

Unsteady viscous flow over a shrinking cylinder

Abstract

The unsteady viscous flow over a shrinking cylinder with mass transfer is studied. Using a similarity transformation, the unsteady Navier-Stokes equations are reduced to nonlinear ordinary differential equations. Numerical technique is used to solve these equations for some values of the parameters involved, namely suction and the unsteadiness parameters. The effects of these parameters on the velocity and the skin friction coefficient are investigated and graphically presented. Results indicate that dual solutions exist for a certain range of suction and unsteadiness parameters.

Keywords

Boundary layer; Cylinder; Dual solutions; Shrinking; Unsteady flow