STRONG L^p-SOLUTIONS TO CERTAIN FLUID-SOLID INTERACTION PROBLEMS

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Abstract. In this talk we consider the movement of a rigid body in a Newtonian or Non-Newtionian fluid under the influence of gravitation. We show that in the first case the system consisting of the Navier-Stokes equations coupled with the balance laws for the momentum and the angular momentum admits a unique, local, strong solution in the L^p-setting. Note that the fluid-solid interface is a moving one and has to be found as part of the solution process. Our result will then be extended to the case of certain Non-Newtonian fluids. This is joint work with Matthias Geissert and Karoline Goetze (Darmstadt).