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ORIGINAL PAPER

MHD Stagnation Point flow Towards an Exponentially Stretching Sheet with Prescribed wall Temperature and Heat Flux

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Abstract The effects of thermal radiation on magnetohydrodynamic stagnation point flow and heat transfer towards an exponentially stretching sheet in the presence of prescribed wall temperature and prescribed heat flux are investigated. The governing partial differential equations are transformed into ordinary differential equations and then solved numerically by using Keller-box method. Numerical results for the velocity and temperature fields are shown graphically for various material parameters. The evaluated results are also compared with previously published papers which show excellent agreement. It is found that the thermal boundary layer thickness increases with increasing the values of magnetic parameter. The solutions for the linear stretching sheet are also recovered. The momentum boundary layer thickness increases with increasing the values of magnetic parameter. The temperature decreases when Prandtl number and velocity ratio parameter are increased.

Keywords MHD · Thermal radiation · Stagnation point · Exponentially stretching sheet