Ondreját, Martin

Existence of global mild and strong solutions to stochastic hyperbolic evolution equations driven by a spatially homogeneous Wiener process. (English) Zbl 1054.60068

J. Evol. Equ. 4, No. 2, 169-191 (2004).

The author considers a semilinear stochastic hyperbolic equation

$$u_{t,t} = \mathcal{A}u + f(u) + g(u)\dot{W}, \quad u(0) = u_0, \quad u_t(0) = v_0,$$

in a d-dimensional domain D, driven by an n-dimensional Wiener process W and where $\mathcal{A}$ is a uniformly elliptic second order differential operator. When f and g are globally Lipschitz, it is known that this type of equation has a unique global mild solution. The author presents a more general set of sufficient assumptions upon f and g that imply that the mild solution to this equation exists globally. Moreover, the author also gives conditions on f, g and the finite spectral measure of W, implying the existence of a real global strong solution. These results apply to equations with polynomial drift. The sufficient conditions are given in terms of Lyapunov functions for the equation.

Reviewer: Carles Rovira (Barcelona)

MSC:

60H15 Stochastic partial differential equations (aspects of stochastic analysis) Cited in **17** Documents

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