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The stability of stochastic partial differential equations. II. (English) Zbl 0726.60061
Stochastics Stochastics Rep. 27, No. 3, 189-233 (1989).

Summary: [For part I see the paper reviewed above.]

We prove general results on stability (in finite time intervals) of SPDEs (stochastic partial differential equations) with unbounded coefficients, with respect to the simultaneous perturbations of the driving semimartingales, of all data, and of the underlying probability space. Hence we derive support theorems for SPDEs (with unbounded coefficients). In particular, we get theorems on supports and theorems on robustness for the nonlinear filter of diffusion processes with unbounded drift and diffusion coefficients. (The above results were proved in the case of bounded coefficients in our earlier papers [ibid. 26, No.3, 129-164 (1989; [Zbl 0669.60059](#)) and Stochastic partial differential equations and applications II, Proc. 2nd Conf., Trento/Italy 1988, Lect. Notes Math. 1390, 91-118 (1989; [Zbl 0683.93092](#))].) Finally we treat an application in a problem of kinematic dynamo.

MSC:

[60H15](#) Stochastic partial differential equations (aspects of stochastic analysis)
[93E15](#) Stochastic stability in control theory

Cited in **2** Reviews
Cited in **7** Documents

Keywords:

Sobolev spaces; stability; stochastic partial differential equations; semimartingales; theorems on robustness for the nonlinear filter

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