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Projective dimension of modules over cluster-tilted algebras

In joint work with Louis Beaudet and Gordana Todorov we study the projective dimension of modules over a cluster-tilted algebra End (T) where T is a tilting object in a cluster category $\mathcal{C}$. It is well-known that all modules are of the form Hom(T, M) for some object M in $\mathcal{C}$, and since End(T) is Gorenstein of dimension 1, the projective dimension of Hom(T, M) is either zero, one or infinity.

We consider the ideal I_M of End$_{\mathcal{C}}(T[1])$ given by all endomorphisms that factor through M, and show that the End$(T)-$module Hom(T, M) has infinite projective dimension precisely when I_M is non-zero. Examples indicate that the objects M of $\mathcal{C}$ such that $I_M \neq 0$ lie on hammocks in $\mathcal{C}$.