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EFFECT OF POROSITY ON THE TRANSIENT MHD GENERALIZED COUETTE FLOW WITH HEAT TRANSFER IN THE PRESENCE OF HEAT SOURCE AND UNIFORM SUCTION AND INJECTION

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ABSTRACT.

The transient magnetohydrodynamic (MHD) generalized Couette flow with heat transfer through a porous medium of an electrically conducting, viscous, incompressible fluid bounded by two parallel insulating porous plates is studied in the presence of uniform suction and injection and a heat source considering the Hall effect. A uniform and constant pressure gradient is imposed in the axial direction and an externally applied uniform magnetic field as well as a uniform suction and injection are applied in the direction perpendicular to the plates. The two plates are kept at different but constant temperatures while the Joule and viscous dissipations are included in the energy equation. The effect of the Hall current, the porosity of the medium and the uniform suction and injection on both the velocity and temperature distributions is investigated.