

# AN IMPROVEMENT ON STABILITY OF A MIXED TYPE QUADRATIC AND ADDITIVE FUNCTIONAL EQUATION IN ABELIAN GROUP

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## **Abstract**

The problem concerning the stability of functional equations was first given by Ulam. Then, Hyers solved Ulam's stability problem in Banach space. Later, the stability of functional equations has been attracted by many authors. Recently, Adam studied alienation and stability of a mixed type quadratic and additive functional equation,

$$f(x + y) + f(x - y) + g(x + y) = 2f(x) + 2f(y) + g(x) + g(y),$$

in 2 - divisible Abelian group in the paper "M. Adam, Alienation of quadratic and additive functional equations, Analysis Math., DOI: 10.1007/s10476- 019- 086 9- 1, 2018".

However, the estimates obtained in the result are relatively big and the author gave an open question, that is "whether the constants occurring on the right-hand side of the inequalities are sharp?"

The aim of our work is to improve Adam's results on stability of Pexider type functional equation with some better estimates.

Keywords: Stability, additive functional equation; quadratic functional equation.