

Università degli Studi di Trieste
Dipartimento di Fisica

Seminar

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May 15, 2018 – 2:30 PM - room 204, 2nd floor
Dip. Fisica - Strada Costiera, 11 – Trieste

Experimental test of collapse models and gravity-induced decoherence with mechanical systems

ABSTRACT

A breakdown of the quantum superposition principle at macroscopic scale, possibly induced by gravity, would allow to solve at the same time the quantum measurement problem and the apparent contradiction between quantum mechanics and gravity. This possibility is mathematically described by collapse models, which predict well defined departures from standard quantum theory. I will discuss recent experimental progress in testing these predictions, focusing in particular on violations of energy conservation, which manifest as an universal force noise acting on mechanical systems. First notable results are a partial exclusion of the CSL model parameters proposed by Adler and a full exclusion of an early model based on quantum gravity arguments. I will discuss some recent ideas towards further improvements.

Organization by: prof. A. Bassi

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Everyone interested in the topic is welcome to attend