

Fachbereich Computerwissenschaften

EINLADUNG

zum Gastvortrag am

Donnerstag, 03. März 2011,

17:00 Uhr, T02

Institutsgebäude Jakob-Haringer-Str. 2, Itzling

von

Dr. Tor Sørenvik

Department of Informatics, University of Bergen

zum Thema:

„Multidimensional Pseudo-spectral methods on Lattice grids“

Abstract

When multidimensional functions are approximated by a truncated Fourier series, the number of terms typically increases exponentially with the dimension s . However, for functions with more structure than just being L_2 -integrable, the contributions from many of the N^s terms in the truncated Fourier series may be insignificant. In this talk we suggest a way to reduce the number of terms by omitting the insignificant ones. We then show how lattice rules can be used for approximating the associated Fourier coefficients, allowing a similar reduction in grid points as in expansion terms. We also show that using a lattice grid permits efficient computation of the Fourier coefficients by the FFT-algorithm. Finally we assemble these ideas into a pseudo-spectral algorithm and demonstrate its efficiency on the Poisson equation.

Univ.-Prof. Dr. Marian Vajtersic (Host)