

Homological properties of stratified algebras

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This is a partially joint work with V.Mazorchuk. In the talk we report about recent advances in the theory of stratified algebras and related topics.

Some problems of theory of representations of Lie algebras lead to the new classes of stratified algebras, which aren't quasi-hereditary. We establish relations with the theory of stratified algebras and the theory of coalgebras over categories. Using the construction of Butler-Burt algebras and a description of some exact subcategories in abelian categories we prove generalizations of Dlab-Ringel standardization theorem. We present applications of developed techniques and related results: existence of exact Borel subalgebras, description of such subalgebras, estimations of finitistic dimension some classes of stratified algebras. We construct new classes of finite dimensional algebras, which allows an analogue of Ringel duality. Some of these results are based on the considering of derived categories of exact categories as A_∞ -categories and their realization as representations of differential \mathbb{Z} -graded categories.