

F. Gourdeau, Z. A. Lykova and M. C. White, **The simplicial Cohomology of $L^1(\mathbf{R}_+^k)$** , *Proceedings of Banach Algebras 2003*, Contemporary Math. 263, 95–110, American Mathematical Society, Providence RI, 2004.

Abstract

Let $\mathcal{A} = L^1(\mathbf{R}_+)$ be the convolution semigroup algebra of \mathbf{R}_+ . We show that the continuous cyclic homology groups $\mathcal{H}C_n(\mathcal{A})$ vanish for $n \geq 1$. A standard use of the Connes-Tzygan exact sequence shows that the continuous simplicial homology groups $\mathcal{H}_n(\mathcal{A}, \mathcal{A})$ vanish for $n \geq 2$ and that $\mathcal{H}_1(\mathcal{A}, \mathcal{A}) = \mathcal{A}$. Duality arguments show that similar results hold for the continuous cyclic and simplicial cohomology groups. These results are then used to obtain the continuous simplicial homology and cohomology groups for $L^1(\mathbf{R}_+^k)$ using a Künneth formula also established in a previous paper by the authors.