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The Hochschild and cyclic cohomology of simplicially trivial topological algebras

We give explicit formulae for the continuous Hochschild and cyclic homology and cohomology of simplicially trivial $\hat{\otimes}$-algebras. We show that, for a continuous morphism $\varphi: X^* \to Y^*$ of complexes of complete nuclear $DF$-spaces, the isomorphism of cohomology groups $H^n(\varphi): H^n(X^*) \to H^n(Y^*)$ is automatically topological. The continuous cyclic-type homology and cohomology are described up to topological isomorphism for the following classes of biprojective $\hat{\otimes}$-algebras: the algebra of smooth functions $\mathcal{E}(G)$ on a compact Lie group $G$, the algebra of distributions $\mathcal{E}^*(G)$ on a compact Lie group $G$; the tensor algebra $E\hat{\otimes}F$ generated by the duality $(E, F, \langle \cdot, \cdot \rangle)$ for nuclear Fréchet spaces $E$ and $F$ or for nuclear $DF$-spaces $E$ and $F$; nuclear biprojective Köthe algebras $\lambda(P)$ which are Fréchet spaces or $DF$-spaces.