On finiteness properties of Grothendieck hearts

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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-Smalo 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 $\mathrm{fp}(\mathcal{G})$ of finitely presented objects.