

Furstenberg's Correspondence Principle

Kai Prince SFHEA

2025-07-29

Table of contents

Theorem 0.1 (cf. Kra et al. (2022), Theorem 2.10). *Let Γ be an amenable group, $A \subset \Gamma$, and Φ be a Følner sequence in Γ such that the limit*

$$\delta = \lim_{N \rightarrow \infty} \frac{|\cdot|A \cap \Phi_N}{|\cdot|\Phi_N}$$

exists.

Then there exists an ergodic system (X, μ, Γ) that is acted on by Γ , a clopen set $E \subset X$, a Følner sequence Ψ in Γ , and a point $a \in X$ that is generic with μ with respect to Ψ such that $\mu(E) \geq \delta$ and

$$A = \gamma \in \Gamma : \gamma.a \in E.$$

Kra, B., et al. (2022). 'Infinite sumsets in sets with positive density', Available at: <https://arxiv.org/abs/2206.01786>.