

# Stationary probability measures on projective spaces

*mardi 28 mai 2024 09:30 (1 heure)*

We give a description of stationary probability measures on projective spaces for an iid random walk on  $\mathrm{PGL}_d(\mathbb{R})$  without any algebraic assumptions. This is done in two parts. In a first part, we study the case (non-critical or block-dominated case) where the random walk has distinct deterministic exponents in the sense of Furstenberg–Kifer–Hennion. In a second part (critical case), we show that if the random walk has only one deterministic exponent, then any stationary probability measure on the projective space lives on a subspace on which the ambient group of the random walk acts semisimply. This connects the critical setting with the work of Guivarc’h–Raugi and Benoist–Quint. Combination of all these works allow to get a complete description. Joint works with Richard Aoun.

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