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Radius of Comparison of Fixed Point Algebras and Crossed Products of Actions of Finite Groups

Abstract: The radius of comparison, based on the Cuntz semigroup, was introduced to distinguish examples of nonisomorphic simple separable unital AH algebras with the same Elliott invariant. The comparison theory of projections is fundamental to the theory of von Neumann algebras, and is the basis for the type classification of factors. A C*-algebra might have few or no projections, in which case their comparison theory tells us little about the structure of the C*-algebra. The appropriate replacement for projections is positive elements. This idea was first introduced by Cuntz in [2] with a view to studying dimension functions on simple C*-algebras. Then the appropriate definition of the radius of comparison of C*-algebras was introduced by Andrew Toms in Section 6 of [6]. Significant progress has been made on the radius of comparison of a C*-algebra A and a large subalgebra of A by N. Christopher Phillips. (See [4] and [5].) Also, the radius of comparison of commutative C*-algebras was computed prcisely by Zhuang Niu and George A. Elliott in [3].

The relation between the radius of comparison of a simple unital C*-algebra and the radius of comparison of its crossed product and fixed point algebras under an action of a finite group with the tracial Rokhlin property will be discussed in my talk. The talk is based on a joint work with Nasser Golestani and N. Christopher Phillips. We encourage the reader to go through the references displayed in this abstract, and check [1] for further details.

References:

[1] M. A. Asadi-Vasfi, N. Golestani, and N. C. Phillips, *The Cuntz semigroup and the radius of comparison of the crossed product by a finite group*, arXiv: 1908.06343v1 [math.OA].
[2] J. Cuntz, *Dimension functions on simple C*-algebras*, Math. Ann. **233**(1978), 145–153.
[3]G. A. Elliott and Z. Niu, *On the radius of comparison of a commutative C*-algebra*, Canad. Math. Bull. **56**(2013), 737–744.
[4] N. C. Phillips, *The C*-algebra of a minimal homeomorphism with finite mean dimension has finite radius of comparison*, arXiv: 1605.07976v1 [math.OA].
[5] N. C. Phillips, *Large subalgebras*, arXiv: 1408.5546v2 [math.OA].
[6] A. S. Toms, *Flat dimension growth for C*-algebras*, J. Funct. Anal. **238**(2006), 678–708.