

Abstract

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Symmetry analysis for steady boundary-layer stagnation-point flow of Rivlin–Ericksen fluid of second grade subject to suction

An analysis for the steady two-dimensional boundary-layer stagnation-point flow of Rivlin–Ericksen fluid of second grade with a uniform suction is carried out via symmetry analysis. By employing Lie-group method to the given system of nonlinear partial differential equations, the symmetries of the equations are determined. Using these symmetries, the solution of the given equations is found. The effect of the viscoelastic parameter k ; the suction parameter R on the tangential and normal velocities, temperature profiles, heat transfer coefficient; the wall shear stress, have been studied. Also, the effect of the Prandtl number Pr on the temperature and the heat transfer coefficient has been studied.