THE STABILITY OF AN ADDITIVE $(\rho_1, \rho_2)$–FUNCTIONAL INEQUALITY IN BANACH SPACES

CHOONKIL PARK

Abstract. In this paper, we introduce and solve the following additive $(\rho_1, \rho_2)$-functional inequality

$$\|f(x+y) - f(x) - f(y)\| \leq \|\rho_1(f(x+y) + f(x-y) - 2f(x))\|$$

$$+ \|\rho_2\left(2f\left(\frac{x+y}{2}\right) - f(x) - f(y)\right)\|,$$

where $\rho_1$ and $\rho_2$ are fixed nonzero complex numbers with $\sqrt{2} |\rho_1| + |\rho_2| < 1$.

Using the fixed point method and the direct method, we prove the Hyers-Ulam stability of the additive $(\rho_1, \rho_2)$-functional inequality (1) in complex Banach spaces.


Keywords and phrases: Hyers-Ulam stability, additive $(\rho_1, \rho_2)$-functional inequality, fixed point method, direct method, Banach space.

REFERENCES


