

Notes on Numerical Fluid Mechanics and Multidisciplinary Design

Volume 131

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Rolf Radespiel · Reinhard Niehuis
Norbert Kroll · Kathrin Behrends
Editors

Advances in Simulation of Wing and Nacelle Stall

Results of the Closing Symposium of the DFG
Research Unit FOR 1066, December 1–2,
2014, Braunschweig, Germany

 Springer

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Preface

Reliable simulations of flow separation on airfoils, wings and powered engine nacelles at high Reynolds numbers represent great challenges in defining suitable mathematical models, computing numerically accurate solutions and providing comprehensive experimental data for the validation of numerical simulations. Additional scientific problems arise from the need to consider airframe-engine interactions and inhomogeneous onset flow conditions as real aircraft operate in atmospheric environments with often large distortions. This describes the research field of the Research Unit FOR 1066 which received funding of 9 coordinated projects by Deutsche Forschungsgemeinschaft during the years 2009-2015. As simulation of wing and nacelle stall is an internationally active research area it can take advantage of communicating new approaches and best practises in implementations and applications in order to enhance scientific progress. Therefore, scientific symposia were held every other year since 2008 in Braunschweig, Germany. The symposia aimed to bring together scientists dealing with numerical simulations of these flows and researchers who contributed experimental work for validation. Invited lectures given by leading international scientists and engineers from industry and academia highlighted the current status in the field.

The closing symposium of FOR 1066 was an excellent opportunity to review the work and accomplishments of the Research Unit after six years. The editors of this volume were glad to host this symposium on 1-2 December 2014. The present volume contains the manuscripts of the presentations given during these two days. The order of contributions in this book corresponds to that of the sessions of the symposium. The reviews of the FOR 1066 research projects are accompanied by papers given by external researchers. Among these are invited contributions from three internationally leading scientists, who agreed to present keynote lectures in selected areas. We thank M. Strelets, K. Hillewaert and R. Schnell for their excellent contributions.

We hope that reading this book will provide valuable insight into the potentials and challenges of this important area of flight physics.

We express our thanks to the colleagues providing the manuscripts and to Kathrin Behrends for managing the review process needed to generate this volume.

We 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 this volume.

Braunschweig
April 2015

Rolf Radespiel
Reinhard Niehuis
Norbert Kroll



Contents

Part I: Modelling

The Delay of RANS-to-LES Transition in Hybrid RANS-LES Approaches and Some Recently Proposed Remedies	3
<i>Mikhail Strelets, Mikhail Shur, Andrey Travin, Philippe R. Spalart</i>	
Computations of Separated Flows with a Hybrid RANS/LES Approach	23
<i>Daniela G. Francois, Rolf Radespiel, Silvia Reuß, Axel Probst</i>	
Hybrid RANS/LES Study of the Development of an Airfoil-Generated Vortex.	41
<i>Silvia Reuß, Axel Probst, Tobias Knopp, Katharina P. Wawrzinek</i>	
Interaction of Three-Dimensional Disturbances with the Flow Around a Two-Element High-Lift Airfoil	55
<i>Simon Klein, Peter Scholz, Rolf Radespiel</i>	
The Discontinuous Galerkin Method as an Enabling Technology for DNS and LES of Industrial Aeronautical Applications.	75
<i>Koen Hillewaert, Corentin Carton de Wiart</i>	
Body Force Modelling of Internal Geometry for Jet Noise Prediction	97
<i>James C. Tyacke, Iftekhar Z. Naqavi, Paul G. Tucker</i>	
Numerical Studies of Turbulent Flow Influence on a Two-Element Airfoil.	111
<i>Katharina P. Wawrzinek, Thorsten Lutz, Ewald Krämer</i>	
CFD for Prediction of Flow Separation from Aircraft Tail Surfaces. . .	137
<i>Andrea Masi, Jeremy Benton, Paul G. Tucker</i>	

Zonal RANS-LES Computation for Near-Stall-Airfoil Flow	151
<i>Benedikt Roidl, Koen J. Geurts, Wolfgang Schröder</i>	
 Part II: Simulation of Atmospheric Disturbances	
 Criteria for Crosswind Variations during Approach and Touchdown at Airports	167
<i>Henk W. Krüs</i>	
 Development and Improvement of Two Methods of Different Complexity to Simulate Atmospheric Boundary Layer Turbulence for Aircraft Design Studies.	189
<i>Christoph Knigge, Siegfried Raasch</i>	
 Simulation of Interaction of Aircraft with Gust and Resolved LES-Simulated Atmospheric Turbulence	203
<i>Philip Kelleners, Ralf Heinrich</i>	
 A New Method to Generate Anisotropic Synthetic Turbulence for LES.	223
<i>Torsten Auerswald, Jens Bange</i>	
 Numerical Simulation of the Turbulent Flow Around a Wing	235
<i>Torsten Auerswald, Jens Bange</i>	
 Part III: Inlet and Engine Flows	
 Integration- and Intake-Induced Flow Distortions and Their Impact on Aerodynamic Fan Performance	251
<i>Rainer Schnell, Dirk Schönweitz, Marius Theune, Johakim Corroyer</i>	
 Flow Investigations in a Stalling Nacelle Inlet under Disturbed Inflow	271
<i>Simon Übelacker, Rainer Hain, Christian J. Kähler</i>	
 Realistic Inlet Distortion Patterns Interacting with a Transonic Compressor Stage	285
<i>Fabian Wartzek, Felix Holzinger, Christoph Brandstetter , Heinz-Peter Schiffer</i>	
 Unsteady CFD Simulation of Transonic Axial Compressor Stages with Distorted Inflow	303
<i>Sebastian Barthmes, Jakob P. Haug, Andreas Lesser, Reinhard Niehuis</i>	

Transitional Shock-Wave/Boundary-Layer Interactions in Intakes at Incidence 323
Tafara E. Makuni, Hardeep S. Kalsi, Paul G. Tucker, Holger Babinsky

Part IV: Applications in Complex Aircraft Flows

Advanced Design Approach for a High-Lift Wind Tunnel Model Based on Flight Test Data 337
Niko Bier, Stefan Keye, David Rohlmann

Simulation of Longitudinal Vortices on a High-Lift Wing 351
Tim Landa, Jochen Wild, Rolf Radespiel

Impact of Different UHBR-Engine Positions on the Aerodynamics of a High-Lift Wing 367
Sebastian Ritter

Numerical Investigation of the Influence of Pressure Belts on the Stall of a Transport Aircraft in Landing Configuration 381
David Rohlmann

Numerical Studies of Active Flow Control Applied at the Engine-Wing Junction 397
Sebastian Fricke, Vlad Ciobaca, Jochen Wild, David Norman

Author Index 413