

Department of Mathematics

University of Houston

Scientific Computing Seminar

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A framework for the development of implicit solvers for incompressible flow problems

Thursday, Nov. 6, 2014

1:30 PM- 2:30 PM

Room 646 PGH

Abstract: This survey talk reviews some recent developments in the design of robust solution methods for the Navier-Stokes equations modelling incompressible fluid flow. There are two building blocks in our solution strategy. First, an implicit time integrator that uses a stabilized trapezoid rule with an explicit Adams-Bashforth method for error control, and second, a robust Krylov subspace solver for the spatially discretized system. Numerical experiments are presented that illustrate the effectiveness of our generic approach. It is further shown that the basic solution strategy can be readily extended to more complicated models, including unsteady flow problems with coupled physics and steady flow problems that are stochastic in the sense that they have uncertain input data.

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