

A simple topological pattern appearing in 2d Navier-Stokes flows at large Reynolds numbers

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ABSTRACT

We consider Kolmogorov's problem for the 2D Navier-Stokes equations. More precisely we study numerically stability and bifurcation of stationary and time-periodic solutions. For large Reynolds numbers, we observed a topologically simple pattern in streamlines, which is called unimodality. A new version of conjecture about such unimodal solutions is presented. We will present evidence that such patterns appear at large Reynolds numbers in steady-states or even in time-periodic solutions.