

Abstract Submitted
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Towards uniformly turbulent pipe flow? MARC AVILA, BJOERN HOF, Max Planck Institute for Dynamics and Selforganization — Turbulence occurs first in pipes in the form of localized spots of fluctuating but well defined size. These spots may relaminarize, merge or split, giving rise to the large-scale laminar-turbulent patterns of the transitional regime. We report on direct numerical simulations and experiments of the transition between these intermittent flows and uniform turbulence. Here, long periodic pipes of up to 500 diameters are used in order to capture the patterns selected by the flow. A large number of simulations is carried out to statistically demonstrate that the limit of uniform turbulence is only reached asymptotically. In particular, it is shown that the relaminarization probabilities of pipe sections of arbitrary lengths are nonzero.

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