

Mixed convection boundary layer flow past a vertical cone embedded in a porous medium subjected to a convective boundary condition

ABSTRACT

In the present analysis, we study the steady mixed convection boundary layer flow past a vertical cone embedded in a porous medium subjected to a convective boundary condition. The governing partial differential equations are reduced to the coupled nonlinear ordinary differential equations using a similarity transformation before being solved numerically by a shooting method. Both assisting and opposing flows are considered. The influence of the convective heat transfer parameter is analysed and discussed through graphs. Dual solutions are found to exist for the case of opposing flow.

Keyword: Mixed convection; Porous medium; Convective boundary condition; Dual solutions; Fluid mechanics