An Auslander-Buchweitz approximation approach to the silting theory in triangulated categories

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Abstract

In this talk, we use the Auslander-Buchweitz approximation theory developed by Mendoza Hernández et al. to study the silting theory in a triangulated category $\mathcal{T}$. An Auslander-Reiten type correspondence is established between the class of silting subcategories of $\mathcal{T}$ and that of certain covariantly finite subcategories of $\mathcal{T}$. It is shown that under a mild condition the Iyama and Yoshino's subfactor category can be realized as a triangulated quotient. An application is given for projective abelian model structures on a bicomplete abelian category $\mathcal{G}$ with enough projective objects. We describe the stable category of the Frobenius category associated with a projective abelian model structure as a mutation pair in a certain triangulated subcategory of bounded derived category $D^{\mathrm{b}}(\mathcal{G})$, and show further that the homotopy category of a projective abelian model structure on $\mathcal{G}$ is triangulated equivalent to a certain triangulated quotient category. This is a joint work with Zhongkui Liu and Xiaoxiang Zhang.