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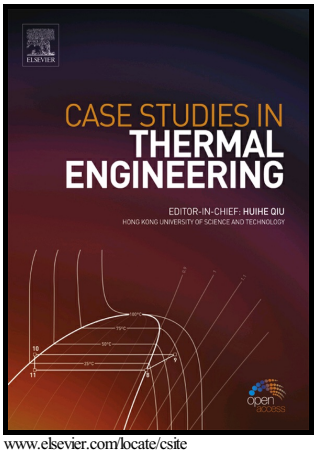

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S.S. Ghadikolaei, Kh. Hosseinzadeh, D.D. Ganji

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Analysis of unsteady MHD Eyring-Powell squeezing flow in stretching channel with considering thermal radiation and Joule heating effect using AGM

S.S. Ghadikolaei[a], Kh. Hosseinzadeh[b], D.D. Ganji[b*]

[a]Department of Mechanical Engineering, Mazandaran university of science and Technology, Babol, Iran

[b]Department of Mechanical Engineering, Babol Noushirvani University of Technology, Babol, Iran

[*]Corresponding author, E-mail:ddg_davood@yahoo.com

Abstract

In this paper, has been investigated the heat and mass transfer in an unsteady two-dimensional squeezing flow of magnetohydromagnetic (MHD) radiative non-Newtonian Eyring-Powell fluid between two parallel infinite plates in the presence of heat generation/absorption, thermal radiation and Joule heating effect. The partial differential equations governing the flow problem converted to ordinary differential equations by using suitable similarity transformation. After that the Akbari- Ganji's Method (AGM) has been used to solve differential equations governing this problem and during comparing happened between AGM and Runge-Kutta Fehlbrg method (RKF) it's observing AGM is a method with high accuracy for solving differential equations. The main goal of this paper is to investigate the effects of changes in the values of several parameters on the velocity and temperature and also on the local skin friction coefficient, local Nusselt and Sherwood numbers. The most important results of analyzes are Lorentz force generated by magnetic field parameter in the fluid flow field which reduces velocity and decrease in fluid temperature by increasing thermal radiation parameter.

Key words: magnetohydrodynamic (MHD); Eyring-Powell fluid; thermal radiation; heat generation/absorption; stretching channel; Akbari- Ganji Method (AGM).