

Abstract Submitted  
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**Observation of near-heteroclinic cycles in the von Karman flow**

CAROLINE NORE, LIMSI, Orsay, France, FREDERIC MOISY, FAST, Orsay, France, LAURENT QUARTIER, LPS-ENS, Paris, France — The bifurcations and the nonlinear dynamics of the von Kármán swirling flow between exactly counter-rotating disks in a stationary cylinder are experimentally investigated by means of visualizations and particle image velocimetry. A regime diagram of the different flow states is determined as a function of the height-to-radius ratio  $\Gamma$  and the Reynolds number  $Re$  based on disks rotation speed and cylinder radius. Among the steady and time-dependent states found in the experiment, robust near-heteroclinic cycles, that link two unstable states of azimuthal wavenumber  $m = 2$ , are observed and characterized in detail for  $\Gamma = 2$ . These are compared with the numerical findings of Nore et al [*J. Fluid Mech* **477**, 51 (2003)], with a particular emphasis on the influence of the imperfection and the noise of the experimental setup.

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