

Testing the quantum superposition principle

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New technological developments allow to explore the quantum properties of very complex systems, bringing the question of whether also macroscopic systems share such features, within experimental reach. The interest in this question is increased by the fact that, on the theory side, many suggest that the quantum superposition principle is not exact, departures from it being the larger, the more macroscopic the system [1]. Testing the superposition principle intrinsically also means to test suggested extensions of quantum theory, so-called collapse models. We will report on three new proposals to experimentally test the superposition principle with nanoparticle interferometry [2], optomechanical devices [3] and by high-resolution spectroscopy [4].

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- [4] Bahrami, M., A. Bassi, and H. Ulbricht, *Testing the quantum superposition principle in the frequency domain*, arXiv:1309.5889 (2013).