Effect of Aligned Magnetohydrodynamics on Convective Boundary Layer Flow of Jeffrey Micropolar Fluid with Newtonian Heating across a Stretching Sheet

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Abstract. This paper investigates the flow and heat transfer of Jeffrey micropolar fluid across a stretching sheet with the influence of Newtonian heating boundary condition. The governing equations for respective problem are first transformed into ordinary differential equation using appropriate transformation. The Bvp4c method which is embedded in Matlab was employed to establish the solutions for the distribution on velocity, microrotation and temperature. The numerical results of skin friction and heat transfer has been captured and presented in tabular form for various values of Deborah number, (β), Magnetohydrodynamics parameter (M), and the Prandtl number (Pr). The comparison of numerical solutions for limiting cases has been made with previous published results and it shows acceptable outcomes.

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