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Integrability and concentration of the truncated variation for the sample paths of fractional Brownian motions, diffusions and Lévy processes
(2015) *Bernoulli*, 21 (1), pp. 437-464.

Abstract

For a real càdlàg function f defined on a compact interval, its truncated variation at the level $c > 0$ is the infimum of total variations of functions uniformly approximating f with accuracy $c/2$ and (in opposite to the total variation) is always finite. In this paper, we discuss exponential integrability and concentration properties of the truncated variation of fractional Brownian motions, diffusions and Lévy processes. We develop a special technique based on chaining approach and using it we prove Gaussian concentration of the truncated variation for certain class of diffusions. Further, we give sufficient and necessary condition for the existence of exponential moment of order $\alpha > 0$ of truncated variation of Lévy process in terms of its Lévy triplet. © 2015 ISI/BS.

2-s2.0-84924935416

Document Type: Article

Publication Stage: Final

Source: Scopus

Access Type: Open Access