

End-point maximal regularity for the Stokes system and an application to a free boundary problem of the Navier-Stokes equations

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Abstract

Maximal regularity is one of a useful estimate when we consider a problem to quasi-linear parabolic type equations. The estimate is well established in the framework of UMD Banach spaces. Since any UMD space is necessarily reflexive, a non-reflexive Banach space is not UMD. Besides maximal L^1 -in-time regularity does not hold even on the Lebesgue space of spatial variables. Here I will talk on maximal L^1 -in-time regularity for the initial boundary value problem of the Stokes equations in the n -dimensional half Euclidean space. As an application, I will comment on a global existence of small solutions to a free boundary problem of the Navier-Stokes equations. This talk is based on a joint work with Senjo Shimizu (Kyoto Univ.).