

Abstract Submitted
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Are Geophysical Jets Protected Topologically? BRAD MARSTON, Brown University, ANTOINE VENAILLE, ENS Lyon — Atmospheric and oceanic jets can be surprisingly robust to perturbations. Do dynamics alone account for this stability, or are there deeper principles at work? A clue may be provided by classical systems with topologically protected chiral modes. These optical, acoustic, and mechanical systems realize physics that was first discovered in the context of condensed matter such as the quantum Hall effect and topological insulators. They share the common feature that low-energy waves propagate in only one direction with no backscattering. We address the question of whether or not such topological protection of chiral modes can be found at geophysical or even astrophysical scales by studying idealized models of geophysical jets.

John Marston
Brown University

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