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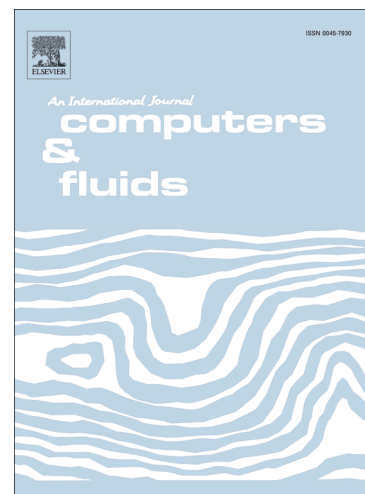
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Natural Convection Coupled with Radiation heat transfer in an Inclined Porous Cavity with Corner Heater

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Abstract

A computational work has been proposed on natural convection coupled with radiation in an inclined porous cavity with corner heater. The heaters are isothermal and temperature of one side of the cavity is lower than that of heaters while remaining walls are adiabatic. Length of corner heaters (h_x and h_y), radiation parameter (R_d), Rayleigh number (Ra), inclination angle (θ) and Darcy number (Da) are chosen as governing parameter on heat and fluid flow. Numerical results are presented for these parameters via isotherms, streamlines, velocity profiles, local and average Nusselt numbers. It is found that radiation parameter affects both heat transfer and fluid flow and heat transfer is an increasing function of radiation parameter and a decreasing function of Darcy number.

Keywords: Porous media, radiation, corner heater, natural convection

Nomenclature

Da Darcy number

g gravitational acceleration, m/s^2

H height of cavity, m

h_x dimensionless heater length in x direction

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