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Numerical simulation in 3D of atomizing coaxial gas-liquid jets GILOU AGBAGLAH, DANIEL FUSTER, GEORDIE MCBAIN, Institut Jean Le Rond d'Alembert, UMR 7190, UPMC & CNRS, Paris, France, STEPHANE POPINET, NIWA, Kilbirnie, Wellington, New Zealand, STEPHANE ZALESKI, Institut Jean Le Rond d'Alembert, UMR 7190, UPMC & CNRS, Paris, France — We investigate three-dimensional multiphase flows using the Volume of Fluid method. We are in particular focusing on the problem of jet atomizaton. We use a Volume of Fluid method with oct-tree adaptive finite volume discretization, mostly using the Gerris free code. Surface tension is computed by a balanced-force method. Coaxial, 3D, round and planar air-water jets similar to those investigated experimentally are studied and compared to the equivalent jets in 2D axisymetric and 2D planar setups. A mechanism for large-scale jet disruption is observed. The distribution of droplet sizes is compared to experimental measurements. The effect of grid resolution and of the presence of an explicitly modelled solid separator plate is discussed.

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