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Universality of the transition to turbulence in Couette flow GRGOIRE LEMOULT, BJRN HOF, IST Austria — Turbulence is one of the most frequently encountered non-equilibrium phenomena in nature, yet characterizing the transition that gives rise to turbulence in basic shear flows has remained an elusive task. Although, in recent studies, critical points marking the onset of sustained turbulence have been determined for several such flows, the physical nature of the transition could not be fully explained. More recently, in extensive experimental and computational studies, Lemoult *et al.* show for the example of Couette flow that the onset of turbulence is a second-order phase transition and falls into the directed percolation universality class. Consequently, the complex laminar–turbulent patterns result from short-range interactions of turbulent domains and are characterized by universal critical exponents. In the present contribution, we present new experimental results, for the transition to turbulence in Taylor-Couette flow. We measured two new quantities, namely the correlation length and the correlation time, exhibiting universal scaling in agreement with the universality class of directed percolation.

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