ADDITIVE $s$–FUNCTIONAL INEQUALITIES AND PARTIAL MULTIPLIERS IN BANACH ALGEBRAS

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Abstract. In this paper, we solve the additive $s$–functional inequalities

$$
\|f(x+y+z) - f(x) - f(y) - f(z)\| \leq \|s(f(x-y) + f(y-z) - f(x-z))\|,
$$

(0.1)

where $s$ is a fixed nonzero complex number with $|s| < 1$, and

$$
\|f(x-y) + f(y-z) - f(x-z)\| \leq \|s(f(x+y-z) - f(x) - f(y) - f(z))\|,
$$

(0.2)

where $s$ is a fixed nonzero complex number with $|s| < 1$.

Furthermore, we prove the Hyers-Ulam stability of the additive $s$–functional inequalities (0.1) and (0.2) in complex Banach spaces. This is applied to investigate partial multipliers in Banach $*$-algebras and unital $C^*$-algebras, associated with the additive $s$–functional inequalities (0.1) and (0.2).


Keywords and phrases: Partial multiplier in $C^*$-algebra, Hyers-Ulam stability, additive $s$–functional inequality.

REFERENCES