Various Homology and Cohomology Theories

We list various cohomology/homology theories in this document.

Sheaf Cohomology

$$\mathrm{H}(X, \mathcal{F}) = \mathrm{H}(\Gamma(X, \mathcal{E}))$$

Commutative Algebra

$$\mathrm{Tor}_R(A, B) = \mathrm{H}(A \otimes_R Q) = \mathrm{H}(P \otimes_R B) = \mathrm{H}(P \otimes_R Q)$$
$$\mathrm{Ext}_R(A, B) = \mathrm{H}(\mathrm{Hom}_R^\star(A, E)) = \mathrm{H}(\mathrm{Hom}_R^\star(P, B))$$

$$\mathrm{H}(\boldsymbol{x}, M) = \mathrm{H}(\mathcal{K}(\boldsymbol{x}) \otimes_R M)$$
$$\mathrm{H}(\boldsymbol{x}^\infty, M) = \mathrm{H}(\widehat{\mathcal{K}}(\boldsymbol{x}, M)) = \varinjlim \mathrm{H}(\mathcal{K}^\star(\boldsymbol{x}^n, M))$$
$$\mathrm{H}_I(M) = \mathrm{H}(\Gamma_I(E))$$

Sheaf Cohomology