

Recurrent points in linear dynamics.

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Abstract: Phenomena that look non linear appear in linear dynamics whenever the underlying Banach space is infinite dimensional. We exhibit several such phenomena, for instance there exists a linear operator on a Banach space X such that both the set of points such that $(\|T^n x\|)$ converges and its complement are dense in X . We also show that on every separable, infinite dimensional Banach space X , it is possible to construct a linear operator T such that there is no x in X such that $(\|T^n x\|)$ tends to infinity, but both the set of recurrent points for T and its complement have non empty interior.

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