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How are soap bubbles blown? Fluid dynamics of soap bubble blowing JOHN DAVIDSON, LORI LAMBERT, ERICA SHERMAN, TIMOTHY WEI, SANGJIN RYU, University of Nebraska-Lincoln — Soap bubbles are a common interfacial fluid dynamics phenomenon having a long history of delighting not only children and artists but also scientists. In contrast to the dynamics of liquid droplets in gas and gas bubbles in liquid, the dynamics of soap bubbles has not been well documented. This is possibly because studying soap bubbles is more challenging due to there existing two gas-liquid interfaces. Having the thin-film interface seems to alter the characteristics of the bubble/drop creation process since the interface has limiting factors such as thickness. Thus, the main objective of this study is to determine how the thin-film interface differentiates soap bubbles from gas bubbles and liquid drops. To investigate the creation process of soap bubbles, we constructed an experimental model consisting of air jet flow and a soap film, which consistently replicates the conditions that a human produces when blowing soap bubbles, and examined the interaction between the jet and the soap film using the high-speed videography and the particle image velocimetry.

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