

BOUNDARY VALUE PROBLEMS FOR THE STOKES SYSTEM
IN ARBITRARY LIPSCHITZ DOMAINS

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Abstract

The goal of this work is to treat the main boundary value problems for the Stokes system, i.e.,

- (i) the Dirichlet problem with L^p -data and nontangential maximal function estimates,
- (ii) the Neumann problem with L^p -data and nontangential maximal function estimates,
- (iii) the Regularity problem with L_1^p -data and nontangential maximal function estimates,
- (iv) the transmission problem with L^p -data and nontangential maximal function estimates,
- (v) the Poisson problem with Dirichlet condition in Besov-Triebel-Lizorkin spaces,
- (vi) the Poisson problem with Neumann condition in Besov-Triebel-Lizorkin spaces,

in Lipschitz domains of arbitrary topology in \mathbb{R}^n , for each $n \geq 2$. Our approach relies on boundary integral methods and yields constructive solutions to the aforementioned problems.