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Vorticity Dynamics in Actuated Transverse Jets FABRICE SCHLEGEL, AHMED F. GHONIEM, MIT — Transverse jets are important to various industrial applications (film cooling, primary or dilution jets in gas turbines). Our previous results on the impact of the boundary layer detachment on the jet evolution show the sensibility of the overall jet dynamics to the near-nozzle conditions. Small perturbations at the nozzle exit are thus expected to act as powerful tools for control of the jet trajectory, its spanwise spreading, and its mixing properties. In this study, we demonstrate actuation strategies that manipulate the jet via nozzle edge perturbations, helical perturbations and the addition of delta-tabs at the nozzle exit.

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