Quantum Physics

Analysis of Effectiveness of Lyapunov Control for Non-generic Quantum States

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A Lyapunov-based control design for natural trajectory-tracking problems is analyzed for quantum states where the analysis in the generic case is not applicable. Using dynamical systems tools we show almost global asymptotic stability for stationary target states subject to certain conditions on the Hamiltonians, and discuss effectiveness of the design when these conditions are not satisfied. For pseudo-pure target states the effectiveness of the design is studied further for both stationary and non-stationary states using alternative tools.

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