UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

HEAT TRANSFER OVER AN UNSTEADY STRETCHING SURFACE IN POROUS MEDIUM WITH RADIATION EFFECT

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

The boundary layer is a stationary fluid layer (such as water or air) that surrounds a moving object immersed. Boundary layer flow has many practical applications on a moving surface. For example, the extrusion of plastic sheets in aerodynamic and cooling of infinite metallic plate in a cooling bath. Radiation effect on the flow and heat transfer over an unsteady stretching surface are studied. The system in the form of partial differential equation (PDE) are transformed to the system of Ordinary Differential Equation (ODE) by similarity transformation. The ordinary differential equation (ODE) systems are solved numerically by using Runge-Kutta Fehlberg method with shooting technique. The effect of Prandtl number, radiation, unsteadiness and permeability parameter on velocity and temperature are displayed graphically and discussed in details for various values of different parameter. Result shown that the temperature and velocity increases with increasing the numbers in Prandtl number, radiation parameter, unsteadiness parameter and permeability parameter. For the further research, researchers can consider other internal or external forces such as suction, injection, heat source and etc on the different surface of fluid.