# Measures of maximal entropy for random $\beta$-transformations.

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**Abstract.** Let $\beta > 1$ be a non-integer. We consider $\beta$-expansions of the form $\sum_{i=1}^{\infty} \frac{d_i}{\beta^i}$, where the digits $(d_i)_{i\geq 1}$ are generated by means of a random map $K_\beta$ defined on $\{0,1\} \times [0, \lfloor\beta\rfloor/(\beta-1)]$. We show that $K_\beta$ has a unique measure $\nu_\beta$ of maximal entropy $\log(1+\lfloor\beta\rfloor)$. Under this measure, the digits $(d_i)_{i\geq 1}$ form a uniform Bernoulli process, and the projection of this measure in the second coordinate is an infinite convolution of Bernoulli measures. In case 1 has a finite greedy expansion with positive coefficients, the measure of maximal entropy is Markov.