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Drops subjected to surface acoustic waves: flow dynamics PHILIPPE BRUNET, CNRS - Laboratoire Matière et Systèmes Complexes (MSC), MICHAEL BAUDOIN, Institut d'Electronique de Microélectronique et Nanotechnologies (IEMN) - Université Lille 1, OLIVIER BOU MATAR, Institut d'Electronique de Microélectronique et Nanotechnologies (IEMN) -Ecole Centrale de Lille, DYNAMIQUE DES SYSTÈMES HORS EQUILIBRE TEAM, AIMAN - FILMS TEAM — Ultrasonic acoustic waves of frequency beyond the MHz are known to induce streaming flow in fluids that can be suitable to perform elementary operations in microfluidics systems. One of the currently appealing geometry is that of a sessile drop subjected to surface acoustic waves (SAW). Such Rayleigh waves produce non-trival actuation in the drop leading to internal flow, drop displacement, free-surface oscillations and atomization. We recently carried out experiments and numerical simulations that allowed to better understand the underlying physical mechanisms that couple acoustic propagation and fluid actuation. We varied the frequency and amplitude of actuation, as well as the properties of the fluid, and we measured the effects of these parameters on the dynamics of the flow. We compared these results to finite-elements numerical simulations.

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