

Effect of Rotation on Thermal Instability in Couple-Stress Elastico-Viscous Fluid

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The thermal instability of a layer of a couple-stress fluid acted on by a uniform rotation is considered. Following the linearized stability theory and normal mode analysis, the dispersion relation is obtained. For stationary convection it is found that rotation has a stabilizing effect, whereas the couple-stress has both stabilizing and destabilizing effects. It is found that the presence of rotation introduces oscillatory modes in the system. A sufficient condition for the non-existence of overstability is also obtained.

Key words: Thermal Instability; Couple-stress Elastico-viscous Fluid; Uniform Rotation.