

# Functorial methods in the theory of group representations I

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## Abstract

We introduce a candidate for the group algebra of a Hausdorff group which plays the same role as the group algebra of a finite group. It allows to define a natural bijection between  $k$ -continuous representations of the group in a Hilbert space and continuous representations of the group algebra. Such bijections are known, but to our knowledge only for locally compact groups. We can establish such a bijection for more general groups, namely Hausdorff groups, because we replace integration techniques by functorial methods, i.e., by using a duality functor which lives in certain categories of topological Banach balls (resp., unit balls of Saks spaces). © 1995 Kluwer Academic Publishers.

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## Keywords

Banach balls, group algebra,  $k$ -continuity, locally convex topologies, Mathematics Subject Classifications (1991): Primary 18B99, Secondary 46A70, 46M05, pre-\*-autonomous situation, totally convex spaces, unitary representations