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Exact categories and vector space categories. (With an appendix by B. Keller). (English)

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In the paper under review, a special basic theory of exact categories is developed. The main focus is on the exact categories constructed from closed subbifunctors of the extension functor. Several methods are given to obtain new exact structure on a category. Almost split pairs (something like almost split sequences for Artin algebras) are used to study the exact categories and their projective objects or injective objects. Many interesting examples are provided to illustrate the main points of the authors. As a main application, the authors consider the representations of bimodules and subspace categories of vector space categories, this includes, in particular, the module category of the one-point extension of an algebra by a module. As an appendix, a new axiom of exact categories is given by B. Keller at the end of the paper.

Reviewer: Xi Changchang (Beijing)

MSC:

16B50 Category-theoretic methods and results in associative algebras (except as in 16D90)
18E10 Abelian categories, Grothendieck categories
16G70 Auslander-Reiten sequences (almost split sequences) and Auslander-Reiten quivers
16G10 Representations of associative Artinian rings

Keywords:

exact categories; bifunctors; almost split sequences; projectives; injectives; representations of bimodules; vector space categories; one-point extensions

Full Text: DOI