Seminar

des DFG-Sonderforschungsbereichs 393

Parallele Numerische Simulation für Physik und Kontinuumsmechanik

Zeit :	Freitag, 26. 11. 2004, 11.00 Uhr
Ort :	2/B202
Vortragender :	Luka Grubisic
Thema :	Ritz value approximations for positive definite operators under realistic regularity assumptions

We will present an abstract framework to obtain the eigenvalue and eigenvector estimates for the self adjoint operator defined by a positive definite form in a Hilbert space. The estimate has a form of a Temple-Kato like inequality. A Temple-Kato like estimate is a combination of a bound on the part of the spectrum one is not interested in and a measure of the residual of the considered Ritz-vectors. The obtained estimates involve "relative" quantities and test vectors that are anywhere in the form (weak) domain of the operator are allowed (think of Laplace operator and linear finite elements).
The new estimates will be considered in the context of finite element approximation methods for positive definite operators. An abstract condition that is needed to formulate a finite dimensional procedure to asses the measure of the residual will be stated. In the case of the Laplace (divergence form) operator this condition essentially depends on the measure of the oscillation of the considered Ritz-vector(s). Several computational examples will be worked out in detail.

Das Seminar wird von Prof. Meyer geleitet. Interessenten sind herzlich eingeladen.