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The stability of stochastic partial differential equations and applications. I. (English)

[Zbl 0726.60060](#)

Stochastics Stochastics Rep. 27, No. 2, 129-150 (1989).

Summary: We investigate the stability of stochastic evolution equations with respect to simultaneous perturbations of the driving semimartingales, of all data (on finite time intervals), and of the probability space. The result we present generalises earlier work of the author [see, e.g., Stochastics 25, No.2, 59-85 (1988; [Zbl 0669.60058](#)), Stochastics Stochastics Rep. 26, No.3, 129-164 (1989; [Zbl 0669.60059](#)), Stochastic partial differential equations and applications II, Proc. 2nd Conf., Trento/Italy 1988, Lect. Notes Math. 1390, 91-118 (1989; [Zbl 0683.93092](#)), and Comput. Math. Appl. 19, No.1, 47-63 (1990; [Zbl 0711.60053](#))]. As applications we prove Stroock-Varadhan type theorems on the supports for stochastic evolution equations. In part II (see the paper reviewed below) we apply the results of the present paper to stochastic partial differential equations, in particular we deal with applications in nonlinear filtering and 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
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Keywords:

[stability](#); [stochastic evolution equations](#); [semimartingales](#); [nonlinear filtering](#)

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