

# Séminaire de Probabilités et Statistique

Mardi 24 mai à 14h00

Laboratoire Dieudonné

**Tomasz Komorowski**

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*Fluctuations of solutions to the KPZ equation on a large size torus*

The KPZ (Kardar-Parisi-Zhang) equation is a stochastic partial differential equation that plays an important role in statistical physics as an object interpolating between universality classes. In the first part of the talk we discuss fluctuations of solutions on a torus of a fixed size, both in the case of a noise that is smooth in space, in arbitrary spatial dimension  $d \geq 1$ , and in the case of spatial dimension  $d = 1$  and the noise that is white both in time and space. Then, the fluctuations are of a gaussian type in the long time asymptotics. The second part of my talk shall be devoted to the question of estimating the variance of the solution to the KPZ equation in dimension 1 with 1 + 1 dimensional white noise, that starts from stationarity. We shall assume that both time  $t$  and size of torus  $L$  are large. We provide optimal estimates of the variance in both the super-relaxation, (when  $L \sim t^\alpha$ ,  $0 < \alpha < 2/3$ ) and part of the relaxation (when  $L \sim \delta t^{2/3}$ , with  $\delta$  some universal constant) regimes. This is a joint work with A. Dunlap (Courant Institute, NYU) and Y. Gu (Univ. of Maryland).