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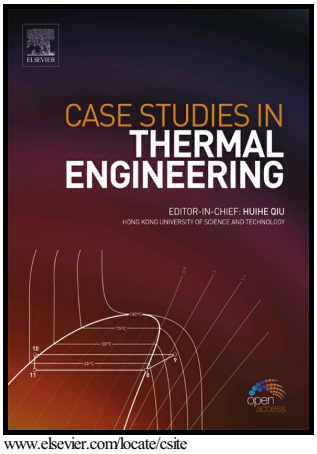

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Micropolar nanofluid flow and heat transfer between penetrable walls in the presence of thermal radiation and magnetic field

M. Alizadeh[1*], A.S. Dogonchi[2*], D. D. Ganji[1*]

[1]Mechanical Engineering Department, Babol Noshirvani University of Technology, P.O. Box 484, Babol, Iran.

[2]Young Researchers and Elite Club, Aliabad Katoul Branch, Islamic Azad University, Aliabad Katoul, Iran.

Milad_alizadeh_kntu@yahoo.com

Sattar.dogonchi@yahoo.com

Ddg_davood@yahoo.com

[*]*Corresponding authors*

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A B S T R A C T

Flow and heat transfer of *MHD* micro-polar nanofluid in a channel with penetrable walls and considering thermal radiation impact are investigated. A similarity transformation is utilized to transmute the governing momentum and energy equations into non-linear ordinary differential equations with the appropriate boundary conditions. The gained non-linear ordinary differential equations are solved by Duan–Rach Approach (*DRA*). This method allows us to detect a solution without applying numerical methods to evaluate the unspecified coefficients. The impacts of diverse active parameters such as the micro-polar parameter, the magnetic parameter, the volume fraction of nanofluid and the radiation parameter on the velocity and temperature profiles are examined. Furthermore, the value of the Nusselt number is calculated and presented through figures.

Keywords: Micro-polar nanofluid; Penetrable channel; *MHD*; Thermal radiation; Duan-Rach Approach (*DRA*)

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