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MICROPOLAR FLUID FLOW IN A CHANNEL WITH POISEUILLE EFFECTS

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ABSTRACT

This paper presents analytical investigations of micropolar fluid flow in a channel in which the Poiseuille flow parameter K is studied. The governing equations of the problem are reduced to ordinary differential equations. It was observed that no spinning occur when K = 0. Also for $\sigma = 0$, the classical Hagen-Poiseuille flow, which absorbs the spin velocity is reversed. $K \neq 0$ and $\sigma \neq 0$ have been considered with different flow situation. The effects of the harmonic mode show that the fluid solution profile decreases farther away from the particle solution function profile for each mode a = 0,1,2 whereas when Poiseuille flow parameter K = 0.1, 0.5 and as the micropolar constant $\sigma = 0,1, 2$ increases the particle solution profile increases.

Key words: Micropolar fluid, channel flow, poiseuille effects.