

DENSENESS OF CERTAIN SMOOTH LÉVY FUNCTIONALS IN $\mathbb{D}_{1,2}$

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Abstract: The Malliavin derivative for a Lévy process (X_t) can be defined on the space $\mathbb{D}_{1,2}$ using a chaos expansion or in the case of a pure jump process also *via* an increment quotient operator. In this paper we define the Malliavin derivative operator D on the class \mathcal{S} of smooth random variables $f(X_{t_1}, \dots, X_{t_n})$, where f is a smooth function with compact support. We show that the closure of $L_2(\mathbb{P}) \supseteq \mathcal{S} \xrightarrow{D} L_2(\mathfrak{m} \otimes \mathbb{P})$ yields to the space $\mathbb{D}_{1,2}$. As an application we conclude that Lipschitz functions operate on $\mathbb{D}_{1,2}$.

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