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Exact Fidelity and Full Fidelity Statistics in Regular and Chaotic Surroundings

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For a prepared state exact expressions for the time dependent mean fidelity as well as for the mean inverse participation ratio are obtained analytically. The distribution function of fidelity in the long time limit and of inverse participation ratio are studied numerically and analytically. Surprising features like fidelity revival and enhanced non-ergodicity are observed. The role of the coupling coefficients and of complexity of background is studied as well.

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