

Lie centralizers at unit product on generalized matrix algebras

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Abstract. Let $\mathcal{G}$ be a generalized matrix algebra, and $\phi : \mathcal{G} \rightarrow \mathcal{G}$ a linear map. It is shown that, under some mild conditions, the following are equivalent: (i) $\phi([S, T]) = [\phi(S), T]$, for all $S, T \in \mathcal{G}$ with $ST = I$; (ii) $\phi([S, T]) = [S, \phi(T)]$, for all $S, T \in \mathcal{G}$ with $ST = I$; (iii) $\phi(A) = ZA + \gamma(A)$, for all $A \in \mathcal{G}$, where $Z \in \mathcal{Z}(\mathcal{G})$ and $\gamma : \mathcal{G} \rightarrow \mathcal{Z}(\mathcal{G})$ is a linear map vanishing on each commutator $[S, T]$ whenever $ST = I$. These results are then applied to matrix algebras and some operator algebras.

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