

UNIFORM ERGODICITY AND THE ONE-SIDED ERGODIC HILBERT TRANSFORM

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ABSTRACT. Let T be a bounded linear operator on a Banach space X satisfying $\|T^n\|/n \rightarrow 0$. We prove that T is uniformly ergodic if and only if the one-sided ergodic Hilbert transform $H(T)x := \lim_{n \rightarrow \infty} \sum_{k=1}^n k^{-1} T^k x$ converges for every $x \in \overline{(I-T)X}$. When T is power-bounded (or more generally (C, α) bounded for some $0 < \alpha < 1$), then T is uniformly ergodic if and only if the domain of H equals $(I-T)X$.

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2010 *Mathematics Subject Classification.* Primary: 47A35; Secondary: 37A30.

Key words and phrases. Uniform ergodicity, one-sided ergodic Hilbert transform, (C, α) boundedness.