

THE STABILITY OF A WILSON TYPE AND A PEXIDER TYPE FUNCTIONAL EQUATION

YONG-SOO JUNG AND KIL-WOUNG JUN

Abstract. In this paper we study the stability of the Wilson type functional equation $f(x+y) - f(x-y) = 2g(x)g(y)$ and the Pexider type functional equation $f(x+y-xy) = (1-x)^\alpha g(y) + (1-y)^\alpha h(x)$, respectively.

Mathematics subject classification (2000): 39B52, 39B72.

Key words and phrases: functional equation, stability.

REFERENCES

- [1] J. ACZÉL, *Lectures on Functional Equations and Their Applications*, Academic Press, New York/London, 1966.
- [2] J. ACZÉL, J. DHOMBRES, *Functional Equations in Several Variables*, Cambridge Univ. Press, 1989.
- [3] J. BAKER, *The stability of the cosine equation*, Proc. Amer. Math. Soc., **80** (1980), 411–416.
- [4] P. W. CHOLEWA, *The stability of the sine equation*, Proc. Amer. Math. Soc., **88** (1983), 631–634.
- [5] S. CZERWIK, *On the stability of the quadratic mapping in normed spaces*, Abh. Math. Sem. Hamburg, **62** (1992), 59–64.
- [6] Z. DARÓCZY, ZS. PÁLES., *Functional Equations-Results and Advances*, Kluwer Academic Publishers, Dordrecht/Boston/London, 2002.
- [7] P. GÁVRUŤA, *A generalization of the Hyers-Ulam-Rassias stability of approximately additive mappings*, J. Math. Anal. Appl., **184** (1994), 431–436.
- [8] R. GER, P. ŠEMRL, *The stability of the exponential equation*, Proc. Amer. Math. Soc., **124** (1996), 117–125.
- [9] D. H. HYERS, *On the stability of the linear functional equation*, Proc. Nat. Acad. Sci. U. S. A., **27** (1941), 222–224.
- [10] G. ISAC, TH. M. RASSIAS, *Functional inequalities for approximately additive mappings*, in Stability of Mappings of Hyers-Ulam Type (Th. M. Rassias and J. Tabor, Eds.), (1994), 117–125, Hadronic Press, Palm Harbour, FL.
- [11] S.-M. JUNG, *Hyers-Ulam-Rassias stability of a quadratic functional equation*, J. Math. Anal. Appl., **232** (1999), 384–392.
- [12] S.-M. JUNG, *On the superstability of the functional equation $f(x^y) = yf(x)$* , Abh. Math. Sem. Univ. Hamburg, **67** (1997), 315–322.
- [13] Y.-H. LEE, K.-W. JUN, *A generalization of the Hyers-Ulam-Rassias stability of Pexider equation*, J. Math. Anal. Appl., **246** (2000), 627–638.
- [14] GY. MAKSA, *Problems 18*, In Report on the 34th ISFE, Aequationes Math., **53** (1997), 194.
- [15] GY. MAKSA, ZS. PÁLES., *Hyperstability of a class of linear functional equations*, Acta Math. Acad. Paed. Nyhazi., **17** (2001), 107–112.
- [16] TH. M. RASSIAS, *On the stability of the linear mapping in Banach spaces*, Proc. Amer. Math. Soc., **72** (1978), 297–300.
- [17] TH. M. RASSIAS, *On the stability of functional equations and a problem of Ulam*, Acta Appl. Math., **62** (2000), 23–130.

- [18] TH. M. RASSIAS, *On the stability of functional equations in Banach spaces*, J. Math. Anal. Appl., **251** (2000), 264–284.
- [19] TH. M. RASSIAS (ED.), *Functional Equations and inequalities*, Kluwer Academic, Dordrecht/ Boston/ London, 2000.
- [20] TH. M. RASSIAS, J. TABOR, *Stability of mappings of Hyers-Ulam type*, Hadronic Press, Inc., Florida, 1994.
- [21] TH. M. RASSIAS, *On the the behavior of mappings which does not satisfy Hyers-Ulam stability*, Proc. Amer. Math. Soc., **114** (1992), 989–993.
- [22] TH. M. RASSIAS, J. TABOR, *What is left of Hyers-Ulam stability?*, Journal of Natural Geometry, **1** (1992), 65–69.
- [23] F. SKOF, *Sull'approssimazione delle appliazioni localmente δ -additive*, Atti Accad. Sc. Torino, **117** (1983), 377–389.
- [24] J. TABOR, *Stability of the Cauchy functional equation with variable bound*, Publ. Math. Debrecen, **51** (1997), 165–173.
- [25] S. M. ULAM, *Problems in Modern Mathematics*,, Chap. VI, Wiley, New York, 1964.