MAGNETIC EFFECT ON UNSTEADY BOUNDARY LAYER STAGNATION POINT FLOW AND HEAT TRANSFER OVER A STRETCHING SHEET WITH SLIP EFFECTS

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ABSTRACT

This study investigates the magnetic effect on unsteady boundary layer stagnation point flow and heat transfer over a stretching sheet in a porous medium with slip flow. The primary objective is to understand how a magnetic influences skin friction coefficient, heat transfer rate, fluid velocity and temperature profiles. This study's findings have potential applications in engineering fields such as microfluidics, heat transfer processes, and industrial fluid dynamics, providing insights into optimizing heat transfer and fluid flow in the presence of magnetic. This study transforms the governing partial differential equations into ordinary differential equations using a similarity transformation variable and solve them numerically with the Runge-Kutta method in Maple software. The research explores various parameters including magnetic field strength, unsteadiness, thermal slip, velocity slip, and porosity. The results demonstrate that increasing the magnetic parameter leads to decrease fluid velocity and increase in temperature profiles, significantly affecting heat transfer rate and flow behavior.

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