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ON SELF DUAL L C A GROUPS

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DEFINITION 1.1. Let G be a locally compact Hausdorff Abelian group with a character group G^*. (Hereafter we shall call such groups G as L C A groups.) G is called self dual if there is a topological isomorphism $T: G^* \to G$ from G onto G^*. Some examples of self dual groups are known in literature, but the structure of all such groups is an open problem (see page 423 of [1]). In this note we announce the structure of those self dual groups which are torsion free as abstract Abelian groups. We state some definitions before announcing the main theorem. The complete details will appear elsewhere.

DEFINITION 1.2. Let J be an index set. Let G_α be an L C A group for each $\alpha \in J$. Let $H_\alpha \subset G_\alpha$ be a compact, open subgroup of G_α for every $\alpha \in J$. By the local direct sum G of the groups G_α modulo H_α, we mean the subgroup of $\prod_{\alpha\in J} G_\alpha$ consisting of those elements for which all but a finite number of coordinates lie in H_α. Notice that $H = \prod_{\alpha\in J} H_\alpha$ is contained in G. We topologise G in such a way that H is declared to be open in G, and the relative topology on H as a subspace of G coincides with the product topology of the spaces H_α where H_α is given the relative topology from G_α. We write $G = \sum_{\alpha\in J} G_\alpha$. With this definition G is also an L C A group.

DEFINITION 1.3. Let p be a prime integer >0. Then J_p denotes the field of p-adic numbers with usual addition and topology. With this addition and topology, J_p is a locally compact Abelian group. Any compact, open subgroup H_p of J_p is called p-adic integers. A local direct sum $\sum_{\alpha\in X} G_\alpha$ of the L C A groups G_α is called a canonical p-group if each G_α, where $\alpha \in X$, is isomorphic to p-adic numbers and, in each G_α, some compact open subgroup is fixed in advance.

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