

Crossed product C^* -algebras associated with homeomorphisms of the unit circle

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Communicated by: George Elliott

Received: April 2, 2007

Abstract. Given a homeomorphism φ of the unit circle \mathbb{T} , there is associated the C^* -crossed product algebra of $C(\mathbb{T})$ by the \mathbb{Z} -action induced by φ . We analyze the C^* -crossed product algebras arising from those homeomorphisms that possess both cyclic and non-cyclic points, or are order-reversing. It is shown that upto compact perturbations, infinite-dimensional irreducible $*$ -representations of algebras in this class can be expressed in terms of certain finite-dimensional irreducible $*$ -representations. This relationship is used to recover the topological features of the underlying homeomorphisms upto inversion, and to construct a complete $*$ -isomorphism invariant for these algebras. It is shown that two algebras with underlying homeomorphisms φ and ψ are $*$ -isomorphic if and only if φ is conjugate to ψ or ψ^{-1} .

2000 *Mathematics Subject Classification:* Primary 46L35, 47L65, Secondary 47C15.