Quantum Signatures of Classical Stickiness

Starting from the classical notion of stickiness in Hamiltonian systems with mixed phase space, we will discuss how the chaotic sea is hierarchically organized and gives rise to time-dynamic traps. Using the *kicked top* as a paradigmatic model, we will show how finite-time Lyapunov exponent (FTLE) statistics characterize this classical hierarchy [1]. We will then explore its quantum signatures through the participation ratio (PR) of coherent states in the Floquet eigenbasis, showing that this observable not only distinguishes regular and chaotic regions but also captures the internal organization of sticky regions [2]. Time permitting, we will briefly discuss another mechanism of *stickiness* emerging in the fully chaotic regime and its influence on quantum states in open systems with escape [3,4].

References

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