

Abstract Submitted
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Decaying two-dimensional turbulence in a circular container¹ KAI SCHNEIDER, LMSNM-CNRS, CMI, Universite de Provence, MARIE FARGE, LMD-CNRS, Ecole Normale Superieure — We present direct numerical simulation of two-dimensional decaying turbulence in a circular container with no-slip boundary conditions. Starting with random initial conditions the flow rapidly exhibits a self-organization into coherent vortices. We study their formation and the role of the viscous boundary layer on the production and decay of integral quantities. The no-slip wall produces vortices which are injected into the bulk flow. The self-organisation of the flow is reflected by the transition of the initially Gaussian vorticity probability density function (PDF) towards a distribution with exponential tails. Due to the presence of coherent vortices the pressure PDFs become strongly skewed with exponential tails for negative values.

¹<http://wavelets.ens.fr>

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