

Condensed Matter Theory Center Seminar



Tuesday, November 19
11:00 am – 12:30 pm, Physics Building 2205

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“Generating shortcuts to adiabaticity in quantum and classical dynamics”

Within the field of quantum control, the term "shortcuts to adiabaticity" refers to strategies for gaining the benefits of quantum adiabatic evolution without paying the price of slow driving. The goal can be stated as a problem of reverse engineering: we wish to find the perturbation that will cause a system to evolve from the n 'th eigenstate of an initial Hamiltonian to the n 'th eigenstate of a final Hamiltonian, over a given, finite interval of time. After introducing this topic, I will describe an approach to solving this problem that involves constructing its classical version, and then quantizing the solution of the classical problem. For a class of model systems, including the paradigmatic particle-and-piston, this approach yields exact solutions in both the classical and quantal cases. I will also discuss how the approach may be extended to provide approximate solutions when exact ones are unavailable.

(All are welcome to attend)

