

On finiteness properties of Grothendieck hearts

Manuel Saorín
University of Murcia

The problem addressed in this talk is the following. Suppose that \mathcal{G} is a Grothendieck category, which in many cases will be required to be also locally finitely presented, and that $\mathbf{t} = (\mathcal{T}, \mathcal{F})$ is a torsion pair of finite type in \mathcal{G} . By results of Carlos Parra and the speaker, this last condition is equivalent to say that the associated Happel-Reiten-Smalø t-structure in the (unbounded) derived category $\mathcal{D}(\mathcal{G})$ has a heart which is itself a Grothendieck category.

We will study under which conditions, both on \mathcal{G} and the torsion pair \mathbf{t} , that heart is locally finitely presented or even locally coherent. We will also study, under the hypothesis that \mathcal{G} be locally coherent, the relation between the local coherence of the mentioned heart and the fact that the torsion pair \mathbf{t} restricts to the (abelian) subcategory $\text{fp}(\mathcal{G})$ of finitely presented objects.