1125-VC-713 **Mingchao Cai*** (cmchao2005@gmail.com), 1128 E Belvedere Av, Apt B, Balimore, MD 21239.
Fast solvers for poroelastic models.

Poroelastic models have been widely used in geoscience and biomechanics. We consider to apply staggered-grid Finite Difference method to discretize the quasi-static poroelastic model. Our goal is developing preconditioners to accelerate the convergence rate of the Krylov subspace methods applied to the resulting saddle point problems. The approximation of the inverse of the Schur complement is derived by using a Fourier analysis approach. For constant-coefficient problem, we show that if exact Poisson solvers are employed, the preconditioned system has clustered eigenvalues values which are robust with respect to mesh refinement and parameters. The analysis reflects the stability of the stagger-grid Finite Difference discretization and the effects of boundary treatment. Numerical experiments are provided to verify the effectiveness of the proposed preconditioners. (Received September 09, 2016)