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Subcritical turbulent condensate in rapidly rotating Rayleigh-Bénard convection EDGAR KNOBLOCH, University of California at Berkeley, BENJAMIN FAVIER, Aix Marseille University, IRPHE, CÉLINE GUERVILLY, Newcastle University — The possibility of subcritical behavior in the geostrophic turbulence regime of rapidly rotating thermally driven convection is explored. In this regime a nonlocal inverse energy transfer may compete with the more traditional and local direct cascade. We show that, even for control parameters for which no inverse cascade has been previously observed, a subcritical transition towards a large-scale vortex state can occur when the system is initialized with a vortex dipole of finite amplitude. This new example of bistability in a turbulent flow, which may not be specific to rotating convection, opens up new avenues for studying energy transfer in strongly anisotropic three-dimensional flows.

Edgar Knobloch
University of California at Berkeley

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