The Hong Kong Polytechnic University
Department of Applied Mathematics

Seminar
On

Cascadic Multigrid Methods

by

Prof. Zhong-Ci Shi
Institute of Computational Mathematics
Chinese Academy of Sciences

Abstract

Multigrid method is supposed to be the one of most efficient methods for solving large scale linear system of N unknowns with O(N) computational complexity. There are mainly two types of multigrids: W-cycle that uses two corrections in each cycle, and V-cycle that uses only one correction per cycle. Recently (1996--) there appears a new type of multigrids, the so-called Cascadic Multigrid which uses NO correction at all, but only a number of iterations on each level of grids. So it can be viewed as a one-way multigrid.

We have established a general framework of the cascadic multigrid method and given a detailed convergence analysis of this new method in conjunction with its applications for the finite element approximation of the second as well as the fourth order elliptic partial differential equations.

Meanwhile, we have proposed a new technique on the determination of iteration numbers on each level which can greatly reduce the computational costs in the whole process.

Date : 18 April, 2008 (Friday)

Time : 3:00 – 4:00 p.m.

Venue : Departmental Conference Room HJ610
The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***