NUMERICAL STUDY OF MICROPOLAR FLUID FLOW HEAT AND MASS TRANSFER OVER VERTICAL PLATE: EFFECTS OF THERMAL RADIATION AND MAGNETIC FIELD

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ABSTRACT. In this paper, we examine the thermal radiation effect on heat and mass transfer in steady laminar boundary layer flow of an incompressible viscous micropolar fluid over a vertical flat plate, with the presence of a magnetic field. Rosseland approximation is applied to describe the radiative heat flux in the energy equation. The resulting similarity equations are solved numerically. Many results are obtained and representative set is displayed graphically to illustrate the influence of the various parameters on different profiles. The conclusion is drawn that the flow field, temperature, concentration and microrotation as well as the skin friction coefficient and the both local Nusselt and Sherwood numbers are significantly influenced by Magnetic parameter, material parameter and thermal radiation parameter.

KEYWORDS: *MHD, micropolar fluid, thermal radiation, heat and mass transfer, boundary layer.*