Enomoto, Yuko; **Shibata, Yoshihiro**

Local energy decay of solutions to the Oseen equation in the exterior domains. (English)

Zbl 1088.35048
Indiana Univ. Math. J. 53, No. 5, 1291-1330 (2004).

The authors prove a local energy decay of the Oseen semigroup in the n-dimensional exterior domain ($n \geq 3$). To formulate the Oseen equation in the framework of semigroup theory, the authors introduce the Helmholtz decomposition. The local energy decay is a crucial step to obtain L^p-L^q estimates of the Oseen semigroup, which in turn enables to prove the unique existence of global in time solutions to the Navier-Stokes equation in an exterior domain with small initial data in the L_m framework, and their properties of time decay.

Reviewer: Messoud A. Efendiev (Berlin)

MSC:

35Q35	PDEs in connection with fluid mechanics
35B40	Asymptotic behavior of solutions to PDEs
76D03	Existence, uniqueness, and regularity theory for incompressible viscous fluids
35M20	PDE of composite type (MSC2000)

Keywords:

Oseen equation; L^p-L^q estimate; exterior domain; local energy decay; existence; Navier-Stokes equation

Full Text: DOI