Furstenberg's Correspondence Principle

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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*

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

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.