Stochastic variational principles for the Navier Stokes equation in bounded domains

Ana Bela Cruzeiro[1],

[1] Group of Mathematical Physics and Dep. Mathematics Instituto Superior Técnico, Univ. Lisboa

We show that the (deterministic) Navier-Stokes equation for fluid dynamics can be derived from a (stochastic) variational principle where the pressure is introduced as a Lagrange multiplier. The position of the fluid particles is described by a stochastic process and the velocity is an averaged velocity. We explain the different cases, for domains with boundary and without boundary.

References

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