

Trace scaling automorphisms of certain stable AF algebras

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Abstract. Trace scaling automorphisms of a stable AF algebra with dimension group totally ordered are outer conjugate if the scaling factors are the same (not equal to one).

Key words: AF algebra, automorphism, Rohlin property, outer conjugacy.

1. Introduction

This is a continuation of [8], where we showed a UHF version of a well-known result of A. Connes [5] that trace scaling automorphisms of the AFD type II_∞ factor with the same non-trivial scale are outer conjugate with each other. In this paper we show the same result for stable AF algebras with totally ordered dimension group.

The key idea remains the same as in [8] and hence as in [5]: Define and prove a Rohlin property for such automorphisms and analyse them using this property. We are now familiar with the unital case (see [3, 2, 16, 13, 14, 15]). What we did in [8] is to evade non-unital C^* -algebras and deal with *partial* unital endomorphisms of unital (UHF) algebras. What we do here is to define a suitable Rohlin property for automorphisms of non-unital C^* -algebras and prove it. We will define it by borrowing an idea due to Rørdam [18], where corner endomorphisms are treated, and prove it by using an argument in [13, 14], where automorphisms of unital AF algebras are treated. Our main contribution is to find a passage from the *non-unital* case to the *unital* case in proving the Rohlin property, which is done in Section 2.

In Section 3 we shall show that our definition of Rohlin property is the *right* one, i.e., this is at least strong enough to prove the stability or 1 cohomology property [5, 9, 10]. Note that it is this property that we actually need.

Another idea used in [5, 8], a technique involving tensor products, is