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**Combined effects of slip and convective boundary condition on MHD 3D stretched flow of nanofluid through porous media inspired by non-linear thermal radiation**

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**Abstract**
In the present study, the main concern is to investigate the magnetohydrodynamic nanofluid flow subject to porous matrix and convective heating past a permeable linear stretching sheet. In addition, the influence of velocity slip, viscous dissipation, Joule heating and non-linear thermal radiation are considered. A new micro-convection model known as the Patel model is implemented for considerable enhancement of the thermal conductivity and hence, the heat transfer capability of nanofluids. Moreover, a convective heat transfer model is introduced where the bottom surface of the sheet gets heated due to a convection mechanism from a hot fluid of particular temperature. The numerical results of the transformed governing differential equations have been obtained by using fourth-order Runge–Kutta method along with shooting approach and secant method is used for better approximation. In the present analysis, base fluids such as water and Ethylene glycol and Copper, Silver and Aluminum oxide nanoparticles are considered. Results of the present investigation show that inclusion of porous matrix contributes to slow down the fluid velocity and diminution of wall shear stress (axial as well as transverse). Drag force due to magnetic field strength, velocity slip and imposed fluid suction impede the fluid motion and upsurge the heat transfer rate from the surface. In addition, rise in viscous dissipation widens the thermal boundary layer. © 2018, Indian Association for the Cultivation of Science.

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