

Graduate Studies in Condensed Matter Physics and Materials Computation at The College of William and Mary



Condensed matter and materials physics:

Experimental Faculty:	3
Theoretical Faculty:	3
Postdoctoral Researchers:	5
Graduate Students:	15
Female Students:	3

Rankings (US News and World Report):

W&M ranked 6th amongst public US universities

Physics Department Statistics:

Average annual number of Ph. D. recipients: 8
Average time to Ph. D.: 5 years

Departmental Website:

<http://www.wm.edu/physics>

<http://www.wm.edu/as/physics/research/index.php>

Graduate Admissions:

<http://www.wm.edu/as/physics/grad/index.php>

Application deadline: Feb 1st

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William Small Physical Laboratory

General Information:

The College of William and Mary (W&M), chartered in 1693, is the second oldest university in the US. It boasts four US presidents, supreme court justices and Jon Stewart as alumni. W&M is a liberal arts university with a strong research focus. Our 7,800 students (2,000 of them graduate students) enjoy a low student-to-faculty ratio, state-of-the-art facilities, and a beautiful campus.

Located in Williamsburg, Virginia, W&M is in the heart of colonial American history and is adjacent to Colonial Williamsburg, a historic recreation of 18th century colonial life. While much of the campus has been restored to its 18th-century appearance, the physics department is housed in a newly refurbished and expanded building that provides outstanding teaching and research space.

The William and Mary physics department benefits enormously from close ties with both Thomas Jefferson National Accelerator Facility (JLab) and NASA Langley Research Center in nearby Newport News (thirty minutes from the W&M campus).

Research Areas

Atomic, Molecular and Optical Physics

Condensed Matter Physics

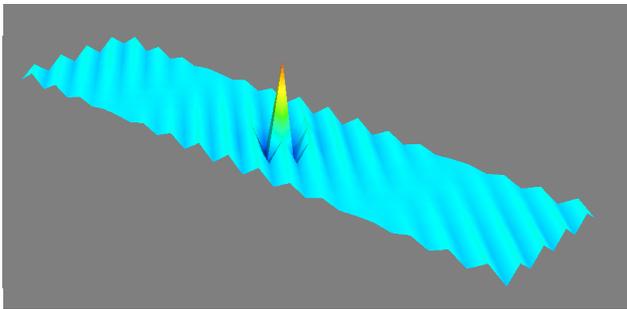
High Energy Physics

Nonlinear and Plasma Physics

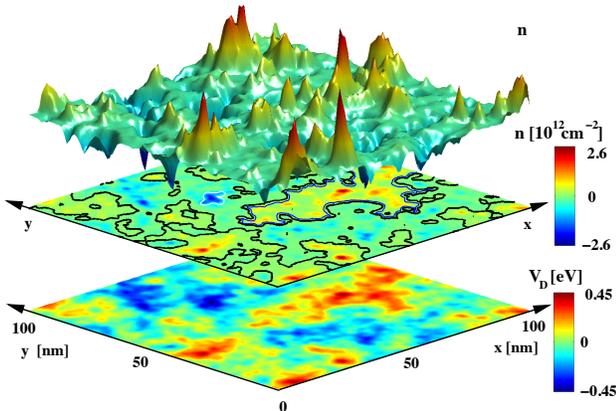
Nuclear and Hadronic Physics



Graduate students working in the thin-films and nanostructures laboratory



Predicted collective mode of spin-density wave in optical lattices by quantum simulations on Jaguar, the DOE supercomputer at ORNL



Calculated density profile in a Graphene sheet in the presence of disorder

Experimental Condensed Matter Physics

Research in experimental condensed matter physics spans a few distinct areas: (i) development of Solid State Nuclear Magnetic Resonance techniques for the quantitative determination of structure and dynamics in condensed matter systems; (ii) fundamental structure-property correlations in superconducting, ferromagnetic, highly correlated oxides and metallic materials in constrained geometries such as thin films and nanostructures and their applications. This thrust has strong collaboration with faculty from the AMO area; (iii) infrared and optical spectroscopy of materials with exotic phase transitions and/or unconventional properties. State-of-the-art facilities include an ultra-high field NMR facility with a 17.6 Tesla magnet; the ultrafast optical center capable of high-precision pump-probe experiments in a wide range of temperature, temporal (100fs to 6ns) and spectral (400nm to 1.2mm) regions; and a near-field infrared microscope with 20 nm spatial resolution.

Theoretical and Computational Condensed Matter Physics

The condensed matter theory and materials computation group at William and Mary is interested in a wide range of problems on magnetism, superconductivity, ultracold atomic gases and optical lattices, ferroelectricity, graphene-based systems, the electronic structure of transition metal systems, energy storage and conversion materials, etc. We develop advanced quantum Monte Carlo simulation methods and apply them in conjunction with traditional theoretical approaches to study these problems, using state-of-the-art local computing facilities and large allocations on national supercomputing resources. The group currently consists of three faculty members, about five research scientists and postdoctoral researchers, and half a dozen graduate students.



NMR laboratory