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MHD flow of a uniformly stretched vertical permeable membrane in the presence of zero order reaction and quadratic heat generation

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Abstract

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We present a magneto - hydrodynamic flow of a uniformly stretched vertical permeable surface undergoing Arrhenius heat reaction. The analytical solutions are obtained for concentration, temperature and velocity fields using an asymptotic approximation, similar to that of Ayeni et al 2004. It is shown that the temperature field and the velocity field depend heavily on the thermal grashof numbers, heat generation/absorption, magnetic induction, chemical reaction parameters and reaction order. It is also established that maximum velocity occurs in the body of the fluid close to the surface and not the surface.

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