

TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Room 617 Wachman Hall

Wednesday, 27 March 2013, 4:00 p.m.
(tea and social at 3:45)

Discretization and Preconditioning for Coupled PDE Systems

by Jinchao Xu
Penn State University

Abstract. In this talk, I will present some recent works on discretization and preconditioning techniques for coupled PDE systems that involves the Stokes operator. Examples include Navier-Stokes equations, Darcy-Stokes coupling, Brinkman models, magnetohydrodynamics and complex fluids. Both conforming and discontinuous Galerkin methods will be discussed. One particular issue to be addressed is the role played by the divergence-free condition in the design of both discretization and preconditioning methods.