Zentrum für Hochleistungsrechnen

E i n l a d u n g

zum

Z H R - K o l l o q u i u m

Titel: **On the Design of Efficient Numerical Schemes for PDEs on the Grid**

Referent: **Prof. M. Garbey**
University of Houston

Kurzfassung:

This presentation will be focused on the design of Parallel Algorithm for the Efficient Numerical Computation of PDEs on the Grid. Typical applications that we will consider are Navier Stokes flow, combustion simulation or air quality problems. We will restrict ourselves to distributed computing architectures such as few shared memory servers or large scale parallel computers linked by a slow network. More precisely, we will assume that the internal network of the parallel computers is several orders of magnitude faster than the network used for grid computing. We will present 3 categories of algorithm that are designed to achieve numerical efficiency and parallel efficiency in this type of environment:

1. C(p,q,j) scheme for coupling systems of differential equations.
2. Acceleration of Schwarz like algorithm in domain decomposition.
3. Stabilization of explicit treatment of diffusion terms via filtering.

This work that has been done in collaboration with M. Resch's team (HLRS-Germany) and D. Tromeur Dervout's team (CDCSP-France), has lead to several successful metacomputing experiences with regular internet links. Several developments on the theory of these algorithms are currently under investigation.

Ort:	**Willers-Bau C207**
Zeit:	**Dienstag, den 24. Juni 2003, 14.00 Uhr**

gez. Prof. Dr. W.E. Nagel
