Abstract Submitted
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Global mode induced by a symmetry-breaking in a split cylindrical cavity[1] JESUS O. RODRIGUEZ-GARCIA, Universidad de Navarra, SOLEDAD LE CLAINCHE, Universidad Politécnica de Madrid, JAVIER BURGUETE, Universidad de Navarra — We study experimentally the flow inside a closed cylinder split in two halves at the equator. When these two parts rotate in exact corotation regime the internal flow is essentially in solid-body rotation at the angular velocity of both sides. When a slight difference between the rotation frequencies is established a secondary flow is created due to the differential rotation between halves and restricted to the boundary layer. The behavior of this boundary layer is compared with theoretical and numerical results finding the "sandwich" structure of a Stewartson boundary layer. Time-dependent structures are observed near the cylindrical wall. Their behavior for different values of the Reynolds and the Rossby numbers are presented. A global recirculation mode is also found due to a symmetry-breaking induced between sides that appears because of a slight misalignment of the experimental setup, whose characteristics are compatible with the behavior od a precessing cylinder[2]. A HODMD analysis is performed finding relevant frequencies inside the flow that allow us to reconstruct the global mode[3].

[1]FIS2017-83401-P
[2]J. O. Rodríguez-García and J. Burguete, **Phy. Rev. E** 99, 023111.
[3]S. Le Clainche and J. M. Vega, **SIAM J. Appl. Dyn. Syst.** 16, 882-925.

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