Abstract

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Hall effects on the peristaltic transport of Williamson fluid through a porous medium with heat and mass transfer

This paper deals with the peristaltic flow of an incompressible, electrically conducting Williamson fluid in a symmetric planner channel through a porous medium with heat and mass transfer. Hall effects, viscous dissipation and Joule heating are taken into consideration. The non linear partial differential equations that govern that model were simplified under assumptions of long wavelength and low Reynolds number. Then a regular perturbation technique in the Weissenberg number ðWe 1Þ was applied to obtain a closed form expressions for stream function, axial pressure gradient, temperature and concentration profiles. The influence of various embedded parameters on the flow were plotted through a set of graphs and discussed.