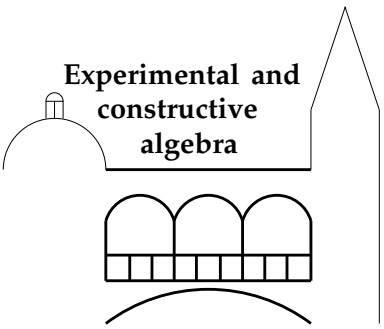
Graduiertenkolleg

Experimentelle und konstruktive Algebra



Kolloquiumsvortrag

Dienstag, 10. April 2018, 14:00 Uhr, Hörsaal V

Jendrik Brachter (Lehrstuhl D für Mathematik):

Automorphism groups of hyperbolic lattices and integral homology

Hyperbolic lattices naturally appear in many different areas of mathematics and while there exists a broad theory for the reflective case (i.e. reflections in the automorphism group generate a finite index subgroup), arbitrary hyperbolic lattices as well as their automorphism groups remain less accessible.
In 2013, M. Mertens developed an algorithm to compute the automorphism group of arbitrary hyperbolic lattices, using the theory of dual cones as presented by J. Opgenorth and M. Köcher. It works via computing an action of the automorphism group on a special pair of dual cones. This action gives rise to an action on a polytopal complex and in my master's thesis I have used this complex to compute integral homology groups of the automorphism group. Having computed those homology groups, one can read of invariants of the automorphism group and thereby study its structure.
The first part of the talk will be concerned with basics on hyperbolic lattices and their automorphism groups. I will present the theory of dual cones and minimal classes in the context of hyperbolic lattices as well as the algorithm due to M. Mertens. In the second part I will give a short introduction to group (co-)homology and present a method to compute integral homology groups of automorphism groups of hyperbolic lattices.

Wir laden alle Interessierten herzlich ein.