Mild solutions of partial differential equations driven by general stochastic measures

Iryna Bodnarchuk
Taras Shevchenko National University of Kyiv
ibodnarchuk@univ.kiev.ua

Vadym Radchenko
Taras Shevchenko National University of Kyiv
vradchenko@univ.kiev.ua

Let $L_0(\Omega, \mathcal{F}, P)$ be the set of all real-valued random variables defined on complete probability space $(\Omega, \mathcal{F}, P)$, $X$ be an arbitrary set and $\mathcal{B}(X)$ be a $\sigma$-algebra of Borel subsets of $X$. Let $\mu$ be a general stochastic measure, i.e., a $\sigma$-additive mapping $\mu: \mathcal{B}(X) \to L_0(\Omega, \mathcal{F}, P)$.

We investigate Cauchy problems of a wave and heat equations driven by general stochastic measures. The existence and uniqueness of the mild solutions are proved. Hölder regularity of the paths in time and spatial variables is obtained. Asymptotic behavior of the mild solutions is established.