

## عنوان مقاله:

Development of Boundary Layer of Highly Elastic Flow of the Upper Convected Maxwell Fluid over a Stretching Sheet

## محل انتشار:

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## خلاصه مقاله:

High Weissenberg boundary layer flow of viscoelastic fluids on a stretching surface has been studied. The flow is considered to be steady and two dimensional. Flows of viscoelastic liquids at high Weissenberg number exhibit stress boundary layers near walls. These boundary layers are caused by the memory of the fluid. Upon proper scaling and by means of an exact similarity transformation, the non-linear momentum and constitutive equations of each layer transform into the respective system of highly nonlinear and coupled ordinary differential equations. Effects of variation in pressure gradient and Weissenberg number on velocity profile and stress components are investigated. It is observed that the value of stress components decrease by Weissenberg number. Moreover, the results show that increasing the pressure gradient results in thicker velocity boundary layer. It is observed that unlike the Newtonian flows, in order to maintain a potential flow, normal stresses must inevitably develop in far fields.

## کلمات کلیدی:

Boundary layer, High weissenberg flow, Nonlinear viscoelastic fluid, Similarity solution

## لینک ثابت مقاله در پایگاه سیویلیکا:

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