

Generalized additive Cauchy equations and their Ulam-Hyers stability

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ABSTRACT.

In this paper we investigate the Hyers-Ulam-Rassias stability of the following functional equation: $f(a(x) + b(y)) = mf(x) + nf(y)$ in Banach spaces.

REFERENCES

- [1] Ulam, S.M., *A Collection of Mathematical Problems*, Interscience Publ. New York, 1960
- [2] Aoki, T., *On the stability of the linear transformation in Banach spaces*, J. Math. Soc. Japan, **2** (1950), 6466
- [3] Radu, V., *The fixed point alternative and the stability of functional equation*, Fixed point theory **4** (1)(2003), 91-96
- [4] Hyers, D.H., *On the stability of the linear functional equation*, Proc. Natl. Acad. Sci. **27**(1941), 222-224
- [5] Rassias, Th. M., *On the stability of the linear mapping in Banach spaces*, Proc. Amer. Math. Soc. **72**(1978), 297-300
- [6] Borelli, C. and Forti, L., *On a general Hyers-Ulam stability result*, Internat. J. Math. and Math. Sci. **18** (1995) 229-236
- [7] Găvruta, P., *A generalization of the Hyers-Ulam-Rassias Stability of approximately additive mappings*, J. Math. Anal. Appl., **184**(1994), 431-436
- [8] Cădariu, L. and Radu, V., *On the stability of the Cauchy functional equation: a fixed points approach*, Grazer Math. Ber., Bericht Nr. **346** (2004), 323-350
- [9] Rassias, Th. M., *Communication, 27-th International Symposium on Functional Equation Bielsko-Biala, Katowice, Krokow, Poland, 1989*
- [10] Aczel, J., *Lectures on Functional Equations and their Applications* Academic Press, New York- San Francisco- London, 1966
- [11] Gajda, Z., *On stability of additive mappings* Internat. J. Math. Math. Sci., **14** (1991), 431-434
- [12] Zamani, Eskandani, G., *On the HyersUlamRassias stability of an additive functional equation in quasi-Banach spaces* **345** (2008) 405409
- [13] Moradlou, F., Vaezi, H. and Park, C., *Fixed Points and Stability of an Additive Functional Equation of n-Apollonius Type in C-Algebras* Hindawi Publishing Corporation Abstract and Applied Analysis Volume, 2008
- [14] Trif, T., *On the stability of a functional equation deriving from an inequality of Popoviciu for convex functions* J. Math. Anal. Appl. **272** (2002), 604616
- [15] Jun, K.W. and Kim, H.M., *Stability problem of Ulam for generalized forms of Cauchy functional equation* J. Math. Anal. Appl. **312** (2005), 535547

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