The vanishing viscosity limit for the inhomogeneous incompressible Navier-Stokes equations around a small obstacle

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In this talk we consider solutions of the inhomogeneous Navier-Stokes system in a domain exterior to a small obstacle satisfying the non-slip boundary condition. We study the behavior of the solution when both viscosity and size of the obstacle tend to zero. We prove convergence to the inhomogeneous Euler equations in the full space, assuming that the obstacle is sufficiently small (less than a constant times the viscosity) and that the solution to the limit problem stays sufficiently regular. Moreover, we can show explicit convergence rates in L^2. This is joint work with Jens Schröder (FAU Erlangen).