

Effect of Hall Current on MHD Free Convection Flow with Heat and Mass Transfer past a Vertical Porous Plate

* S.D. Singh, ** A.K. Khamborkar

Abstract

The objective of this analysis is to study the effect of hall current on MHD free convection flow past a vertical porous plate with heat and mass transfer taking Viscous and Darcy resistance terms into account and the constant permeability of the medium numerically and neglecting induced magnetic field in comparison to applied magnetic field. The velocity, temperature, concentration and skin friction distributions are derived, discussed numerically and shown in figures 1,2,3 and 4 respectively. It is observed that velocity increases with increase in Gm , K and m but it decreases with the increase in M . It is observed that increase in Prandtl number Pr , causes decreases in temperature. It is observed that increase in Schmidt number Sc leads to decreases in concentration. It is observed that skin friction increases with increase in Gm , K and m but it decrease with the increase in M .

Keywords: Convection Problem, Hall Current, Viscous and Darcy Resistance Terms

* Dept. of Mathematics, Sydenham College of Commerce & Economics, Mumbai, E-mail Id: drsunilsingh912@gmail.com

** Dept. of Statistics, Sydenham College of Commerce & Economics, Mumbai.