Conférence en probabilité

Jeudi 5 octobre 2006 à 16h00

MA 12, EPFL, Ecublens

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Random field solution to the non linear stochastic wave equation in high dimensions

Résumé

In 1999, R.C. Dalang extends the stochastic integral with respect to martingale measures developed by Walsh (1984) to be able to integrate non-negative Schwartz distributions. This extension allows him to find a random-field solution to the 3-dimensional non-linear stochastic wave equation in the case of a noise white in time and correlated in space. Under slightly stronger assumptions, we extend these results to integrate a more general class of Schwartz distributions. In particular, this class contains the fundamental solution of the wave equation in dimensions greater than 3. This leads to a square-integrable random-field solution to the non-linear stochastic wave equation in any dimension with the same noise as above. In the particular case of an affine multiplicative noise, we obtain estimates on p-th moments of the solution (p > 1), and we show that the solution is Hölder continuous of the same exponent as in the 3-dimensional case.

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