

On Conserving FEM Discretizations for Fluid Flow

We will present and discuss new approaches for incompressible fluid flow for FEM computations. Reformulation of the PDEs of the incompressible Navier Stokes equations allows for better conservation of physical properties like energy or momentum. This comes with additional computational challenges for boundary conditions, time discretization, linear solvers, and adaptive mesh refinement. We will show numerical results of well-known benchmark problems to highlight the difficulties and show some solutions.