1172-76-229 Christopher W Curtis* (ccurtis@sdsu.edu), 5500 Campanile Dr., San Diego, CA 92182. Using Dynamic-Mode Decomposition in Coherent Structure Identification in Weakly Turbulent Flows.

In this talk, we will show how the dynamic-mode decomposition can be used to help identify and characterize coherent structures in otherwise weakly turbulent flows generated by forced nonlinear Schrödinger equations. A variety of affiliated metrics are studied which provide a means for distinguishing between different types of flows forced at varying wavelengths and with varying types of dissipation present. Thus, we show how the dynamic-mode decomposition can provide significant aid in the otherwise difficult problem of distinguishing and typifying complex flows, thereby providing a foundation on which to build machine learning strategies for the study of complex flows. In a related vein, we also discuss current work on using machine learning techniques to enhance the dynamic-mode decomposition, pointing towards even more sophisticated results on which to build flow classifiers. (Received August 29, 2021)