

Department of Applied and Computational Mathematics and Statistics Colloquium



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Analysis and Simulation of Discontinuous Galerkin Methods for Two-Phase Flows

Modeling multicomponent flows in porous media is important for many applications relevant to energy and environment.

Advances in pore-scale imaging, increasing availability of computational resources, and developments in numerical algorithms have started rendering direct pore-scale numerical simulations of multiphase flow in pore structures feasible. This talk presents recent advances in the discretization of phase-field models for systems of two-phase flows, characterized by coupled Navier-Stokes and Cahn-Hilliard equations. Spatial discretization is based on the interior penalty discontinuous Galerkin methods. Time discretization is either fully implicit or a decoupled splitting approach.

Both theory and application of the proposed methods to model flows in porous structures are discussed.

Mon, Oct 2, 2023

3:45 - 4:45 PM

127 Hayes-Healy Center

Colloquium Tea - 3:15 PM in 101A Crowley Hall