ANALYTICAL SOLUTION FOR AXI-SYMMETRIC ROTATING FLOW OF NEWTONIAN CONDUCTING FLUID PAST A STRETCHING POROUS SHEET UNDER A TRANSVERSE MAGNETIC FIELD

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Abstract

The steady laminar flow of an electrically conducting fluid over a radial stretching porous sheet rotating with an angular velocity Ω, is considered for investigation in the presence of a transverse magnetic field. The axi-symmetric flow of conducting fluid is induced due to radial stretching of a sheet rotated with an angular velocity which generates the boundary layer type of flow. Introducing the dimensionless quantities the governing partial differential equations are transformed into non-linear ordinary differential equations. An expression for pressure distribution is derived. A series solution is obtained analytically for different existing parameters. The effects of magnetic fields are shown on the radial, peripheral and axial velocity across the boundary layer.

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