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**Hysteretic Gravity-Wave Bifurcation in a Highly Turbulent Swirling Flow** NICOLÁS MUJICA, Departamento de Física, Universidad de Chile, DANIEL LATHROP, IREAP, University of Maryland — We report on experimental observations of a gravity-wave instability forced by a highly turbulent free-surface Taylor–Couette flow. Bistability and hysteresis are observed at the bifurcation from a turbulent base state, with an axisymmetric mean flow, to a turbulent gravity-wave state, with an azimuthal  $m = 1$  pattern to the mean flow and free surface. We show that the critical Reynolds number at which the wave state appears is not sharply defined as it depends on turbulent fluctuations.

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