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Eckhaus instability and homoclinic snaking in plane Couette flow

JOHN BURKE, Boston University, JOHN GIBSON, University of New Hampshire, TOBIAS SCHNEIDER, Harvard University — Homoclinic snaking in wide plane Couette channels gives rise to exact solutions of the Navier-Stokes equation which are spatially localized. In this talk, we examine the upper limit of the snaking branches, where the localized states resemble holes of laminar flow embedded in an otherwise regular spatially periodic state. The termination of the snaking branches is related to the Eckhaus instability of the spatially periodic equilibria, but also depends sensitively on the width of the domain.

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