

Stokes and Navier-Stokes equations with friction laws at the boundary of the domain and coupling of two fluids

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SUMMARY

In this talk we will review some existence results of weak solutions for the incompressible Navier-Stokes equations with friction conditions at the boundary, such as the Navier law or the nonlinear Glaucker-Manning law. We will then consider the case of the coupling of two fluids governed by the Stokes equations and coupled by a Navier law at the (rigid) interface, such as the ocean and the atmosphere in the laminar regime. We will show that the solutions converge towards a limit satisfying continuity conditions at the interface when the friction coefficient tends to infinity, which is confirmed by a series of simulations, carried out from a numerical scheme for which we are able to prove convergence.

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