

## Natural convection flow of a Couple stress fluid between two vertical parallel plates with Hall and Ion-slip effects

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Abstract

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**Abstract** The Hall and ion-slip effects on fully developed electrically conducting couple stress fluid flow between vertical parallel plates in the presence of a temperature dependent heat source are investigated. The governing non-linear partial differential equations are transformed into a system of ordinary differential equations using similarity transformations. The resulting equations are then solved using the homotopy analysis method (HAM). The effects of the magnetic parameter, Hall parameter, ion-slip parameter and couple stress fluid parameter on velocity and temperature are discussed and shown graphically.

**Keywords:** Free convection Couple stress fluid Magnetohydrodynamics Hall and ion-slip effects HAM

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