ON ISOMORPHISMS OF BEURLING ALGEBRAS

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One of the most fundamental objectives in all areas of mathematics is to describe the general form of the maps that preserve the basic structure of the objects being investigated. In abstract harmonic analysis, the first paper studying this question is credited to J. G. Wendel [5]. Wendel proved that if G and H are locally compact topological groups and $T : L^1(G) \to L^1(H)$ is an isometric isomorphism of the group algebras $L^1(G)$ and $L^1(H)$, then the topological groups G and H are isomorphic. In this paper, Wendel also mentioned that, in general, the algebra structure of a group algebra does not necessarily determine its underlying topological group structure. So, if only the existence of an algebra isomorphism between group algebras is assumed, then the underlying topological groups are isomorphic only if we impose some constraints for instance on the norm of the isomorphism (such as being an isometry, contractive or of small bound) or if we consider some special isomorphism such as a bipositive one. In this talk I will discuss similar results for Banach algebras defined on locally compact groups with a weight function, the so called Beurling algebras.

References

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