Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Snell's law and walking droplets[1] JOHN BUSH, Department of Mathematics, MIT, GIUSEPPE PUCCI, Department of Mathematics, MIT; University of Haifa, BENJAMIN AUBIN, PIERRE-THOMAS BRUN, LUIZ FARIA, Department of Mathematics, MIT — Droplets walking on the surface of a vibrating bath have been shown to exhibit a number of quantum-like features. We here present the results of a combined experimental and theoretical investigation of such droplets crossing a linear step corresponding to a reduction in bath depth. When the step is sufficiently large, the walker reflects off the step; otherwise, it is refracted as it crosses the step. Particular attention is given to an examination of the regime in which the droplet obeys a form of Snell's Law, a behavior captured in accompanying simulations. Attempts to provide theoretical rationale for the dependence of the effective refractive index on the system parameters are described.

[1]Supported by NSF through CMMI-1333242

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Date submitted: 01 Aug 2016 Electronic form version 1.4