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Quantum acceleration

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We discuss how the adiabatic evolution of a quantum-mechanical system due to the slow and periodic change of system parameters can lead to an exponential growth of the energy. This contradicts, at first glance, to the quantum adiabatic theorem, however we show that periodic creation and destruction of an additional quantum integral leads to the adiabatic level crossing necessary for the acceleration. As an example, we consider the Schroedinger equation in a periodically divided and reconnected domain.