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Walking droplets in confined geometries BORIS FILOUX, OLIVIER MATHIEU, NICOLAS VANDEWALLE, GRASP, Institute of Physics B5a, Sart Tilman, University of Liège, B4000 Liège, Belgium — When gently placing a droplet onto a vertically vibrated bath, coalescence may be avoided : the drop bounces permanently. Upon increasing forcing acceleration, a drop interacts with the wave it generates, and becomes a "walker" with a well defined velocity. In this work, we investigate the confinement of a walker in a mono-dimensional geometry. The system consists of linear submarine channels used as waveguides for a walker. By studying the dynamics of walkers in those channels, we discover some 1D-2D transition. We also propose a model based on an analogy with "Quantum Wires." Finally, we consider the situation of a walker in a circular submarine channel, and examine the behavior of several walking droplets in this system. We show the quantization of the drop distances, and correlate it to their bouncing modes.

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