MECCANICA

A CONFERENCE IN HONOR OF SANDRO GRAFFI ON HIS 65TH BIRTHDAY

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QUANTUM BROWNIAN MOTION, QUANTUM FRICTION AND DECOHERENCE

I will discuss some recent results in the 'Quantum Theory of Experiments', including the following ones:

- (1) Quantum Brownian Motion of a heavy quantum particle interacting with quantum-mechanical heat baths;
- (2) Hamiltonian and Quantum Friction for particles interacting with light or moving through a Bose-Einstein condensate;
- (3) Decoherence for these systems.

It is argued that these results clarify what it is that quantum theory enables us to predict about the outcome of experiments.