THREE DIMENSIONAL MAGNETOHYRODYNAMIC FLOW OF A JEFFREY FLUID BETWEEN TWO POROUS DISKS

G. BHASKAR REDDY, S. SREENADH AND E. SUDHAKARA

Department of Mathematics,
Sri Venkateswara University, Tirupati- 517502, India

Abstract

MHD flow of a Jeffrey fluid in the gap between two parallel co-axial non-conducting porous disks of which one is rotating and the other stationary is studied in the presence of a uniform axial magnetic field. The expressions for the velocity field, average normal force and the torque on the disks are obtained. It is found that all the components of velocity are affected by uniform suction or injection and in particular we note that the effect of suction or injection on the radial components of velocity predominates over the effect of rotation for a given Hartmann number. When the Jeffrey parameter tends to zero the results agree with the corresponding ones of Chandrasekhara and Rudraiah (1971) for the Newtonian fluid between two porous disks.

_____

Key Words : *MHD flow, Porous disks, Suction, Injection, Jeffrey fluid.*