MR2942810 (Review) 46L55 (37B10 46L05)

Correia Ramos, Carlos (P-EVOR-CIM); **Martins, Nuno** (P-TULT); **Pinto, Paulo R. [Pinto, Paulo Rocha]** (P-TULT)

Orbit representations from linear mod 1 transformations. (English summary)

SIGMA Symmetry Integrability Geom. Methods Appl. **8** (2012), *Paper* 029, 9 *pp*.

The authors consider mod 1 interval maps $f_{\beta,\alpha}\colon [0,1] \to [0,1]$ defined by $f_{\beta,\alpha}(x) = \beta x + \alpha \pmod 1$ with $\beta \geq 1$ and $\alpha \in [0,1)$. They show that for such a map $f := f_{\beta,\alpha}$ there corresponds a Cuntz-Krieger algebra $\mathcal{O}_{\Lambda_f}$, and for each $x \in [0,1]$ there is a Hilbert space H_x and an irreducible representation $\rho_x\colon \mathcal{O}_{\Lambda_f} \to B(H_x)$. Moreover, the authors show that for a given f and for points $x, y \in [0,1]$, the representation ρ_x is unitarily equivalent to ρ_y if and only if x and y are in the same generalized orbit of f (i.e., $f^n(x) = f^m(y)$ for some natural numbers m and n).

Reviewed by *Mark Tomforde*

References

1. Abe M., Kawamura K., Recursive fermion system in Cuntz algebra. I. Embeddings of fermion algebra into Cuntz algebra, *Comm. Math. Phys.* **228** (2002), 85–101, math-ph/0110003. MR1911249 (2003c:46079)
2. Bratteli O., Jorgensen P.E.T., Iterated function systems and permutation representations of the Cuntz algebra, *Mem. Amer. Math. Soc.* **139** (1999), no. 663, 89 pages, funct-an/9612002. MR1469149 (99k:46094a)
3. Bratteli O., Jorgensen P.E.T., Ostrovs'kyĭ V., Representation theory and numerical AF-invariants. The representations and centralizers of certain states on $\mathcal{O}_d$, *Mem. Amer. Math. Soc.* **168** (2004), no. 797, 178 pages, math.OA/9907036. MR2030387 (2005i:46069)
4. Carlsen T.M., Silvestrov S., $C*$-crossed products and shift spaces, *Expo. Math.* **25** (2007), 275–307, math.OA/0512488. MR2360917 (2008m:46140)
5. Correia Ramos C., Martins N., Pinto P.R., On $C*$-algebras from interval maps, *Complex Anal. Oper. Theory*, to appear.
6. Correia Ramos C., Martins N., Pinto P.R., Orbit representations and circle maps, in Operator Algebras, Operator Theory and Applications, *Oper. Theory Adv. Appl.*, Vol. 181, Birkhäuser Verlag, Basel, 2008, 417–427. MR2681900 (2012b:46100)
7. Correia Ramos C., Martins N., Pinto P.R., Sousa Ramos J., Cuntz–Krieger algebras representations from orbits of interval maps, *J. Math. Anal. Appl.* **341** (2008), 825–833. MR2398251 (2010e:46067)
8. Cuntz J., Krieger W., A class of $C*$-algebras and topological Markov chains, *Invent. Math.* **56** (1980), 251–268. MR0561974 (82f:46073a)
9. Daubechies I., Ten lectures on wavelets, *CBMS-NSF Regional Conference Series in Applied Mathematics*, Vol. 61, Society for Industrial and Applied Mathematics (SIAM), Philadelphia, PA, 1992. MR1162107 (93e:42045)

10. Dutkay D.E., Jorgensen P.E.T., Wavelet constructions in non-linear dynamics, *Electron. Res. Announc. Amer. Math. Soc.* **11** (2005), 21–33, math.DS/0501145. MR2122446 (2006d:42060)
11. Exel R., A new look at the crossed-product of a $C*$-algebra by an endomorphism, *Ergodic Theory Dynam. Systems* **23** (2003), 1733–1750, math.OA/0012084. MR2032486 (2004k:46119)
12. Jorgensen P.E.T., Certain representations of the Cuntz relations, and a question on wavelets decompositions, in Operator Theory, Operator Algebras, and Applications, *Contemp. Math.*, Vol. 414, Amer. Math. Soc., Providence, RI, 2006, 165–188, math.CA/0405372. MR2277210 (2007k:46094)
13. Marcolli M., Paolucci A.M., Cuntz–Krieger algebras and wavelets on fractals, *Complex Anal. Oper. Theory* **5** (2011), 41–81, arXiv:0908.0596. MR2773056 (2012e:46116)
14. Martins N., Sousa Ramos J., Cuntz–Krieger algebras arising from linear mod one transformations, in Differential Equations and Dynamical Systems (Lisbon, 2000), *Fields Inst. Commun.*, Vol. 31, Amer. Math. Soc., Providence, RI, 2002, 265–273. MR1904519 (2003h:37053)
15. Matsumoto K., On $C*$-algebras associated with subshifts, *Internat. J. Math.* **8** (1997), 357–374. MR1454478 (98h:46077)
16. Milnor J., Thurston W., On iterated maps of the interval, in Dynamical Systems (College Park, MD, 1986–1987), *Lecture Notes in Math.,* Vol. 1342, Springer, Berlin, 1988, 465–563. MR0970571 (90a:58083)
17. Pedersen G.K., $C*$-algebras and their automorphism groups, *London Mathematical Society Monographs*, Vol. 14, Academic Press Inc., London, 1979. MR0548006 (81e:46037)

Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.