

The Department of Physics and Astronomy
Presents Research Seminar Speaker

Dr. Mark D. Havey

Department of Physics
Old Dominion University, Norfolk, VA



Friday February 26, 2010

Time: 3:00-4:00 p.m.

Location: MB 0.302

Electromagnetic wave dynamics in ultracold, high-density Rb vapor

Recent experiments and theoretical results on Anderson localization of light in condensed samples show that diffusive transport is strongly suppressed and that a regime of anomalous diffusion develops dynamically. Proximity of the light localization threshold can be detected through time evolution of either forward or diffusely scattered light. In this presentation I give an overview of the general subject and the current interest in it, including the attractive features of studying ultracold atomic gases. I will first briefly discuss light scattering in ultracold atomic rubidium samples in the weak localization regime, where multiple coherent light scattering can be thought of in terms of chains of scattering and propagation segments. This will be followed by presentation of newer experimental results at much higher densities, in the generally expected vicinity of the localization transition. Theoretical results on spectral variations of the total scattering cross section in the strong localization regime will also be presented.

This research is supported by the National Science Foundation.