Sonderforschungsbereich 611

Singuläre Phänomene und Skalierung in mathematischen Modellen

Einladung zu einem Vortrag im SFB-Seminar

Prof. Dr. Matthias Bollhöfer

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spricht zum Thema

Multilevel block preconditioning for shifted Helmholtz and time-harmonic Maxwell equations

Zeit: **Dienstag, den 11. Januar 2011, 15.30 Uhr**

Ort: **Kleiner Hörsaal, Wegelerstr. 10**
Kaffee/Tee: 16.30 Uhr

gez. **Mario Bebendorf**

Abstract: The simulation of acoustic- and electromagnetic phenomena leads to Helmholtz- resp. to time-harmonic Maxwell equations. These equations lead to large scale complex-symmetric systems which are highly indefinite and the process of solving them numerically is known to be challenging. Moreover, discretization techniques like those based high order discontinuous Galerkin methods lead to an underlying block structure with dense blocks. In this talk we analyze an adapted algebraic multilevel block preconditioning approach with respect to structures preservation and efficiency. We also discuss the use of block-structured Level-3-BLAS for suitably shifted systems. The preconditioner itself turns out to be complex symmetric which allows for the use of the simplified QMR method.