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Differential Equations and Applied Math Seminar

Dr. Qingguo Hong, The Pennsylvania State University

11am-12pm November 15th, 2019

336 Derrick Hall

Title: Parameter-robust iterative methods for Biot and multiple-permeability poroelasticity systems.

Abstract: In this talk, we consider the flux-based Biot and multiple-permeability poroelasticity systems describing multiple-network flow and deformation in a poro-elastic medium, also referred to as MPET models. The focus of the talk is on the convergence analysis of some iterative methods for the MPET models. These iterative methods include a commonly used fixed-stress split methods and the novelly designed Uzawa type methods. We prove the linear convergence of these fixed-point iteration and show that the contraction rates of these iterative methods do not depend on any of the physical parameters appearing in the models. These results are confirmed by numerical results.

Interested faculty and graduate students are encouraged to attend.