

On the stability of quartic type functional equation

FLORIN BOJOR

ABSTRACT.

In this article we investigate the generalized Hyers-Ulam-Rassias stability for the quartic type functional equation $f(x+2y) + f(x-2y) = 4f(x+y) + 4f(x-y) + 24f(y) - 6f(x)$ by using the fixed point alternative and we shall obtain a better estimate for the difference in norm of a solution of equation and a sub-solution of equation.

REFERENCES

- [1] Aczél, J. and Dhombres, J., *Functional Equations in Several Variables*, Cambridge Univ. Press, 1989
- [2] Czerwik, S., *On the stability of the quadratic mapping in normed spaces*, Abh. Math. Sem. Univ. Hamburg 62 (1992), 59-64
- [3] Hyers, D.H., *On the stability of the linear functional equation*, Proc. Nat. Acad. Sci. USA 27 (1941) 222-224
- [4] Hyers, D.H. and Rassias, Th.M., *Approximate homomorphisms*, Aequationes Math. 44 (1992), 125-153
- [5] Ulam, S.M., *Problems in Modern Mathematics*, Wiley, New York, 1964
- [6] Cholewa, P.W., *Remarks on the stability of functional equations*, Aequationes Math., 27 (1984), 76-86
- [7] Găvruta, P., *A generalization of the Hyers-Ulam-Rassias Stability of approximately additive mappings*, J. Math. Anal. Appl., 184 (1994), 431-436
- [8] Aoki, T., *On the stability of the linear transformation in Banach spaces*, J. M. Soc. Japan 2 (1950), 64-66
- [9] Gajda, Z., *On stability of additive mappings*, Internat. J. Math. Math. Sci., 14 (1991), 431-434
- [10] Kannappan, Pl., *Quadratic functional equation and inner product spaces*, Results Math., 27 (1995), 368-372
- [11] Rassias, Th.M., *On the stability of the linear mapping in Banach spaces*, Proc. Amer. Math. Soc., 72 (1978), 297-300
- [12] Skof, F., *Proprietà locali e approssimazione di operatori*, Rend. Sem. Mat. Fis. Milano 53 (1983), 113-129
- [13] Lee, S.H., Im, S.M. and Hwang, I.S., *Quartic functional equation*, J. Math. Anal. Appl. 307 (2005), 387-394
- [14] Radu, V., *The fixed point alternative and the stability of functional equation*, Fixed point theory 4 (1) (2003), 91-96
- [15] Rassias, J.M., *Solution of the Ulam stability problem for quartic mappings*, Glasnik Matematički Vol. 34 (54) (1999), 243-252
- [16] Cădariu, L. and Radu, V., *A Hyers-Ulam-Rassias stability theorem for a quartic functional equation*, ACAM 13 (1) (2004), 31-39

NORTH UNIVERSITY OF BAI A MARE
DEPARTMENT OF MATHEMATICS
AND COMPUTER SCIENCE
VICTORIEI NR. 76
430122 BAI A MARE, ROMANIA
E-mail address: f.bojor@yahoo.com