

Abstract Submitted
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Couette flow transition in 2D directed percolation universality class¹ LUKASZ KLOTZ, IST Austria, GREGOIRE LEMOULT, CNRS, BJRN HOF, IST Austria — In Couette flow turbulence arises despite the linear stability of the laminar flow and the nature of this transition has remained unresolved despite numerous theoretical and experimental efforts. We here report an experimental study where the Couette flow is realized in a very narrow gap (negligible curvature) with azimuthal and axial aspect ratios of about 2000 full gaps. At the same time the periodic boundary conditions allow excessively long observation times. By investigating turbulent stripes at the onset of sustained turbulence we measure the critical exponents that fully characterize this transition. As shown the onset of turbulence in Couette flow falls into the two dimensional directed percolation universality class.

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