Stagnation-point flow over a stretching/shrinking sheet in a porous medium

ABSTRACT

An analysis is performed for the stagnation-point flow over a stretching/shrinking sheet in a porous medium. By using similarity variables, the governing system of partial differential equations are reduced to the coupled ordinary differential equations before being solved numerically using a Maple software. Numerical results are obtained for the skin friction coefficient, local Nusselt number, velocity and temperature profiles. Both stretching and shrinking sheets are considered. The influence of the governing parameters on the fluid flow and heat transfer characteristics are analyzed and discussed. Dual solutions are found to exist for the shrinking case, while only unique solutions are found for the stretching case.

Keyword: Dual solutions; Porous medium; Stagnation-point; Stretching/shrinking