

Semiclassical approach to fidelity amplitude

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The fidelity amplitude is a quantity of paramount importance in echo type experiments. We use semiclassical theory to study the average fidelity amplitude for quantum chaotic systems under external perturbation. We explain analytically two extreme cases: the random dynamics limit -- attained approximately by strongly chaotic systems-- and the random perturbation limit, which shows a Lyapunov decay. Numerical simulations help us bridge the gap between both extreme cases.

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