

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Numerical Investigation of a Piloted Premixed Jet Burner YUNTAO CHEN¹, MATTHIAS IHME², The University of Michigan at Ann Arbor — Premixed and partially premixed combustion technologies have the potential of reducing pollutant emissions and enhancing the overall combustion efficiency. However, the successful implementation of these technologies in practical systems requires a thorough understanding of the underlying combustion-physical phenomena. To predict partially premixed combustion, a three-stream progress-variable model has been developed. This model is applied to large-eddy simulations of the piloted premixed jet burner experiment of Dunn et al., and configurations PM1- $\{50,100,150\}$ are considered. Comparisons with measurements for all three configurations are presented, and it is shown that this model is capable of capturing the characteristics of the flow-field, temperature, and compositional field.

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Date submitted: 30 Jul 2012

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