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# On Hyers-Ulam Stability of Generalized Wilson's Equation

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**Abstract:** In this paper, we study the Hyers-Ulam stability problem for the following functional equation

$$\sum_{\varphi\in\Phi}\int_K f(xk\varphi(y)k^{-1})d\omega_K(k) = |\Phi|f(x)g(y),\ x,y\in G, \qquad (E(K))$$

where $G$ is a locally compact group, $K$ is a compact subgroup of $G$, $\omega_K$ is the normalized Haar measure of $K$, $\Phi$ is a finite group of $K$-invariant morphisms of $G$ and $f,g : G \longrightarrow \mathbb{C}$ are continuous complex-valued functions such that $f$ satisfies the Kannappan type condition, for all $x,y,z\in G$

$$(*)\quad \int_K\int_K f(zkxk^{-1}hyh^{-1})d\omega_K(k)d\omega_K(h) = \int_K\int_K f(zkyk^{-1}hxh^{-1})d\omega_K(k)d\omega_K(h).$$

Our results generalize and extend the Hyers-Ulam stability obtained for the Wilson's functional equation.