

Welcome Home Workshop 2014

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LINGUA PER LA CONFERENZA: italiano o inglese, indifferente

TITOLO: Stochastic PDEs: an introduction

COAUTORI: no

Abstract

In this talk we introduce the concept of Stochastic Partial Differential Equations (SPDEs): these can be seen as PDEs with random coefficients depending on time *and* space. In order to study these equations and possibly solve them, we need first to clarify what we mean by random coefficients and introduce the notion of *stochastic field*. A stochastic field is a family of random variables indexed by a multidimensional index such as (t, x) , rather than indexed only by t as for stochastic processes. Clearly, the solution to an SPDE will be itself a stochastic field.

A number of examples will be given, including (one of) the first examples appearing in the literature (Walsh, 1984) describing the movement of a guitar string left outdoor during a sandstorm, where the sandstorm hits are modelled by means of the nowadays well known *white noise*.