Model Structures on The Category of Complexes of Quiver Representations

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In this talk, we study the category $\mathbb{C}(\mathrm{Rep}(\mathcal{Q}, \mathcal{G}))$ of complexes of representations of quiver $\mathcal{Q}$ with values in a Grothendieck category $\mathcal{G}$. We develop a method for constructing some model structures on $\mathbb{C}(\mathrm{Rep}(\mathcal{Q}, \mathcal{G}))$ based on componentwise notion. As an application of these model structure we introduce some descriptions of the derived category of complexes of representations of $\mathcal{Q}$ in Mod-R. We also study the morphism category $\mathbf{H}(R)$ and its two full subcategories, monomorphism category $\mathbf{S}(R)$ and epimorphism category $\mathbf{F}(R)$. We show that the well know equivalence between $\mathbf{S}(R)$ and $\mathbf{F}(R)$ can be extended to an auto-equivalence of $\mathbf{H}(R)$.