

Automorphic equivalence in the classical varieties of linear algebras.

A. Tsurkov.

Institute of Mathematics and Statistics.

University São Paulo. Brazil.

Universal algebras H_1, H_2 of the variety Θ are geometrically equivalent if they have same structure of the algebraic closed sets. Automorphic equivalence of algebras is a generalization of this notion. We can say that universal algebras H_1, H_2 of the variety Θ are geometrically equivalent if the structures of the algebraic closed sets of these algebras coincides up to changing of coordinates defined by some automorphism of the category Θ^0 . Θ^0 is a category of the free finitely generated algebras of the variety Θ . The quotient group $\mathfrak{A}/\mathfrak{N}$ determines the difference between geometric and automorphic equivalence of algebras of the variety Θ , where \mathfrak{A} is a group of the all automorphisms of the category Θ^0 , \mathfrak{N} is a group of the all inner automorphisms of this category.

In cite: PlotkinZhitAutCat was considered two cases when Θ is a variety of linear algebras over the infinite field k : Θ is a variety of the all Lie algebras and Θ is a variety of the all associative algebras with unit. In both these cases the group $\mathfrak{A}/\mathfrak{N}$ is finite when $\text{Aut}k = \{1\}$.

In may talk the group $\mathfrak{A}/\mathfrak{N}$ will be calculated for some classical varieties of linear algebras: the variety of the all linear algebras, the variety of the all alternative algebras, the variety of the all Jordan algebras and so one. In some case the group $\mathfrak{A}/\mathfrak{N}$ is infinite even when $\text{Aut}k = \{1\}$.

Also the examples of the linear algebras which are automorphically equivalent but not geometrically equivalent will be presented.

PlotkinZhitAutCat B. Plotkin, G. Zhitomirski, On automorphisms of categories of free algebras of some varieties, *Journal of Algebra*, **306:2**, (2006), pp. 344 – 367.