Department of Mathematics

University of Houston

Scientific Computing Seminar

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A stabilization of time dependent Navier-Stokes equation for variable density and variable viscosity problems and its numerical solution

Thursday, May 3, 2012
3:00 PM- 4:00 PM
Room 646   PGH

Abstract:
Variable density problems arise,for instance in interfaces between fluids of different densities in multiphase flows such as appear in porous media problems. The fluids are assumed to be incompressible. It is shown that by solving the Navier-Stokes equation for the momentum variable instead of the velocity, the corresponding saddle point problem, which arises at each time step, becomes automatically regularized, enabling elimination of the pressure variable and leading to a, for the iterative solution, efficient preconditioning of the arising block matrix. We present also bounds for the splitting and linearizing method used.

This seminar is easily accessible to persons with disabilities. For more information or for assistance, please contact the Mathematics Department at 743-3500.