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Simplicity and uniqueness of trace of group C^* -algebras

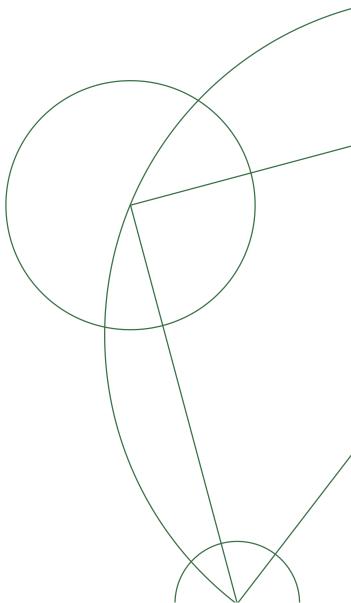
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Abstract

A discrete group is C^* -simple if the reduced group C^* -algebra $C_r^*(G)$ has no non-trivial proper two-sided closed ideals, and it has the unique trace property if the canonical faithful tracial state on $C_r^*(G)$ is the only tracial state. In 1975 Powers published an article proving that the free group on two generators is C^* -simple and has the unique trace property. His result and calculations have been generalized since, and some of these new results will be dealt with in this thesis. In 2014 [bko] was released, using theory of boundary actions of discrete groups G on compact Hausdorff spaces to classify when G is C^* -simple, respectively, has the unique trace property, and to show that C^* -simplicity implies the unique trace property. Following up on this an article, due to the late Uffe Haagerup ([haagerup2015new]), was released in 2015. This article provided new proofs of precisely when a discrete group G is C^* -simple, respectively, has the unique trace property, using boundary actions. We will in this thesis describe C^* -simplicity and the unique trace property in terms of both Dixmier properties and properties of boundary actions of G, found in [haagerup2015new].

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