

## BINARY SHIFTS OF HIGHER COMMUTANT INDEX

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*Abstract.* In a previous paper the author has shown that all binary shifts of commutant index 2 are cocycle conjugate. In this paper we show that there are only finitely many conjugacy classes of binary shifts of commutant index 3.

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### REFERENCES

- [1] W. ARVESON AND G. PRICE, *The structure of spin systems*, Internat. J. Math. **14** (2003), 119–137.
- [2] D. BURES AND H. YIN, *Outer conjugacy of shifts on the hyperfinite  $II_1$  factor*, Pacific J. Math. **142** (1990), 245–257.
- [3] A. CONNES, *Periodic automorphisms of the hyperfinite factor of type  $II_1$* , Acta Sci. Math. **17** (1977), 39–66.
- [4] E. ENOMOTO AND Y. WATATANI, *Powers' binary shifts on the hyperfinite factor of type  $II_1$* , Proc. Amer. Math. Soc. **105** (1989), 371–374.
- [5] V. F. R. JONES, *Index for subfactors*, Invent. Math. **72** (1983), 1–25.
- [6] R. LIDL AND H. NIEDERREITER, *Introduction to finite fields and their applications*, Cambridge Univ. Press, 1987.
- [7] M. NEWMAN, *Integral matrices*, Academic Press, 1986.
- [8] R. T. POWERS, *An index theory for semigroups of  $*$ -endomorphisms of  $\mathcal{B}(\mathcal{H})$  and type  $II_1$  factors*, Canad. J. Math **40** (1988), 86–114.
- [9] R. T. POWERS AND G. PRICE, *Cocycle conjugacy classes of shifts on the hyperfinite  $II_1$  factor*, J. Funct. Anal. **121** (1994), 275–295.
- [10] G. PRICE, *Cocycle conjugacy classes of shifts on the hyperfinite  $II_1$  factor II*, J. Operator Theory **39** (1998), 177–195.
- [11] G. PRICE, *Shifts on the hyperfinite  $II_1$  factor*, J. Functional Analysis **156** (1998), 121–169.
- [12] G. PRICE, *Shifts on type  $II_1$  factors*, Canad. J. Math **39** (1987), 492–511.
- [13] G. PRICE AND G. H. TRUITT, *On the ranks of Toeplitz matrices over finite fields*, Linear Algebra and its Applications **294** (1999), 49–66.