

On the solution of the system modelling non-linear stratified rotating fluid

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We consider non-linear motion of exponentially stratified fluid which is rotating over the vertical axis. The model is used to describe the three-dimensional velocity camp of the flows of the Atmosphere and the Ocean. Analytically, we prove the local existence and the uniqueness of the solution. For the solution, we also prove the convergence of the numerical algorithm by using the Galerkin method.

Keywords: geophysical fluid dynamics, rotating fluid, stratified fluid in a homogeneous gravity field, dynamics of the Atmosphere and the Ocean, approximate solution by Galerkin method, mathematical qualitative properties of the solutions of PDE