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Flow Field Measurements of a Fluidic Dump Combustor[1] ZAKERY CARR, KAREEM AHMED, DAVID FORLITI, State University of New York at Buffalo — A fluidic-based dump combustor offers potential thrust and efficiency benefits for propulsion. The capability of fluidics for flame stabilization in a high-speed premixed reactant flow has been established. The current study documents detailed flow field measurements to help understand the fluidic dump combustor. Digital particle image velocimetry was used to study the flow field of both a fluidic and V-gutter based dump combustor. The effects of combustion on the mean and turbulent flow fields for the two configurations will be described. Measurements under steady and oscillatory combustion will be presented. Comparisons of the turbulence length and velocity scales as well as flame topology for the two configurations will be made to help understand the performance of the fluidic dump combustor.

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