

Differential Equations and Applied Math Seminar

Texas State University

2-3pm April 24, 2015

329 Derrick Hall

Speaker: Dr. Sanghyun Lee, University of Texas - Austin

Title: 3D Fracture Propagation Modeling using Phase Field

Abstract: This work presents recent progress in phase-field-based fracture modeling in heterogeneous porous media. We develop robust numerical algorithms that can be used for three-dimensional applications. Specially, we present a Newton loop that combines a primal-dual active set method (required for treating the crack irreversibility) for pressurized fractures and couple this loop with a pressure-diffraction equation in order to solve for fluid flow in the porous media and the fracture. The resulting algorithm splits geomechanics and flow computations in terms of a fixed-stress approach. Several numerical examples considering pressurized fractures in heterogeneous media and fluid-filled fracture propagation in porous media substantiate our developments.

This is a joint work with A.Mikelic, M.F.Wheeler, and T.Wick.

Interested faculty and graduate students are encouraged to attend.