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Coupling modes between liquid/gas coaxial jets and transverse acoustic waves. CHAD HELLAND, CULLEN HILLIKER, DAVID FORLITI, University of St. Thomas, UNIVERSITY OF ST. THOMAS TEAM — The interactions between shear flows and acoustic disturbances plays a very important role in many propulsion and energy applications. Liquid jets, either independent or air assisted, respond to acoustic disturbances in a manner that alters the primary and secondary atomization processes. The current study focused on the response of an air-assisted liquid jet to disturbances associated with a transverse acoustic wave. The jet is placed in the pressure node (velocity antinode) region of the resonant mode shape. It has been shown in previous studies, under certain conditions, that the acoustic forces can cause the jet flow to distort and atomize. Both liquid and coaxial gas/ liquid jet flows have been shown to distort via acoustic forces. The purpose of the current study is to understand the predictive characteristics that cause the distortion behaviors of a liquid and coaxial jet flow, and how a how a coaxial flow affects the behavior.

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