

Forced Convection Boundary Layer Flow of a Casson Fluid over a Moving Permeable Flat Plate beneath a Uniform Free Stream

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Abstract : In this paper, the steady forced convection boundary layer flow of a Casson fluid past a moving permeable semi-infinite flat plate beneath a uniform free stream is investigated. The mathematical problem reduces to a pair of noncoupled ordinary differential equations by similarity transformation, which is then solved numerically using the shooting method. Both the cases when the plate moves into or out of the origin are considered. Effects of the non-Newtonian (Casson) parameter, moving parameter, suction or injection parameter and Eckert number on the flow and heat transfer characteristics are thoroughly examined. Dual solutions are found to exist for each value of the governing parameters.

Keywords : forced convection, Casson fluids, moving flat plate, boundary layer

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