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Title: Characterizations of Lie-skew multiplicative maps on operator algebras of indefinite inner product spaces

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Let H and K be indefinite inner product spaces. In this paper, we show that a bijective map $\Phi : \mathcal{B}(H) \rightarrow \mathcal{B}(K)$ satisfies $\Phi(AB - BA^\dagger) = \Phi(A)\Phi(B) - \Phi(B)\Phi(A)^\dagger$ for every pair $A, B \in \mathcal{B}(H)$ if and only if there exist a unitary or conjugate unitary operator $U \in \mathcal{B}(H, K)$ such that $\Phi(A) = UAU^\dagger$ for all $A \in \mathcal{B}(H)$.

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