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Painlevé Test to a Reduced System of Six Coupled Nonlinear ODEs

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Abstract: In this paper we investigate the complete integrability of the system of six coupled nonlinear ODEs, which arises in the ODE reduction of rotating stratified Boussinesq equations. We use Painlevé test to investigate the complete integrability of the system. And we conclude that the system is completely integrable only if the Rayleigh number $Ra = 0$. The singular solution of the system admits the movable pole type singularity in complex domain.

Keywords: *Painlevé test; rotating stratified Boussinesq equations; integrable system.*

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