

Stanford University
Departments of Mathematics and Statistics

PROBABILITY SEMINAR

4pm, Monday, October 29, 2018
Sequoia Hall Room 200

Refreshments served at 3:30pm in the Lounge.

Speaker: Yuri Kifer
Institute of Mathematics,
Hebrew University of Jerusalem

Title: Nonconventional random matrix products

Abstract:

Let ξ_1, ξ_2, \dots be independent identically distributed random variables and $F : \mathbb{R}^\ell \rightarrow SL_d(\mathbb{R})$ be a Borel measurable matrix-valued function. Set $X_n = F(\xi_{q_1(n)}, \xi_{q_2(n)}, \dots, \xi_{q_\ell(n)})$ where $0 \leq q_1 < q_2 < \dots < q_\ell$ are increasing functions taking on integer values on integers. I'll talk about the asymptotic behavior as $N \rightarrow \infty$ of the singular values of the random matrix product $\Pi_N = X_N \cdots X_2 X_1$ and show, in particular, that (under certain conditions) $1/N \ln \|\Pi_N\|$ converges with probability one as $N \rightarrow \infty$. Similar results are obtained for such products when ξ_i form a Markov chain. The essential difference from the usual setting appears since the sequence (X_n) is long-range dependent and nonstationary.

This is joint work with Sasha Sodin from Queen Mary University of London.