

## ZARM Kolloquium

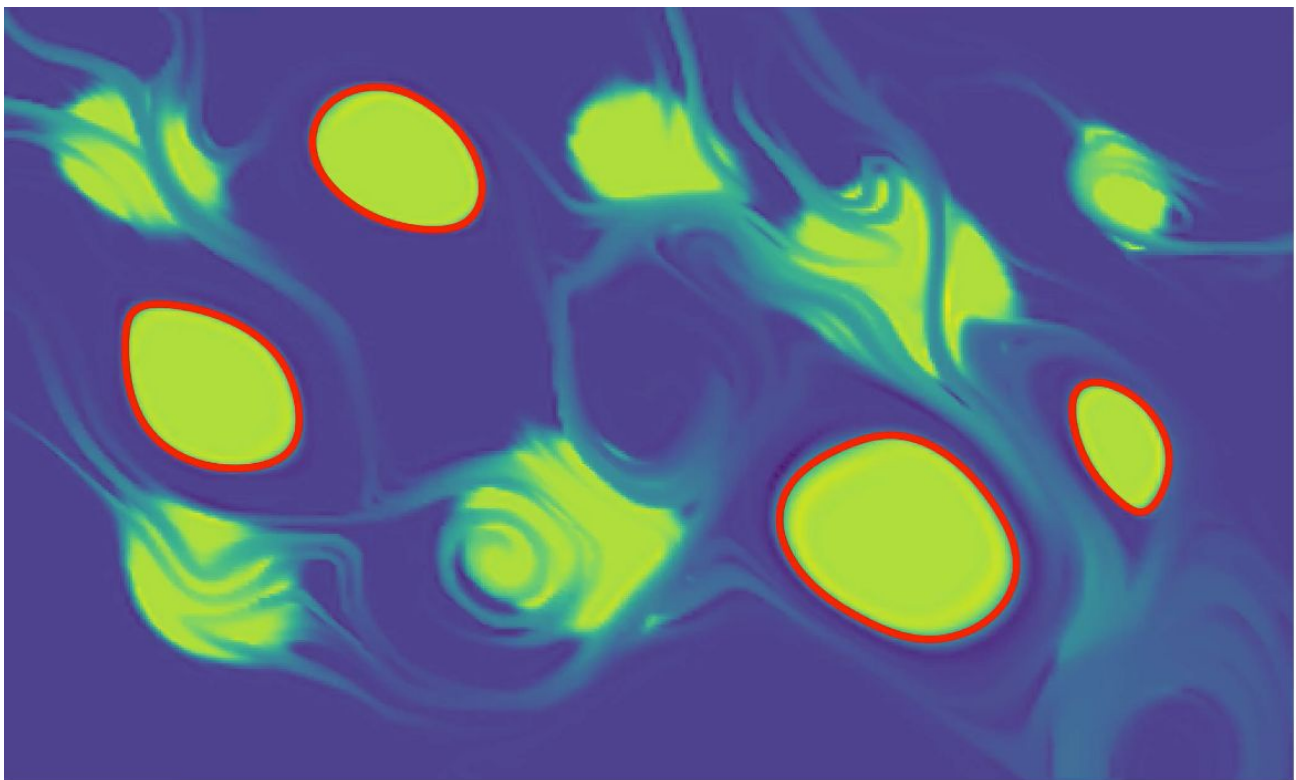
Wednesday, May 16, 2018 at 13:00

Location: ZARM, Room 1730

### Material Barriers to Diffusive and Stochastic Transport

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Observations of tracer transport in fluids generally reveal highly complex patterns shaped by an intricate network of transport barriers. The elements of this network appear to be universal for small diffusivities, independent of the tracer and its initial distribution.

In this talk, I discuss a mathematical theory for weakly diffusive tracers that predicts transport barriers and enhancers solely from the flow velocity, without reliance on diffusive simulations. The theory also extends to particle motion under uncertainties, eliminating the need for Monte-Carlo simulations in detecting stochastic transport barriers. I illustrate the results on Rayleigh-Benard convection simulation and on satellite-inferred ocean current data.