

PHYSICAL MATHEMATICS SEMINAR

Bouncing and Walking Drops: From Experiments to Theory and Back Again

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ABSTRACT:

In a set of remarkable experiments, Yves Couder and collaborators have shown that drops of silicone oil bouncing on a vibrating liquid bath can be made to move horizontally and exhibit many features analogous to quantum mechanics, such as tunneling, single-particle diffraction or quantized orbits. Our aim was to provide the simplest theoretical model capable of quantitative prediction of the drop's behaviour, which would guide us in search of new phenomena. This was achieved using a logarithmic spring model for the drop-bath interaction. We show the rich regime diagrams of the drop's vertical and horizontal behaviour, compare our model with experiments, and explain why the drops walk only in a small region of system parameters.

TUESDAY, MARCH 5, 2013

2:30 PM

Building 56, Room 180

*Reception following in Building 2, Room 290
(Math Dept. Common Room)*

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



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