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Stochastic stability of the Ekman spiral

MATTHIAS HIEBER AND WILHELM STANNAT

Abstract. Consider the stochastic Navier-Stokes-Coriolis equations in $\mathbb{T}^2 \times (0, b)$ subject to Dirichlet boundary conditions as well as the Ekman spiral which is a stationary solution to the deterministic equations. It is proved that the stochastic Navier-Stokes-Coriolis equation admits a weak martingale solution. Moreover, as an stochastic analogue of the existing deterministic stability results for the Ekman spiral, stochastic stability of the Ekman spiral is proved by considering stationary martingale solutions.

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