Stochastic processes in random environment
Juan Carlos Pardo Millán (CIMAT, MX)

The ant in the labyrinth
Manuel Cabezas (Pontificia Universidad Católica de Chile, CL)

We will review recent progress understanding the phenomenon of anomalous slow diffusion induced by disorder. We want to focus on the most central class of such examples, i.e. random walks on critical random structures, for instance critical percolation clusters. This question is also known as "the ant in the labyrinth" problem, since Pierre Gilles de Gennes in the 70's.

Joint work with Alexander Fribergh and Gérard Ben Arous.

Random walks on conservative interacting particle systems
Marcelo Hilario (Federal University of Minas Gerais, BR)

In this talk, I present some recent developments in the study of the limiting behavior of random walks on dynamic random environments.
The environments are given by conservative interacting particle systems in equilibrium such as Poisson fields of independent random walks or the exclusion process.
We show how to obtain LLN, CLT and large deviation bounds for the random walk for a certain range of parameters of the model.
We also discuss the possibility of the existence of regimes for which the model is non-ballistic but transient or non-diffusive.

Branching processes in Markov additive environment
Sandra Palau (IIMAS-UNAM, MX)

In this talk, we study the asymptotic behaviour of exponential functionals of Markov additive processes (MAP) and apply our results to the asymptotic behaviour of the extinction time of continuous state branching processes in a Markovian environment. The former extend some known results obtained for Lévy processes, where five regimes have been obtained by different authors. Our techniques use fluctuation theory for MAPs.

Three Eigen-value problems of the neutron transport equation
Andreas Kyprianou (University of Bath, UK)

We introduce the neutron transport equation and look at the three different ways of examining the notion of stability, via three distinct Eigenvalue problems. We discuss the open problem of efficient numerical estimation and look at some of the existing ad-hoc techniques and how this plays into the modern theory of Monte-Carlo simulation.