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*Unitary representations of  $L_0(\mu, \mathbb{T})$  and of  $C^0(K, \mathbb{T})$ .*

We give a classification of unitary representations of certain Polish, not necessarily locally compact, groups: groups of all measurable functions with values in the circle and the connected components of the identity of groups of all continuous functions with values in the circle. Essential tools in the proofs are certain known structure theorems and factorization theorems for linear operators. (Received June 28, 2011)