عنوان مقاله:

Solutions and stability of variant of Van Vleck's and D'Alembert's functional equations

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خلاصه مقاله:

In this paper. (۱) We determine the complex-valued solutions of the following variant of Van Vleck's functional equation\int_{S}f(\sigma(y)xt)d\mu(t)-\int_{S}f(xyt)d\mu(t) = ۲f(x)f(y), \;x,y\in S, where S is a semigroup, \sigma is an involutive morphism of S, and \mu is a complex measure that is linear combinations of Dirac measures (\delta_{z_{i}})_{i\in I}, such that for all i\in I, z_{i} is contained in the center of S. (۲) We determine the complex-valued continuous solutions of the following variant of d'Alembert's functional equation\int_{S}f(xty)d\upsilon(t)+\int_{S}f(\sigma(y)tx)d\upsilon(t) = ۲f(x)f(y), \;x,y\in S, where S is a topological semigroup, \sigma is a continuous involutive automorphism of S, and \upsilon is a complex measure with compact support and which is \sigma-invariant. (۳) We prove the superstability theorems of the first functional equation.

کلمات کلیدی:

semigroup, d'Alembert's equation, Van Vleck's equation, sine function, involution, multiplicative function, homomorphism, superstability