

Absolute Continuities of Exit Measures and Total Weighted Occupation Times for Super- α -Stable Processes

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Abstract: Suppose X is a super- α -stable process in R^d whose underlying motion is a α -stable process ($0 < \alpha < 2$), and whose branching rate function is dt , branching mechanism is of the form $\Psi(x, z) = z^{1+\beta}$ ($0 < \beta \leq 1$). Let X_τ and Y_τ denote the exit measure of a bounded smooth domain D and the total weighted occupation time of X in D , respectively. We discuss the absolute continuity of X_τ and Y_τ . It turns out that X_τ is absolutely continuous with respect to the surface measure of ∂D for any dimension d , and Y_τ is absolutely continuous with respect to the Lebesgue measure when $d < \alpha + \alpha/\beta$.