

İSTANBUL ANALYSIS SEMINARS

LINEAR DYNAMICS AND RECURRENCE PROPERTIES DEFINED BY ESSENTIAL IDEMPOTENTS OF $\beta\mathbb{N}$

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Abstract: An operator T on a topological vector space X is called hypercyclic if there exists a vector x in X such that for any nonempty open subset U of X the set

$$N(x, U) := \{n \in \mathbb{N} : T^n x \in U\}$$

is non-empty. In this talk, we will investigate which kind of properties of density can the sets $N(x, U)$ have for a given hypercyclic operator.

We will also consider operators satisfying the property that for any U there exists an x such that $N(x, U)$ has positive upper Banach density. Our main result is a characterization of sequence of operators satisfying this property, for which we have used a strong result of V. Bergelson and R. McCutcheon in the vein of Szemerédi’s theorem. It turns out that operators having this property satisfy a kind of recurrence described in terms of essential idempotents of $\beta\mathbb{N}$.

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Time: 17:00

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Bomonti Campus, Silahşör Cad. No: 71, Şişli 34380, İstanbul

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