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## *Foreword*

Presently the finite element method is an effective and reliable everyday tool of numerical analysis in science and engineering. It was therefore chosen to be the key topic of the International Conference OFEA'95 as well as to designate its title. The aim of the conference was to give scientists an additional opportunity to view recent advancements and to discuss various aspects which promote the optimization of this method in theory and implementation. Undoubtedly there are still many improvements to come which will make the finite element method more effective, more elegant in use, and successfully applicable to a much wider range of problems than now.

The field of numerical mathematics is hardly separable into pieces, at least without heavy losses. Thus, reports on other computational approaches took their natural place in the program—in particular, mesh methods, related algorithms, and their applications.

Reports presented at the conference were devoted to a variety of important problems. Among these are: the dimensional and other sorts of adaptivity, a-priori and a-posteriori error estimates and discrete maximum principles, superconvergence, mixed and hybrid finite element methods as well as boundary element methods, finite element approximations on manifolds, stability and other properties of finite element approximations and projection-difference schemes for some time dependent problems, analysis of the p-version and its algorithms, preconditioning, hierarchical projections, multigrid and domain decomposition iterative techniques, analysis and applications of finite element methods for some complicated nonlinear problems of solid and fluid mechanics, splines and wavelets, computer implementations of a number of interesting engineering problems, and others. A reader can get some idea of the topics touched upon at the conference from the collection of abstracts. Due to volume restrictions, only a selection of the most interesting lectures could be presented in this edition. They cover, however, a good share of the exciting problems of the modern numerical analysis and add considerably to the toolkit for further investigations.

The conference was initiated by several scientists from different countries and put on the practical ground by the St.Petersburg seminar on finite element method and related topics of numerical analysis. It has become real by the sound support of researchers from many countries as well as scientists from other fields of mathematics. Professors W. Hackbusch (Germany), S. Jensen (USA), W. Wendland (Germany), and academician A. A. Samarskii (Russia) are worth mentioning here. Special thanks are to be rendered to professor U. Langer whose active attitude to the problems met in the preparation of the conference was very fruitful.

Special thanks go to Dmitry Kirsanov who is the designer of the conference logo and has prepared the camera-ready copy of this volume. Above all special gratitude should be extended to the journal *Mathematical modelling* and its publishing group for their patience, collaboration and excellent work.