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Measuring axisymmetric drainage of large viscous bubbles JAMES BIRD, CASEY BARTLETT, MATTHIEU SANTIN, Boston University — Large bubbles on the surface of a viscous liquid can be stable for many minutes, even in the absence of surfactants. Over time the thickness of these bubbles evolve as the liquid film drains under the influence of gravity. Past interferometry measurements have shown that the film thickness at the top of a viscous bubble decays exponentially – which is consistent with current theories. However these models rely on drainage assumptions away from the centerline, assumptions that have been yet to be validated experimentally. In this talk we present measurements for both the film thickness and drainage velocity along viscous bubbles. Our results demonstrate that current models dramatically under-predict the film thickness away from the centerline. We demonstrate why the dynamics are more subtle than previously assumed, and we offer a model that is consistent with our measurements.

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