Veranstaltungen im Wintersemester 2017/18

Das dreißigste Treffen des Rhein-Main Arbeitskreises findet

Freitag, den 2. Februar 2018

an der

TU Kaiserslautern

im **Gebäude 48, Raum 210 (Erdgeschoss)** statt.

Programm

15:00 Uhr: Dr. Thomas Batard (TU Kaiserslautern)
Geometric Variational Models for Color Images Correction
Due to physical and technological limitations of the acquisition process of a real-world scene by a digital camera, the output image of the camera processing pipeline is a degraded version of the observed scene. In this talk, I will present some mathematical models for image processing whose aim is to correct the output image in order to make it perceptually closer to the observed scene.

15:45 Uhr: Tee/Kaffee

16:15 Uhr: M.Sc. Philipp Keding (Universität Marburg)
Quarklet Frames in Adaptive Numerical Schemes
This talk is concerned with new discretization methods for the numerical treatment of elliptic partial differential equations. We derive an adaptive frame scheme that is based on quarkonial decompositions. These new frames are constructed from a finite set of functions by translation, dilation and multiplication by monomials. By means of nonoverlapping domain decompositions, we establish quarkonial frames on domains that can be decomposed into the union of parametric images of unit cubes. We also show that these new representation systems constitute stable frames in scales of Sobolev spaces. The construction is performed in such a way that, similar to the wavelet setting, the frame elements, the so-called quarklets, possess a certain amount of vanishing moments. This enables us to generalize the basic building blocks of adaptive wavelet algorithms to the quarklet case. The applicability of the new approach is demonstrated by numerical experiments for the Poisson equation on L-shaped domains.

17:00 Uhr: Priv.-Doz. Dr. Michael Gnewuch (Universität Kiel)
Infinite-Dimensional Integration
Integrals over functions with an infinite number of variables appear in applications such as molecular chemistry, physics or quantitative finance. Complex stochastic models, e.g., are often based on a sequence of independent and identically distributed random variables, implying that expectations can be represented as infinte-dimensional integrals. In the talk we want to discuss how to approximate infinite-dimensional integrals.

We will, e.g., consider integrands that belong to weighted Sobolev-spaces of dominated mixed smoothness. Optimal algorithms can be constructed as follows: We start with optimal algorithms for univariate integration and use them as building blocks for Smolyak algorithms (aka sparse grid methods) for multivariate integration which in turn are used as building blocks of so-called multivariate decomposition methods for infinite-dimensional integration. With the help of these algorithms we can, in particular, establish the following result: For classes of 'sufficiently smooth' integrands the infinite-dimensional integration problem is (essentially) not harder than the corresponding univariate (i.e., the 'one-dimensional') integration problem.

anschließend: Nachsitzung im Restaurant Sommerhaus

Einen Gebäude- und Raumplan finden Sie auf dieser Seite.