Fractional Powers of the Stokes operator with boundary conditions involving the pressure

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SUMMARY

Stokes and Navier-Stokes problems have been often studied with Dirichlet boundary condition. Nevertheless, in the opinion of engineers and physicists such a condition is not always realistic in industrial and applied problems of origin. Thus arises naturally the need to carry out a mathematical analysis of these systems with different boundary conditions, which best represent the underlying fluid dynamic phenomenology. Based on the study of the complex and fractional powers of the Stokes operator with pressure boundary condition, we carry out a systematic treatment of the Stokes problem with the corresponding boundary conditions in L^p-spaces.

Keywords: Stokes Problem, pressure boundary conditions, Complex and fractional powers of operators.

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