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Unsteady Couette Flow With Heat Transfer Considering Ion-Slip

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Abstract: The unsteady Couette flow of an electrically conducting, viscous, incompressible fluid bounded by two parallel non-conducting porous plates is studied with heat transfer taking ion-slip into consideration. An external uniform magnetic field and a uniform suction and injection are applied perpendicular to the plates while the fluid motion is subjected to a constant pressure gradient. 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 ion-slip an uniform suction and injection on both the velocity and temperature distributions is examined.

Key Words: Hydromagnetic, fluid mechanics, heat transfer, Hall effect, ion-slip, numerical solution, Couette flow, parallel plates channel.

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