

Abstract Submitted  
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**Transition from spherical cap to toroidal bubbles.** THOMAS BONOMETTI, JACQUES MAGNAUDET, IMFT/CNRS — A puzzling feature of large buoyancy-driven bubbles is that, given an initial gas volume, the final shape can be either a spherical cap or a torus. We perform a numerical investigation of the evolution of such bubbles using a Volume of Fluid method that does not explicitly reconstruct interfaces. We first determine the localization of the transition from spherical cap to toroidal bubbles in the parameter space built on the Bond and Archimedes numbers. Two different transition scenarios are identified. In the limit of large  $Ar$  (resp. large  $Bo$ ), the bubble pinch-off is due to an upward jet (resp. downward jet) coming from the rear part (resp. front part) of the bubble. We also examine the influence of the initial conditions on the final bubble topology. More precisely, increasing the initial oblateness for a fixed Bond number is found to broaden the domain of existence of spherical cap bubbles.

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