Karlsruhe Institute of Technology

Seminar of the Work Group
Nonlinear Partial Differential Equations
SS 2021

Speaker: Michele Coti Zelati
April 16, 2021, 14:00 - 15:00
Zoom Link: //kit-lecture.zoom.us/j/7143665630
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Stationary Euler flows near the Kolmogorov and Poiseuille flows

Abstract

We exhibit a large family of new, non-trivial stationary states of analytic regularity, that are arbitrarily close to the Kolmogorov flow on the square torus. Our construction of these stationary states builds on a degeneracy in the global structure of the Kolmogorov flow. This is in contrast with both the Kolmogorov flow on a rectangular torus and the Poiseuille flow in a channel, for which we can show that the only stationary states near them must be shears. This has surprising consequences in the context of inviscid damping in 2D Euler and enhanced dissipation in Navier-Stokes.