Corners and local smoothness of the convex hull of Lévy processes

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Abstract

We investigate the geometric regularity of the closed convex hull of a multidimensional Lévy process in $\^d$ ($d \geq 2$). *Resolving an open question regarding boundary smoothness beyond Brownian motion, stable processes with full support and processes of arbitrarily low activity, whose convex hull boundary almost surely ha 2$. These regularity properties extend to paths under locally diffeomorphic transformations and preclude two-sided corner or thorn points. Conversely, we prove that finite variation processes with a non-zero natural drift almost s breaking representation of the convex keel, and a novel subsampling approach to analyse local behaviour at directional ex changing the process using inverse local times at directional records.*

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