Abstract Submitted
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Effect of the forcing on "steady" turbulent states BRICE SAINT-MICHEL, GUILLAUME MANCEL, BÉRENGÈRE DUBRULLE, ÉRIC HERBERT, FRANÇOIS DAVIAUD, CEA Saclay - Laboratoire SPHYNX — Turbulent systems are intrinsically out of equilibrium, and thus have no reason to respect the symmetries of their forcing. It is yet generally accepted that symmetries are "statistically" restored in turbulence. Von Kármán swirling flows, though, might display continuous transitions or hysteretic behaviour depending on the type of forcing when the impeller speed is imposed. In the latter case, turbulent steady states are found to depend on the history of the system, three states being – at least marginally – stable for perfectly symmetric forcing. We have recently investigated the effect of the forcing on this system. When torque is imposed to the impellers, a whole new dynamics region is accessible inside the hysteresis loop; our system becomes multistable, continuously transiting between a small number of localised states. We characterize the structures displayed by such states and examine what governs the dynamics between them.

Brice Saint-Michel
CEA Saclay - Laboratoire SPHYNX

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