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Unsteady MHD convective heat transfer past a semi-infinite vertical porous moving plate with variable suction. (English) [Zbl 1210.76219](#)

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Summary: We study the unsteady two-dimensional laminar flow of a viscous incompressible electrically conducting fluid in the vicinity of a semi-infinite vertical porous moving plate in the presence of a transverse magnetic field. The plate moves with constant velocity in the direction of fluid flow, and the free stream velocity follows the exponentially increasing small perturbation law. A uniform magnetic field acts perpendicular to the porous surface which absorbs the fluid with a suction velocity varying with time. The effects of material parameters on the velocity and temperature fields across the boundary layer are investigated. Numerical results show that for a constant plate moving velocity with a given magnetic and permeability parameters, and Prandtl and Grashof numbers, the effect of increasing values of suction velocity parameter results in a slight increasing surface skin friction for lower values of plate moving velocity. It is also observed that for several values of Prandtl number, the surface heat transfer decreases by increasing the magnitude of suction velocity.

MSC:

[76W05](#) Magnetohydrodynamics and electrohydrodynamics

[76E06](#) Convection in hydrodynamic stability

Cited in **22** Documents

Full Text: [DOI](#)

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