

# "A method to extract coherent structures from numerical and experimental data"

The extraction of coherent features of fluid flows is important to our understanding of fluid dynamical and transport processes. In this talk, we discuss a method for describing the behavior of complex fluid flows by decomposing the flow into modes called Koopman modes. They can be interpreted as a nonlinear generalization of linear normal mode analysis (global modes), they provide an alternative to proper orthogonal decomposition, and in the case of periodic data they reduce to a discrete temporal Fourier transform. The particular focus of the talk is to explicitly related these modes to other type of modes (POD modes a global modes) using weakly nonlinear analysis and concepts borrowed from the dynamical systems and chaos theory.