

A new approach in solving Stokes systems arising from distributive relaxation method

This is joint work with Panayot S. Vassilevski. The distributed relaxation method for incompressible Stokes problem is based on an adequate change of variables which leads to a lower triangular system with Laplace operators on the main diagonal for which multigrid methods are more suitable. The method can be applied to finite element discretizations of the Stokes system provided the approximation finite dimensional spaces for velocity and for pressure form a stable pair. We establish sharp rates of convergence in terms of the in-sup condition constants at the continuous and the discrete level. We compare our iterative process with Uzawa type algorithms.