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Pairs of Bouncing Droplets MILES COUCHMAN, PIERRE CALDAIROU, Department of Mathematics, Massachusetts Institute of Technology, ANAND OZA, Courant Institute of Mathematical Sciences, New York University, JOHN BUSH, Department of Mathematics, Massachusetts Institute of Technology
— Multiple droplets bouncing on the surface of a vibrating fluid bath interact through the waves generated at each bounce. We here present the results of an experimental study of the behavior of two interacting droplets. As the driving acceleration of the bath is increased progressively, static bound states are found to destabilize into a variety of dynamical states including oscillating, orbiting, and ratcheting states. The type of instability depends on the droplet sizes and their separation distance. Attempts to provide theoretical rationale for the observed behavior are described.

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