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**Combining Countercurrent Shear Flow Control and Transverse Jets for Fluidic Thrust Vector Control** IGNACIO ECHAVARRIA DIAZ-GUARDAMINO, DAVID FORLITI, State University of New York at Buffalo — Countercurrent shear flow control has been established as an effective method for thrust vector control but has been challenged by hardware integration issues. Recent developments in fluidic thrust vector control have focused on nozzle interior methods that skew the throat of the nozzle using multiple transverse jets. The present work is motivated to combine these two flow control approaches to create a thrust vector control technique with enhanced performance. A combined computational and experimental effort was undertaken to consider the integration of these two flow control techniques. A simple configuration of a channel flow was used with consideration of various geometrical and operating conditions. It is apparent that the employment of countercurrent flow control does enhance the thrust vector control performance over a single transverse jet. The influence of countercurrent shear on the turbulence created with the transverse jet will be studied to help understand how the two flow control methodologies contribute to the pressure gradients required for thrust vectoring.

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