

## ANALYTICAL AND NUMERICAL METHODS FOR SOLVING UNSTEADY MHD FLOW PROBLEM

ABDELLATIF SA'ADALDIN<sup>1</sup> AND NAJI QATANANI<sup>2</sup>

<sup>1,2</sup> Department of Mathematics,  
An-Najah National University, Nablus - Palestine

### Abstract

This paper studies the unsteady MHD flow of an electrically conducting, incompressible viscous fluid through two parallel porous flat plates with the fluid is being injected into the flow region with constant velocity  $v_0$  and being sucked away in the same speed and it is subjected to a constant transverse magnetic field and the effect of Hall current. The governing partial differential equations are solved using Laplace transform technique. An implicit finite difference scheme has been employed to solve them numerically. The effects of  $M$  (Hartman number) and  $m$  (Hall parameter) on the primary velocity have been investigated and their profiles are shown graphically.

---

Key Words : *MHD flow, Hall effect, Parallel Porous flat plates.*

© <http://www.ascent-journals.com>