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【633】Hysteresis in the drift wave turbulence to zonal flow bifurcation in magnetised plasma

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Drift wave turbulence occurs ubiquitously in inhomogeneous magnetised plasmas, and determines transport in magnetic fusion experiments. The quasi two-dimensional turbulence implies an inverse energy cascade that condensates in persistent zonal flows, which correspond to a global sheared rotation in a torus. We study bifurcation from turbulence to flow regimes by simulations with a gyrofluid Hasegawa-Wakatani model when dissipative coupling as control parameter is increased. In addition to previous fluid models, our gyrofluid simulations include finite Larmor radius (FLR) effects for a temperature ratio tau = Ti / Te > 0. We discuss changes in transition characteristics related to FLR effects, and conditions for hysteresis in the back transition.

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