

ABSTRACT. For A a C^* -algebra, E_1, E_2 two Hilbert bimodules over A , and a fixed isomorphism $\chi : E_1 \otimes_A E_2 \rightarrow E_2 \otimes_A E_1$, we consider the problem of computing the K -theory of the Cuntz–Pimsner algebra $\mathcal{O}_{E_2 \otimes_A E_1}$ obtained by extending the scalars and by iterating the Pimsner construction.

The motivating examples are a commutative diagram of Douglas and Howe for the Toeplitz operators on the quarter plane, and the Toeplitz extensions associated by Pimsner and Voiculescu to compute the K -theory of a crossed product. The applications are for Hilbert bimodules arising from rank two graphs and from commuting endomorphisms of abelian C^* -algebras.