MHD Williamson Micropolar Fluid Flow Pasting a non-linearly Stretching Sheet under the Presence of non-linear Heat Generation/Absorption

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A B S T R A C T

The objective of this work is to study the MHD boundary layer flow of Williamson micropolar fluid pasting a non-linearly stretching sheet under the existence of nonlinear heat absorption/generation. The governing equations corresponding to the above said physical configuration has been considered in view of modified Darcy Law with appropriate boundary conditions. Thereafter making use of suitable similarity transformation by introducing stream function, the revised governing equations in the form of ODE with boundary conditions have been obtained and this boundary value problem has been solved numerically by using the shooting technique. The effect of various parameters on flow variables like velocity, temperature, and micro-rotation has been depicted through graphs. Also, the obtained result of the present analysis is compared with those obtained earlier to ensure the numerical validation of the present analysis. In particular, it is observed that the Hartmann number and Williamson parameter have the effect of increasing skin friction.

Keywords: Micro-rotation, Heat absorption, Williamson fluid

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