DISCRETE-TIME PATH DISTRIBUTIONS ON HILBERT SPACE

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The Feynman Path Integral formulation of quantum mechanics is a well known concept for physicists but this integral is mathematically not generally well defined even if there exists different approach, e.g. the Itô-Albeverio-Høegh-Krohn, De Witt-Morette. In a recent paper, we constructed a path distribution representing the kinetic part of the Feynman path integral at discrete times similar to that defined by Erik Thomas, but on a Hilbert space of paths rather than a nuclear sequence space. We also considered different boundary conditions and show that the discrete-time Feynman path integral is well-defined for suitably smooth potentials. The aim of this talk is to present this new approach and to discuss the advantages and the perspectives (for the delta potential).