Homoclinic snaking in plane Couette flow: bending, skewing, and finite-size effects JOHN GIBSON, Univ of New Hampshire, TOBIAS SCHNEIDER, cole polytechnique fdrale de Lausanne — Invariant solutions of shear flows have recently been extended from spatially periodic solutions in minimal flow units to spatially localized solutions on extended domains. One set of spanwise-localized solutions of plane Couette flow exhibits homoclinic snaking, a process by which steady-state solutions grow additional structure smoothly at their fronts when continued parametrically. In this talk, we present a numerical study of the snaking solutions, generalizing beyond the fixed streamwise wavelength of previous studies. We find a number of new solution features, including bending, skewing, and finite-size effects. We establish the parameter regions over which snaking occurs and show that the finite-size effects of the traveling-wave solution are due to a coupling between its fronts and interior that results from its shift-reflect symmetry. A new winding solution of plane Couette flow is derived from a strongly-skewed localized equilibrium.

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