

SDE SOLUTIONS IN THE SPACE OF SMOOTH RANDOM VARIABLES

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ABSTRACT

ABSTRACT. In this paper we analyze properties of a dual pair $(\mathcal{G}, \mathcal{G}^*)$ of spaces of smooth and generalized random variables on a Lévy white noise space. We show that the Fréchet algebra $\mathcal{G} \subset L^2(\mu)$ contains a larger class of solutions of Itô equations driven by pure jump Lévy processes. Further a characterization of $(\mathcal{G}, \mathcal{G}^*)$ in terms of the S -transform is given. We propose $(\mathcal{G}, \mathcal{G}^*)$ as an attractive alternative to the Meyer-Watanabe test function and distribution space $(\mathbb{D}_\infty, \mathbb{D}_{-\infty})$ [Watanabe, S.: On Stochastic Differential Equations and Malliavin Calculus. Tata Institute of Fundamental Research, Vol. 73, Springer-Verlag (1979)] to study strong solutions of SDE's. (Joint work with F. Proske and H. B. Salleh)

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