

COLLOQUIUM
UNIVERSITY OF PITTSBURGH
FRIDAY, NOVEMBER 14, 2008
704 THACKERAY HALL
4:00 P.M.

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CLEMSON UNIVERSITY

COUPLED GENERALIZED NONLINEAR STOKES FLOW
WITH FLOW THROUGH A POROUS MEDIA

ABSTRACT: In this presentation, we analyze the flow of a fluid through a coupled Stokes-Darcy domain. The fluid in each domain is non-Newtonian, modeled by the generalized nonlinear Stokes equation in the free flow region and the generalized nonlinear Darcy equation in the porous medium. A flow rate is specified along the inflow portion of the free flow boundary. We show existence and uniqueness of a variational solution to the problem. We propose and analyze an approximation algorithm and establish a-priori error estimates for the approximation.

Refreshments served at 3:30 p.m.
in the Math Dept. COMMON ROOM, Thackeray 705