

## Safoura Zadeh

### *Some random ergodic theorems*

Let  $(M)$  be a semifinite von Neumann algebra and  $(T)$  a positive contraction on both  $(L^1(M))$  and  $(L^\infty(M))$ . In this talk, we consider ergodic averages along a random sparse

subsequence determined by independent Bernoulli variables  $(X_n)_{n \geq 1}$  with  $(\mathbb{P}(X_n = 1) = n^{-\alpha})$ , for some  $\alpha \in (0, 1)$ , and set  $(W_N = \sum_{n=1}^N \mathbb{E}[X_n])$ . We prove that for all  $(1 < p < \infty)$ , almost surely, the averages  $(\frac{1}{W_N} \sum_{n=1}^N X_n, T^n(x))$  converge bilaterally almost uniformly to the ergodic projection, for all  $(x \in L^p(M))$ . This extends a theorem of Bourgain to the non-commutative setting.

The talk is based on a joint work with Christian Le Merdy.