Abstract Submitted
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Torque scaling and number of states in turbulent Taylor-Couette flow[1] JORGE PEIXINHO, BORJA MARTINEZ-ARIAS, INNOCENT MUTABAZI, Le Havre University and CNRS, LABORATOIRE ONDES ET MILIEUX COMPLEXES TEAM — Torque measurements in a Taylor-Couette flow over a range of velocities up to a Reynolds number of 16 000 are presented. Here only the inner cylinder is rotating, the radius ratio is 0.9 and the aspect ratio is 30. Simultaneously to the torque, the evolution of the flow pattern is observed. Different states are observed depending on the range of Reynolds. The relationship between the states, the speed and the torque is studied in the form of scaling laws. The effect of the number of vortices and the meaning of the exponents will be discussed. In addition to Newtonian fluids, polymer solutions are also used. Specifically, the properties of low concentrations of high molecular weight poly-ethylene-oxide in water will be reported. The effect of the additives to the flow patterns and the torque scaling will be discussed.

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