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Wave function collaspe and gravity

Wednesday 23 August 2017 17:00 (30 minutes)

To make quantum theory consistent, models of spontaneous wave function collapse (collapse models) propose to modify the Schrödinger equation by including nonlinear and stochastic terms, which describe the collapse of the wave function in space. These spontaneous collapses are "rare"for microscopic systems, hence their quantum properties are left almost unaltered. At the same time, since the collapses add coherently in composite systems, macroscopic spatial superpositions of macro-objects are rapidly suppressed. I will review the main features of collapse models. In particular, I will discuss ideas to connect the collapse of the wave function to gravity: The Diosi-Penrose model, Adler's model and the Schroedinger-Newton equation. Next, I will present an update of the most promising ways of testing them in interferometric and non-interferometric experiments, showing the current lower and upper bounds on their parameters.

Topic:

Mini-workshop: Quantum Foundations and Quantum Information

Summary

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