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**Gung-Min Gie\*** ([gungmin@ucr.edu](mailto:gungmin@ucr.edu)), Department of Mathematics, University of California, Riverside, 900 University Ave., Riverside, CA 92521, **Makram Hamouda** ([mahamoud@indiana.edu](mailto:mahamoud@indiana.edu)), ISCAM, Indiana University, Rawles Hall, 831 E. Third St., Bloomington, IN 47405, and **Roger Temam** ([temam@indiana.edu](mailto:temam@indiana.edu)), ISCAM, Indiana University, Rawles Hall, 831 E. Third St., Bloomington, IN 47405. *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)