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Quantum jumps and spikes

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Quantum systems subjected to a continuous monitoring can be described by a diffusive stochastic differential equation. However, in the limit where the measurement rate becomes large, the system evolution starts to be effectively discontinuous with Poisson like jumps between the eigenvectors of the measure. The limiting regime can be precisely described and the transition rates computed. However, the transition to the jumpy regime is not trivial and power law fluctuations that we have called "quantum spikes" subsist in the limit. The objective of this short talk is to explain this phenomenon. If time permits, I will discuss the link with a classical toy model for measurement and I will briefly hint at the possible foundationnal applications of quantum spikes to collapse models.

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