SS 2004

Numerik partieller Differentialgleichungen II
Numerics of Partial Differential Equations II
Vorlesung (4-stündig)

Wenn von den Hörern gewünscht, wird die Veranstaltung auf Englisch stattfinden, daher ist die folgende Beschreibung auf Englisch.

Lecturer: P. Knabner
Participants: Students of Mathematik (Diplom) or Technomathematik (Diplom), Computational Engineering or other engineering sciences.
Prerequisites: Finite element or finite difference method for linear elliptic problems.
Examination: Oral examination.
Subject: The lecture continues the one of Prof. Wieners in winterterm 03/04. Knowledge of finite element discretizations will be amended by a treatment of (node-oriented) finite volume discretizations (popular in CFD) and, if time permits, of mixed finite element and (cell-oriented) finite volume discretizations. In their main body, the lectures will be concerned with numerical methods for time-dependent problems. Mainly conformal finite element methods and partially also the other discretizations will be studied for parabolic problems (where diffusive/dispersive forces are dominant), for convection-dominated parabolic problems (where diffusive forces exist, but where convective forces become important), and if time permits also finite difference methods for hyperbolic problems (in one space dimension) (where only convective forces play a role). In addition to linear problems also nonlinear problems will be treated. The lectures mainly use the following textbook, with additional material for hyperbolic problems or mixed finite elements.
Dates: Tuesday, 08.15–09.45 h, KS II, Südcampus, Cauerstr. 4,
       Wednesday, 12.15–13.45 h, Raum 0.111, Cauerstr. 6
Note that different dates are given in the printed “Vorlesungsverzeichnis”!
First Lecture: April, 20th, 2004
Exercises: Cannot take place due to limited teaching capacity.
gez. P. Knabner