
Hermite spaces and QMC methods in quantitative finance

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Abstract

We present the concept of an Hermite space, which is a special kind of reproducing kernel Hilbert space of functions on the \hat{d} . We review some tractability results regarding integration in those spaces.

We shall show that those spaces behave nicely with regard to orthogonal transforms of the \hat{d} , which in turn can be shown to correspond to different Brownian path constructions like, e.g., the Brownian bridge construction.

We present a method for finding fast and efficient path constructions for a given pricing problem.

Numerical examples will serve to illustrate our findings.

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