

APPLIED DYNAMICAL SYSTEMS SEMINAR

**Domain Decomposition Methods for Solving Stokes-Darcy
Systems Based on Boundary Integrals**

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We consider a coupled problem of Stokes and Darcy equations. This involves solving PDEs of different orders simultaneously. To overcome this difficulty, we apply a non-overlapping domain decomposition method based on a Robin boundary condition obtained by combining the velocity and pressure interface conditions. The coupled system is then reduced to solving each problem separately by an iterative procedure using a Krylov subspace method. The numerical solution in each subdomain is based on the boundary integral formulation, where the kernels are regularized and the leading term in the regularization error is eliminated for higher order accuracy.