

Stochastic Volterra equations driven by Lévy noise

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We discuss stochastic Volterra equations in space-time with singular kernels driven by Lévy bases. For example, such equations naturally arise in the study of stochastic PDEs driven by Lévy noise. Typically, in particular in higher space dimensions, no solution with finite second moment will exist. Thus, we give existence and uniqueness results for L^p -solutions in the range $0 < p \leq 2$, and we relate our existence conditions to the moment and variation structure of the noise as well as to the growth of the coefficients of the equation. Furthermore, we investigate continuity and long-term behaviour of the solution.