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*A *-autonomous category of topological abelian groups*

Let **SPLC** denote the full subcategory of topological abelian groups consisting of the groups that can be embedded algebraically and topologically into a product of locally compact abelian groups. We show that there is a full coreflexive subcategory **C** of **SPLC** that contains all locally compact groups and is *-autonomous. This means that for all G, H in **C** there is an “internal hom” $G \multimap H$ whose underlying abelian group is $\text{Hom}(G, H)$ and that that makes **C** into a closed category with a tensor product whose underlying abelian group is a quotient of the algebraic tensor product. Moreover a perfect duality results if we let T denote the circle group and define $G^* = G \multimap T$.

This is essentially a new exposition of work originally done jointly with H. Kleisli [Theory and Applications of Categories **8**(2001), 54–62].