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From Frobenius categories to Cluster Structures

By the result of Happel it is known that the stable categories of Frobenius categories are triangulated. We discuss situations in which such stable categories have cluster tilting objects, cluster structure, or are triangle-equivalent to generalized cluster categories associated to algebras of global dimension 2.

The well known such classes of Frobenius categories are the subcategories of finitely presented modules over preprojective algebras associated to the elements in Coxeter groups as done in [GLS] and [BIRSc]. The stable categories of these categories have cluster tilting objects and cluster structure. It was shown in [AIRT] that certain Frobenius categories with cluster tilting objects are triangle equivalent to generalized cluster categories associated to algebras of global dimension 2. In particular it is true for the above categories associated to the elements of Coxeter groups. Another interesting Frobenius category is the category of representations of circle, with the stable category being the continuous cluster category [IT].