
HUAXIN LIN, University of Oregon

The Rokhlin property for automorphisms on simple C^ -algebras*

We study a general Kishimoto's problem for automorphisms on simple C^* -algebras with tracial rank zero. The original problem of Kishimoto is the following: Let A be a unital simple AT -algebra with real rank zero and α is an approximately inner automorphism. Is $A \rtimes_{\alpha} \mathbb{Z}$ again a simple AT -algebra? Let A be a unital separable simple C^* -algebra, with tracial rank zero and let α be an automorphism. Under the assumption that α has certain Rokhlin property, $A \rtimes_{\alpha} \mathbb{Z}$ has tracial rank zero. We also show that if the induced map α_{*0} on $K_0(A)$ fixes a "dense" subgroup of $K_0(A)$ then the tracial Rokhlin property implies a stronger Rokhlin property. Consequently, the induced crossed product C^* -algebras have tracial rank zero. By applying the classification theorem, this answers affirmatively Kishimoto's original question.