Universal Dynamical Decoupling and Quantum Walks in Functional Spaces ADILET IMAMBEKOV, Department of Physics and Astronomy, Rice University, LIANG JIANG, Institute for Quantum Information, Caltech — We investigate the universal dynamical decoupling (DD) schemes, which can restore the coherence of quantum system independent of the details of system-environment interaction. We introduce a general mapping between DD sequences and quantum walks in functional spaces, and use it to prove the universality of various DD schemes such as quadratic DD, nested Uhrig DD, and Uhrig concatenated DD, as well as previously known universal schemes of concatenated DD, Uhrig DD and concatenated Uhrig DD.

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