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RICAM
JOHANN · RADON · INSTITUTE
FOR COMPUTATIONAL AND APPLIED MATHEMATICS

KOLLOQUIUM

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"Energy Minimizing Bases for Efficient Multiscale Modeling and Linear Solvers"

We discuss convergence results for general subspace correction methods, such as Multigrid and Domain Decomposition methods. These multilevel techniques are used to build efficient iterative methods for solving and preconditioning systems of equations arising from finite element discretizations of elliptic problems. As an application of the abstract theory, we will derive lower bounds on the convergence rate for two level methods.
We furhter discuss some of the techniques used in algebraic multigrid methods (AMG) to construct coarse scale discretizations (models). We focus on the choice of coarse spaces and their approximation properties, relation to compatible relaxation technique, and construction of piecewise harmonic bases via energy minimization. We will comment on the optimal algorithms for constructing energy minimizing bases with prescribed sparsity and their applications in multiscale modeling.
The talk is based on ongoing and recent joint works with with J. Xu and J. Brannick (Penn State), R. Scheichl and I. Graham (University of Bath, UK), P. Vassilevski and R. Falgout (Lawrence Livermore National Lab).

Alle Interessenten sind herzlich eingeladen !
o.Univ.-Prof. Dr. Heinz Engl

Mittwoch, 6. Mai 2009, 17:15 Uhr
Johannes Kepler Universität, HF 9901