Preview

The abelian category R-Mod is equivalent, as abelian category, to a subcategory of the triangulated category $D^b(R\text{-Mod})$, and also of $D^-(R\text{-Mod})$ and $D(R\text{-Mod})$. When R is derived equivalent to S, then S-Mod also becomes a subcategory, up to equivalence, of $D^b(R\text{-Mod})$, through the equivalence $D^b(S\text{-Mod}) \xrightarrow[\simeq]{F} D^b(R\text{-Mod})$. The image of S-Mod under F in $D^b(R\text{-Mod})$ usually is not contained in R-Mod, as we know from the derived equivalences between $k(\circ \to \circ \to \circ)$, $k(\circ \leftarrow \circ \to \circ)$ and $k(\circ \to \circ \leftarrow \circ)$, and also since $F(S)$ may be a proper complex.

So, $D^b(R\text{-Mod})$ in general may contain many different and non-equivalent abelian categories or even module categories.

What structure on a derived or just triangulated category allows to find an abelian subcategory inside a triangulated category?

The t-structures to be discussed in this chapter do provide an answer.