Minisymposium 12 - Representation Theory of Algebras

Examples of higher Auslander algebras which are quasi-hereditary

CHRISTOF GEISS (UNAM, MEXICO)

This is a report on joint work in progress with B. Leclerc (Caen) and J. Schröer (Bonn).
Let Q be a Dynkin quiver, $\bar{Q}$ its double and $\Lambda = k\bar{Q}/(\sum_{a\in Q_1}[a,\bar{a}])$ the corresponding preprojective algebra. Let R be a maximal 1-orthogonal Λ-module and $E = \mathrm{End}_\Lambda(R)$, so this is a higher Auslander algebra in the sense of Iyama. Then $F_R = \mathrm{Hom}_\Lambda(-,R)$ induces an anti-equivalence from Λ-modules to the E-modules of projective dimension at most 1. If R is produced by pushing the projective modules of the (ordinary) Auslander algebra of kQ to Λ then E is canonically quasi-hereditary. The image of F_R are precisely the Δ-good modules, the Δ_i are just $F_R(X)$ where X runs over the indecomposable kQ^{op}-modules viewed as Λ-modules, and $\mathrm{Ext}^1_\Lambda(F_R(X),F_R(Y)) \cong D\,\mathrm{Ext}^1_{Q^{\mathrm{op}}}(X,Y)$.
The Δ-dimension vectors should in this way provide usefull invariants of Λ-modules.