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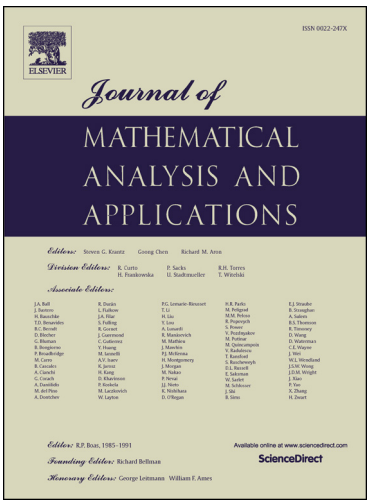

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Stationary solutions to the one-dimensional micropolar fluid model in a half line: existence, stability and convergence rate

Haibo Cui[*], Haiyan Yin[†]

Abstract

In this paper, we study the asymptotic behavior of solutions to the initial boundary value problem for the one-dimensional micropolar fluid model in a half line $\mathbb{R}_+ := (0, \infty)$. Our idea mainly comes from [12] which describes the large time behavior of solutions for non-isentropic Navier-Stokes equations in a half line. Compared with Navier-Stokes equations in the absence of the microrotation velocity, the microrotation velocity brings us some additional troubles. We obtain the convergence rate of global solutions toward corresponding stationary solutions if the initial perturbation belongs to the weighted Sobolev space. The proofs are given by a weighted energy method.

Key words. micropolar fluid model, stationary solutions, outflow problem, convergence rate, weighted energy method.

AMS subject classifications. 34K21, 35B35, 35B40.

Contents

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