



# Lothar-Collatz-Kolloquium für Angewandte Mathematik

**Dienstag, den 15. November 2011, um 16:00 Uhr, im Hörsaal 3**

**Prof. Dr. Peter Benner \***

(Max-Planck-Institut für Dynamik komplexer technischer Systeme, Magdeburg)

## ***„Solving algebraic Riccati equations for feedback stabilization of flow problems“***

### **Zusammenfassung/Abstract:**

We consider the numerical solution of operator Riccati equations arising in the optimal control-based boundary feedback stabilization of flow problems for incompressible fluids. We discuss recent advances in the numerical solution of large-scale algebraic Riccati equations (AREs), allowing us to tackle this challenge. Our approach will be based on Newton's method for AREs where in each iteration step, we will have to solve a Lyapunov equation. An efficient iterative scheme for this task is the ADI iteration, where in each step a shifted, nonsymmetric linear system of equations of saddle point structure has to be solved. As this inner loop is the main computational task, we will focus on the efficient solution of this saddle point problem. In particular, we will discuss an appropriate preconditioner for the particular structure encountered in our problem.

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Die aktuelle Version der Kolloquiumsankündigungen (inkl. Abstracts) finden Sie unter:

<http://www.math.uni-hamburg.de/spag/angmath/kolloq/>