

## **Stagnation-point flow and heat transfer over an exponentially stretching/shrinking cylinder**

### **ABSTRACT**

The stagnation-point boundary-layer flow and heat transfer over an exponentially stretching/shrinking cylinder is studied. The governing partial differential equations in cylindrical form are first transformed into ordinary differential equations which are then solved numerically using a shooting method. Results for the skin friction coefficient, local Nusselt number, velocity and temperature profiles are presented and discussed in detail. The effects of the stretching/shrinking parameter  $\varepsilon$  and the curvature parameter  $\gamma$  on the fluid flow and heat transfer characteristics are also examined. It is found that the solutions for a shrinking cylinder are non-unique and that the surface shear stress and the heat transfer rate at the surface increase as the curvature parameter increases.

**Keyword:** Stagnation-point flow; Exponentially stretching/shrinking cylinder; Heat transfer; Dual solutions

