A Hölder regularity result for the top Lyapunov exponent for random matrix products

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Abstract

In this work we discuss the regularity of Lyapunov exponents for products of random invertible matrices in arbitrary dimension. We prove that the top Lyapunov exponent is pointwise Hölder continuous with respect to the Wasserstein-Hausdorff distance in the space of probability measures with compact support, whenever this exponent is simple and the equator has dimension one. A key ingredient in this result is a quantitative analysis of stationary measures on the projective space: when a one-dimensional equator is present, we establish decay estimates for the mass assigned by stationary measures to neighborhoods of this set. This is a joint work with Adriana Sánchez, El Hadji Yaya Tall and Marcelo Viana.

Key-words: Lyapunov exponents, Random matrix products, Hölder regularity, Equator.