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## **【406】 Quantum dynamics of a harmonic oscillator in a bath of two-level atoms**

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Low-temperature decoherence in many quantum systems, such as magnons or NV centers, is attributed to the interaction with the atomic impurities in the sample. We propose a model describing effective dynamics of a harmonic oscillator in the presence of impurities based on master equation formalism, to model such behaviour. Impurities are modelled as a bath of two-level atoms, which is a rather unconventional scenario, since in the context of quantum optics the bath is usually bosonic. We use our model to study the dependence of the Kittel magnonic mode linewidth in a Yttrium-iron-garnet sphere in a ferromagnetic resonance experiment, where the driving field affects not only the magnon, but also the two-level atoms, and compare our results with recent experiments.

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