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Approximation of a generalized Euler-Lagrange type additive mapping on Lie C^* -algebras.

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Summary: Using fixed point method, we prove some new stability results for Lie (α, β, γ) -derivations and Lie C^* -algebra homomorphisms on Lie C^* -algebras associated with the Euler-Lagrange type additive functional equation

$$\sum_{j=1}^n f \left(-r_j x_j + \sum_{1 \leq i \leq n, i \neq j} r_i x_i \right) + 2 \sum_{i=1}^n r_i f(x_i) = n f \left(\sum_{i=1}^n r_i x_i \right)$$

where $r_1, \dots, r_n \in \mathbb{R}$ are given and $r_i, r_j \neq 0$ for some $1 \leq i < j \leq n$.

MSC:

- 39B82 Stability, separation, extension, and related topics for functional equations
- 39B52 Functional equations for functions with more general domains and/or ranges
- 46L57 Derivations, dissipations and positive semigroups in C^* -algebras
- 46L05 General theory of C^* -algebras
- 16W25 Derivations, actions of Lie algebras

Keywords:

Lie (α, β, γ) -derivation; Lie C^* -algebra homomorphisms; generalized Hyers-Ulam stability; fixed point method; Euler-Lagrange-type additive functional equation

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