International J. of Math. Sci. & Engg. Appls. (IJMSEA)
ISSN 0973-9424, Vol. 9 No. IV (December, 2015), pp. 39-55

# COMBINED EFFECTS ON UNSTEADY MHD FLOW OF BINGHAM FLUID THROUGH POROUS MEDIUM IN A PARALLEL PLATE CHANNEL WITH UNIFORM SUCTION AND INJECTION

**SHAIK SHARMILA[1] AND R. SIVA PRASAD[2]**
[1,2] Department of Mathematics,
Sri Krishnadevaraya University, Ananthapuramu-515003,
Andhra Pradesh, India

**Abstract**

In this paper, we discussed the unsteady magneto hydro dynamic flow of an electrically conducting viscous incompressible non-Newtonian Bingham fluid through a porous medium bounded by two parallel non-conducting porous plates with heat transfer considering the hall current effects into account. The fluid is driven by a uniform pressure gradient parallel to the channel plates and the entire flow field is subjected to a uniform inclined magnetic field of strength $H_0$ inclined at an angle of inclination with the normal to the boundaries in the transverse $xz$-plane. An external uniform magnetic field is applied perpendicular to the plates and the fluid motion is subjected to a uniform suction and injection. The lower plate is stationary and the upper plate moves with a constant velocity and the two plates are kept at different but constant temperatures. Numerical solutions are obtained for the governing momentum and energy equations taking the Joule and viscous dissipations into consideration. The effects of the Hall term, the parameter describing the non-Newtonian behaviour, and the velocity of suction and injection on both the velocity and temperature distributions is studied.

---