ESI Erwin Schrödinger International Institute for Mathematics and Physics

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DVR 0065528

Seminar

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Nonlinear dynamics insights into "golden tides" in the Caribbean Sea

Tuesday, May 2, 2023

at 11:15 h

ESI, Boltzmann Lecture Hall and online via Zoom meeting

Abstract: We identify effective carriers of Sargassum in the Caribbean Sea and describe a mechanism for coastal choking. Revealed from satellite altimetry, the carriers of Sargassum are mesoscale eddies (vortices of 50-km radius or larger) with coherent material (i.e., fluid) boundaries. These are observer-independent—unlike eddy boundaries identified with instantaneously closed streamlines of the altimetric sea-surface height field—and furthermore harbor finite-time attractors for networks of elastically connected finite-size buoyant or "inertial" particles dragged by ocean currents and winds, a mathematical abstraction of Sargassum rafts. The mechanism of coastal inundation, identified using a minimal model of surface-intensified Caribbean Sea eddies, is thermal instability in the presence of bottom topography.

A. Constantin, D. Dritschel, N. Paldor
Zoom coordinates: https://univienna.zoom.us/

Meeting ID: 663 0694 7737
Passcode: hkmQPT

April 21, 2023