

Partially Defined σ -derivations on Semisimple Banach Algebras

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Abstract

Abstract: Let A be a semisimple Banach algebra with a linear automorphism σ and let $\delta: I \rightarrow A$ be a σ -derivation, where I is an ideal of A . Then $\Phi(\delta)(I \cap \sigma(I)) = 0$, where $\Phi(\delta)$ is the separating space of δ . As a consequence, if I is an essential ideal then the σ -derivation δ is closable. In a prime C^* -algebra, we show that every σ -derivation defined on a nonzero ideal is continuous. Finally, any linear map on a prime semisimple Banach algebra with nontrivial idempotents is continuous if it satisfies the σ -derivation expansion formula on zero products.