

MHD stagnation-point flow towards a stretching sheet with prescribed surface heat flux.

ABSTRACT

The steady two-dimensional stagnation point flow of an incompressible viscous and electrically conducting fluid, subject to a transverse uniform magnetic field, towards a stretching sheet is investigated. The governing system of partial differential equations are transformed to ordinary differential equations, which are then solved numerically using a finite difference scheme known as the Keller-box method. The effects of the governing parameters on the flow field and heat transfer characteristics are obtained and discussed. It is found that the heat transfer rate at the surface increases with the magnetic parameter when the free stream velocity exceeds the stretching velocity, i.e. $\varepsilon > 1$, and the opposite is observed when $\varepsilon < 1$.

Keyword: Heat flux; Stagnation point; Heat transfer; Magnetohydrodynamic; Stagnation point flow; Stretching surface.