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Assisted driving Hamiltonian can be not unique in adiabatic evolution

If the overlap between the initial state and the final state of the quantum system is confined to some suitable ranges, even the assisted driving Hamiltonian is designed as the forms which are different from the usual one, the adiabatic evolution can still be successful for the quantum computation. This fact may tell us that, even in almost all of the occasions where assisted driving Hamiltonians could be used for the reducing the time complexity of the adiabatic evolution computing, in which the driving Hamiltonian has a relatively fixed form, however, there could still exist the freedoms of choosing other forms of extra assisted driving Hamiltonian for the adiabatic computation, if the overlap between the states of the system is supposed to be controlled appropriately at the same time.