GRK 2905 Ultrafast Nanoscopy

Special Lecture Series

Friday, May 9, 2025, 2 pm, RUN auditorium

Introduction to Floquet theory

How to characterize properties of a guantum system subject to an intense timeperiodic drive? We shall address this question within the framework of Floquet theory. According to the Floquet theorem, the solutions of the time-dependent Schrödinger equation display a quasi-stationary evolution, governed by guasi-energies, and a periodic part. Working in the Sambe space, it is possible to evaluate both the so-called quasi-energy spectrum and the Floquet functions without resorting to perturbation theory in the strength of the time-periodic drive or other commonly used approximations. Noticeably, the quasi-energy spectrum can be qualitatively different from the one of the undriven Hamiltonian, opening pathways to manipulate properties of quantum systems by a time-periodic drive. These concepts will be illustrated on the example of a strongly driven two-level system.



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