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Approximation of Stochastic Volterra Equations

Abstract : In this talk, we present a multi-factor approximation for Stochastic Volterra Equations with Lipschitz coefficients and kernels of completely monotone type that may be singular. Our approach consists in truncating and then discretizing the integral defining the kernel, which corresponds to a classical Stochastic Differential Equation. We prove strong convergence results for this approximation. For the particular rough kernel case with Hurst parameter lying in $(0, 1/2)$, we propose various discretization procedures and give their precise rates of convergence. We illustrate the efficiency of our approximation schemes with numerical tests for the rough Bergomi model.