



Contact

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How to reach us



Doctoral Program

Computational Mathematics

Numerical Analysis and Symbolic Computation



Intensive PhD training in
 two fundamental areas of
 computational mathematics:
 numerical analysis and
 symbolic computation.



Der Wissenschaftsfonds.



► What is the Doctoral Program (DK)?

The DK is a special effort of five institutes, four of the Johannes Kepler University Linz (JKU) – Institutes of Applied Geometry (Geo), of Computational Mathematics (NuMa), of Industrial Mathematics (IndMath), and of Symbolic Computation (RISC) – and one (RICAM) of the Austrian Academy of Sciences. The DK is granted by the Austrian Science Funds (FWF) for a duration of a maximum of 12 years and it started on October 1, 2008.

► The goal of the DK

The overall goal of the DK program is to provide intensive PhD training in two fundamental areas of computational mathematics: numerical analysis (in particular, of direct and inverse field problems) and symbolic computation. This is accomplished by course work that involves lectures from both areas and by interdisciplinary seminars. The long-term goal is to establish a corresponding distinguished PhD Program at JKU which will attract young researchers from all over the world.

► Scientific staff

DK employees: 14 PhD students and 1 post-doc employed; another 12 PhD students are associated.

► Scientific topics of the 9 DK projects

DK1: Formal Theory and Algorithmics of Noncommutative Gröbner Bases

Supervisor: Prof. Bruno Buchberger

DK3: Geometric Solvers for Polynomial Systems

Supervisor: Prof. Bert Jüttler

DK4: Nonstandard Finite Element Solvers for Second-Order Elliptic Boundary Value Problems

Supervisor: Prof. Ulrich Langer

DK6: Computer Algebra Tools for Special Functions in Numerical Analysis

Supervisor: Prof. Peter Paule

DK8: Nonlinear regularization methods for the solution of linear ill-posed problems

Supervisor: Prof. Ronny Ramlau

DK9: Symbolic-Numeric Techniques for Genus Computation and Parametrization

Supervisor: Prof. Josef Schicho

DK11: Rational Parametric Algebraic Curves

Supervisor: Prof. Franz Winkler

DK12: Efficient Solvers for KKT Systems

Supervisor: Prof. Walter Zulehner

DK13: Multivariate Symbolic Asymptotics

Supervisor: Priv.-Doz. Dr. Manuel Kauers

► Extract of the referees' review of the hearing in 2011

„The reviewers were very satisfied with the overall quality of the DK and the whole program. They liked what they saw and heard during the hearing.“

„The reviewers were happy with the results achieved so far. The students were very carefully selected, the screening process was very well planned and had obviously paid off. The reviewers were impressed by the students. The students are solid compared to top international standards.“

„At the hearing the students presented good quality work, were aware of the state of art and knew what they were doing. They sounded coherent. The poster session was regarded as marvelous.“

► SFB/DK book

Members of the DK and its predecessor, the SFB F013, contributed articles for the book „Numerical and Symbolic Scientific Computing – Progress and Prospects“, which was published in December 2011.

Editors:
Ulrich Langer,
Peter Paule

