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MHD double diffusive natural convection flow over exponentially accelerated inclined plate
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Abstract
An investigation of unsteady MHD double diffusive natural convection flow of a viscous, incompressible, electrically conducting, heat absorbing, radiating and chemically-reactive fluid past an exponentially accelerated moving inclined plate in a fluid-saturated porous medium, when the temperature of the plate and the concentration at the surface of the plate have ramped profiles, is carried out. Exact solutions for the fluid velocity, fluid temperature and the species concentration, under Boussinesq approximation, are obtained in closed form by the Laplace transform technique. The expressions for the shear stress, rate of heat transfer and the rate of mass transfer at the plate are also derived. Numerical evaluations of the fluid velocity, fluid temperature and the species concentration are performed and displayed graphically whereas those of the shear stress, rate of heat transfer and the rate of mass transfer at the plate are presented in tabular form for various values of the pertinent flow parameters. Copyright © 2017 The Society of Theoretical and Applied Mechanics.

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