Random products of matrices

Abstract:
By an old theorem of H. Furstenberg and H. Kesten, the norm of a random product of d-by-d invertible matrices grows at a well-defined (i.e. almost certain) exponential rate, that we call the Lyapunov exponent.

A recent result of A. Avila, A. Eskin and myself asserts that this number depends continuously on the data, that is, on the matrix coefficients and their probability weights. For d=2 this was proven before, in my student C. Bocker’s thesis.

This behavior is in sharp contrast with some classical results of R. Mane and J. Bochi about the Lyapunov exponents of continuous linear cocycles. I’ll also discuss some moduli of continuity for the Lyapunov exponent of random matrices.