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The Feynman integral of quadratic potentials depending on two time variables. (English)

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Summary: We show that the double integral of certain quadratic potentials depending on two time variables is in a Banach algebra \mathcal{S} of functions on Wiener space all of whose members have an analytic Feynman integral. Corollaries are given insuring (a) that \mathcal{S} contains a rather broad class of functions involving double integrals of potentials depending on two time parameters, and (b) the existence of the Fresnel integral for such functions.

MSC:

28C20 Set functions and measures and integrals in infinite-dimensional spaces
(Wiener measure, Gaussian measure, etc.)

46J15 Banach algebras of differentiable or analytic functions, H^p -spaces

81S40 Path integrals in quantum mechanics

Cited in **1** Review
Cited in **9** Documents

Keywords:

path integrals; quadratic potentials; Banach algebra; Wiener space; analytic Feynman integral; Fresnel integral

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