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An introduction to the spontaneous wave function collapse models

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Collapse models are phenomenological models, proposed to solve the measurement problem. In these models the Schroedinger equation is modified and the state vectors evolve according to a non-linear and stochastic dynamics. The effect of these non-linear terms is to induce the wave function collapse in space. The dynamics is built in such a way that the deviations from the linear Schroedinger dynamics are very small for microscopic systems (e.g. particles and atoms) while they become more and more relevant when the system's size increases, explaining the quantum to classical transition. The models make predictions different from quantum mechanics hence, they can be tested in experiments.
In this talk, I will give a general introduction to the most relevant collapse models and their properties. Then, I will present a summary of the current bounds set by different kind of experiments (macromolecule interference, radiation emission, cantilevers, etc..) on the parameters of these models.

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