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Droplets bouncing on a standing wave field[1] GIUSEPPE PUCCI, LUCAS TAMBASCO, Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA 02139, USA, DANIEL HARRIS, Brown University, School of Engineering, Providence, RI 02912, USA, JOHN BUSH, Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA 02139, USA
— A liquid bath subject to a vertical vibration becomes unstable to standing surface waves at a critical vibrational acceleration known as the Faraday threshold. We examine the behavior of a millimetric droplet bouncing on the surface of a quasi-one-dimensional fluid channel above the Faraday threshold. We identify a sequence of bifurcations that occurs as the vibrational acceleration is increased progressively, ultimately leading to the erratic, diffusive motion of the droplet along the length of the channel. A simple theoretical model is presented.

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