THE WILSON VERSION OF D’ALEMBERT’S FUNCTIONAL EQUATION ON A CLASS OF 2-DIVISIBLE NILPOTENT GROUPS

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Abstract. Consider the functional equation

\[ f, g, h, k : G \to K, \quad f(xy) + g(xy^{-1}) = h(x)k(y) \]  

where \( G \) is a group and \( K \) a field with \( \text{char}K \neq 2 \).

Wilson [13] and Aczé [1] have solved the equation (*) where \( G \) is the additive group of real numbers \( \mathbb{R} \) and \( K = \mathbb{R} \).

In the present paper we obtain the general solution of the equation (*) when \( G \) belongs to a special class of nilpotent or generalized nilpotent groups.


Key words. Functional equation, nilpotent group, Lie group.

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