FIXED POINTS AND GENERALIZED HYERS–ULAM
STABILITY OF QUADRATIC FUNCTIONAL EQUATIONS

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Abstract. Let $X, Y$ be complex vector spaces. It is shown that if a mapping $f : X \to Y$ satisfies
$$f(x + iy) + f(x - iy) = 2f(x) - 2f(y) \quad (0.1)$$
or
$$f(x + iy) - f(ix + y) = 2f(x) - 2f(y) \quad (0.2)$$
for all $x, y \in X$, then the mapping $f : X \to Y$ satisfies
$$f(x + y) + f(x - y) = 2f(x) + 2f(y)$$
for all $x, y \in X$. Furthermore, we prove the generalized Hyers-Ulam stability of the functional equations
$(0.1)$ and $(0.2)$ in complex Banach spaces.

Key words and phrases: Quadratic mapping, fixed point, quadratic functional equation, generalized
Hyers-Ulam stability.

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