

Manthey, Ralf

On the Cauchy problem for reaction-diffusion equations with white noise. (English)

Zbl 0658.60089

Math. Nachr. 136, 209-228 (1988).

This paper is concerned with the formal Cauchy problem

$$(\partial/\partial t)u(t, x) = A(\delta^2/\partial x^2)u(t, x) + f(u(t, x)) + \sigma\xi(t, x),$$

$$(t, x) \in (0, T) \times R, \quad \sigma \geq 0, \quad u(0, x) = \phi(x), \quad x \in R,$$

where ξ is a space-time Gaussian white noise, $f: R \rightarrow R$ is a locally Lipschitz continuous function, and there exist two nonincreasing functions g and $h: R \rightarrow R$ such that $g \leq f \leq h$, where

$$|h(u)| \leq c_h(1 + |u|^m) \quad \text{and} \quad |g(u)| \leq c_g(1 + |u|^\ell)$$

for positive constants c_h, c_g and $m, \ell \geq 0$.

The author proves theorems on existence and uniqueness of solutions of the Cauchy problem, and existence of a version of a solution which is continuous in (t, x) .

Reviewer: [L.G.Gorostiza](#)

MSC:

[60H15](#) Stochastic partial differential equations (aspects of stochastic analysis)

Cited in **11** Documents

[60H20](#) Stochastic integral equations

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