

Boundary value problems for the Stokes and Navier-Stokes systems in a polyhedral domain

Vladimir Maz'ya

Department of Mathematics, Linköping University, Sweden

This is a survey of my and J. Rossmann's new results concerning solvability and regularity properties of mixed boundary value problems for the Stokes and Navier-Stokes systems in a three dimensional polyhedral domain. I start with pointwise estimates for Green's tensors of the Stokes operator. Then I turn to estimates of solutions in weighted and nonweighted Sobolev spaces, first for linear and then for nonlinear problems. These results are applied to a free boundary problem for the Navier-Stokes system.