive scientists since 1964. The MSU physics program offers Master of Science and Doctor of Philosophy degrees. The physics faculty, with over 30 members, is committed to maintaining close contact with its more than 60 graduate students and postdoctoral scientists.

## DEGREES OFFERED

M.S. IN PHYSICS

PH.D. IN PHYSICS

The MSU physics program offers Master of Science and Doctor of Philosophy degrees. The physics faculty, with over 30 members, is committed to maintaining close contact with its more than 60 graduate students and postdoctoral scientists. As you read our literature, explore our web site and talk to our students, you will discover a faculty recognized worldwide for its research and teaching.

Our research facilities include a new building, the Engineering and Physical Science (EPS) Building, housing state-of-the-art laboratories and equipment. External collaborations bring national

and international experts to the department and open opportunities for research to be conducted at other world-class laboratories around the globe. On-campus interdisciplinary research programs include the departments of Chemistry and Biochemistry, Electrical and Computer Engineering, the Center for Biofilm Engineering and others. Research collaborations with local industries are also actively pursued. Collectively, our research groups foster interactions among the faculty, undergraduate and graduate students, postdocs, visiting scientists and other departments.

Our graduates have an excellent record of finding employment in academia and industry, including high tech companies in the Bozeman area.

DEPARTMENT OF PHYSICS  
MONTANA STATE UNIVERSITY

Department Address:

264 EPS Building  
P.O. Box 173840  
Bozeman, MT 59717-3840

Tel: 406-994-3614  
Fax: 406-994-4452

Email: [physics@montana.edu](mailto:physics@montana.edu)

Web: [www.physics.montana.edu](http://www.physics.montana.edu)

MONTANA STATE UNIVERSITY  
DIVISION OF GRADUATE EDUCATION





## RESEARCH OPPORTUNITIES

- Astrophysics
- Biophysics
- Condensed matter
- Gravitational physics
- Lasers, optics, spectroscopy
- Physics education research
- Solar physics
- Space science

## M.S. PROGRAM REQUIREMENTS

The Department of Physics grants the Master of Science degree under two options: Plan-A (thesis required) and Plan-B (without thesis).

### Plan-A Requirements

1. Coursework: A minimum of 20 credits of acceptable course work is required, which shall include the following:
  - Teaching Seminar
  - Research Introduction Seminar
  - Advanced Classical Mechanics
  - Quantum Mechanics I
  - Electromagnetic Theory I
  - Mathematical Physics
  - Electives
2. Thesis: An acceptable thesis and at least 10 credits of Physics 590 are required.
3. Examinations: A written comprehensive examination is required. A final oral examination is also required, covering the thesis and related areas.

### Plan-B Requirements

1. Coursework: A minimum of 30 credits of acceptable course work is required, which shall be distributed as follows:
  - Teaching Seminar
  - Research Introduction Seminar
  - Advanced Classical Mechanics
  - Quantum Mechanics I & II
  - Electromagnetic Theory I & II
  - Mathematical Physics
  - Electives
2. Thesis Requirements: None
3. Examinations: A written comprehensive examination is required.

## PH.D. PROGRAM REQUIREMENTS

1. Coursework: A minimum of 40 credits of acceptable course work is required, which shall include the following:
  - Teaching Seminar
  - Research Introduction Seminar
  - Advanced Classical Mechanics
  - Quantum Mechanics I & II
  - Electromagnetic Theory I & II
  - Statistical Mechanics
  - Mathematical Physics
  - Electives - 14 credits
2. Thesis: An acceptable thesis is required. A minimum of 20 credits of Physics 690 is required in addition to the courses listed above.
3. Examinations: A written and oral comprehensive examination is required. A final oral examination is also required, covering the thesis and related areas.

## FACULTY

DEPARTMENT HEAD  
Richard Smith

### PROFESSORS

W. Randall Babbitt - Laser and solid-state physics  
 John Carlsten - Laser physics  
 Rufus Cone - Laser and solid-state physics  
 Greg Francis - Physics education  
 Yves Idzerda - Magnetic nanostructures, spin electronics  
 Bennett Link - Theoretical astrophysics  
 Dana Longcope - Solar physics  
 John Neumeier - Condensed matter, oxides  
 Aleksander Rebane - Laser physics  
 V. Hugo Schmidt (emeritus) - Solid-state physics  
 Richard Smith - Surface physics  
 Sachiko Tsuruta - Theoretical astrophysics

### ASSOCIATE PROFESSORS

Jeffrey Adams - Astronomy, physics education  
 Neil Cornish - General relativity, gravitational waves  
 Charles Kankelborg - Solar physics, experimental space physics  
 Galina Malovichko - Defects in optical materials

### ASSISTANT PROFESSORS

Jiong Qiu - Solar physics  
 Anton Vorontsov - Condensed matter theory

### RESEARCH FACULTY/ADJUNCT FACULTY

Loren Acton - Solar physics  
 Recep Avci - Surface and biophysics  
 Richard Canfield - Solar physics  
 Alan Craig - Laser science and technology  
 Mikhail Drobijev - Laser physics  
 Ron Hellings - General relativity, gravitational waves  
 David Klumpar - Space science  
 Bob Leamon - Solar physics  
 Piet Martens - Solar physics  
 David McKenzie - Solar physics  
 Carla Riedel - Experimental nuclear physics  
 Shannon Willoughby - Physics education

