

INTRINSIC COMPOUND KERNEL ESTIMATES FOR THE TRANSITION
PROBABILITY DENSITY OF LÉVY-TYPE PROCESSES AND THEIR
APPLICATIONS

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Abstract: Starting with an integro-differential operator $(L, C_{\infty}^2(\mathbb{R}^n))$, we prove that its $C_{\infty}(\mathbb{R}^n)$ -closure is the generator of a Feller process X , which admits a transition probability density. To construct this transition probability density, we develop a version of the parametrix method and a verification procedure, which proves that the constructed object is the claimed one. As a part of the construction, we prove the intrinsic upper and lower estimates on the density. As an application of the constructed estimates we state the necessary and (separately) sufficient conditions under which a given Borel measure belongs to the Kato and Dynkin classes with respect to the constructed transition probability density.

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