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Editors

Progress in Hybrid RANS-LES Modelling

Papers Contributed to the 6th Symposium on Hybrid RANS-LES Methods, 26–28 September 2016, Strasbourg, France

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Preface

Today, hybrid RANS-LES methods (HRLM) are increasingly used as a powerful engineering modelling approach in computer simulation of industrially relevant complex turbulent flow. Covering the fundamentals of flow physics modelling and its application to industrial flow problems, the 6th International HRLM Symposium showcases the most recent developments on advanced URANS, LES and hybrid RANS-LES methods in general, as well as a range of other innovations to enable turbulence-resolving simulations.

The main objective of the HRLM Symposium series has been to bring together researchers and industrial engineers to exchange knowledge, to discuss new solutions of flow problems and to present recent achievements in the development and application of a wide spectrum of hybrid RANS-LES methods, scale-resolving modelling approaches and related numerical issues.

Following the first event in Stockholm (Sweden, 2005), the symposium has travelled to Corfu (Greece, 2007), Gdansk (Poland, 2009), Beijing (China, 2011) and most recently in College Station (USA, 2014). The Sixth Symposium on Hybrid RANS-LES Methods marked the 20-year anniversary of the pioneering work on detached eddy simulation. As in the previous symposia, new and emerging ideas have been presented and discussed with great inspiration, offering evolutions in computational accuracy and efficiency in line with industrial needs.

This book provides the set of extended papers presented at the Sixth Symposium on Hybrid RANS-LES Methods, which took place in Strasbourg, France, 26–28 September 2016. Five invited keynotes were delivered by Philippe Spalart (Boeing Commercial Airplanes), Rémi Marceau (CNRS-Univ. of Pau), Florian Menter (ANSYS Inc.), Sylvain Landeau (CD adapco Ltd.) and Song Fu (Tsinghua University). A total of 42 papers were accepted, addressing wall-modelled large eddy simulation (WMLES) methods, embedded LES, lattice Boltzmann methods and turbulence-resolving applications, comparison of the LES methods with both hybrid RANS-LES and URANS methods, numerical modelling issues in industrial applications. All the papers included in this book have been peer-reviewed by the symposium scientific committee members and other invited external experts.

The six HRLM Symposium was hosted by the University of Strasbourg and the ICube laboratory. We are grateful for the excellent and dedicated work of the local organising team at Strasbourg University, including Ph.D. students and members of the ICube laboratory. As ever, the continued success of the HRLM Symposium is founded on the fantastic support of our community, the participants, the invited and contributing authors and the scientific committee alike. The scientific committee and numerous external experts served to review the full paper and improve the quality of the book. In particular we are grateful to the following experts for reviewing the full manuscripts included in the present book: M. Braza, B. Basara, L. Davidson, S. Deck, S. Fu, K. Fujii, T. Gatski, S. Girimaji, W. Haase, S. Jakirlic, J. Kok, D. Laurence, R. Manceau, F. Menter, P. Spalart, M. Strelets, F. Thiele, M. Fuchs and S. Wallin.

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