

Time dilatations for collapse of massive superpositions: An experimentalists view

Tjerk Oosterkamp

Leiden University, Niels Bohrweg 2, 2333CJ Leiden, Netherlands

In my group we perform experiments with ultra cold mechanical resonators, with a focus on experimental techniques that are necessary to make ever more massive superpositions [1]. In recent years we have also worked on heavier ($\sim 1\text{mg}$), levitated systems to measure small gravitational forces in the attoNewton range [2]. This combination of measurements is inspired by the argument raised by Diosi and Penrose, that gravity might cause wavefunction collapse.

In my presentation I will present measurements as well as a theoretical model that uses time dilatation to explain an underlying mechanism of how general relativity could mix into quantum mechanics to cause wavefunction collapse [3].

This work was supported by the EIC and NWO.

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