

Approximations of unbounded chain complexes by truncations

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This is joint work with Amnon Neeman, Wojciech Chacholski, and Wolfgang Pitsch. We package Spaltenstein's original idea to build resolutions of unbounded chain complexes in $Ch(R)$ into a pair of adjoint functors which form what we call a model approximation: The model category of towers of truncated chain complexes approximate the category $Ch(R)$. We then extend these methods to do relative homological algebra. We will also present certain rings and well chosen (or rather badly chosen?) classes of injectives for which our methods do not work as smoothly as expected.