Abstract Submitted
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Simple invariant solutions embedded in 2D Kolmogorov turbulence[1] RICH KERSWELL, GARY CHANDLER, Bristol University — Ideas from dynamical systems have recently provided fresh insight into transitional and weak turbulent flows where the system size is smaller than the spatial correlation length. Viewing such flows as a trajectory through a phase space littered with invariant solutions and their stable and unstable manifolds has proved a fruitful way of understanding such flows. It is therefore natural to ask whether any ideas attempting to rationalise chaos may have something to say about developed turbulence. One promising line of thinking in low-dimensional, hyperbolic dynamical systems stands out as a possibility - Periodic Orbit Theory (Auerbach et al 1987, Cvitanovic 1988 and the review by Lan 2010). I will discuss an attempt to apply this in 2D Kolmogorov turbulence: body-forced flow (where the forcing is monochromatic and large scale) over a doubly periodic box.

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Rich Kerswell
Bristol University

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