Graduiertenkolleg

Experimentelle und konstruktive Algebra

Mini Workshop „Singularities and Computer Algebra“

Ort: Seminarraum Lehrstuhl D für Mathematik

Di, 20. Feb, 15:00 – 16:00 Viktor Levandovskyy (LDfM)

„D-Modules and Singularities“ Algebraic D-modules have tight connections with singularities of hypersurfaces. We present new results on e.g. lower bounds of Bernstein operators and discuss the connections to invariants of singularities.

Mi, 21. Feb, 10:30 – 11:30 Prof. Dr. Anne Frühbis-Krüger (Hannover)

„Desingularization: Finding good centers for blow-ups” A key to desingularization is determining the 'worst' points and characterizing the improvement during the process. In this talk, I will outline invariants which are used in different approaches to resolution of singularities.

Mi, 21. Feb, 12:00 – 13:00 Prof. Dr. Jorge Martín-Morales (Zaragoza)

„Counting the number of solutions modulo a prime and related invariants”
The so-called monodromy conjecture states that the poles of the topological zeta function give rise to roots of the Bernstein-Sato polynomial of the associated singularity. This connects two fascinating different worlds, namely motivic integration and D-module theory, in an unexpected way. In the talk we will discuss how these invariants can be effectively computed by means of embedded resolutions and non-commutative Gröbner bases.

Do, 22. Feb, 10:30 – 11:30 Johannes Hoffmann (LDfM)

„Constructive Arithmetics in Ore localizations with enough commutativity”
We discuss two problems related to (Ore) localization. The first one is to compute the intersection of a (left) ideal I with a multiplicative set S, which is a key ingredient in making arithmetics in Ore-localized G-algebras computable. The second problem is to compute the local closure of an ideal I with respect to a left Ore set S, which has applications in D-module theory. We give algorithms to solve these problems in a variety of situations that are in a sense commutative enough - either because the set S is contained in the center of the ring R in question or R itself is commutative.

Wir laden alle Interessierten herzlich ein.