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Characterizations and Extensions of Lipschitz-α Operators

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摘要

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Characterizations and Extensions of Lipschitz-α Operators

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Abstract In this work, we prove that a map F from a compact metric space K into a Banach space X over ${\Bbb F}$ is a Lipschitz-α operator if and only if for each σ in X^* the map $\sigma\circ F$ is a Lipschitz-α function on K. In the case that $K=[a,b]$, we show that a map f from $[a,b]$ into X is a Lipschitz-1 operator if and only if it is absolutely continuous and the map $\sigma\mapsto (\sigma\circ f)^{\prime}$ is a bounded linear operator from X^* into $L^{\infty}([a,b])$. When K is a compact subset of a finite interval (a,b) and $0<\alpha\le 1$, we show that every Lipschitz-α operator f from K into X can be extended as a Lipschitz-α operator F from $[a,b]$ into X with $L_{\alpha}(f)\le L_{\alpha}(F)\le 3^{1-\alpha}L_{\alpha}(f)$. A similar extension theorem for a little Lipschitz-α operator is also obtained.

Key words Characterization Extension Lipschitz-α operator

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