Exact solutions for unsteady axisymmetric vortex motions governing atmospheric vortices

Jagdish Prasad Maurya, Sanjay Kumar Pandey

Varanasi, India

In this paper, attempts have been made to provide non-steady general solutions to many of the existing solutions for azimuthal velocity of vortex motion representing different rotational motions occurring in the nature. The derived expressions reduce to those available in the existing literature. For time tending to infinity, it is observed that for viscous flows, the core radius stabilises but for inviscid flows, it vanishes. Consequently, for viscous flows, the azimuthal velocity too stabilises. Unlike this, the vortex motion dies out when the flow is inviscid.

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