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Jet drops produced by bursting bubbles: number, size, velocity and resulting mass transfer[1] ALEXIS BERNY, THOMAS SEON, Sorbonne Universit, CNRS, UMR 7190, Institut Jean le Rond D'Alembert, F-75005 Paris, France, LUC DEIKE, Department of Mechanical and Aerospace Engineering, Princeton University, Princeton, New Jersey 08544 USA, STEPHANE POPINET, Sorbonne Universit, CNRS, UMR 7190, Institut Jean le Rond D'Alembert, F-75005 Paris, France
— When a bubble bursts at a liquid-air interface, it produces a jet that may break up and eject drops called jet drops. Numerous studies focused on this phenomenon motivated by the wide range of application, from the bubble in a glass of champagne to spray generation at the surface of the ocean. Here, we solve the two-phase Navier-Stokes equations in axi-symmetrical coordinates with the free software basilisk. We first compare the size and velocity of the first drop in our simulations with the recent experimental, numerical and theoretical results from the literature, before characterizing the number, size and velocity of all ejected droplets. This approach is done for a wide range of controlling parameters, defined as the Laplace and Bond numbers. The resulting total vertical momentum and mass transfer is then discussed.

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