

Linear Stability of Convection in an Inclined Channel with Nanofluid Saturated Porous Medium

Authors : D. Srinivasacharya, Nidhi Humnekar

Abstract : The goal of this research is to numerically investigate the convection of nanofluid flow in an inclined porous channel. Brownian motion and thermophoresis effects are accounted for by nanofluid. In addition, the flow in the porous region governs Brinkman's equation. The perturbed state of the generalized eigenvalue problem is obtained using normal mode analysis, and Chebyshev spectral collocation was used to solve this problem. For various values of the governing parameters, the critical wavenumber and critical Rayleigh number are calculated, and preferred modes are identified.

Keywords : Brinkman model, inclined channel, nanofluid, linear stability, porous media

Conference Title : ICCFD 2022 : International Conference on Computational Fluid Dynamics

Conference Location : London, United Kingdom

Conference Dates : October 13-14, 2022