

THE FREE SURFACE FLOW OF VISCOUS AND VISCOELASTIC **LIQUIDS AROUND IMMERSED BODIES**

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The paper is dedicated to the experimental and numerical studies of the viscous and viscoelastic flows around immersed cylinder in the vicinity of free surface. The experiments are performed in an open channel flow, the flow rate and the fluid height upstream the body being controlled by a weir. Numerical simulations are performed with laminar and turbulent solvers implemented in FLUENT, using the VOF code for the calculation of the free surface geometry.



$$Re = rac{
ho V_0 d}{\eta}$$
 $Fr = rac{V_0}{\sqrt{gd}}$

The numerical results and visualizations are corroborated to determine the influence of fluid elasticity, especially in the region between the free surface and the separation point, D. The free surface lines in the vicinity of the cylinder are almost identical for both liquids. The liquid elasticity influences the separation point position and consequently the drag force acting on the immersed body.

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