Veranstaltungen im Wintersemester 2014/15

Das vierundzwanzigste Treffen des Rhein-Main Arbeitskreises findet

Freitag, den 27. Februar 2015, 15:00 Uhr

an der

TU Kaiserslautern, Fachbereich Mathematik und Informatik,
Gebäude 48, Hörsaal 48-208

statt.

Programm

15:00 Uhr: Martin Altmayer (Universität Mannheim)
Quadrature of Discontinuous SDE Functionals Using Malliavin Integration By Parts
The Heston Model is a popular stochastic volatility model in mathematical finance. In its classical form the volatility process is given by a CIR process, whereas in the generalized form the volatility follows a mean-reverting CEV process.

While there exist several numerical methods to compute functionals of the Heston price, the convergence order is typically low for discontinuous functionals. In this talk, we will study an approach based on the integration by parts formula from Malliavin calculus to overcome this problem: The original function is replaced by a function involving its antiderivative and by a Malliavin weight. Using the drift-implicit Euler scheme for the square root of the volatility, we will construct an estimator for which we can prove that it has L2-convergence order 1/2 even for discontinuous functionals. This leads to an efficient multilevel algorithm, also in the multidimensional case.

15:45 Uhr: Tee/Kaffee

16:15 Uhr: Dr. Markus Weimar (Univ. Marburg)
On Optimal Wavelet Approximations in Spaces of Besov Type
This talk is concerned with the approximation of embeddings between Besov-type spaces defined on bounded multidimensional domains or (patchwise smooth) manifolds. We compare the quality of approximation of three different strategies based on wavelet expansions. For this purpose, sharp rates of convergence corresponding to classical uniform refinement, best N-term, and best N-term tree approximation will be presented. In particular, we will see that whenever the embedding of interest is compact greedy tree approximation schemes are as powerful as abstract best N-term approximation and that (for a large range of parameters) they can outperform uniform schemes based on a priori fixed (hence non-adaptively chosen) subspaces. This observation justifies the use of adaptive non-linear algorithms in computational practice, e.g., for the approximate solution of boundary integral equations arising from physical applications.

If time permits, implications for the related concept of approximation spaces associated to the three approximation strategies will be discussed.

The results to be presented are work in progress within the framework of the DFG-Project *Adaptive Wavelet and Frame Techniques for Acoustic BEM" (DA 360/19-1)*.

17:00 Uhr:	JP Dr. Felix Lindner (TU Kaiserslautern) *Stochastische PDEs mit Lévy-Rauschen und deren schwache Approximation* Im ersten Teil des Vortrags möchte ich anhand von Beispielen einige Grundlagen zu stochastischen partiellen Differentialgleichungen mit Lévy-Rauschen vermitteln. Im zweiten Teil stelle ich als aktuelles Forschungsresultat Abschätzungen des schwachen Fehlers für numerische Approximationschemata vor.
anschließend:	Nachsitzung

Informationen zur Anreise finden Sie auf dieser Seite.

Der Workshop ist eine gemeinsame Veranstaltung mit dem DFG-Schwerpunktprogramm 1324 EqIS (*Mathematische Methoden zur Extraktion quantifizierbarer Information aus komplexen Systemen*).