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Geometry of turbulence: a stroll through 61,506 dimensions[1]
PREDRAG CVITANOVIC, JOHN F. GIBSON, Georgia Tech, JONATHAN HALCROW, Inst. for Physical Sciences, McLean, VA 22101 — We propose to use a hierarchy of exact unstable invariant solutions of the Navier-Stokes equations – corresponding to the recurrent coherent structures observed in experiments – to construct a description of the spatio-temporally chaotic dynamics of turbulent fluid flows as a walk through the space of such structures. This description should allow us to obtain quantitative predictions of transport properties of fluid flows such as bulk flow rate and mean wall drag.

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