Abstract Submitted
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Energetics within the mixing layer of miscible Rayleigh-Taylor turbulence. MICHAEL RIVERA, ROBERT ECKE, Los Alamos National Laboratory — We present recent measurements taken within the turbulent mixing layer generated by two miscible fluids that are initially Rayleigh-Taylor unstable. The measurements are done using simultaneous particle tracking, to obtain velocity measurements, and laser induced fluorescence, to get a local estimate of the density field. Both types of data are captured in a time resolved manner and with high spatial resolution. These measurements allow us to determine the mechanisms involved in transferring energy in the system (both to and from the measurement volume as well as from scale to scale). The results presented will demonstrate that most of the evolution in the kinetic energy is caused by the advection of kinetic energy whereas little energy evolution is mediated by buoyancy from density differences (potential energy terms). This observation is in agreement with recent theoretical work (M. Chertkov, PRL, 2003).

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