

Higher Preprojective Algebras - Categorical Approach

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We consider the category A of coherent functors on the fundamental domain of the cluster category and show that A has a higher cluster tilting subcategory. It is shown that this higher cluster tilting subcategory consists of the projective and injective coherent functors. Furthermore, there is a bijection between projective non-injective and injective non-projective functors via certain higher Auslander-Reiten translation. This correspondence is used to prove that the representable functors on the cluster category decompose as coherent functors on the fundamental domain of the cluster category, giving the higher pre-projective decomposition/structure. These results are analogous to the similar results for higher preprojective algebras.

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