THE DIMENSION OF BERNOULLI CONVOLUTIONS IN R^D

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Abstract：

For $(\lambda_1,\cdots,\lambda_d)=\lambda\in(0,1)^d$ with $\lambda_1>\cdots>\lambda_d$, denote by μ_λ the Bernoulli convolution associated to λ. That is, μ_λ is the distribution of the random vector $\sum_{n\geq 0}\pm(\lambda_1^n,\cdots,\lambda_d^n)$, where the $\pm$ signs are chosen independently and with equal weight. Assuming for each $1\leq j\leq d$ that λ_j is not a root of a polynomial with coefficients $\pm 1,0$, we prove that the dimension of μ_λ equals $\min\{\dim_L\mu_\lambda,d\}$, where $dim_L\,\mu_\lambda$ is the Lyapunov dimension. This is a joint work with Ariel Rapaport.