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Hanfeng Li* (hfli@math.buffalo.edu), Department of Mathematics, SUNY at Buffalo, Buffalo, NY 14260. *Entropy and Fuglede-Kadison Determinant.*

Given a countable discrete amenable group Γ and an element f in the integral group ring $\mathbb{Z}\Gamma$, Γ acts on the abelian group $\mathbb{Z}\Gamma/\mathbb{Z}\Gamma f$ as automorphisms via left translation and hence acts on its Pontryagin dual, the compact abelian group $\widehat{\mathbb{Z}\Gamma/\mathbb{Z}\Gamma f}$ as automorphisms. The calculation of the topological entropy of this action in the case $\Gamma = \mathbb{Z}^n$ by Lind, Schmidt, and Ward, in terms of the Mahler measure of f , plays a key role in their calculation of the topological entropy of any action of \mathbb{Z}^n on compact metrizable abelian groups as automorphisms. I will show that whenever f is invertible in the group von Neumann algebra $\mathcal{N}\Gamma$, and self-adjoint or in the center of $\mathbb{Z}\Gamma$, the entropy of this action is equal to the logarithm of the Fuglede-Kadison determinant of f in $\mathcal{N}\Gamma$ associated to the canonical trace of $\mathcal{N}\Gamma$. This extends previous work of Deninger and Schmidt. (Received March 11, 2008)