

ABSTRACT. The partial isometry homology groups H_n defined in Power [1] and a related chain complex homology CH_* are calculated for various triangular operator algebras, including the disc algebra. These invariants are closely connected with K -theory. Simplicial homotopy reductions are used to identify both H_n and CH_n for the lexicographic products $A(G) \star A$ with $A(G)$ a digraph algebra and A a triangular subalgebra of the Cuntz algebra O_m . Specifically $H_n(A(G) \star A) = H_n(\Delta(G)) \otimes_{\mathbf{Z}} K_0(C^*(A))$ and $CH_n(A(G) \star A)$ is the simplicial homology group $H_n(\Delta(G); K_0(C^*(A)))$ with coefficients in $K_0(C^*(A))$.

[1] S. C. Power, *Homology for operator algebras II: Stable homology for non-self-adjoint algebras*, J. Functional Anal., **10** (1996) 233–269.