Abstract Submitted
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Pinching of a liquid ligament under surface tension JEROME HOEPFFNER, Université Pierre et Marie Curie — We study the retraction of a cylinder of fluid caused by surface tension. At the tip of the ligament, a blob if formed which collect progressively the liquid as it retracts. Between the blob and the cylinder, there is the creation of a neck, whose radius decreases progressively following a mechanism close to that of the Rayleigh-Plateau instability. Inside this neck, we observe a jet of the fluid from the cylinder into the blob, a "capillary Venturi." As the radius of the neck decreases the intensity of this jet increases, and we observe by means of numerical simulations and experiments that the detachment of this jet and creation of a vortex ring is able to alter significantly the evolution of the pinching: the pinching is avoided. This phenomenon is significant in the context of atomization because it changes significantly the statistics of the drops which are created from the retraction of the liquid ligament.

Jerome Hoepffner
Université Pierre et Marie Curie

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