Trace Identities: An Interplay Between Algebra, Combinatorics, and Geometry

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The theory of trace identities, closely related to the invariant theory of matrices, plays an important role in the study of polynomial identities of associative algebras. Its foundations were laid by Procesi and Razmyslov.

The aim of this talk is to provide an introduction to the theory of trace identities, focusing on some of its classical results and the combinatorial tools used in their study.

In the final part of the talk, we will present some recent developments concerning trace identities of upper triangular and diagonal matrix algebras, highlighting connections with algebraic geometry.

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