

# PHYSICAL MATHEMATICS SEMINAR

## Droplets walking on The Impossible Pilot Wave

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**ABSTRACT:**

Yves Couder and coworkers have reported that droplets walking on a vibrating fluid bath can exhibit several features previously thought to be peculiar to the microscopic, quantum realm, including single-particle diffraction and interference, tunneling and quantized orbits. We report new experiments demonstrating that, like their quantum counterparts, walkers in a confined geometry exhibit a wave-like statistical behavior. The hydrodynamics of this system is elucidated, and the walkers are shown to exhibit a pilot-wave dynamics reminiscent of that envisaged by de Broglie. Theoretical developments yield a trajectory equation for the droplets, and provide new rationale for their quantum-like behavior. We discuss the potential value of this hydrodynamic system for both visualizing and understanding quantum mechanics.

**TUESDAY, SEPTEMBER 18, 2012**

**2:30 PM**

**Building 4, Room 163**

*Reception at 3:30 PM in Building 2, Room 290  
(Math Dept. Common Room)*

<http://math.mit.edu/pms>



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