

# Unité de probabilités

## Séminaires programmés

[EPFL](#) > [Faculté SB](#) > [IMA](#) > [PROB](#) & [PRST](#) > [Séminaires](#) > D. Conus - 5  
octobre  
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## 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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