

Wakamatsu tilting theory and pseudo-derived categories

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(joint with Leonid Positselski)

Classical theory of derived equivalences of rings is built around the notion of tilting complex. Tilting complexes which are modules are precisely the Miyashita tilting modules; they have to be finitely generated of finite projective dimension. The finite homological dimension played a very important role in most of the subsequent generalizations of tilting modules.

In this talk, I will focus on what kind of homological equivalences one obtains in the absence of this homological finiteness condition. In general, one then obtains an equivalence not among usual derived categories, but rather among pseudo-derived categories. These are certain triangulated categories where the module category sits as the heart of a t -structure. One (usually in some sense extremal) example of such a pseudo-derived category for a ring R is the homotopy category of complexes of injective R -modules. This is in general a larger category than the usual derived category.

The pseudo-derived equivalences become much nicer in the situation of Wakamatsu tilting modules, which also appear under the name semidualizing bimodules in the literature.

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