On the Strong Solutions of the Nonlinear Viscous Rotating Stratified Fluid

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Abstract : A nonlinear model of the mathematical fluid dynamics which describes the motion of an incompressible viscous rotating fluid in a homogeneous gravitational field is considered. The model is a generalization of the known Navier-Stokes system with the addition of the Coriolis parameter and the equations for changeable density. An explicit algorithm for the solution is constructed, and the proof of the existence and uniqueness theorems for the strong solution of the nonlinear problem is given. For the linear case, the localization and the structure of the spectrum of inner waves are also investigated.