

Experimental bounds on collapse models from gravitational wave detectors

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Wave function collapse models postulate a fundamental breakdown of the quantum superposition principle at the macroscale. We compute the upper bounds on the collapse parameters, which can be inferred by the gravitational wave detectors LIGO, LISA Pathfinder and AURIGA. We consider the most widely used collapse model, the Continuous Spontaneous Localization (CSL) model. We show that these experiments exclude a huge portion of the CSL parameter space, the strongest bound being set by the recently launched space mission LISA Pathfinder.

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