Inertial jets ARNAUD ANTKOWIAK, EMMANUEL VILLERMAUX, IRPHE, Marseille — We investigate the dynamics and ultimate fragmentation of jets formed from the sudden acceleration of a curved liquid gas interface. This configuration is generic of many natural or man made processes leading to drops via the formation of a concentrated jet (Antkowiak et al., *J. Fluid Mech.* **577**, 2007). Here, we establish the axial velocity distribution in the jet as a spatial analogue to the Frankel & Weihs (1985) similarity solution, and compare it successfully to PIV measurements made inside the jet itself. The stability of this original base flow is made accounting for the influence of the deforming substrate on the perturbation dynamics, and assessed by the observed jet radius modulations. As an outcome, the link between these predictions and the liquid jet fragmentation is discussed. This solution is a step forward from the classical Plateau-Rayleigh treatment of quiescent liquid jets, and a new paradigm for impulsively formed liquid jets.

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