

# **Magnetohydrodynamic (MHD) slip Darcy flow of viscoelastic fluid over a stretching sheet and heat transfer with thermal radiation and viscous dissipation**

## **ABSTRACT**

In this paper, we analytically study about the boundary layer flow and heat transfer on nonNewtonian fluid which in particular is the viscoelastic fluid. The magnetohydrodynamic (MHD) slip Darcy flow of viscoelastic fluid over a stretching surface in a porous medium with the presence of thermal radiation and viscous dissipation is examined. The results for two viscoelastic fluids which is elastico-viscous fluid and second grade fluid are obtained and compared. The governing partial differential equations are reduced to non-linear ordinary differential equations with the aid of similarity transformation, which are then solved analytically by using exact analytical method. The effects of the physical parameters on the velocity and temperature fields are presented through graphs and are discussed. Skin friction and heat transfer coefficients are computed and analysed.

**Keyword:** Viscoelastic fluid; Velocity slip; Magnetohydrodynamic; Porous medium; Viscous dissipation; Thermal radiation