

Effect of Hartmann Number on Free Convective Flow in a Square Cavity with Different Positions of Heated Square Block

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Abstract : This paper is concerned with the effect of Hartmann number on the free convective flow in a square cavity with different positions of heated square block. The two-dimensional Physical and mathematical model have been developed, and mathematical model includes the system of governing mass, momentum and energy equations are solved by the finite element method. The calculations have been computed for Prandtl number $Pr=0.71$, the Rayleigh number $Ra=1000$ and the different values of Hartmann number. The results are illustrated with the streamlines, isotherms, velocity and temperature fields as well as local Nusselt number.

Keywords : Hartmann number, free convection, square cavity, finite element method

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