

Quantum Physics

Eigenvalue and eigenspace anholonomies in hierarchical systems

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An adiabatic cycle of parameters in a quantum system can yield the quantum anholonomies, nontrivial evolution not just in phase of the states, but also in eigenvalues and eigenstates. Such exotic anholonomies imply that an adiabatic cycle rearranges eigenstates even without spectral degeneracy. We show that an arbitrarily large quantum circuit generated by recursive extension can also exhibit the eigenvalue and eigenspace anholonomies.

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