College of
Science and Technology
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A C²M² Event

Center for Computational
Mathematics and Modeling

Joint Colloquium
Mathematics and Physics
John Bush

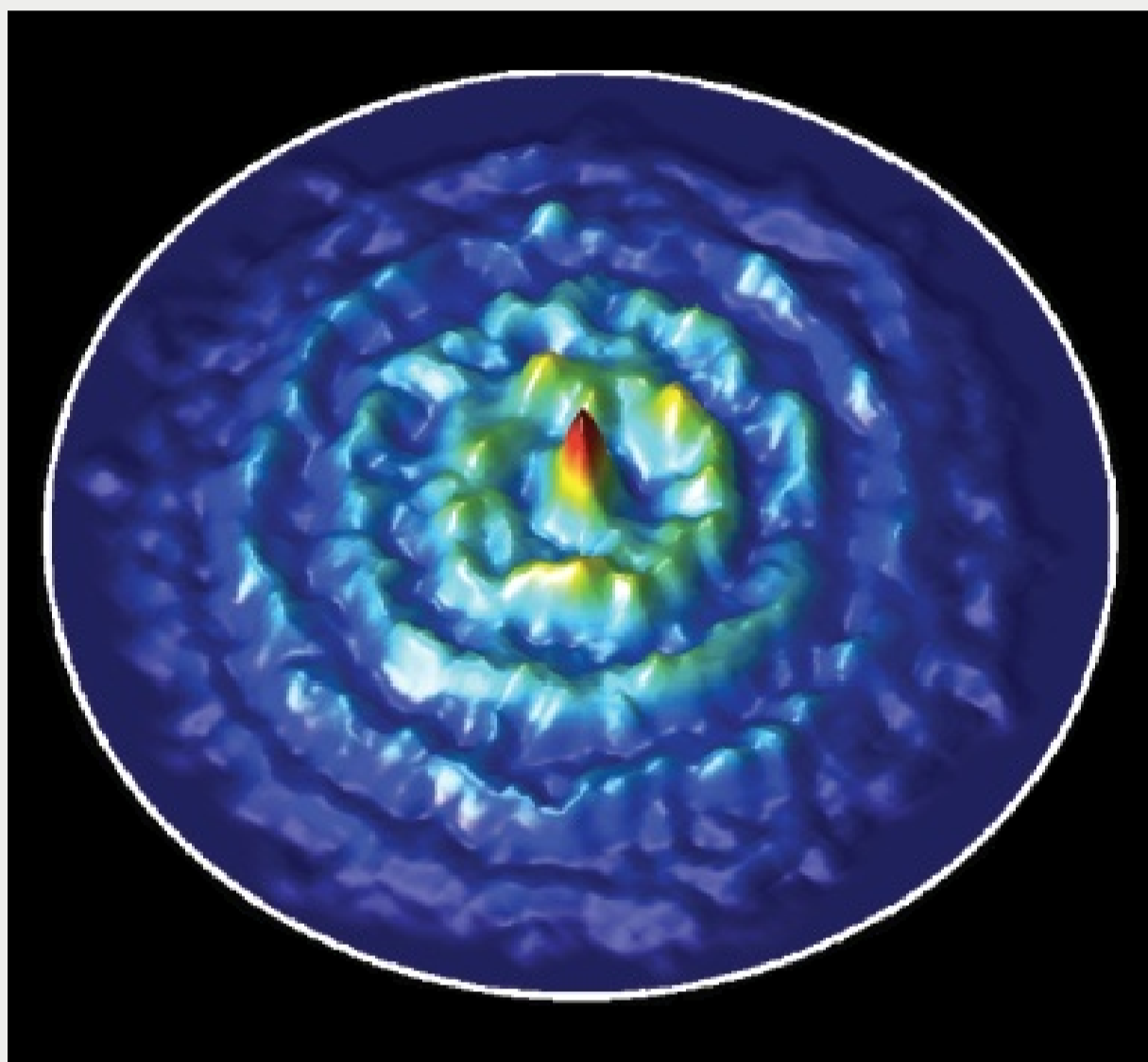### Massachusetts Institute of Technology

Pilot-Wave Hydrodynamics

April 29th, 2019, 3:00pm
SERC, Room 116
Refreshments 2:30pm

Abstract: Yves Couder and coworkers in Paris discovered that droplets walking on a vibrating fluid bath exhibit several features previously thought to be exclusive to the microscopic, quantum realm. These walking droplets propel themselves by virtue of a resonant interaction with their own wavefield, and so represent the first macroscopic realization of a pilot-wave system of the form proposed for microscopic quantum dynamics by Louis de Broglie in the 1920s. New experimental and theoretical results allow us to rationalize the emergence of quantum-like behavior in this hydrodynamic pilot-wave system in a number of settings, and explore its potential and limitations as a quantum analog.

Speaker Bio

John Bush is a Professor of Applied Mathematics at MIT. Having completed his BSc in Physics at University of Toronto, he went on to Harvard for his PhD in Geophysics, then the University of Cambridge for postdoctoral research at DAMTP. He joined the faculty of MIT in 1998, was tenured in 2004 and is now the Director of the Applied Mathematics Laboratory. His research began in geophysics, but then shifted towards surface-tension-driven phenomena and their applications in biology. For the past decade, his work has been focused on hydrodynamic quantum analogs.

http://www.math.temple.edu/events/seminars/colloquium
http://phys.cst.temple.edu/colloquium.html
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