

## ON THE RASSIAS STABILITY OF A BI-JENSEN FUNCTIONAL EQUATION

KIL-WOUNG JUN, YANG-HI LEE, JEONG-HA OH

*Abstract.* In this paper, we investigate the stability of a bi-Jensen functional equation

$$4f\left(\frac{x+y}{2}, \frac{z+w}{2}\right) = f(x, z) + f(x, w) + f(y, z) + f(y, w)$$

in the sense of Th. M. Rassias. Also, we establish the superstability of a bi-Jensen functional equation.

*Mathematics subject classification (2000):* 39B52.

*Key words and phrases:* Stability, Jensen mapping, bi-Jensen mapping, functional equation.

### REFERENCES

- [1] J-H BAE, W-G PARK, *On the solution of a bi-Jensen functional equation and its stability*, Bull. Korean Math. Soc., **43** (2006), 499–507.
- [2] P. GÄVRUTA, *A generalization of the Hyers-Ulam-Rassias stability of approximately additive mappings*, J. Math. Anal. and Appl., **184** (1994), 431–436.
- [3] H. HARUKI, TH. M. RASSIAS, *New generalizations of Jensen's functional equation*, Proc. Amer. Math. Soc., **123** (1995), 495–503.
- [4] D. H. HYERS, *On the stability of the linear functional equation*, Proc. Natl. Acad. Sci. U. S. A., **27** (1941), 222–224.
- [5] D. H. HYERS, G. ISAC, TH. M. RASSIAS, *Stability of Functional Equations in Several Variables*, Birkhäuser, Boston, Basel, Berlin (1998).
- [6] D. H. HYERS, TH. M. RASSIAS, *Approximate homomorphisms*, Aequat. Math., **44** (1992), 125–153.
- [7] K. -W. JUN, Y. -H. Lee, M. -H. HAN, *The Hyers-Ulam-Rassias stability of the bi-Jensen functional equation*, submitted.
- [8] S. -M. JUNG, *Hyers-Ulam-Rassias Stability of Functional Equations in Mathematical Analysis*, Hadronic Press Inc., Palm Harbor, Florida (2001).
- [9] S. -M. JUNG, *Hyers-Ulam-Rassias stability of Jensen's equation and its application*, Proc. Amer. Math. Soc., **126** (1998), 3137–3143.
- [10] H. -M. KIM, *A result concerning the stability of some difference equations and its applications*, Proc. Indian Acad. Sci. Math. Sci., **112** (2002), 453–462.
- [11] C. -G. PARK, *A generalized Jensen's mapping and linear mappings between Banach modules*, Bull. Braz. Math. Soc., **36** (2005), 333–362.
- [12] TH. M. RASSIAS, *On the stability of functional equations and a problem of Ulam*, Acta Applicandae Mathematicae, **62** (1) (2000.), 23–130.
- [13] TH. M. RASSIAS, *On the stability of the linear mapping in Banach spaces*, Proc. Amer. Math. Soc., **72** (1978), 297–300.
- [14] S. M. ULAM, *A Collection of Mathematical Problems*, Interscience, New York (1968), 63.