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Numerical investigation of magnetic field effects on entropy generation in viscous flow over a stretching cylinder embedded in a porous medium
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Abstract
The impact of presence of magnetic field on entropy generation in flow and heat transfer of viscous fluid over a horizontal stretching cylinder embedded in a porous medium has been theoretically studied. The problem is modeled mathematically and the governing partial differential equations are converted into non-linear differential equations by using suitable similarity transformations. Numerical solution of the transformed equations is obtained using the matlab built-in routine bvp4c. The velocity profiles, temperature distribution, local entropy generation number and Bejan number are plotted for various values of magnetic field parameter, curvature parameter, permeability parameter, Prandtl number, Eckert number, temperature exponent and group parameter. Moreover, the effects of these pertinent parameters on skin friction coefficient and local Nusselt number are also presented through tables. A brief discussion has been given about the impact of these physical parameters on thermo-physical properties. © 2016 Elsevier Ltd.

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