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Title: “Signatures in Finance"

Abstract

Signatures have gained a lot in acceptance recently, moving from the realm of abstract tensor algebra to operational tools to describe price paths, approximate derivative payoffs, hedging policies and trading strategies pricing functions, provide cubature schemes amongst other things. We review these applications and exploit the functional Taylor expansion of order 2 to present a new “Greek” that captures path dependence. It is the Lie bracket between the time and space functional derivatives and its impact depends on the Levy area. We show how it can be used to speed up the computation of VaR.