Abstract Submitted
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Crossing the threshold[1] JOHN BUSH, LUCAS TAMBASCO, MIT — First, we summarize the circumstances in which chaotic pilot-wave dynamics gives rise to quantum-like statistical behavior. For "closed" systems, in which the droplet is confined to a finite domain either by boundaries or applied forces, quantum-like features arise when the persistence time of the waves exceeds the time required for the droplet to cross its domain. Second, motivated by the similarities between this hydrodynamic system and stochastic electrodynamics, we examine the behavior of a bouncing droplet above the Faraday threshold, where a stochastic element is introduced into the drop dynamics by virtue of its interaction with a background Faraday wave field. With a view to extending the dynamical range of pilot-wave systems to capture more quantum-like features, we consider a generalized theoretical framework for stochastic pilot-wave dynamics in which the relative magnitudes of the drop-generated pilot-wave field and a stochastic background field may be varied continuously.

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