The study of wall-bounded turbulent flows is of considerable interest from both scientific and practical viewpoints. As such it has attracted a great deal of research over the last 100 years. Much research has concentrated on flows over smooth walls since these are simpler from experimental, numerical and theoretical standpoints. The flow over rough walls has still received considerable attention but progress has necessarily been slower. Perhaps the most essential problem (certainly from a practical point of view) is to be able to predict the skin-friction drag acting on a plate (or a body) given a certain known roughness characteristic of the surface. Unfortunately this has proved to be very difficult since even the simplest rough surfaces can be characterised by a number of different parameters and we still cannot directly connect these to the fluid dynamic drag in a given situation. Various theories and models have been proposed in order to make progress but there is still some disagreement in the community as to the correct understanding of these important flows.

Special invited talks were presented by
Hyung Jin Sung from KAIST in Korea
Lex Smits from Princeton University, USA
Robert Antonia from University of Newcastle, Australia
Stefano Leonardi from University of Puerto Rico at Mayagüez

The IUTAM Symposium on the Physics of Wall-bounded Flows on Rough Walls was held in Clare College, Cambridge from the 7th to 9th July 2009 in order to bring together various expert researchers in the field to try and resolve some of these disagreements and to develop a consensus on the most fruitful directions of future research. The symposium was organised locally by the Chairman assisted by two of his PhD students Gan Lian and Tee Boon Tuan who were invaluable in ensuring the smooth running of the meeting.

The Scientific Committee selected the participants, reviewed the abstracts for presentation and reviewed the final papers for inclusion in this volume – for which I am very grateful. It consisted of

- Tim Nickels, University of Cambridge (Chairman)
- Ian Castro, University of Southampton
- Karen Flack, U.S. Naval Academy
I would also like to thank all of the contributors, in particular the participants who attended the meeting. There were 44 participants at the meeting representing 12 countries. It was their friendly, open attitudes and willingness to discuss points of contention freely and without reserve that made this a particularly successful meeting. A significant amount of time in the symposium was allocated to discussion sessions. This proved to be a very valuable feature of the symposium and should be encouraged in future meetings.

The organisers are very grateful for financial assistance from the IUTAM, the Sir Arthur Marshall Institute of Aeronautics, British Petroleum and Springer. This assistance helped to reduce the costs for participants and hence allowed for a wider participation than might otherwise have been the case.

The papers in this volume appear in the order in which they were presented at the meeting. Although the sessions are not specifically identified here they were loosely organised into papers on related topics and as such, in the volume, related papers appear close together.

Cambridge

March 2010

Tim Nickels
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