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Optimal control of closed quantum systems

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Abstract

In quantum control theory one has to design a suitable Hamiltonian for evolution of closed quantum systems between two given states. In this talk, I review two quantum control schemes for closed systems, i.e. quantum brachistochrone [1] and quantum splines [2]. In quantum brachistochrone one finds a pathway for transferring a given state into another in the shortest time. However quantum splines will generate a continuous curve in the space of quantum states that interpolate through the designated quantum states.

[1] A. Carlini, A. Hosoya, T. Koike, and Y. Okudaira, Phys. Rev. Lett. 96, 060503 (2006).

[2] D. C. Brody, D. D. Holm, and D. M. Meier, Phys. Rev. Lett. 109, 100501 (2012).