Graduate Studies at UNH

An Overview of
Physics
Space Physics and Astrophysics
Institute for Earth, Oceans, and Space
Physics and Earth Science at UNH

Physics Department
- Space Physics
- Astrophysics
- Nuclear/Nucleon Physics
- Material Science
- Particle Theory
- Medical Imaging

Applications, support, and fellowships

Institute for Earth, Oceans, and Space
- Earth Observing
- Complex Systems
- Zoology/Botany
- Research Center
- Physical
- Ocean Process
- Oceanography
- Analysis Laboratory
- Atmospheres
- Climate Change
- Complex Systems

Applications, support, and fellowships

EOS is an institute affiliated with several academic departments that permits research in a wide range of areas. Graduate students are admitted via the academic departments with advisors chosen from among the EOS-affiliated faculty.
Physics Department Graduate Program

Space Physics and Astrophysics:
- X-ray, γ-ray and cosmic ray experimental astrophysics
- Experimental space plasma physics
- Solar, heliospheric and magnetospheric theory

Nuclear and Nucleon Physics:
- Electron reactions on nucleons and nuclei
- Parity violation in nuclear interactions
- Magnetic resonance imaging
- Nuclear theory

Condensed Matter Physics:
- Atomic clusters
- Nanoscience at surfaces
- Thin films

Theoretical Particle Physics:
- Particle theory and phenomenology
- String theory

Connected with Material Science

In EOS
Solar-Terrestrial Interaction & Astrophysics

Simulations

Balloons

Spaceprobes & Satellites

Theory

UNH Research
Nuclear Physics at UNH

For Example:
Probing Neutrons
For their charge distribution in the form of Quarks

UNH-provided hardware

Plastic Scintillators

Prof. J. Calarco
Prof. M. Holtrop
Prof. W. Hersman
(also Medical Imaging)

Bates Large Acceptance Spectrometer Toroid
Condensed Matter Physics at UNH

Atomic structure of fullerene molecule with caged atom

Prof. Olof Echt
Photophysics of fullerenes
Implantation of ions into $C_{60}$
Pulsed-laser-deposition (PLD)

Ion beam assisted deposition of thin films

Prof. James Harper
Thin film materials science
Thin film ion bombardment
Multi-component thin films

Nanoscale self-assembly in a one-atom thin silver film

Prof. Karsten Pohl
NanoScience at surfaces
Self-organizing growth
Scanning probe microscopy
Interrelationship of electronic and geometrical structure

All Condensed Matter Faculty collaborate within the Material Science Program
12 Faculty from 5 Departments
Graduate Studies at UNH (Physics)

For info or to apply: Go to http://www.physics.unh.edu

The deadline for applications is Jan 15, but the deadline is soft! We do not require the Physics GRE.

The best thing to do is to visit, spend a day or two, or work for us one summer!

- Space Grant Fellowship (Application each year)
- 5 new Fellowships at $2000 on top of Assistantship for Space Science for 1st year
Any Questions?
Extra Slides
The University of New Hampshire is one of the few places where you can get an MS or PhD in Physics doing Space Physics research.

The Space Science Center operates out of Physics and EOS with faculty drawn from the Department of Physics. UNH has 25 faculty in space- and astrophysics including Research Faculty.
Spacecraft Missions at UNH

- ACE (MAG & SEPICA)
- Cluster (CODIF & EDI)
- FAST
- Polar
- SOHO
- Wind
- Ulysses
- Stereo
- Suborbital (rockets and balloons)
Although neutrons are without net charge, the neutron is composed of quarks that result in a charge distribution within the neutron.

Another view is that a neutron is a proton surrounded by a cloud of negative pions.

BLAST is designed to probe the neutron and reveal the distribution of charge within it.

Several UNH graduate students are currently earning their PhDs while working on the BLAST project.

The width of this band show the uncertainty in the worlds data on the shape of a neutron.

BLAST will address this
UNH Materials Science Program

• Research in science and engineering that crosses departmental boundaries

• 12 faculty in 5 departments
  (2 NSF Career award winners)

• 7 Ph.D. students, 4 M.S. students in 2005

• Started 2002 - 8 M.S. students and one Ph.D. student have graduated to date
EOS History

- EOS was formed when the Congress of the US provided funds to build a new building on the UNH campus specifically for the study of the Earth and Space.

- Today it functions with an elected leadership, joint teaching appointments with academic departments, an active and well-funded Research Faculty, and a mandate for scientific research and graduate education.
While graduate students conduct their research under the auspices of EOS, they earn degrees within the traditional academic programs.

Physics → EOS Institute → Earth Sciences

Natural Resources → EOS Institute → Zoology

Students take courses in these programs, as well as courses specific to EOS. At the Ph.D. level, many students access the new interdisciplinary program in Natural Resources and Earth System Science.
Graduate Studies at UNH (EOS)

Students interested in studying within EOS must apply for admission within the relevant academic department. Selection of an appropriate academic advisor will place the student’s research within EOS.

Go to http://www.eos.sr.unh.edu for more information.

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