Yoneda's Isomorphism Commutes with Homology
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Let C be a chain complex in an abelian category $\mathcal{A}$, and let $T\colon \mathcal{A} \to \mathcal{A}b$ be a right exact functor into the category of abelian groups. Then there is an isomorphism, the homological Yoneda isomorphism,

$$\mathrm{Nat}\left(H^n Hom_{\mathcal{A}}\left(C,-\right),T\right) \overset{\cong}{\longrightarrow} H_n TC$$

which is natural in C and in T. – We will prove this result and present some immediate consequences. Then we extend the homological Yoneda isomorphism to functors $T\colon \mathcal{X} \to \mathcal{A}b$, where $\mathcal{X}$ is a semiabelian category, and T is a right exact functor. An application to the topic of 'universal n-fold central extensions' in a semiabelian variety concludes the talk.