

# PHYSICAL MATHEMATICS SEMINAR

## PILOT-WAVE DYNAMICS: DE BROGLIE VERSUS BOHM

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### ABSTRACT:

Two versions of pilot-wave theory are compared and contrasted. The first, due to Louis de Broglie (1927), is based on velocities. While the second, due to David Bohm (1952), is based on accelerations. Each formulation requires specific initial conditions in order to agree with the predictions of quantum mechanics, and each formulation allows for more general initial conditions -- leading (in principle) to physics beyond quantum theory. We show that, in de Broglie's version, non-standard initial conditions tend to relax to a stable quantum equilibrium state; whereas in Bohm's version, such relaxation does not occur and the theory is in fact unstable. We argue that de Broglie's version is tenable as a physical theory but Bohm's is not.

**TUESDAY, APRIL 12, 2011**

**2:30 PM**

**Building 2, Room 105**

*Reception at 3:30 PM in Building 2, Room 290*



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