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ON THE STABILITY OF CUBIC BI–DERIVATIONS ON BANACH ALGEBRAS

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Abstract. In this paper, using fixed point method, we investigate the stability and also the super-stability of cubic bi-derivations on Banach algebras.

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REFERENCES

[1] J. BAE AND W. PARK, *Approximate bi-homomorphisms and bi-derivations in C^*-ternary algebras*, Bull. Korean Math. Soc. **47** (2010), 195–209.
[2] A. BODAGHI, *Cubic derivations on Banach algebras*, Acta Math. Viet. **38** (2013), 517–528.
[3] L. CĂDARIU AND V. RADU, *On the stability of the Cauchy functional equation: A fixed point approach*, Grazer Math. Berichte **346** (2004), 43–52.
[4] K. CIEPLIŃSKI, *Ulam stability of functional equations in 2-Banach spaces via the fixed point method*, J. Fixed Point Theory Appl. **23** (2021), Paper No. 33.
[5] J. B. DIAZ AND B. MARGOLIS, *A fixed point theorem of the alternative for contrations on a generalized complete metric space*, Bull. Am. Math. Soc. **74** (1968), 305–309.
[6] A. FOŠNER AND M. FOŠNER, *Approximate cubic Lie derivations*, Abstr. Appl. Anal. **2013** (2013), Art. ID 425784.
[7] P. GĂVRUTA, *A generalization of the Hyers-Ulam-Rassias stability of approximately additive mappings*, J. Math. Anal. Appl. **184** (1994), 431–436.
[8] M. HADDADI, M. ESHAGHI GORDJI AND A. MAHMOODI, *Solution of the Pompeiu derivation functional inequality of other type*, J. Math. Inequal. **13** (2019), 903–910.
[9] D. H. HYERS, *On the stability of the linear functional equation*, Proc. Nat. Acad. Sci. U.S.A. **27** (1941), 222–224.
[10] K. JUN AND H. KIM, *The generalized Hyers-Ulam-Rassias stability of a cubic functional equation*, J. Math. Anal. Appl. **274** (2002), 267–278.
[11] H. KIM, J. PARK AND H. SHIN, *Approximation of quadratic Lie $*$-derivations on ρ-complete convex modular algebras*, J. Math. Inequal. **14** (2020), 121–134.
[12] S. KIM, J. M. RASSIAS, A. A. N. ABDOU AND Y. CHO, *A fixed point approach to stability of cubic Lie derivatives in Banach algebras*, J. Comput. Anal. Appl. **19** (2015), 378–388.
[13] A. NAJATI, *The generalized Hyers-Ulam-Rassias stability of a cubic functional equation*, Turk. J. Math. **31** (2007), 395–408.
[14] A. NUINO, *On the Brzdęk's fixed point approach to stability of a Drygas functional equation in 2-Banach spaces*, J. Fixed Point Theory Appl. **23** (2021), Paper No. 18.
[15] C. PARK, *Bi-additive s-functional inequalities and quasi-$*$-multipliers on Banach algebras*, Bull. Braz. Math. Soc. **50** (2019), 561–574.
[16] TH. M. RASSIAS, *On the stability of the linear mapping in Banach spaces*, Proc. Am. Math. Soc. **72** (1978), 297–300.
[17] S. M. ULAM, *Problems in Modern Mathematics*, Wiley, New York, 1940.

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