**ABSTRACT**

A stability analysis of an unsteady natural convection of saturated incompressible fluid/porous interface is carried out using one domain approach. The momentum transfer in porous medium has been described by the Brinkman-extended Darcy model. Using normal mode analysis the resulting eigenvalue problem is solved by applying method of small oscillations with wave number as a perturbation parameter to get a closed form solution. The influence of various parameters like Grashof number, Prandtl number, Darcy number, depth ratio and porosity on stability characteristics of the flow is analyzed numerically.