

Abstract Submitted  
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**Vorticity Dynamics in Single and Multiple Swirling Reacting Jets** TRAVIS SMITH<sup>1</sup>, MICHAEL AGUILAR<sup>2</sup>, BENJAMIN EMERSON<sup>3</sup>, DAVID NOBLE<sup>4</sup>, TIM LIEUWEN<sup>5</sup>, None — This presentation describes an analysis of the unsteady flow structures in two multinozzle swirling jet configurations. This work is motivated by the problem of combustion instabilities in premixed flames, a major concern in the development of modern low NO<sub>x</sub> combustors. The objective is to compare the unsteady flow structures in these two configurations for two separate geometries and determine how certain parameters, primarily distance between jets, influence the flow dynamics. The analysis aims to differentiate between the flow dynamics of single nozzle and triple nozzle configurations. This study looks at how the vorticity in the shear layers of one reacting swirling jet can affect the dynamics of a nearby similar jet. The distance between the swirling jets is found to have an effect on the flow field in determining where swirling jets merge and on the dynamics upstream of the merging location.

<sup>1</sup>Graduate Student, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA

<sup>2</sup>Propulsion Engineer, Delta Air Lines, Atlanta, GA

<sup>3</sup>Research Engineer, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA

<sup>4</sup>Research Engineer, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA

<sup>5</sup>Professor, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA. AIAA Associate Fellow

Travis Smith  
None

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