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**Is Turbulence a Transient?** DANIEL BORRERO, Georgia Institute of Technology, School of Physics, MICHAEL SCHATZ, Georgia Institute of Technology, School of Physics — In shear flows, the transition to turbulence typically occurs through a subcritical bifurcation where a finite amplitude perturbation is required to take the system from the laminar state to a turbulent one. Experiments have shown that the lifetime of the turbulent state is finite for some range of Reynolds numbers. Some experiments suggest that the lifetime diverges at a finite Reynolds number, whereas other experiments suggest that the lifetime diverges only at infinite Reynolds number. We present measurements of the turbulent state lifetimes for the flow between concentric, rotating cylinders in the regime where the transition to turbulence is subcritical. The streamwise periodicity of this flow allows for arbitrarily long observation times, a feature lacked by previous experimental implementations, which used open flows. Our study also allows us to test whether the transient nature of the turbulence observed in previous experiments is specific to those flow geometries or is present in a more general class of shear flows.

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