

MULTIPLIERS OF HILBERT PRO- C^* -BIMODULES AND CROSSED PRODUCTS BY HILBERT PRO- C^* -BIMODULES

MARIA JOIȚA, RADU-B. MUNTEANU AND IOANNIS ZARAKAS

Abstract. In this paper we introduce the notion of multiplier of a Hilbert pro- C^* -bimodule and we investigate the structure of the multiplier bimodule of a Hilbert pro- C^* -bimodule. We also investigate the relationship between the crossed product $A \times_X \mathbb{Z}$ of a pro- C^* -algebra A by a Hilbert pro- C^* -bimodule X over A , the crossed product $M(A) \times_{M(X)} \mathbb{Z}$ of the multiplier algebra $M(A)$ of A by the multiplier bimodule $M(X)$ of X and the multiplier algebra $M(A \times_X \mathbb{Z})$ of $A \times_X \mathbb{Z}$.

Mathematics subject classification (2010): Primary 48L08, 48L05.

Keywords and phrases: Pro- C^* -algebras, pro- C^* -bimodules, multipliers, crossed products.

REFERENCES

- [1] B. ABADIE, *Takai duality for crossed products by Hilbert C^* -modules*, J. Operator Theory, **64** (2010), 1, 19–34.
- [2] B. ABADIE, S. EILERS, R. EXEL, *Morita equivalence for crossed products by Hilbert C^* -bimodules*, Trans. Amer. Math. Soc. **350** (1998), 8, 3043–3054.
- [3] D. BAKIĆ, B. GULJAŠ, *On a class of module maps of Hilbert C^* -modules*, Math. Commun. **7** (2002), 2, 177–192.
- [4] D. BAKIĆ, B. GULJAŠ, *Extensions of Hilbert C^* -modules*, Houston J. Math., **30** (2004), 2, 537–558.
- [5] S. ECHTERHOFF, S. KALISEZEWSKI, J. QUIGG, I. RAEBURN, *A categorical Approach to Imprimitivity Theorems for C^* -Dynamical Systems*, arXiv:math/0205322v2 [math.OA] 11 Feb 2005.
- [6] M. FRAGOULOPOULOU, *Topological algebras with involution*, North-Holland Mathematics Studies, 200. Elsevier Science B.V., Amsterdam, 2005. xvi+495 pp. ISBN: 0-444-52025-2
- [7] M. JOIȚA, *Hilbert modules over locally C^* -algebras*, Bucharest University Press, Bucharest 2006.
- [8] M. JOIȚA, *On multiplier modules of Hilbert modules over locally C^* -algebras*, Studia Math. **185** (2008), 3, 263–277.
- [9] M. JOIȚA, *Covariant representations of Hilbert C^* -modules*, Expo. Math. **30** (2012) 209–220.
- [10] M. JOIȚA, *Crossed products of locally C^* -algebras*, Editura Academiei Române, Bucharest, 2007, 115+Xii pp., ISBN 978-973-27-1600-7.
- [11] M. JOIȚA, I. ZARAKAS, *Crossed products by Hilbert pro- C^* -bimodules*, Studia Math. **215** (2013), 2, 139–156.
- [12] M. JOIȚA, I. ZARAKAS, *A construction of pro- C^* -algebras from pro- C^* -correspondence*, To appear in J. Operator Theory.
- [13] A. MALLIOS, *Topological Algebras. Selected Topics*, North-Holland, 1986.
- [14] N. C. PHILLIPS, *Inverse limit of C^* -algebras*, J. Operator Theory, **19** (1988), 159–195.
- [15] D. ROBERTSON, *Extensions of Hilbert bimodules and associated Cuntz-Pimsner algebras*, arXiv:1105.1615v1 [math.OA] 9 May 2011.
- [16] I. RAEBURN, D. P. WILLIAMS, *Morita equivalence and continuous trace C^* -algebras*, Mathematical surveys and monographs, Vol. 60.
- [17] I. ZARAKAS, *Hilbert pro- C^* -bimodules and applications*, Rev. Roum. Math. Pures Appl., LVII (2012), no. 3, 289–310.
- [18] D. P. WILLIAMS, *Crossed products of C^* -algebras*, Mathematical Surveys and Monographs, Vol. 134, AMS 2007.