Compactly generated t-structures over commutative rings

Michal Hrbek

Contact: hrbek@math.cas.cz, Mathematical Institute, Czech Academy of Sciences

Abstract: A lot is known about the structure of the derived category of a commutative noetherian ring. Namely, through the work of Hopkins and Neeman, we have a full understanding of all the localizing subcategories - they correspond to (any) subsets of the Zariski spectrum. In contrast, the localizing subcategories in the derived category of a general commutative ring can be very messy. However, if we restrict to those localizing subcategories which arise from compact objects, Thomason proved a direct (but not straightforward) generalization to any commutative ring, and these subcategories again correspond to certain subsets of the spectrum.

Recently, Alonso, López and Saorín described all the compactly generated t-structures over a noetherian ring in terms of infinite filtrations of the Zariski spectrum by specialization closed sets. We show how this result extends to any commutative ring. Even though the result itself is a direct generalization of the noetherian case, the methods used are rather different, adapted from the ones used in the recent classification of tilting classes over commutative rings.