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Abstract

Double diffusive convection of a vertical through flow in a porous layer saturated by a power-law fluid with variable gravity

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Abstract

The present study investigates the thermosolutal convection of a power-law fluid with variable gravity in a vertical through flow. The porous layer is heated and salted from below. The normal mode method is used to solve the non-dimensionalized governing equations. Using linear stability analysis, the influence of variable gravity in a vertical through flow was investigated. Linear instability analysis is studied by using shooting with the RK method. This theoretical and numerical analysis is made to understand the effect of gravity field in a power-law fluid flow passing through a porous layer. It also studies thermal and solutal instability analysis in a porous medium saturated by power-law fluid.

Key words: Power law fluid, variable gravity,porous medium,double diffusive convection.

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