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**Development of Filtered Density Function for Large Eddy Simulation of Entropy Transport in Turbulent Reacting Flows** MEHDI SAFARI, M. REZA H. SHEIKHI, Northeastern University — A new methodology based on filtered density function (FDF) is being developed for large eddy simulation of entropy transport in turbulent reacting flows. The filtered form of entropy transport equation includes several unclosed entropy generation terms. The closure is provided by the FDF, which represents the joint entropy, frequency, velocity and scalar probability density function within the subgrid. An exact transport equation is developed for the FDF. The unclosed terms in this equation are modeled by considering a system of stochastic differential equations incorporating the second law of thermodynamics. The modeled FDF transport equation is solved by a Lagrangian Monte Carlo method. The methodology is employed to simulate turbulent shear flows, involving transport of entropy. The predicted results are assessed by comparing with data generated by direct numerical simulation (DNS). The predictions show good agreements with the DNS data.

Reza Sheikhi  
Northeastern University

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