

On Existence and Uniqueness of Solutions of Some Stochastic Infinite-Dimensional Differential Systems with H -Regular Noise

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ABSTRACT: The problem of existence and uniqueness of stochastic infinite-dimensional systems

$$du = Au + B(u) + G(u)dW, u(0, \cdot) = u_0 \in H$$

with local Lipschitz-continuous nonrandom operators A, B and G acting on a separable Hilbert-space H is studied. For this purpose, some new kind of monotonicity conditions on those operators and an existing H -series expansion of the H -valued space-time noise W with $\sum_{k=1}^{+\infty} \alpha_n^2 < +\infty$ belonging to the trace of related covariance operator Q of W with local noise intensities $\alpha_n \in \mathbb{R}^1$ as eigenvalues of Q are exploited.

Key words and phrases. Stochastic partial differential equations, stochastic infinite-dimensional systems, space-time noise, stochastic evolution equations, existence and uniqueness.