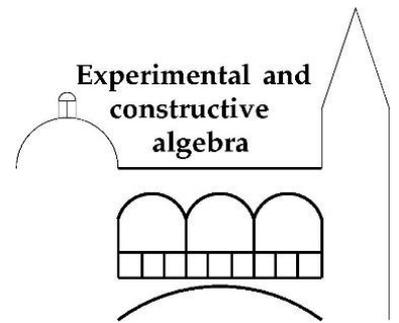


Graduiertenkolleg

## 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.