International J. of Math. Sci. & Engg. Appls. (IJMSEA) ISSN 0973-9424, Vol. 3 No. II (2009), pp. 267-281

## EFFECT OF THERMAL DIFFUSION AND MAGNETIC FIELD ON AN UNSTEADY FREE CONVECTIVE FLOW WITH MASS TRANSFER THROUGH A POROUS MEDIUM IN PRESENCE OF A HEAT SOURCE

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## Abstract

An attempt is made to investigate the effect of thermal diffusion and magnetic field on an unsteady free convective flow with mass transfer through a porous medium in presence of a heat source. Analytical solutions to the coupled non-linear equations, governing the flow and heat transfer are derived by using regular perturbation technique. The expressions for the velocity field, temperature field, species concentration, skin friction and the rate of heat transfer (in terms of Nusselt number) from the plate to the fluid are obtained in non-dimensional forms and their numerical values are demonstrated in graphs and tables for different values of the parameters involved namely, the Hartmann number M, the Soret number S0 and the permeability parameter K.

2000 Mathematics Subject Classification : 76 D.

Key Words: Thermal diffusion, Magnetic field, free convection, porous medium.