Amitsur Memorial Symposium 2025 - Abstracts

Dani Wise – Cubical Quotients and Nonproducts

We show that cubical groups have cubical quotients unless they look like products.

This is joint work with Maca Arenas and Kasia Jankiewicz.

Eugene Plotkin – Elementary equivalence of algebraic groups

The talk is focused on model theoretic questions of simple/reductive algebraic groups over arbitrary rings with emphasis on their elementary equivalence. We plan to survey the developments of the theory starting with last decade results on classical groups. The very recent results for the isotropic case obtained by P. Gvozdevsky and E.Voronetzky will be outlined. If time permits, I will address the issue of anisotropic groups, which is a hard and tempting goal for further research.

Nir Lazarovich – Highly twisted knot diagrams

One easy way of representing knot is via a knot diagram. However, inferring properties of the knot from its diagram and deciding when two diagrams represent the same knot are quite difficult problems. Surprisingly, when the diagram is sufficiently "twisty" then some structure starts to emerge. I will discuss two results of this nature: hyperbolicity of highly twisted knot diagrams and uniqueness of highly twisted plat diagrams.

Based on joint works with Yoav Moriah, Tali Pinsky and Jessica Purcell. All relevant notions will be explained in the talk.

Agatha Atkarskaya – The Burnside problem for odd exponents

The Burnside problem asks whether a finitely generated group that satisfies a group law $x^n = 1$ is necessarily finite. The answer for large enough exponents n is negative. The first negative result for odd exponents was obtained in by S. Adian and P. Novikov in 1968 for $n \geq 4381$, and it was further improved by Adian for $n \geq 665$. In parallel there exists a different approach of A. Olshanskii that gives a negative answer for $n > 10^{10}$ but has a significantly shorter proof. In 2023 in our work with E. Rips and K. Tent we gave a new and relatively short proof that free Burnside groups for odd $n \geq 557$ are infinite. I will tell about this result and some recent ideas about a further way to decrease n.

Elena Bunina – Automorphisms of Twisted Forms of Chevalley Groups

The structure of automorphisms and isomorphisms of Chevalley groups over a wide class of commutative rings is now well understood. A natural next step in the algebraic classification of groups of Lie type over commutative rings is to investigate the automorphisms (and isomorphisms) of twisted Chevalley groups. These groups extend the classical theory and include, for instance, unitary groups over rings with involution.

In this talk, we will discuss recent advances in this area. In particular, we are approaching a complete characterization of the automorphism groups of twisted Chevalley groups over arbitrary commutative rings containing 1/2.

Michah Sageev – Topological median algebras structures on Euclidean spaces

After a review of some of the basics of median algebras, we discuss some some new results about what topological median algebras homeomorphic to Euclidean space "look like".