

Approximate counterdiabatic driving protocols for quantum non-integrable systems

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Due to noise and decoherence from environment, the application of adiabatic protocols in quantum technologies is intensely limited. Counterdiabatic (CD) driving protocols provide a powerful alternative for controlling a quantum system when its parameter(s) is tuned externally. These protocols allow us to change these parameters rapidly while still mimicking adiabatic dynamics. They have been shown to work well for a wide variety of systems but it's exponentially hard to find exact CD protocols for quantum many-body non-integrable systems. We study a method to approximate CD protocol which avoids exponential sensitivity to perturbations.