AN OSCILLATORY FREE CONVECTIVE MAGNETOHYDRODYNAMICS (MHD) FLOW THROUGH POROUS MEDIUM IN A ROTATING VERTICAL POROUS CHANNEL WITH HEAT SOURCE

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Abstract

An Analysis of Hydromagnetic free convective oscillatory flow of a viscous, incompressible and electrically conducting fluid through a porous medium filled in a vertical porous channel in the presence of heat source is carried out. The fluid is injected with the constant velocity through the stationary plate and simultaneously sucked through the channel plate oscillating in its own plane. A uniform magnetic field is applied perpendicular to the planes of the plate. The induced magnetic field is neglected due to the assumption of small magnetic Reynolds number. The channel and the fluid rotate in unison with constant angular velocity about the axis normal to the channel plates. An exact solution to this flow problem is obtained. The results for the steady and unsteady resultant velocities, shear stresses along with their phase differences have been discussed in detail with the help of figures.

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