

Title: Peripherally multiplicative maps between Figà-Talamanca-Herz algebras

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The main purpose of this paper is to characterize, not necessarily linear, generalized (weakly) peripherally multiplicative maps between Figà-Talamanca-Herz algebras. Let G_1 and G_2 be locally compact Hausdorff groups, Γ and Ω be arbitrary nonempty sets, and $1 < p < \infty$. We characterize surjections $S_1 : \Gamma \rightarrow A_p(G_1)$, $S_2 : \Omega \rightarrow A_p(G_1)$, $T_1 : \Gamma \rightarrow A_p(G_2)$ and $T_2 : \Omega \rightarrow A_p(G_2)$ satisfying $\|T_1(\gamma)T_2(\omega)\|_\infty = \|S_1(\gamma)S_2(\omega)\|_\infty$ for all $\gamma \in \Gamma$, $\omega \in \Omega$. We apply this to get a description of certain peripherally multiplicative maps. In particular, it is shown that if surjections $T_1, T_2 : A_p(G_1) \rightarrow A_p(G_2)$ satisfy $R_\pi(T_1(f)T_2(g)) \subseteq R_\pi(fg)$ for all $f, g \in A_p(G_1)$, or $R_\pi(fg) \subseteq R_\pi(T_1(f)T_2(g))$ for all $f, g \in A_p(G_1)$, then T_1 and T_2 are weighted composition operators. For amenable groups G_1 and G_2 , T_1 and T_2 are shown to be weighted isomorphisms which induce an algebra isomorphism between $A_p(G_1)$ and $A_p(G_2)$. Moreover, when one of G_1 or G_2 is first countable, precise characterizations of weakly peripherally multiplicative maps are obtained. Conditions are also given to guarantee that T_1 and T_2 are algebra isomorphisms.

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