SUPERSTABILITY OF THE DIFFERENCE–FORM FUNCTIONAL EQUATIONS RELATED TO DISTANCE MEASURES

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Abstract. The present work extends the study on the stability of the functional equation $f(pr,qs)+f(ps,qr) = f(p,q)f(r,s)$, which arises in the characterization of symmetrically compositive sum-form distance measures, and as a products of some multiplicative functions.

In this paper, we obtain the superstability of the functional equations

$$f(pr,qs) - f(ps,qr) = f(p,q)g(r,s)$$
$$f(pr,qs) - f(ps,qr) = g(p,q)f(r,s)$$
$$f(pr,qs) - f(ps,qr) = g(p,q)g(r,s)$$
$$f(pr,qs) - f(ps,qr) = g(p,q)h(r,s),$$

for all $p,q,r,s \in G$, where G is an Abelian group. These functional equations arise in the characterization of the nonsymmetrically compositive difference-form related to distance measures, products of some multiplicative functions. In reduction, they can be represented as exponential functional equations.

Mathematics subject classification (2010): 39B82, 39B52.

Keywords and phrases: Distance measure, superstability, multiplicative function, stability of functional equation.

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