

# Effective equations for quantum dynamics

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## Abstract

Systems of interests in natural sciences are typically characterized by a huge number of degrees of freedom. For such systems the fundamental equations of physics are impossible to solve. one of the main goals of statistical mechanics is therefore the derivation of simpler effective theories, which allow to make predictions about the behavior of large systems, and, at the same time, approximate the solutions of the fundamental equations in the interesting limiting regimes. In this talk I am going to present some models for which effective evolution equations can be derived from first principles quantum dynamics in mathematically rigorous terms.

*AMS Classification: 82C10.*