

## New exact solutions of stokes' second problem for an MHD second grade fluid in a porous space

### Abstract :

We investigate a problem describing the oscillating flow of an incompressible magnetohydrodynamic (MHD) second grade fluid in a porous half space. Exact solutions for sine and cosine oscillations are developed by applying the Laplace transform method. The total obtained solution is a sum of steady and transient solutions. Particular attention is given to the effects of magnetic and porous medium parameters on the velocity. It is shown that previous results for a non-porous medium and hydrodynamic fluid are the limiting cases of the present problem. The results for velocity are plotted and discussed carefully.