A NOTE ON MATHEMATICAL ANALYSIS OF ROTATING STRATIFIED BOUSSINESQ EQUATIONS

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Abstract: The mathematical analysis of the system of six coupled non-linear Ordinary Differential Equations (ODEs), which arose in the reduction of uniformly stratified fluid contained in a rotating rectangular box of dimension $L \times L \times H$ which is completely integrable if the Rayleigh number $Ra = 0$, is dealt with this paper.

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1. Introduction

Since long back as a century, Painlevé test has been popular as the most successful technique for detecting the integrability of differential equations. This was mentioned in the Kowalevskian work. An integrability of differential equation is analogous to the characteristics of its solutions near movable singularity. The formal algebraic consequence of such a relation is exploited in the Painlevé test. It