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C.-G. Park

Dept. of Mathematics, Chungnam National University, Daejeon 305-764, South Korea
cgpark@cnu.ac.kr

Homomorphisms between Lie JC*-Algebras and Cauchy-Rassias Stability of Lie JC*-Algebra Derivations

It is shown that every almost linear mapping $h: A \rightarrow B$ of a unital Lie JC*-algebra A to a unital Lie JC*-algebra B is a Lie JC*-algebra homomorphism when $h(2^n u \circ y) = h(2^n u) \circ h(y)$, $h(3^n u \circ y) = h(3^n u) \circ h(y)$ or $h(q^n u \circ y) = h(q^n u) \circ h(y)$ for all $y \in A$, all unitary elements $u \in A$ and $n = 0, 1, 2, \dots$, and that every almost linear almost multiplicative mapping $h: A \rightarrow B$ is a Lie JC*-algebra homomorphism when $h(2x) = 2h(x)$, $h(3x) = 3h(x)$ or $h(qx)qh(x)$ for all $x \in A$. Here the numbers 2, 3, q depend on the functional equations given in the almost linear mappings or in the almost linear almost multiplicative mappings. Moreover, we prove the Cauchy–Rassias stability of Lie JC*-algebra homomorphisms in Lie JC*-algebras, and of Lie JC*-algebra derivations in Lie JC*-algebras.

Keywords: Lie JC*-algebra homomorphism, Lie JC*-algebra derivation, stability, linear functional equation.

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