International J. of Math. Sci. & Engg. Appls. (IJMSEA)
ISSN 0973-9424, Vol. 5 No. IV (July, 2011), pp. 361-369

STABILITY OF A FUNCTIONAL EQUATION HAVING n-th ORDER SOLUTION IN GENERALIZED 2-NORMED SPACES

M. ARUNKUMAR, S. MURTHY AND G. GANAPATHY

Abstract

In this paper, the authors investigate the generalized Ulam - Hyers - Aoki - Rassias stability of new type of functional equation having n-th order solution $f_m(x) = cx^m$ is of the form

$$f_m(x+y) + f_m(x-y) = 2\sum_{k=0}^{p} {}^mC_{2k} f_m(\sqrt[m]{x^{m-2k}y^{2k}}) \tag{0.1}$$

where $p = \frac{1}{2}\left(m - 1 + \frac{1-(-1)^{m-1}}{2}\right)$ and $m \in \mathbb{Z}^+$ in Generalized 2-normed space.

Key Words and Phrases : *Additive functional equation, Quadratic functional equation, Generalized Ulam - Hyers - Aoki - Rassias stability, Generalized 2-normed space, Generalized 2-Banach space.*

2000 AMS Subject Classification : 39B52, 32B72, 32B82 .