Wolfgang Desch and Stig-Olof Londen: *On a Stochastic Parabolic Integral Equation*; Helsinki University of Technology, Institute of Mathematics, Research Reports A513 (2006).

Abstract: *In this article we analyze the stochastic parabolic integral equation*

$$u(t,x,\omega) = c_\alpha t^{-1+\alpha} * \Delta u + \sum_{k=1}^{\infty} \int_0^t g^k(s,x,\omega)\, dw_s^k,$$

where $t \geq 0$, $x \in \mathbb{R}^d$, $\alpha \in (\frac{1}{2}, 1)$ and $\omega \in \Omega$. We take $\{w_t^k \mid k = 1, 2, ...\}$ to be a family of independent $\mathcal{F}_t$-adapted Wiener processes defined on a probability space $(\Omega, \mathcal{F}, P)$. Here $\mathcal{F}_t \subset \mathcal{F}$ and $\mathcal{F}_t$ an increasing filtration.
By applying and modifying the method of Krylov we obtain existence and regularity results in L_p-spaces, $p \geq 2$.

AMS subject classifications: 60H20 45R05

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