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Blowing a liquid curtain H. LHUISSIER, IUSTI, CNRS & Aix-Marseille Université, France, P. BRUNET, MSC, CNRS & Université Paris Diderot, France, S. DORBOLO, GRASP, FNRS & Université de Liège, Belgium — We study the response of a steady free-falling liquid curtain perturbed by focused air jets blowing perpendicularly against it. Asymmetric and symmetric perturbations are applied by using either a single pulsed jet or two identical steady jets facing each other. The response strongly depends on the curtain flow rate, and the location and strength of the perturbation. For pulsed asymmetric perturbations of increasing amplitude, sinuous wave, drop ejection, bubble ejection, and hole opening are successively observed. For steady symmetric perturbations, a steady hole forms downstream in the wake. For this latter case, we present a model for the curtain thickness and the location of the hole inthe wake which compares favorably to the experiments providing the perturbation is small enough (jet stagnation pressure smaller than curtain stagnation pressure) and the liquid viscosity is negligible.

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