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Abstract

In this paper, we investigate the effects of slip condition, transverse magnetic field and radiative heat transfer to unsteady flow of a conducting optically thin fluid through a channel filled with porous medium. Exact solution of the governing equations for fully developed flow is obtained in closed form. Detailed computations of the influence of the Grashof number,

Hartmann number, slip parameter, porosity parameter, radiation parameter and frequency of the oscillation are discussed.

Reference

- Makinde, O.D and Mhone, P. Y (2005): Heat Transfer to MHD Oscillatory Flow in a Channel Filled with Porous Medium. Rom Journal of Physics, 50(9-10), Pp. 931 – 938.
- Raptis, A. and Perdikis (1985): Unsteady free convective through a porous medium bounded by an infinite vertical plate. International Journal of Engineering Sciences, Volume 23, Pp. 99 – 105.
- Ram, Gulab and Mishra R. S (1976): Unsteady flow through MHD porous media. Indian J. Pure Applied Mathematics 8(6), 637 – 647.
- Mansutti, D, Pontrelli G. and Rajagopal KR (1993): Steady flows of non-Newtonian fluids past a porous plate with suction or injection. International Journal Num. Method Fluids 17, 929 – 941.
- Ramana, M.V Murthy, G. Noushima Humera, Rafi'uddin and M. Chenna Krishna Reddy (2007): MHD Unsteady free convective Walter's memory flow with constant suction and heat Sink". ARPN Journal of Engineering and Applied Sciences. 2(5), Pp. 12 – 16
- Mustafa S, Rafi'uddin and M.V. Ramana Murthy (2008): Unsteady MHD Memory Flow with Oscillatory suction, Variable free stream and heat source. ARPN Journal of Engineering and Applied Sciences, 3(3), Pp. 17 – 24.
- El-Hakiem, M.A (2000): MHD Oscillatory Flow on Free Convection-radiation through a Porous medium with constant suction velocity. Journal of Magnetism and Magnet Materials.220 (2-3), Pp. 271 – 276.
- Soltani, F; and Yilmazer, U (1998): Slip velocity and slip layer thickness in flow of concentrated suspensions. Journal of Applied Polymer Science, 70, pp. 515-522.
- Watanebe, K; Yanuar; and Mizunuma, H (1998): Slip of Newtonian fluids at solid boundary. Japan Society Mechanical Engineering, International Journal Series, B41, pp. 525.
- Watanebe, K; Yanuar, Udagawa, H (1999): Drag reduction of Newtonian fluid in a circular pipe with highly water-repellent wall. Journal of fluid Mechanics, 381, pp. 225.
- Ruckenstein, E; and Rahora, P (1983): On the no-slip boundary conditions of hydrodynamics. Journal of Colloid and Interface Science, 96, pp. 448.
- Mehmood, A and A. Ali (2007): The Effect of Slip Condition on Unsteady MHD Oscillatory Flow of a Viscous Fluid in a Planner Channel. Rom. Journal of Physics, 52(1-2), Pp. 85 - 91
- Makinde, O.D and Osalusi, E (2006): MHD steady flow in a channel with slip at the permeable boundaries. Rom Journal of Physics, 51, Pp. 319-328.
- Khaled, A.R.A and Vafai, K (2004): The effect of the slip condition on stokes and Couette flows due to an oscillatory wall; exact solutions. International Journal of Nonlinear Mechanics, 39, pp. 795-809.
- Mansour, M.A; Mohammed, R.A; Abd-Elaziz, M.M; Ahmed, S.E (2007): Fluctuating thermal and mass diffusion on unsteady MHD convection of a micro polar fluid through a porous medium past a vertical plate in slip-flow regime. International Journal of Applied Mathematics and Mechanics, 3, pp. 99-117.

Index Terms

Computer Science

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Key words

Heat transfers

Oscillatory flow

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Slip conditiong

MHD