

# Direct numerical simulation of incompressible fluids

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We consider the variational formulation of the Navier Stokes equations for incompressible fluids in the stationary and in the instationary case. After summarizing results on unique solvability for both cases, we discuss some linearization strategies and discretization techniques, in particular, an implicit Euler method and a finite element approximation with Taylor Hood elements. Finally we present some numerical examples of pipe flows with large Reynold's numbers in two and three space dimensions.

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