Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Progress on experimental investigation of RT instability at high Atwood numbers BHANESH AKULA, DEVESH RANJAN, Texas A&M University — The new multi layer experimental facility at Texas A&M University can be used to study the mixing between two or more gas streams (separated by partitions initially) with different densities and velocities. This is a convective type system similar to the gas channel facility that was used to study RT mixing. This new suction-type multi layer facility has a test section double the size of the gas channel which will enable measurements up to Reynolds number of 30000. For the present study, this facility is used to study the Rayleigh-Taylor mixing between Air and Air-Helium mixtures at Atwood numbers greater than 0.5. Different diagnostics including Simultaneous PIV-PLIF and backlight imaging are used to obtain field wise measurement of velocities and densities as well as mixing width and its growth rate. The parameters obtained from these measurements including molecular mixing parameter θ, turbulent quantities such as mean fluctuation of streamwise and cross stream velocities are presented.

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Date submitted: 06 Aug 2012 Electronic form version 1.4