

# Artificial Stress Diffusion in Numerical Simulations of Viscoelastic Fluids Flows

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## Abstract

Numerical simulations of viscoelastic fluid flows continue to be a very challenging problem for high values of Weissenberg ( $We$ ). In order to stabilize the simulations for high values of the parameter  $We$ , many researchers add artificial diffusion to the model. In this talk, we present the artificial tensor diffusion of stresses that proved to be very important in stabilizing the simulations for this type of flow. Several variants of tensor artificial diffusion are presented, focusing on practical aspects of its implementation and use.