

THE TRACIAL ROKHLIN PROPERTY FOR AUTOMORPHISMS OF SIMPLE C^* -ALGEBRAS OF TRACIAL RANK ZERO

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In this talk we introduce the tracial Rokhlin property for automorphisms of stably finite simple unital C^* -algebras containing enough projections in the sense of Phillips [4]. This property is formally weaker than the various Rokhlin properties considered by Herman and Ocneanu, Kishimoto, Rørdam, and Izumi.

Our main results are as follows.

- [1] Let A be a stably finite simple unital C^* -algebra, and let α be an automorphism of A which has the tracial Rokhlin property. Suppose A has real rank zero and stable rank one, and suppose that the order on projections over A is determined by traces. Then the crossed product algebra $C^*(Z, A, \alpha)$ also has these three properties.
- [2] Let A be a simple separable nuclear unital C^* -algebra which satisfies the Universal Coefficient Theorem and has tracial rank zero. If $\alpha \in \text{Aut}(A)$ has the Rokhlin property and if α^n is an approximately inner for some $n > 0$, then $C^*(Z, A, \alpha)$ is a simple AH algebras with no dimensional growth and real rank zero.

This talk is mainly based on recent works of Huaxin Lin and Hiroyuki Osaka [1], and Hiroyuki Osaka and Chris Phillips [2] [3].

Reference

- [1] H. Lin and H. Osaka, *The Rokhlin property and the tracial topological rank*, preprint (arXiv: math.OA/0402094).
- [2] H. Osaka and N. C. Phillips, *Stable and real rank for crossed products by automorphisms with the tracial Rokhlin property*, in preparation.
- [3] H. Osaka and N. C. Phillips, *Furstenberg transformations on irrational rotation algebras*, in preparation.
- [4] N. C. Phillips, *Crossed products by finite cyclic group actions with the tracial Rokhlin property*, preprint.