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# *Colloquium*

## *Inhomogeneous coverings of topological Markov shifts*

**Professor Stéphane Seuret**  
Université Paris Est Créteil - Val de Marne

### Abstract

Let  $S$  be an irreducible topological Markov shift, and let  $\mu$  be a shift-invariant Gibbs measure on  $S$ . Let  $(X_n)_{n \geq 1}$  be a sequence of i.i.d. random variables with common law  $\mu$ . We are interested in the size of the set of points which are covered infinitely many times by the balls  $B(X_n, n^{-s})$ . This generalizes the original Dvoretzky problem by considering random coverings of fractal sets by non-homogeneously distributed balls. We compute the almost sure dimension of  $\limsup_{n \rightarrow +\infty} B(X_n, n^{-s})$  for every  $s$ , which depends on  $s$  and the multifractal features of  $\mu$ . Our results include the inhomogeneous covering of  $[0, 1]^d$  and Sierpinski carpets.

Date: 10 April 2018 (Tuesday)  
Time: 4:30pm – 5:30pm  
Venue: Room 222, Lady Shaw Building,  
The Chinese University of Hong Kong, Shatin

*All are Welcome*