

# Parameterization of all path integral trajectories

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## Abstract

It is well known that the differentiation of the propagator obtained by path integral formalism leads to the Schrödinger equation. In this paper, we will prove the complementary result that the integration of the Schrödinger equation will lead to the path integral trajectories forming the propagator. The proposed Schrödinger's approach to path integral is helpful in explaining the origin of the multiple quantum paths connecting two fixed points and in providing a means to find all these multiple paths. We point out that path integral trajectories are governed by quantum Hamilton equations derived from the Schrödinger equation and can be continuously parameterized in terms of a free parameter so that an infinite dimensional path integral can be transformed into a one-dimensional normal integral over this free parameter.