

# Mixed Convection Flow on MHD Non-coaxial Rotation of Second Grade Fluid in a Porous Medium

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**Abstract.** The effects of magnetic field and porosity on non-coaxial rotation of incompressible second grade fluid in mixed convection flow have been studied in this article. The problem is modelled in terms of partial differential governing equations with initial and oscillating boundary conditions. These equations are transformed into non-dimensional forms by using the suitable non-dimensional variables. The exact solutions are obtained by using the Laplace transform technique. Expressions for velocity and temperature are obtained. Numerical computations carried out and the results are plotted. The effects of various embedded parameters such as second grade fluid, magnetic, porosity, Prandtl number and Grashof number are discussed. It is found that, when porosity increases, both primary and secondary velocities increase, but quite the opposite effect is noted for magnetic field. Exact solutions obtained in this study can be used as a references for other results obtained via experimental and numerical schemes.