1100-65-196 **Son-Young Yi*** (syi@utep.edu), Department of Mathematical Sciences, 500 W. University Ave., University of Texas at El Paso, El Paso, TX 79968, and **Maranda Bean** (mlbean@miners.utep.edu), Department of Mathematical Sciences, 500 W. University Ave., University of Texas at El Paso, El Paso, TX 79968. *Iterative coupling algorithms for Biot's consolidation model.*

In this talk, we consider numerical algorithms for modeling of the time-dependent coupling between the fluid flow and deformation in elastic porous medium. Modeling the mechanical behavior of fluid-saturated porous media is of great importance in a wide range of science and engineering fields including reservoir engineering, soil mechanics, environmental engineering, and, more recently, biomechanical engineering.

Here, we employ a new mixed finite element method for the 2D Biot's model introduced by Yi. We present four different iteratively coupled methods, known as drained, undrained, fixed-strain, and fixed-stress splits, in which the diffusion operator is separated from the elasticity operator and the two subproblems are solved in a staggered way while ensuring full convergence of the solution at each time step.

A-priori convergence results for each iterative coupling are presented. We also present some numerical results to support the convergence estimates and to show the effectiveness of the algorithms. (Received February 08, 2014)