Exact Solutions of Flows of an Oldroyd 8-Constant Fluid with Nonlinear Slip Conditions

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This communication is concerned with the nonlinear flows of an Oldroyd 8-constant fluid when the no-slip condition is not valid. Due to slip effects in terms of shear stress, the arising slip conditions are nonlinear. The resulting mathematical problems involves nonlinear differential equations and nonlinear boundary conditions. To the best of my knowledge, no such analysis for the flows of an Oldroyd 8-constant fluid is available in the literature. Graphs are plotted for the velocity profiles and examined with respect to the sundry emerging parameters.

Key words: Nonlinear Conditions; Analytic Solutions; Oldroyd 8-Constant Fluid.