TRANSIENT UNSTEADY NATURAL CONVECTION MHD FLOW PAST A SEMI-INFINITE VERTICAL PLATE WITH CONSTANT HEAT FLUX

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A numerical analysis is performed to study the MHD flow of an electrically conducting, incompressible, viscous fluid past a semi-infinite vertical plate with constant heat flux, subjected to a transversely applied magnetic field. The heat due to viscous dissipation and the induced magnetic field are assumed to be negligible. The dimensionless governing equations are unsteady, two-dimensional, coupled, and non-linear. A most accurate, unconditionally stable and fast converging implicit finite difference scheme is used to solve the non-dimensional governing equations. Velocity and temperature of the flow have been presented graphically for various parameters. The local and average skin friction and Nusselt number are also presented graphically.

Key words: convective, magnetic field, skin friction, Nusselt number, vertical plate.

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