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New Results in Numerical and Experimental Fluid Mechanics VII

Contributions to the 16th STAB/DGLR
Symposium Aachen, Germany 2008

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Foreword

This volume contains the papers presented at the 16th DGLR/STAB-Symposium held at the Eurogress Aachen and organized by RWTH Aachen University, Germany, November, 3 - 4, 2008. STAB is the German Aerospace Aerodynamics Association, founded towards the end of the 1970's, whereas DGLR is the German Society for Aeronautics and Astronautics (Deutsche Gesellschaft für Luft- und Raumfahrt - Lilienthal Oberth e.V.).

The mission of STAB is to foster development and acceptance of the discipline "Aerodynamics" in Germany. One of its general guidelines is to concentrate resources and know-how in the involved institutions and to avoid duplication in research work as much as possible. Nowadays, this is more necessary than ever. The experience made in the past makes it easier now, to obtain new knowledge for solving today's and tomorrow's problems. STAB unites German scientists and engineers from universities, research-establishments and industry doing research and project work in numerical and experimental fluid mechanics and aerodynamics for aerospace and other applications. This has always been the basis of numerous common research activities sponsored by different funding agencies.

Since 1986 the symposium has taken place at different locations in Germany every two years. In between STAB workshops regularly take place at the DLR in Göttingen. The changing meeting places were established as focal points in Germany's Aerospace Fluid Mechanics Community for a continuous exchange of scientific results and their discussion. Moreover, they are a forum where new research activities can be presented, often resulting in new commonly organized research and technology projects.

It is the seventh time now that the contributions to the Symposium are published after being subjected to a peer review. The material highlights the key items of integrated research and development based on fruitful collaboration of industry, research establishments and universities. Some of the contributions still present results from the "Luftfahrtforschungsprogramm der Bundesregierung (German Aeronautical Research Program)". Some of the papers report on work sponsored by the Deutsche Forschungsgemeinschaft (DFG, German Research Council) in some of their Priority Programs (Verbundschwerpunkt-Programm) as well as in their Collaborative Research Centres (Sonderforschungsbereiche). Other articles are sponsored by the European Community and are therefore results of cooperation among different organizations. The main areas include numerical simulation, experimental simulation and test techniques, flow control, airplane aerodynamics, hypersonic flows and aerothermodynamics, aeroacoustics and the rather new fields of convection mixing and biomedical flows. This volume gives an almost complete review of the ongoing

aerodynamics research work in Germany. The order of the papers in this book corresponds closely to that of the sessions of the Symposium.

From 100 lectures presented at the Symposium 75 are included in this book.

The Review-Board, partly identical with the Program-Committee, consisted of N. Adams (München), J. Ballmann (Aachen), C. Bartels (Hamburg), S. Becker (Erlangen), H. Bieler (Bremen), C. Breitsamter (Garching), G. Brenner (Clausthal), M. Breuer (Hamburg), C. Brücker (Freiberg), J. Delfs (Braunschweig), K. Ehrenfried (Göttingen), R. Ewert (Braunschweig), H. Foysi (Aachen), J. Fröhlich (Dresden), A. Gardner (Göttingen), N. Gauger (Berlin), A. Gülhan (Köln), D. Hänel (Duisburg), K. Hannemann (Göttingen), H. Hansen (Bremen), S. Hein (Göttingen), A. Henckels (Köln), R. Henke (Aachen), D. Hennecke (Darmstadt), P. Hennig (Unterschleißheim), M. Hepperle (Braunschweig), H. Herwig (Hamburg), R. Höld (Unterschleißheim), F. Holzäpfel (Weßling), K. H. Horstmann (Braunschweig), T. Indinger (Garching), S. Jakirlic (Darmstadt), C. Kähler (Neubiberg), R. Kessler (Göttingen), W. Khier (Braunschweig), M. Klaas (Aachen), L. Kleiser (Zürich), M. Kloker (Stuttgart), M. Konstantinov (Göttingen), W. Kordulla (Nordwijk), F. Kost (Göttingen), H. Krain (Köln), E. Krämer (Stuttgart), D. Kröner (Freiburg), N. Kroll (Braunschweig), W. Kühn (Bremen), H. Lienhart (Erlangen), J. Longo (Braunschweig), T. Lutz (Stuttgart), J. Martinez Schramm (Göttingen), M. Meinke (Aachen), F. Menter (Otterfing), D. Müller (Aachen), C. Mundt (Neubiberg), C.-D. Munz (Stuttgart), K.-P. Neitzke (Bremen), G. Neuwerth (Aachen), S. Niebergall (Merkers-Kieselbach), W. Nitsche (Berlin), H. Olivier (Aachen), H.-D. Papenfuß (Bochum), R. Radespiel (Braunschweig), H.-J. Rehder (Göttingen), M. Rein (Göttingen), C. Resagk (Ilmenau), K. Richter (Göttingen), U. Rist (Stuttgart), H. Rosemann (Göttingen), C.-C. Rossow (Braunschweig), R. Rudnik (Braunschweig), T. Rung (Hamburg), E. Sarradj (Cottbus), A. Schröder (Göttingen), W. Schröder (Aachen), E. Schülein (Göttingen), D. Schwamborn (Göttingen), F. Seiler (Saint-Louis), A. Seitz (Braunschweig), W. Send (Göttingen), J. Sesterhenn (Neubiberg), J. Srulijes (Saint-Louis), C. Stemmer (Garching), J. Stiller (Dresden), A. Thess (Ilmenau), F. Thiele (Berlin), C. Tropea (Darmstadt), R. Voß (Göttingen), C. Wagner (Göttingen), C. Weiland (Bruckmühl), H. Wengle (Neubiberg), J. Wild (Braunschweig) and W. Würz (Stuttgart).

Nevertheless, the authors sign responsible for the contents of their contributions.

The editors are grateful to Prof. Dr. W. Schröder as the General Editor of the "Notes on Numerical Fluid Mechanics and Multidisciplinary Design" and to the Springer-Verlag for the opportunity to publish the results of the Symposium.

November 2009

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