Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Rayleigh Taylor Instability with Acceleration Reversals DENIS ASLANGIL, Lehigh University, ANDREW LAWRIE, University of Bristol, UK, ARINDAM BANERJEE, Lehigh University — Self-similar evolution to turbulence of Rayleigh Taylor Instability (RTI) is studied for various acceleration histories, using high resolution numerical simulations. Incompressible, three-dimensional flow is modelled by MOBILE, a massively parallel solver, here using the Implicit Large Eddy Simulation technique. In the current work, accel-deccel-accel profiles with different reversal times and different deceleration periods are applied to RTI problem, to analyze their effects on self-similar evolution of RTI. Simulations are initialized with two initial conditions having the same initial energy but differing in terms of their mode number range. We will discuss a number of metrics which include low order metrics like mix widths, growth constants, molecular mixing parameter, and higher order turbulence parameters like second and higher order moments, their dissipations, and production-dissipation ratios which will also be useful in validating mix models.

Arindam Banerjee
Lehigh University

Date submitted: 01 Aug 2014 Electronic form version 1.4