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Direct Numerical Simulation of Spiral Turbulence S. DONG, X. ZHENG, Purdue University — Spiral turbulence in the Taylor-Couette setting is one of the most fascinating phenomena of fluid dynamics, where intertwined helical turbulent and laminar patterns propagate between counter-rotating concentric cylinders. It is characterized by spatiotemporal intermittency and the co-existence of turbulent and laminar domains in space and time. We report a direct numerical simulation of spiral turbulence in the Taylor-Couette geometry over a range of Reynolds numbers at which well-defined turbulent/laminar spiral patterns are observed. The statistical features of turbulent spirals are characterized with a conditional averaging technique.

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