

**Title:** Contact topology and time-dependent hydrodynamics

**Abstract:** *More than twenty years ago, in their "Contact Topology and Hydrodynamics" saga, Etnyre and Ghrist introduced a fruitful connection between contact topology and the study of stationary solutions to the 3D Euler equations for ideal fluids. In this talk, we present a new framework that allows assigning contact/symplectic invariants to large sets of time-dependent solutions to the Euler equations on any closed three-manifold with an arbitrary fixed Riemannian metric. Applications include a general non-mixing result for the infinite-dimensional dynamical system defined by the equation and the existence of new conserved quantities of the equation obtained from Floer theories in contact topology. This is based on joint work with Francisco Torres de Lizaur.*