Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Effect of topology changes on the breakup of a periodic liquid jet ALBERTO ROMAN-AFANADOR, University Of Notre Dame, STEPHANE ZALESKI, Sorbonne Universite, GRETAR TRYGGVASON, JIACAI LU, Johns Hopkins University — The breakup of a periodic jet is examined computationally, using a front-tracking/finite-volume method, where the interface is represented by connected marker points moving with the fluid, while the governing equations are solved on a fixed grid. Tracking the interface allows control of whether topology changes take place or not. The Reynolds and Capillary numbers are kept relatively low so most of the flow is well resolved. The effect of topology changes is examined by following the jet until it has mostly disintegrated, for different "coalescence" criteria, based on the thickness of thin films and threads. It is found that while the overall breakup is relatively insensitive to the exact conditions for topology changes, various quantitative measures of the evolution are not. The evolution of both two-dimensional and fully three-dimensional flows is examined. It is found that although there is a significant difference between the evolution when no breakup takes place and when it does, once breakup takes place the evolution is relatively insensitive to exactly how it is triggered for a range of coalescence criteria. However, excessively aggressive coalescence leads to different outcomes

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Date submitted: 31 Jul 2019 Electronic form version 1.4