1145-65-929   **Mingchao Cai*** (`mingchao.cai@morgan.edu`), Baltimore, MD 21251. *Preconditioners and solvers for Biot's model.*

Biot's model has been widely used in Biomechanics. For example, mathematical models of brain edema and cancellous bones are all Biot's model. In this presentation, we aim at solving Biot's model under a stabilized finite element discretization and the MAC Finite Difference discretization. To solve the resulting saddle point linear systems, some preconditioners and iterative methods are proposed. In the preconditioners, the Schur complement approximation is derived by using a Fourier analysis approach. These preconditioners are implemented exactly or inexactly using Multigrid or domain decomposition methods. For accelerating the convergence rate, Krylov subspace methods are used as outer iteration. Extensive experiments are given to justify the performance of the proposed preconditioners and the solvers. (Received September 17, 2018)