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AN INVESTIGATION ON VERTICAL POROUS PLATE IN A CONDUCTING FLUID WITH MULTIPLE BOUNDARY LAYER FLOW OF CASSON FLUID

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Abstract: The present investigation generates an analytical solution of multiple boundary layer flow of Casson fluid past over a vertical plate through porous medium in a conducing fluid in the presence of a uniform transverse magnetic field. In this investigation the effects of radiation, heat generation/absorption, radiation absorption and homogeneous chemical reaction are considered. The coupled nonlinear partial equations are turned to ordinary equations by super imposing solutions with steady and time dependent transient part. Finally, the set of ordinary differential equations are solved with a perturbation method to meet the inadequacy of boundary condition. The effect of different parameters on the flow is described with the help of graphs and tables. The most interesting observation found from this investigation is the fluctuation of velocity appears near the plate due to the presence of sink and presences of elastic element as well heat source reduce the skin friction.

Keywords and Phrases: Casson fluid, Porous plate, Thermal radiation, Chemical reaction, Heat and mass transfer, Radiation absorption.