MHD Micropolar Slip Flow due to an Exponentially Stretching Sheet with Chemical Reaction and Non–uniform Heat Generation

Bal Krishn Vaishnav[1], Sushila Choudhary[1], and Bhagawan Singh Yadav[1]

[1]University of Rajasthan

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Abstract

The main focus of the current study is to examine the impact of melting heat transfer and chemical reactions on MHD micropolar fluid flow over a sheet that is exponentially stretching and immersed in a porous medium in which the source of heat is not uniform. Also taken into consideration are slip phenomena and thermal radiation. The governing PDEs are converted to a system of ODEs via similarity transformation and the necessary boundary conditions. These nonlinear ODEs are resolved with the help of shooting techniques and an RK-4 iterative strategy. Also, solved this problem using the Bvp4c approach for validating the results of the RK-4 method. Both outcomes are consistent with previously published data. With the help of tables and graphs, we examine the influence of multiple physical parameters on velocity, thermal profile, microrotation, concentration profiles, Nusselt number, Sherwood number, coefficient of skin friction, and Wall couple stress. We see that the temperature distribution and velocity profiles decrease when the melting parameter increases. The temperature profile boost when the heat source parameter is increased.

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