

Seminar on

Modern Optics and Spectroscopy

Ed Grant, Purdue University

Frequency Domain Observations of Electron Orbital - Rovibrational Coupling

**April 6, 2004
12:00 – 1:00 p.m.**

Abstract

Electronic relaxation encountered in molecules excited to levels near and above their first ionization thresholds presents a particularly well-defined problem in non-Born-Oppenheimer dynamics. Here, intramolecular energy transfer that leads to electron ejection or electron capture can be conveniently framed in terms of coupling between approximately separable orbital-electronic and cation-core internal degrees of freedom. These dynamics are important because they are universal; all molecules ionize. Specific interactions encountered in this regime relate to the elementary dynamics of electron transfer, and connect directly with theories of electron-cation inelastic scattering. This talk will present the results of new experiments in the frequency domain that use double- and triple-resonance spectroscopy to measure line shapes and positions which have been altered by the coupling of electron orbital motion with vibration and rotation in the simple molecules, BH, HCO and NO₂.

Grier Room, MIT Bldg 34-401
Refreshments will be served