A stability analysis of boundary layer stagnation-point slip flow and heat transfer towards a shrinking/stretching cylinder over a permeable surface

ABSTRACT

A stability analysis of dual solution for the problem of stagnation-point slip flow over a stretching or shrinking cylinder is studied. The partial differential equations governing will be transformed to a set of coupled nonlinear nonsimilar equations via similarity transformations. The transformed governing equations are solved numerically using the bvp4c function in MATLAB software. Numerical calculations exhibit the existence of dual solution and the implementation of stability analysis proved that the first solution is stable and physically realizable.

Keyword: Stability analysis; Stagnation-point; Heat transfer; Shrinking/Stretching cylinder; Permeable surface