PREFACE

The Sixth International Conference on Domain Decomposition was held at the Villa Olmo, Como, Italy, June 15-19.* About 120 scientists attended the meeting. There were over 50 talks of which more than 20 were by invited speakers.

The meeting, and these proceedings, reflect the steady growth of our knowledge of the field. To a large extent, this development is driven by a changing computer technology, but at the same time, the mathematical foundations are strengthened. Compared with just a few years ago, there is much more experience with difficult applications and much more solid evidence that these algorithms can provide very valuable tools for solving very hard problems in science and industry. There is also a great deal of new knowledge of many aspects on software design.

Much of the work in this field focuses on the development of numerical methods for large algebraic systems that are central in the development of efficient codes for computational fluid dynamics, elasticity and other core problems of continuum mechanics. Many other tasks in such codes parallelize relatively more easily. Therefore, the importance of the algebraic system solvers are increasing with the arrival of parallel computing systems with hundreds and soon thousands of fast processors, systems already provide cost effective alternatives to traditional supercomputers. The promise of these methods is that they will make it possible to carry out simulations of very hard three dimensional continuum mechanics problems, with very high resolution, relatively easily. Much higher resolution, than now possible, is required in many applications in order to gain insight into important open problems in science and engineering.

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* In choosing this venue, the organizers continued the tradition of holding the European symposia in this series at sites associated with Napoleon. The first meeting was thus held in Paris, the fourth in southern outskirts of Moscow, where, according to legend, the Emperor watched his troops in retreat, and Villa Olmo once had Napoleon as an overnight guest while he was still at the height of his power.

The flexibility of this approach is also illustrated in important studies in which different numerical methods and different models of applied mathematics, each appropriate for the subregion at hand, are used to solve large problems cost effectively.

The proceedings of the previous five conferences have been published by SIAM. The organizers are now very pleased to welcome the American Mathematical Society as its new publisher.

The organizers also wish to express their sincere appreciation for the generous support by a number of sponsors including:
Consiglio Nazionale delle Ricerche (C.N.R.) through the "Comitato per la Matematica"; G.A.M.N.I./S.M.A.I., Paris; Istituto di Analisi Numerica del C.N.R., Pavia; Dipartimento di Matematica del Politecnico di Milano; Dipartimento di Matematica dell'Università di Trento, Povo (TN); I.B.M. Fondazione Italia.

We wish to thank the other members of the Scientific Committee (J.H. Bramble, T.F. Chan, R. Glowinski and G.H. Golub) for their invaluable help in deciding the scientific policy of the Conference, evaluating the contributions as well as for their constant assistance to the Organizers.

We would also like to acknowledge the precious work done by the Organizers (D.L. Marini, A. Russo and A. Valli) all along this adventure, and the hard work of Mrs. M.G. Fusari, who has taken care in a beautiful manner of infinitely many technical details.

Finally, we are pleased to thank the Istituto di Analisi Numerica del CNR of Pavia and the Centro di Cultura Scientifica "A. Volta" of Como, and in particularly Mrs. A. Passi and Dr. M. Marelli, for the active support given in the organization of the Conference.

Without the help of everybody the meeting could not have been nearly as successful or indeed at all possible.

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