

Abstract Submitted  
for the DFD12 Meeting of  
The American Physical Society

**PDF investigations of turbulent non-premixed jet flames with thin reaction zones** HAIFENG WANG, Purdue University, STEPHEN POPE, Cornell University — PDF (probability density function) modeling studies are carried out for the Sydney piloted jet flames. These Sydney flames feature much thinner reaction zones in the mixture fraction space compared to those in the well-studied Sandia piloted jet flames. The performance of the different turbulent combustion models in the Sydney flames with thin reaction zones has not been examined extensively before, and this work aims at evaluating the capability of the PDF method to represent the thin turbulent flame structures in the Sydney piloted flames. Parametric and sensitivity PDF studies are performed with respect to the different models and model parameters. A global error parameter is defined to quantify the departure of the simulation results from the experimental data, and is used to assess the performance of the different set of models and model parameters.

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Date submitted: 23 Jul 2012

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