

## Young Researchers

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This article studies the existence of global stochastic weak solutions for non-Newtonian third grade fluid equations, on a bounded simply connected domain  $\mathcal{D}$  of  $\mathbb{R}^3$ , perturbed by a multiplicative white noise and supplemented with a Navier slip boundary condition. Assuming that the initial data is an  $H^1(\mathcal{D})$ -valued random variable, we show the existence of a martingale solution, extending the existence result in [1], where the authors have proved the existence of a martingale solution with an initial data in the Sobolev space  $H^2(\mathcal{D})$ . Compared to the mentioned work, where the methods are based exclusively on compactness arguments, here we apply a new strategy relying on the conjugation of compactness criteria together with the monotonicity property of an appropriate operator to be defined.

### References

- [1] A. ALMEIDA, F. CIPRIANO, *Weak solution for 3d-stochastic third grade fluid equations*, Water, 12(11), 3211 (2020).
- [2] F. CIPRIANO, P. DIDIER, S. GUERRA, *Well-posedness of stochastic third grade fluid equation*, J. Diff. Eq., 285, 496–535 (2021).