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| Title | Numerical exploration of thermal and mass transportation by utilising non-Fourier double diffusion theories for Casson model under Hall and ion slip effects | | |
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| Abstract |  |
| Non-Newtonian materials have attracted the attention of scientists and engineers due to their many applications in the current era. This endeavour is conducted to utilise the generalised Ohm law with thermal and mass transportation. Phenomena of heat and mass transfer are based on generalised Fourier and Fick’s laws respectively. Present analysis examines magnetohydrodynamic (MHD) three-dimensional flow of the Casson liquid. Flow is assumed to be over a stretched surface which is stretched in two directions. Contribution of Hall and ion slip effects are included. Diffusion phenomenon is captured using the Boungrino model. Convergent series solutions by homotopy algorithm is also derived. Physical quantities of interest are discussed with respect to the involved variables. Convergence of the applied scheme is presented in the form of error analysis. Also convergence is shown by computing dimensionless stresses, heat and mass transfer rates. Authenticity of the achieved result is shown by comparing the obtained results with those from the open literature and excellent similarity is attained and recorded. Diffusion of mass and heat can be controlled by enhancing the thermal, solutal factors and Prandtl and Schmidt numbers. | |