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## Constructing functional control variates using quantization


**Abstract** :

We aim at considering a variance reduction technique for Monte Carlo simulations of the solutions of a Stochastic Differential Equation (SDE). Strongly inspired by the work of G. Pagès, we present how to use quantization to construct a control variate. For this, we quantize approximations of coefficients of the Karhunen-Loève decomposition using the Brownian motion Brownian motion. Theses coefficients themselves are obtained a least-squares approximations. Numerical experiments show a good performance of the scheme.


*From a joint work with V. Reutenauer (at Calyon at that time). Ref: A Variance Reduction Technique Using a Quantized Brownian Motion as a Control Variate, J. Comput. Finance, 2012 (doi: 10.21314/JCF.2012.242)*