Abstract Submitted
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Self-similar breakup of near-inviscid liquids[1] ALFONSO A. CASTREJON-PITA, J. RAFAEL CASTREJON-PITA, JOHN R. LISTER, E. JOHN HINCH, IAN M. HUTCHINGS, University of Cambridge — Experimental results are presented for the final stages of drop pinch-off and ligament breakup for different initial conditions. Water and ethanol were used as working fluids. High-speed imaging and image analysis were utilized in order to determine the contraction rate of the thinning neck and the shape of the liquid thread just before the breakup. Our results show that the geometry of the breakup of near-inviscid fluids is self-similar in the domain of simple dripping. We also demonstrate that, independently of the initial conditions, the necking of these liquids scales with $\tau^{2/3}$, asymptotically giving a unique breakup angle of $18.0 \pm 0.4^{\circ}$. Both observations are in complete agreement with previous theoretical predictions. The angle converges towards self similarity like $\tau^{1/2}$, also as predicted.

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