
Non-Newtonian fluids under random influences

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Abstract

We present new results for generalized Navier-Stokes equations which are perturbed by a Brownian motion. First we address existence of martingale weak solutions to the SPDE based on a stochastic pressure decomposition and L^∞ -truncation.

For slow flows (i.e. if the convective term is neglected) we establish regularity results and study space-time discretizations.

We show that the approximation has convergence rate one w.r.t. the space discretization and $1/2$ w.r.t. to the discretization in time.

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