

## Documents

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**Unsteady Hydromagnetic Flow past a Moving Vertical Plate with Convective Surface Boundary Condition**

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**Abstract**

Investigation of unsteady MHD natural convection flow through a fluid-saturated porous medium of a viscous, incompressible, electrically-conducting and optically-thin radiating fluid past an impulsively moving semi-infinite vertical plate with convective surface boundary condition is carried out. With the aim to replicate practical situations, the heat transfer and thermal expansion coefficients are chosen to be constant and a new set of non-dimensional quantities and parameters are introduced to represent the governing equations along with initial and boundary conditions in dimensionless form. Solution of the initial boundaryvalue problem (IBVP) is obtained by an efficient implicit finite-difference scheme of the Crank-Nicolson type which is one of the most popular schemes to solve IBVPs. The numerical values of fluid velocity and fluid temperature are depicted graphically whereas those of the shear stress at the wall, wall temperature and the wall heat transfer are presented in tabular form for various values of the pertinent flow parameters. A comparison with previously published papers is made for validation of the numerical code and the results are found to be in good agreement.

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