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A new proof of quantum adiabatic theorem

Adiabatic quantum algorithms are a new approach to quantum computation. While being equivalent to standard quantum circuit model, they present a completely different way of thinking about quantum algorithms.

Adiabatic algorithms are based on the adiabatic theorem of quantum mechanics. Informally, this theorem says that, when a Hamiltonian of a physical system is slowly transformed to a different Hamiltonian, the lowest energy state of the first Hamiltonian is transformed to the lowest energy state of the second Hamiltonian.

We present a new proof of quantum adiabatic theorem, in terms of discrete mathematics.