GORENSTEIN PROJECTIVE MODULES

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Over any associative ring R the category of (non-finite) Gorenstein projective (left) R-modules GP(R) shares several important features with the category of ordinary projective (left) R-modules.

We show how the resolving property of GP(R) gives functorial descriptions of the Gorenstein projective dimension, and enable us to calculate the finitistic Gorenstein projective dimension of R.

Furthermore we have existence of proper Gorenstein projective resolutions of modules with finite Gorenstein projective dimension. Using these we can derive the Hom-functor using Gorenstein projective and Gorenstein injective modules.