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Analytical solution for large-scale rotating fluid layer with thermal convection. (English. Russian original) [Zbl 1434.76144](#)
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Summary: A soliton-like solution is obtained by using the auxiliary Riccati equation method for the evolution equation describing the deformation of the upper surface of a large-scale rotating fluid layer with the thermal convection. This solution reveals that the long-lived structure of the rotating fluid layer depends on the nonlinear term associated with the beta effect and the diffusion term resulted from the thermal convection.

MSC:

76U05 General theory of rotating fluids

76R05 Forced convection

76E20 Stability and instability of geophysical and astrophysical flows

80A19 Diffusive and convective heat and mass transfer, heat flow

Keywords:

large-scale rotating fluid layer; long-lived structure; analytical solution; soliton; thermal convection

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