

Unsteady flow and heat transfer past an axisymmetric permeable shrinking sheet with radiation effect.

ABSTRACT

In this paper, the problem of unsteady axisymmetric boundary layer flow and heat transfer induced by a permeable shrinking sheet in the presence of radiation effect is studied. The transformed boundary layer equations are solved numerically by an implicit finite-difference scheme known as the Keller-box method. The influence of radiation, unsteadiness and mass suction parameters on the reduced skin friction coefficient $f''(0)$ and the heat transfer coefficient $-\theta'(0)$, as well as the velocity and temperature profiles are presented and discussed in detail. It is found that dual solutions exist and suction parameter delays the separation of boundary layer.

Keyword: Unsteady flow; Heat transfer; Radiation effect; Boundary layer; Permeable shrinking sheet; Numerical solution.