On the geometry of coexisting edge states for plane Couette flow

LINA KIM, JEFF MOEHLIS, University of California, Santa Barbara — For certain shear flows, it has recently been suggested that the codimension-1 manifolds of an exact coherent structure, called an edge state, can define the boundary which separates trajectories that directly decay to the laminar state from those that become turbulent. This boundary is referred to as the edge of chaos. For a range of aspect ratios for plane Couette flow, distinct edge states can be found using an iterative method. We explore the geometry associated with these coexisting edge states, and the relationship of the edge to the turbulent and laminar dynamics.

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