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Maximal L^1-regularity and its application to free boundary problems of the Navier-Stokes equations

We consider end-point maximal L^1-regularity upon the homogeneous Besov space for the Stokes equations with inhomogeneous stress boundary condition. We decompose the Fourier symbol of the Stokes equations in time and space regions. Utilizing the almost orthogonal properties between the boundary potential and the Littlewood–Paley decomposition, we show maximal L^1-regularity in the Besov and the Lizorkin–Triebel spaces. We further discuss an application to free boundary problems of the Navier–Stokes equations.

This is based on a joint work with Takayoshi Ogawa (Waseda University).