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Title: Global solution for the incompressible viscoelastic fluids in the critical L^p framework

Abstract:

We investigate the global strong solutions for a system of equations related to the incompressible viscoelastic fluids of the Oldroyd-B type with the initial data close to a stable equilibrium. We obtain the existence and uniqueness of the global solution in a functional setting invariant by the scaling of the associated equations, where the initial velocity has the same critical regularity index as for the incompressible Navier-Stokes equations, and one more derivative is needed for the deformation tensor. Like the classical incompressible Navier-Stokes, one may construct the unique global solution for a class of large highly oscillating initial velocity. Our result also implies that the deformation tensor F has the same regularity as the density of the compressible Navier-Stokes equations. This is the joint work with Ting Zhang