CNLD Seminar, Monday, January 23, 1:00 p.m. PMA 11.204

https://utexas.zoom.us/j/97250566432

Tracking the movement of microplastics in 3D flow

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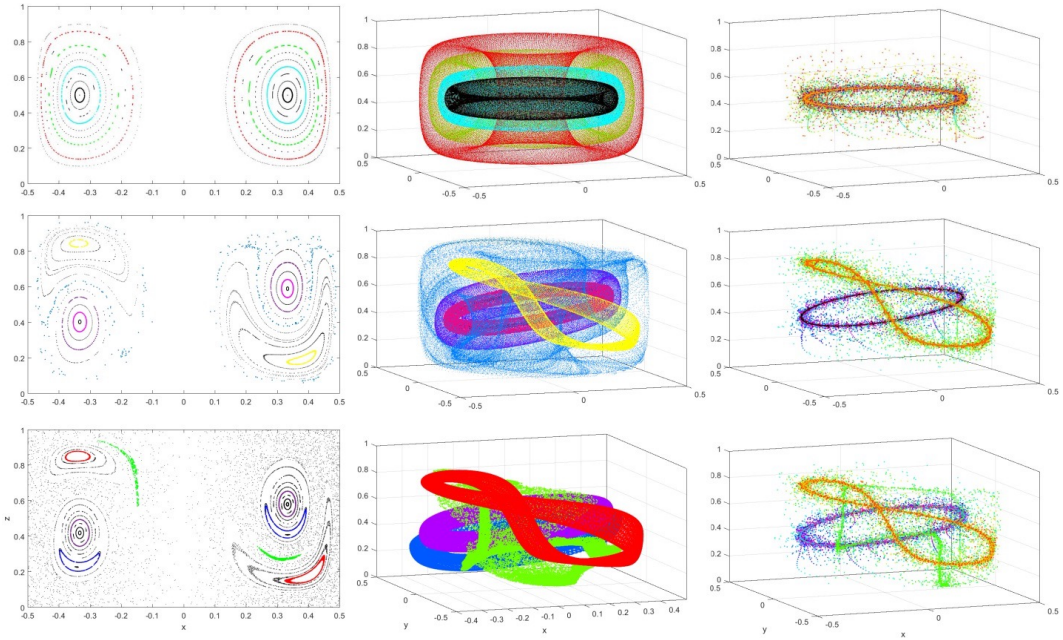

Microplastic particles are being found just about everywhere, including the depths of the ocean. Most attempts to study the movement of small plastic particles have been carried out in the context of 2D flows that are relevant to ocean surface currents, and this has resulted in an understanding of how particles accumulate in ocean surface eddies and gyres. Many particles have density that is close to that of sea water and thus can be subducted into the ocean interior, where they are carried about by 3D circulations. In an attempt to understand whether regions of accumulation might exist at depth, we consider movement in an idealized model of a 3D ocean eddy. Particles are tracked using the Maxey-Riley equation through a flow that combines horizontal swirling with vertical overturning, and may contain pockets of Lagrangian chaos. We find that certain periodic orbits can act a attractors for the particles and we attempt to explain the physics using a theory for motion of the particles on a slow manifold.