

BOUNDARY LAYER SLIP FLOW AND HEAT TRANSFER OVER A POROUS PLATE IN A DARCY-FORCHHEIMER POROUS MEDIUM

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ABSTRACT

The problem of steady forced convection boundary layer flow and heat transfer of an incompressible fluid past a plate embedded in a Darcy-Forchheimer porous medium. Velocity and thermal slips are considered instead of no-slip conditions at the boundary. The governing partial differential equations are converted into ordinary differential equations by similarity transformation, which is then solved numerically using the shooting method. The important features of the flow and heat transfer characteristics for different values of porous permeability and slip parameter are analyzed and discussed. Results for the skin friction coefficient, local Nusselt number, velocity profiles as well as temperature profiles are presented for different values of the governing parameters.