

Abstract Submitted  
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**The Onset of Motion of Bouncing Droplet Pairs**<sup>1</sup> MILES COUCHMAN, RUBEN ROSALES, JOHN BUSH, MIT — Multiple droplets bouncing on a vibrating fluid bath interact through the surface waves they produce at each bounce. We present the results of an integrated experimental and theoretical investigation focusing on the behavior of two interacting droplets. As the driving acceleration of the bath is increased progressively, static bound states destabilize into a variety of dynamical states including oscillating, orbiting, and promenading states. The dependence of the type of instability on the droplet sizes and initial separation distance is rationalized theoretically. The critical role of the drops' vertical dynamics is highlighted, and extensions of our findings to larger, multi-drop systems are explored.

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