Departmental Colloquium

Thursday, 3:40 PM, September 29, 2011
109 Nicholson Hall

"Coherent Attosecond Beams at keV Photon Energies and Applications in Materials and Molecular Science"

Margaret Murnane
University of Colorado at Boulder

Host: Mette Gaarde

• Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall •

Bright coherent high harmonic beams can now be generated from tabletop lasers, at photon energies that span from the ultraviolet to >1.6 keV (<7.8 Å). This corresponds to efficiently combining together > 5000 laser photons. In the future, it may even be possible to realize a coherent ultrafast version of the Roentgen X-ray tube in a tabletop-scale apparatus. Example applications of high harmonic beams in materials and molecular science will also be discussed, including uncovering how magnetic materials behave on timescales less than the characteristic exchange interaction time, nanoscale 3-dimensional lensless imaging, capturing the coupled motions of electrons and atoms in molecules, and following energy flow in nanostructures.

Publications:

