

## Computational analysis of mixed convection in a channel with a cavity heated from different sides.

### ABSTRACT

A computational work is performed in this paper to analyze the heat transfer, temperature distribution and flow field in a channel with a cavity heated from different sides. Flow inlets to the channel are uniform. Constant magnetic field is applied to the channel as  $Ha = 10$ , Prandtl number is chosen as  $Pr = 0.7$  and Reynolds number is fixed at  $Re = 100$ . Finite element method is used to solve governing equations. Three different cases were considered based on heater position in the cavity at the left vertical side (Case 1), bottom side (Case 2) and right vertical side (Case 3). It is found that the highest heat transfer is obtained when the isothermal heater is located at the right vertical wall.

**Keyword:** Channel; Cavity; Magnetic field; Convection heat transfer.