Quenched decay of correlations for slowly mixing systems

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(joint work with Wael Bahsoun and Chris Bose)

We study random maps with slowly mixing random towers and obtain rates of quenched decay of correlations in general setting. Then we apply the general results to the random family of Liverani-Saussol-Vaienti maps with parameters in $[\alpha_0, \alpha_1] \subset (0, 1)$ chosen independently with respect to a distribution ν on $[\alpha_0, \alpha_1]$ and show that the rate of quenched decay of correlations is governed by the fastest mixing map in the family.

In particular, we prove that for every $\delta > 0$, for almost every $\omega \in [\alpha_0, \alpha_1]^{\mathbb{Z}}$, the upper bound $n^{1 - \frac{1}{\alpha_0} + \delta}$ holds on the rate of decay of correlation for Hölder observables on the fibre over ω.