Abstract
In this study, effects of Hall current and rotation on an electrically conducting rarefied gas are investigated . A constant , strong magnetic field is applied at an angle φ to both the electric field and the direction of flow of the fluid. The study seeks to find the effects of Hall current and angle of application of the magnetic field on velocity and temperature profiles . The flow of the gas is considered as unsteady and restricted to laminar domain. The set of equations which describe the flow are a combination of the Navier-Stokes equations of fluid dynamics, generalized Ohm's law, Maxwell's equations, equation of continuity and equation of energy. These equations are solved numerically using the finite difference method. Numerical results of velocity and temperature profiles are analyzed using tables and graphs for Hall current parameters m* ranging from 0.0 to 1.0 and parameter λ for angle of application of the magnetic field ranging from 0.0 to 1.0.