

Special Volume with Selected Papers from the 20th Chemnitz Finite Element Symposium

This special volume of ETNA, the *Electronic Transactions on Numerical Analysis*, contains selected papers from the 20th Chemnitz Finite Element Symposium, held on September 24–26, 2007, in the Schlosshotel Klaffenbach, located in the southern outskirts of Chemnitz, Germany. Sixty six people took part in this conference. The scientific program consisted of four invited and forty three contributed talks.

This symposium was a jubilee meeting, the twentieth. The first symposium took place under the official title *Symposium on the application and computer realization of the finite element method* in 1978, followed by conferences every three years in 1981, 1984, 1987, and 1990. The aims were to exchange ideas with other scientists and to bring together mathematicians and engineers who deal with the finite element method.

Although these meetings became more and more popular (about 200 participants in 1990), this tradition was discontinued. Instead, smaller workshops with a limited scope were organized by the groups of Ulrich Langer and Arnd Meyer in the years 1991, 1993, 1994, and 1995. They provided a forum for fast solution techniques in finite and boundary element methods as well as in scientific parallel computing.

In 1997, on the occasion of the founding of the Collaborative Research Center (in German: Sonderforschungsbereich) called *Numerical simulation on massively parallel computers* funded by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG), the organizers decided to extend the scope of the meetings and to call these annual conferences *Chemnitz Finite Element Symposia* in the tradition of the working title of the former meetings. Between 1997 and 2007 altogether eleven symposia took place. The meetings are devoted to all aspects of finite elements including fast solvers, error estimation, parallel implementation, and applications. Some topics are emphasized every year, in 2007 those were: computational fluid dynamics, contact problems and large deformations, solvers and preconditioners, as well as mortar and discontinuous Galerkin methods.

In order to mark the jubilee meeting in 2007, it was decided to publish selected papers from the symposium. This special issue of ETNA contains peer-reviewed articles on new developments in the field of numerical methods for partial differential equations and their applications. The special editors for this volume want to take this opportunity to thank both the authors and all reviewers of the papers for their assistance in the successful completion of this task. Special thanks go to Lothar Reichel and Jing Li for hosting this special issue in ETNA.

Thomas Apel, Universität der Bundeswehr München
Albrecht Böttcher, Technische Universität Chemnitz
Gundolf Haase, Karl-Franzens-Universität Graz
Bernd Heinrich, Technische Universität Chemnitz
Michael Jung, Hochschule für Technik und Wirtschaft Dresden (FH)
Ulrich Langer, Johannes Kepler Universität Linz
Arnd Meyer, Technische Universität Chemnitz
Arnd Rösch, Universität Duisburg-Essen
Olaf Steinbach, Technische Universität Graz
Special volume editors