Speaker: M. Ganesh, Professor, Colorado School of Mines

Title: A hybrid framework and analysis for simulation of a class of stochastic wave propagation models

Abstract: We present an efficient computational framework and analysis for quantifying uncertainties in the propagation of waves through a stochastic media comprising a large number of three-dimensional particles. Simulation even for a single deterministic three-dimensional configuration is inherently difficult because of the large number of particles. The stochasticity leads to a larger dimensional model involving three spatial variable and additional stochastic variables, and accounting for uncertainty in key parameters of the input probability distributions leads to prohibitive computational complexity. Our approach and analysis provide a framework for high performance computing (HPC) implementation to compute statistical moments for the three dimensional model. The hybrid HPC framework can be used in conjunction with any method to simulate a single particle deterministic model.