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HEAT AND MASS TRANSFER IN AN UNSTEADY MHD FREE CONVECTIVE FLOW THROUGH A POROUS MEDIUM BOUNDED BY VERTICAL POROUS CHANNEL IN THE PRESENCE OF RADIATIVE HEAT AND HALL CURRENT

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Abstract

The paper theoretically investigates the problem of heat and mass transfer in an unsteady convective flow of a viscous incompressible fluid through a porous medium bounded by vertical porous channel in the presence of radiative heat and Hall current. The fluid and the channel rotate as a solid body with constant angular velocity about the axis perpendicular to the planes of the plates. The temperature difference of the plate is high enough to induce the radiative heat. The exact solution of the equation governing the flow is obtained. The effect of various parameters affecting the velocity field, the temperature field and the concentration field and the rate of heat transfer, the coefficient of the rate of mass transfer and the skin friction factor are obtained and expressed graphically and in the tabular form and discussed.

Key Words : *Porous medium, Rotating channel, Hall current, Radiative heat*

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