Abstract Submitted
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Laminar-turbulent boundary in plane Couette flow[1] BRUNO ECKHARDT, TOBIAS M. SCHNEIDER, Philipps Universitaet Marburg, JOHN F. GIBSON, Georgia Institute of Technology, FILIPPO DE LILLO, Universita degli Studi di Turino, MAHER LAGHA, Ecole Polytechnique — We apply the iterated edge state tracking algorithm to study the boundary between laminar and turbulent dynamics in plane Couette flow at Re=400. Perturbations that are not strong enough to become fully turbulent nor weak enough to relaminarize tend towards a hyperbolic coherent structure in state space, termed the edge state, which seems to be unique up to obvious continuous shift symmetries. The results reported here show that in cases where a fixed point has only one unstable direction, as for the lower branch solution in plane Couette flow, the iterated edge tracking algorithm converges to this state. They also show that choice of initial state is not critical, and that essentially arbitrary initial conditions can be used to find the edge state.

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