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Direct and inverse energy cascades in strongly rotating turbulent flows[1] GANAPATI SAHOO, IRENE MAZZITELLI, Department of Physics INFN, University of Tor Vergata, Rome, Italy, PRASAD PERLEKAR, TIFR Centre for Interdisciplinary Sciences, Hyderabad, India, FABIO BONACCORSO, LUCA BIFERALE, Department of Physics INFN, University of Tor Vergata, Rome, Italy

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Rotation plays a key role in many geophysical and astrophysical flows. Under a strong rotation rate (low Rossby numbers), three-dimensional turbulent flows show a tendency to develop fluctuations in a plane perpendicular to the rotation axis leading to a two-dimensional and three-components (2D3C) evolution. By using high resolution direct numerical simulations up to 4096^3 collocation points we present a systematic analysis of the 2D3C field and of the energy transport both concerning direct and inverse cascades using a decomposition in helical-Fourier modes.

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