Sebastian Böö: Navier-Stokes ekvationer. Några enkla lösningar och tillämpningar inom meteorologi

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Sammanfattning

The aim of this thesis is to give a fundamental introduction to the Navier-Stokes equations. First the formation of the equations is viewed from a historical perspective. Then the equations are derived from physical assumptions of conservation of mass and momentum, whereupon the classical solutions of Poiseuille and Couette are studied. This is followed by a description of how the equations can be modified to be practically solvable in meteorological applications. Finally, the problem of proving existence of solutions to the entire Navier-Stokes equations is considered.