

Iterative solvers for the incompressible Navier Stokes equations

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ABSTRACT

In CFD, there is a strong need for fast and robust iterative solvers for the discretized incompressible Navier Stokes equations. Popular methods are preconditioned Krylov solvers. The most important part to make these solvers successful is the construction of a good preconditioner. One of the difficulties is the zero block due to the incompressibility equation. Another difficulty is the coupling of the various unknowns. Recently, a number of block preconditioners have been proposed to overcome these difficulties:

- the pressure convection diffusion (PCD) preconditioner,
- the least squares commutator (LSC) preconditioner,
- the augmented Lagrangian based (ALB) preconditioner,
- the SIMPLE(R) preconditioner.

In this minisymposium a number of papers is presented to illustrate the properties of these preconditioners for the solution of the discretized incompressible Navier Stokes equations.

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