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HYPERBOLIC RELAXATION OF THE 2D NAVIER-STOKES EQUATIONS IN A BOUNDED DOMAIN

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Abstract. A hyperbolic relaxation of the classical Navier-Stokes problem in 2D bounded domain with Dirichlet boundary conditions is considered. It is proved that this relaxed problem possesses a global strong solution if the relaxation parameter is small and the appropriate norm of the initial data is not very large. Moreover, the dissipativity of such solutions is established and the singular limit as the relaxation parameter tends to zero is studied.

Contents

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Key words and phrases. Navier-Stokes equations, hyperbolic relaxations, singular perturbations, attractors.

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