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Impact of a single drop on the same liquid: formation, growth and disintegration of jets G. GILOU AGBAGLAH, Cornell University, ROBERT DEEGAN, University of Michigan — One of the simplest splashing scenarios results from the impact of a single drop on on the same liquid. The traditional understanding of this process is that the impact generates a jet that later breaks up into secondary droplets. Recently it was shown that even this simplest of scenarios is more complicated than expected because multiple jets can be generated from a single impact event and there are bifurcations in the multiplicity of jets. First, we study the formation, growth and disintegration of jets following the impact of a drop on a thin film of the same liquid using a combination of numerical simulations and linear stability theory. We obtain scaling relations from our simulations and use these as inputs to our stability analysis. We also use experiments and numerical simulations of a single drop impacting on a deep pool to examine the bifurcation from a single jet into two jets. Using high speed X-ray imaging methods we show that vortex separation within the drop leads to the formation of a second jet long after the formation of the ejecta sheet.

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