

10. Übungsaufgaben Darstellungstheorie II, SS 07

1. Let A be a finite-dimensional K -algebra, and let ${}_{\infty}\underline{\Delta}$ be the subquiver of Γ_A obtained by the knitting algorithm. Show that ${}_{\infty}\underline{\Delta} = {}_{\infty}(\underline{\Gamma}_A)$.
2. Let Q be a finite connected quiver without oriented cycles, and let $A = KQ$. Show that Γ_A has a unique preprojective component and a unique preinjective component. Show that these coincide if and only if Q is representation-finite.
3. Let A be a finite-dimensional K -algebra, and let \mathcal{C} be a connected component of Γ_A such that $\mathcal{C} \subseteq {}_{\infty}\underline{\Delta}$. Show that \mathcal{C} is a preprojective component.
4. Choose a connected quiver Q with 3 vertices and at least 3 arrows such that Q has no oriented cycles. Knit the preinjective component of Q .