Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Turbulent/Non-Turbulent Interface in a Reacting Compressible Shear Layer REZA JAHANBAKHSHI, CYRUS K. MADNIA, SUNY at Buffalo — Since entrainment occurs across the turbulent/non-turbulent interface (TNTI), DNS data is used to study the characteristics of this interface in shear layers. Several cases are considered ranging from a low compressible non-reacting to highly compressible reacting flows. As the compressibility level increases, the average size of the structures that form the TNTI increases, however, as the heat release level increases, the average size of the structures that form the local shape of TNTI decreases. The geometrical shape of the turbulent/non-turbulent interface looking from the turbulent region is examined. It is observed that in non-reacting cases the TNTI is dominated by the concave shaped surfaces. As the level of compressibility increases, the probability of finding highly curved concave shaped surfaces on the TNTI decreases, while the probability of finding flatter concave and convex shaped surfaces increases. In reacting flows with high heat release level, the TNTI is dominated by the convex shaped surfaces. As the heat release level increases the probability of finding highly curved convex shaped surfaces on the TNTI increases, whereas the probability of finding flatter concave and convex shaped surfaces decreases.

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Date submitted: 28 Jul 2016 Electronic form version 1.4