Einladung zum Oberseminar Wissenschaftliches Rechnen

Julius-Maximilians-Universität Würzburg
Lehrstuhl für Wissenschaftliches Rechnen IX

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An operator splitting method for solving a class of Fokker-Planck equations

The Fokker-Planck equation describes the time evolution of the probability density function of a stochastic process.
If the process does not contain jumps, the Fokker-Planck equation is a parabolic partial differential equation. Regarding this case, a finite difference scheme for initial-value problems that preserves the two key properties of the solution (namely the positivity and the conservativeness of the total probability) was proposed by Chang and Cooper in [1] and analyzed in [2].
When the underlying process contains jumps, the evolution of its probability density function is modelled by a partial-integro differential equation. We consider a partial-integro differential equation, whose integral part is due to a finite activity jump process. We propose an operator splitting method that preserves the two required properties of the probability density function.

References

[1] J. S. Chang and G. Cooper, *A Practical Difference Scheme for Fokker-Planck Equations*, Journal of Computational Physics (1970) 6, 1-16.

[2] M. Mohammadi and A. Borzì, *Analysis of the Chang-Cooper Discretization Scheme for a Class of Fokker-Planck Equations*, J. Numer. Math., to appear.

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Zu diesem Vortrag laden wir Sie herzlich ein.

gez. Prof. Dr. Alfio Borzi