

Preface

The Eighth International Conference on Domain Decomposition Methods for Partial Differential Equations took place in Beijing, P. R. China, from May 16 to May 20, 1995. It was organized by the State Key Laboratory of Scientific and Engineering Computing and the Institute of Computational Mathematics, both of the Chinese Academy of Sciences (CAS).

One of the main reasons for organizing this conference in Beijing was the growing popularity of Domain Decomposition Methods in China over the last few years, mostly due to the need for mathematical tools and associated numerical algorithms for efficiently solving Partial Differential Equations of various types on distributed computers and networked workstations. Domain Decomposition Methods for Partial Differential Equations have become topics of intense interest in *Scientific and Engineering Computing* over recent years because they not only provide computing strategies suitable for high performance computing systems but also can be very effective for the numerical solution of broad classes of large scale problems from Sciences and Engineering. From that point of view, the Domain Decomposition Conferences have become very important components of the Computational Science landscape.

The main goal of this conference was to bring together researchers with different backgrounds, all of whom are working on Domain Decomposition topics, in order to discuss and review the most recent results and also to promote interaction between numerical analysts, applied mathematicians, and computer scientists. The conference featured sixteen invited lectures, 54 contributed and poster presentations, and was attended by about 100 participants.

The topics from the conference ranged from basic theoretical research to industrial applications, including the numerical analysis of domain decomposition methods with or without overlappings, of multigrid and multilevel methods, of domain decompositions with non-matching grids, etc., as well as applications to problems from Fluid and Structural Mechanics, from Electro-Magnetics, and from Petroleum Engineering. Several lectures were devoted to the hardware and software aspects of the implementation of domain decomposition methods on parallel platforms.

These proceedings contain the text of 51 presentations. They have been divided into five parts, namely:

- I. Basic Domain Decomposition Algorithms
- II. Domain Decomposition and Multilevel Methods
- III. Domain Decomposition and Parallel Computing
- IV. Domain Decomposition Methods for Advection-Diffusion, Transport and Wave Problems
- V. Domain Decomposition Methods for Flow Problems

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