Hall Effects on Unsteady MHD Flow Between Two Rotating Disks with Non-Coincident Parallel Axes Embedded in a Porous Medium

Abstract

Hall effects on an unsteady MHD flow of a viscous incompressible electrically conducting fluid between two rotating disks with non-coincident parallel axes embedded in a porous medium have been studied. The governing equations have been solved analytically using the Laplace transform technique. The effects of rotation parameter, Hall parameter, Hartmann number and Darcy number have been considered on the flow characteristics and illustrated by graphs. It is observed that the velocity components are significantly affected by Hall parameter and Darcy number. The velocity components increase near the lower disk whereas they decrease near the upper disk with an increase in either rotation parameter of disk or rotation parameter of axis. Further, the torque experienced by the disks increases with an increase in either Hartmann number or rotation parameter while it decreases with an increase in either Hall parameter or Darcy number.
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**Index Terms**

Computer Science  
Applied Sciences

**Keywords**

Hall effects  
Hartmann number  
rotation parameters  
rotating disks  
non-coincident porous medium