

Mutation of Rigid Modules over Preprojective Algebras

Abstract: I will present portions of the paper *Rigid Modules over Preprojective Algebras* by Geiß, Leclerc, and Schroër. A module M is called *rigid* if $\text{Ext}^1(M, M) = 0$, i.e., M has no self-extensions. One is often concerned with how large such a module can be, but there are three notions of largeness which don't necessarily coincide. We describe the *preprojective algebra* over which they are equivalent. Then, following the setup from a seminal paper on cluster categories, we define a mutation operation on such modules whose suggestive name leads to a description of the operation in terms of cluster algebras.