FUZZY STABILITY OF A FUNCTIONAL EQUATION RELATED TO INNER PRODUCT SPACES

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Abstract

The fuzzy stability problems for the Cauchy quadratic functional equation and the Jensen quadratic functional equation in fuzzy Banach spaces have been investigated by Moslehian *et al.* Th. M. Rassias introduced the following equality

$$\sum_{i,j=1}^{m} \|x_i - x_j\|^2 = 2m \sum_{i=1}^{m} \|x_i\|^2, \quad \sum_{i=1}^{m} x_i = 0,$$

for a fixed integer $m \geq 3$. By the above equality, we define the following functional equation

$$(0.1) \qquad \sum_{i,j=1}^{m} f(x_i - x_j) = 2m \sum_{i=1}^{m} f(x_i), \quad \sum_{i=1}^{m} x_i = 0.$$

In this paper, we prove the generalized Hyers-Ulam stability of the functional equation (0.1) in fuzzy Banach spaces.

Keywords: Fuzzy Banach space, Functional equation related to inner product space, Generalized Hyers-Ulam stability.

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