



**QMC Opening Workshop
August 28-September 1, 2017**

Lecture: *A Sign-definite Heterogeneous Media Wave Propagation Model*

Speaker: Mahadevan Ganesh

Abstract:

The standard Galerkin formulation of the acoustic wave propagation, governed by the Helmholtz partial differential equation (PDE), is indefinite for large wavenumbers. However, the Helmholtz PDE is in general not indefinite. The lack of coercivity (indefiniteness) is one of the major difficulties for approximation and simulation of heterogeneous media wave propagation models, including application to stochastic wave propagation Quasi Monte Carlo (QMC) analysis. We will present a new class of sign-definite continuous and discrete preconditioned FEM Helmholtz wave propagation models.