

عنوان مقاله:

A Note on the Hydromagnetic Blasius Flow with Variable Thermal Conductivity

محل انتشار:

مجله مکانیک کاربردی و محاسباتی، دوره 7، شماره 4 (سال: 1400)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

In this paper, the influence of the transverse magnetic field is unraveled on the development of steady flow regime for an incompressible fluid in the boundary layer limit of a semi-infinite vertical plate. The sensitivity of real fluids to changes in temperature suggests a variable thermal conductivity modeling approach. Using appropriate similarity variables, solutions to the governing nonlinear partial differential equations are obtained by numerical integration. The approach used here is based on using the shooting method together with the Runge-Kutta-Fehlberg integration scheme. Representative velocity and temperature profiles are presented at various values of the governing parameters. The skin-friction coefficient and the rate of heat transfer are also calculated for different parameter values. Pertinent results are displayed graphically and discussed. It is found that the heat transfer rate improves with an upsurge in a magnetic field but lessens with an elevation in the fluid thermal conductivity.

کلمات کلیدی:

MHD, Blasius flow, variable thermal conductivity, heat transfer

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