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Role of Gas Pressure and Molecular Weight in Bubble Pinch-Off from an Underwater Nozzle NATHAN C. KEIM, SIDNEY R. NAGEL, James Franck Institute, University of Chicago — We report on experiments that explore the role of gas pressure and molecular weight near the pinch-off of an air bubble from an nozzle submerged in water. We use high-speed video to image the dynamics close to the singularity occurring at pinch-off.[1] As the neck collapses to a radius of several microns, the effects of the Bernoulli pressure associated with gas flow inside the neck begin to alter the bubble's shape and evolution, as was recently proposed.[2] We address the role that the gas plays in creating satellite bubbles during the pinch-off process, and its influence on the evolution of perturbations to axisymmetric collapse.[3]

[1]N. C. Keim et al., *PRL* 97, 144503 (2006).
[2]J. M. Gordillo, M. A.Fontelos, *PRL* 98, 144503 (2007).
[3]L. E. Schmidt et al., in preparation.

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