



Date and time :: 2012 April 23, 14:30h

Room :: Seminars Room of DMA (B4009), Campus of Gualtar

Speaker :: Patrícia Gonçalves, Centre of Mathematics, University of Minho

Title :: Variance bounds for additive functionals of exclusion processes

Abstract :: In this talk, I will start by introducing one-dimensional exclusion processes that I will denote by $(\eta_t)_{t \geq 0}$, starting from the invariant state, namely the Bernoulli product measure of parameter $\rho \in [0, 1]$. The goal of the talk consists in presenting some methods in order to obtain sharp bounds on the variance of the additive functional

$$\Gamma_t(f) := \int_0^t f(\eta_s) ds$$

for proper local functions f . When $f(\eta) := \eta(0)$, the functional $\Gamma_t(f)$ is called the occupation time of the origin. We will see that the variance bounds and the corresponding scaling limit, depend on the chosen jump rate and on the degree of the associated test function. As examples, we will see the symmetric case, partially asymmetric and weakly asymmetric. The corresponding limit processes are the fractional Brownian motion, the Brownian motion and a process that can be written in terms of a solution of the KPZ equation.

This is a joint work with Cédric Bernardin (ENS-Lyon), Milton Jara (IMPA) and Sunder Sethuraman (Arizona University).