

OPERATOR ALGEBRAS ASSOCIATED TO MODULES OVER AN INTEGRAL DOMAIN

BENTON L. DUNCAN

Communicated by E. Katsoulis

ABSTRACT. We use the Fock semicrossed product to define an operator algebra associated to a module over an integral domain. We consider the C^* -envelope of the semicrossed product, and then consider properties of these algebras as models for studying general semicrossed products.

REFERENCES

1. W. Arveson, *Operator algebras and measure preserving automorphisms*, Acta Math. **118** (1967), 95–109.
2. W. Arveson and K. Josephson, *Operator algebras and measure preserving automorphisms. II*, J. Funct. Anal. **4** (1969), 100–134.
3. N. Brown and N. Ozawa, *C^* -algebras and finite-dimensional approximations*, Graduate Studies in Mathematics, 88. American Mathematical Society, Providence, RI, 2008.
4. H. Choda, *A correspondence between subgroups and subalgebras in a discrete C^* -crossed product*, Math. Japonica **24** (1979), 225–229.
5. J. Cuntz and X. Li, *The regular C^* -algebra of an integral domain*, Quanta of maths, 149–170 Clay Math. Proc. 11 Amer. Math. Soc., Providence RI, 2010.
6. K. Davidson and E. Katsoulis, *Isomorphisms between topological conjugacy algebras*, J. Reine Angew. Math. **621** (2008), 29–51.
7. K. Davidson and E. Katsoulis, *Semicrossed products of simple C^* -algebras*, Math. Ann. **342** (2008), 515–525.
8. K. Davidson and E. Katsoulis, *Operator algebras for multivariable dynamics*, Mem. Amer. Math. Soc. **209** (2011), no. 982.
9. K. Davidson and E. Katsoulis, *Dilation theory, commutant lifting, and semicrossed products*, Doc. Math. **16** (2011), 781–868

Copyright 2016 by the Tusi Mathematical Research Group.

Date: Received: Jun. 15, 2017; Accepted: Oct. 20, 2017.

2010 *Mathematics Subject Classification*. Primary 47L74; Secondary 47L40.

Key words and phrases. Semicrossed product, integral domain, module.

10. K. Davidson, A. Fuller, and E. Kakariadis, *Semicrossed products of operator algebras by semigroups*, *Memoirs Amer. Math. Soc.* **239** (201X).
11. B. Duncan, *Operator algebras associated to integral domains*, *New York J. Math.* **19** (2013), 39–50.
12. B. Duncan and J. Peters, *Operator algebras and representations from commuting semigroup actions*, *J. Operator Theory* **74** (2015), 23–43.
13. A. Fuller, *Nonsel-adjoint semicrossed products by abelian semigroups*, *Canad. J. Math.* **65** (2013), 768–782.
14. E. Kakariadis and E. Katsoulis, *Isomorphism invariants for multivariable C^* -dynamics*, *J. Noncommut. Geom.* **8** (2014), 771–787.
15. M. Landstad, D. Olesen, and G. Pedersen, *Towards a Galois theory for crossed products of C^* -algebras*, *Math. Scand.* **43** (1978), 311–321.
16. J. Peters, *Semicrossed products of C^* -algebras*, *J. Funct. Anal.* **59** (1984), 498–534.
17. J. Peters, *The C^* -envelope of a semicrossed product and nest representations*, *Operator structures and dynamical systems*, 197–215, *Contemp. Math.*, 503, Amer. Math. Soc., Providence RI, 2009.
18. S. Roman, *Advanced linear algebra, third edition*, *Graduate Texts in Mathematics*, 135, Springer, New York, NY, 2008.

DEPARTMENT OF MATHEMATICS, NORTH DAKOTA STATE UNIVERSITY, FARGO, NORTH DAKOTA, USA.

E-mail address: benton.duncan@ndsu.edu