

Abstract Submitted  
for the DFD17 Meeting of  
The American Physical Society

**The shape of turbulent spots in plane Couette flow** MARIE COULIOU, DAAA, ONERA and IMSIA, ENSTA ParisTech, ROMAIN MONCHAUX, IMSIA, ENSTA ParisTech — We numerically investigate the temporal aspects of turbulent spots spreading in a plane Couette flow for transitional Reynolds numbers between 300 and 450. We focus on the spreading along the streamwise direction and on the shape of turbulent spots. Studying the topology of turbulent spots and the associated large-scale flows velocity, we suggest a decomposition of the streamwise growth rate. On one hand, the quadripolar large-scale flow steers inside the spot along the streamwise direction and slows down the growth. The associated growth rate is negative. On the other hand, we can also define positive growth rate associated to inside large-scale flow which enables the convection of the streaks. The total of these two growth rates is compared to the spot streamwise growth rate and shows good agreement. The resulting shape of the spot is then discussed. A scenario that gathers all these elements is providing a better understanding of the growth dynamics and the shape of turbulent spots in plane Couette flow that should possibly apply to other extended shear flows.

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Date submitted: 31 Jul 2017

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