Banach J. Math. Anal. 8 (2014), no. 1, 138–147

Banach Journal of Mathematical Analysis
ISSN: 1735-8787 (electronic)
www.emis.de/journals/BJMA/

BAUMSLAG–SOLITAR GROUP C^*-ALGEBRAS FROM INTERVAL MAPS

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Communicated by M. Joiţa

Abstract. We yield operators U and V on Hilbert spaces that are parameterized by the orbits of certain interval maps that exhibit chaotic behavior and obey the (deformed) Baumslag–Solitar relation

$$UV = e^{2\pi i\alpha} VU^n, \qquad \alpha \in \mathbb{R},\ n \in \mathbb{N}.$$

We then prove that the scalar $e^{2\pi i\alpha}$ can be removed whilst retaining the isomorphism class of the C^*-algebra generated by U and V. Finally, we simultaneously unitarize U and V by gluing pairs of orbits of the underlying noninvertible dynamical system and investigate these unitary representations under distinct pairs of orbits.

1. Introduction and preliminaries

In [6, 7, 8, 10] we use symbolic dynamics and yield representations of Cuntz, Cuntz–Krieger, subshift C^*-algebras determined by orbits of nonlinear systems – in particular iterated maps of the interval, and Markov systems. These representations has allowed us to get a clearer relationship between the structure of these algebras and the underlying nonlinear dynamics. The studied systems are non-invertible and the symbolic dynamics is based on one-sided sequences. We obtained operators that are partial isometries, generating the referred algebras. In the present paper, we will be able to obtain unitary operators (leading to

Date: Received: 4 March 2013; 30 May 2013.

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2010 *Mathematics Subject Classification.* Primary 46L55; Secondary 46L05, 37B10, 37A20.

Key words and phrases. Group C^*-algebras, representations of C^*-algebras, symbolic dynamics, interval maps.