Department of Mathematical Sciences
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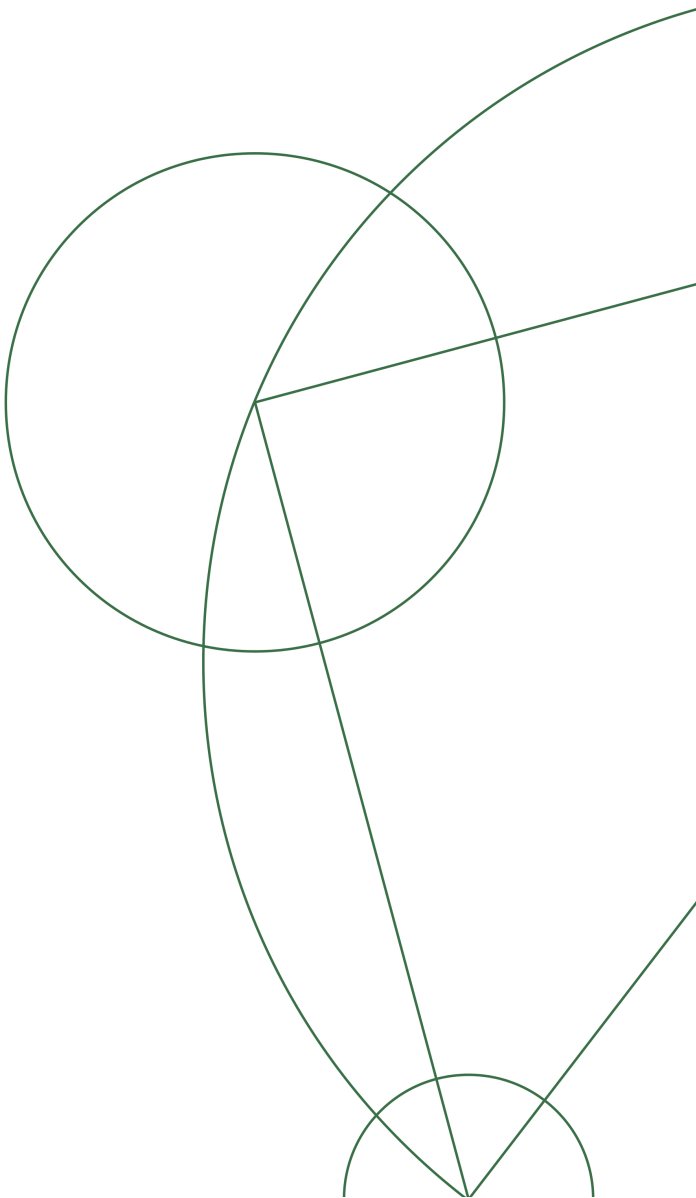
Simplicity and uniqueness of trace of group C^*-algebras



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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 Breuillard et al. 2014 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 (Haagerup 2015), 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 Haagerup 2015.

CONTENTS

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Breuillard et al. 2014
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Bibliography

Breuillard, Emmanuel et al. (2014). "C*-simplicity and the unique trace property for discrete groups". In: *arXiv preprint arXiv:1410.2518*.

Haagerup, Uffe (2015). "A new look at C*-simplicity and the unique trace property of a group". In: *arXiv preprint arXiv:1509.05880*.