

Finiteness conditions on the heart of a t-structure

Rosanna Laking

Max Planck Institute for Mathematics, Bonn

Triangulated categories arising in representation theory often come with the additional data of a t-structure, indicating a close relationship between its abelian heart and the ambient triangulated category. As a result, the t-structures in a given category allow one to compare the homological properties of distinct abelian categories, including those coming from algebraic geometry and representation theory. Since such categories are often Grothendieck it is natural to ask when the heart of a t-structure is a Grothendieck category (e.g. [1, 3]). We will present recent progress on this question, as well as on when the heart is generated by a set of ‘small’ objects. The talk will be based on [2], in which we use the language of derivators to make connections between silting theory, purity and homotopically smashing t-structures.

References

- [1] L. ANGELERI HÜGEL, F. MARKS and J. VITÓRIA, *Torsion pairs in silting theory*, Pacific J. Math. **291** (2017), 257–278.
- [2] R. LAKING, *Purity in compactly generated derivators and t-structures with Grothendieck hearts*, preprint (2018), arXiv:1804.01326.
- [3] M. SAORÍN, J. ŠŤOVIČEK and S. VIRILLI, *t-Structures on stable derivators and Grothendieck hearts*, preprint (2017), arXiv:1708.07540.