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Fokker-Planck description of the inverse cascade in two-dimensional turbulence OLIVER KAMPS, Center for Nonlinear Science, University of Muenster, Muenster, Germany, MICHEL VOSSKUHLE, Laboratoire de Physique, Ecole Normale Superieure de Lyon, Lyon, France — In many approaches the mathematical description of fully developed turbulence relies on the statistical properties of the longitudinal velocity increments $\xi(r) = U(x+r) - U(x)$. In [1] the increment statistics is described as a Markov process in scale, leading to a Fokker-Planck description of the probability density functions (PDFs) for the velocity increments. The universality of this approach was tested for different kinds of three-dimensional flows like inhomogeneous turbulence, fractal grid generated turbulence and for the transition of a flow from a vortex street to fully developed turbulence in a cylinder wake the flow. In this talk we want to extend the test for the universality of the Markov description by analyzing data from numerical simulations of the inverse energy cascade in two-dimensional turbulence. The central question is whether the velocity field of the inverse cascade can be modeled as Markov process in scale similar to the three-dimensional case. By estimating the coefficients of the Fokker-Planck equation we are able to discuss the role of intermittency and differences to three-dimensional flows.

[1] Friedrich R., Peinke J., *Phys. Rev. Lett, vol. 78, pp. 863-866 (1997)*

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