

Abstract Submitted
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Instability of the capillary bridge GOUNSETI PARE, JEROME HOEPPFFNER, Institut Jean Le Rond d'Alembert — Capillary adhesion is a physical mechanism that maintains two bodies in contact by capillarity through a liquid ligament. The capillary bridge is an idealization of this capillary adhesion. In this study we first focus on the classical case of the stability of the capillary bridge. Secondly we study a slightly more complex configuration, imagining a flow in the capillary bridge as in the case of the dynamics of the neck of a liquid ligament, in its withdrawal under the effect of capillarity. Inspired by the experiments on soap films of Plateau, the configuration analyzed consists of an initially axisymmetric, mass of fluid held by surface tension forces between two parallel, coaxial, solid pipes of the same diameter. The results presented are obtained by numerical simulations using the free software, Gerris Flow Solver. We first focus on the capillary Venturi. In the static configuration the stability diagram of the capillary bridge obtained is in perfect agreement with the results of Lev A. Slobozhanin. In the dynamic case we develop a matlab code based on the one dimensional equations of Eggers and Dupont. The comparison of the bifurcation diagram obtained and the numerical simulations shows a good agreement.

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