

MATHEMATIKKOLLOQUIUM

Das Institut für Mathematik, Infmath Imaging,
lädt zu folgendem Vortrag ein:

Prof. Dr. Bernd Hofmann

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“Quasi-solution versus regularization: Some analysis for linear and non-linear ill-posed problems”

Abstract:

The first part of the talk deals with the stable approximate solution of linear ill-posed problems. $Ax = y$ in a Hilbert space setting. Some new details of error analysis for quasi-solution and regularization approaches are given. This requires the study of certain moduli of continuity for the associated inverse operator A^{-1} .

Under appropriate domain restrictions. In this context, properties for the modulus of continuity and their intimate connections to error bounds of various regularizing procedures are studied systematically. It is shown that Mathé's concept of qualification allows us to find assertions of convergence rates under weak assumptions when conditional stability can be expressed in a quantitative manner.

The main goal of the second part of the presentation, devoted to non-linear ill-posed problems $F(x) = y$, is to show that recent developments of inverse problem theory and new mathematical concepts of regularization can be of interest for inverse option pricing and the stable approximate solution of calibration problems that arise in financial markets. There is a discussion of a decoupling ansatz in Hilbert space that provides us with two separated subproblems, one with respect to time and the other with respect to price variables. The singular case of at-the-money options characterized by degenerating derivatives can be handled by switching from Hilbert space L^2 to the auxiliary Banach spaces $L^{2-\varepsilon}$.

Zeit: Dienstag, 20.5.2008, 12:30
Ort: HS 11, Architekturgebäude EG

Otmar Scherzer

Gäste sind herzlich willkommen!