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STABILITY OF TIME-PERIODIC PARALLEL FLOW OF COMPRESSIBLE VISCOELASTIC SYSTEM IN AN INFINITE LAYER

Ayaka Haruki

MS & AD Inter Risk Research & Consulting, Inc.,
WATERRAS ANNEX (10F & 11F), 2-105, Kanda Awajicho, Chiyoda-ku,
Tokyo 101-0063, Japan

and

Yusuke Ishigaki*

Department of Mathematics, Tokyo Institute of Technology,
2-12-1, Ookayama, Meguro-ku,
Tokyo 152-8551, Japan
(E-mail: ishigaki.y.aa@m.titech.ac.jp)

Abstract. The stability of a time-periodic parallel flow of a compressible viscoelastic system in an infinite layer is considered under non-slip boundary conditions on the top and bottom and space-periodic condition in unbounded directions. We show that the time-periodic parallel flow is asymptotically stable and its perturbation decays exponentially as time goes to infinity if the initial data are sufficiently close to the time-periodic flow, provided that the Reynolds number and Mach number are sufficiently small, and the strength of the elasticity is sufficiently strong.

*Corresponding author.
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