

**EFFECT OF IMPOSED TIME-PERIODIC GRAVITY
MODULATION AND ELECTRIC FIELD ON THE ONSET OF
RAYLEIGH-BÉNARD CONVECTION IN A COUPLE STRESS
FLUID**

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Abstract

The effect of time-periodic body force (TBF, also called gravity modulation) of small amplitude on electroconvection in a dielectric couple stress fluid is investigated using a linear stability analysis. The Venezian approach is adopted in arriving at the expression for the correction Rayleigh number for small amplitudes of TBF. The role of couple stress parameter, Prandtl number, Electric Rayleigh number and thermal Rayleigh number are discussed on the onset of convection with gravity modulation in the presence of electric field.

Key Words : *Rayleigh-Bénard convection, Couple stress fluid, Gravity modulation, Electric field, Rayleigh number.*