Anderson Localization of Ultrasound in Three Dimensions

(27 May 2014)

John Page

University of Manitoba

Waves in complex media are often strongly scattered due to mesoscopic heterogeneities, leading to unusual and fascinating phenomena which continue to challenge our basic understanding of wave physics. One of the most striking effects is the complete inhibition of wave propagation, due to disorder, that may occur in very strongly scattering samples when waves become localized. Ultrasonic techniques are well suited for investigating this phenomenon since complete information about wave propagation (both amplitude and phase, in both time and space) can be measured directly in samples with well controlled internal structures. In this talk, the speaker will focus on the recent progress in answering the long–standing question of whether or not the Anderson localization of classical waves can really occur in three-dimensional disordered materials. This work is making it possible to study aspects of classical wave localization that have not previously been amenable to experimental investigation, and is contributing to the current resurgence of interest in localization across several domains of physics.