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MHD Mixed Convection in a Vertical Porous Channel

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Abstract : This work deals with the problem of MHD mixed convection in a completely porous and differentially heated vertical channel. The model of Darcy-Brinkman-Forchheimer with the Boussinesq approximation is adopted and the governing equations are solved by the finite volume method. The effects of magnetic field and buoyancy force intensities are given by the Hartmann and Richardson numbers respectively, as well as the Joule heating represented by Eckert number on the velocity and temperature fields, are examined. The main results show an augmentation of heat transfer rate with the decrease of Darcy number and the increase of Ri and Ha when Joule heating is neglected.

Keywords : heat sources, magnetic field, mixed convection, porous channel
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