Asymptotic analysis of the linearized Navier-Stokes equations in a general domain.

We study, in a curved bounded domain in $\mathbb{R}^3$ with a characteristic boundary, the asymptotic behavior of the linearized Navier-Stokes equations (LNSE) when the viscosity is small. Using the curvilinear system, we show that the solutions of the LNSE behave like the corresponding Euler solutions except in a thin region, near the boundary, where a certain heat solution is added as a corrector. (Received September 07, 2010)