

Second International Workshop on Wall-Bounded Turbulent Flows

The Abdus Salam International Centre for Theoretical Physics (ICTP)
Trieste, Italy, November 2-5, 2004

The workshop is organized to maximize discussion and introspection with an atmosphere that encourages an open-mind approach to the issues. Enough time is planned for each of us to convince others of what is right at the present level of understanding in the spirit of true intellectual inquiry and in a congenial atmosphere. We hope that out of these meetings we will emerge with a shared level of understanding, and a clearer sense of where our future efforts should lie.

The speakers must prepare shorter talks rather than spill over the allotted time. It is important for the speakers to make the main points rather than to be comprehensive and discursive. The session chairs have been asked to strictly adhere to the indicated starting and ending times. Prepared discussions will be limited to a maximum of two slides per individual.

Tuesday, 2 November

- Registration and Social Gathering 18:00 – 21:00

Wednesday, 3 November

- Registration 8:00 – 8:45
- **Welcome (K. R. Sreenivasan)**
- **and Announcements (Lex Smits)** 8:45 – 9:00

- **Session I: Latest advances in computational and experimental approaches and techniques (Chair: Hassan Nagib; Co-Chair: John K. Eaton)** 9:00 – 13:15
 - *Ivan Marusic* 9:00 – 9:25
"Investigation of Large-Scale Structures in Wall Turbulence Using Multi-Plane PIV"
 - Discussion, including prepared comments 9:25 – 9:50
 - *Arne Johansson and Henrik Alfredsson* 9:50 – 10:10
"Perspectives on scaling issues for turbulent boundary layers, in the light of new developments"
 - Discussion, including prepared comments 10:10 – 10:30
 - **Coffee Break** **10:30 – 11:15**
 - *Noor Afzal* 11:15 – 11:30
"Outer Non-Linear Wake Layer in Turbulent Boundary Layers and Izakson-Millikan Overlap for Power Law and Log Law Solutions: A new Approach"
 - Discussion 11:30 – 11:45
 - *Takahiro Tsukahara and Hiroshi Kawamura* 11:45 – 12:00
"Large scale structure captured in DNS of turbulent Couette and Poiseuille flows"
 - Discussion 12:00 – 12:15
 - *Vincenzo Armenio and Stefano Salon* 12:15 – 12:30
"Large-Eddy Simulation of the Stokes Boundary Layer in the Turbulent Regime"

- Discussion 12:30 – 12:45
- *Kaoru Iwamoto and Nobu Kasagi* 12:45 – 13:00
"DNS of Moderately High Reynolds Number Turbulent Channel Flow"
- Discussion 13:00 – 13:15
- **Lunch** 13:15 – 14:45
- **Session II: Similarities and differences between atmospheric and laboratory boundary layers (Chair: Ivan Marusic; Co-Chair: Peter Monkewitz)** 14:45 – 18:45
 - *Joe Klewicki* 14:45 – 15:10
"On Discerning Reynolds Number Variations in Boundary Layer Statistics from Atmospheric Surface Layer Measurements"
 - Discussion, including prepared comments 15:10 – 15:40
 - *Tim Nickels* 15:40 – 16:00
"Evidence for the -1-law in Wall-Bounded Turbulence"
 - Discussion, including prepared comments 16:00 – 16:30
 - **Coffee Break** 16:30 – 17:15
 - *Hans Fernholz* 17:15 – 17:30
"Measurements in High Reynolds-Number Boundary layers"
 - Discussion 17:30 – 17:45
 - *Min Chong and Jason Monty* 17:45 – 18:00
"Further Spectral Measurements in High Reynolds Number Turbulent Boundary Layers"
 - Discussion 18:00 – 18:15
- **Banquette Hosted by ICTP** 19:30

Thursday, 4 November

- Announcements 8:15 – 8:30
- **Session III: Non-equilibrium effects including pressure gradient, roughness, etc., (Chair: Rodam Narasimha; Co-Chair: Bob Moser)** 8:30 – 13:00
 - *Peter Monkewitz* 8:30 – 8:45
"Rethinking of Outer Scaling in ZPG Turbulent Boundary Layers Based on Recent Measurements in the NDF and the RANS Equations"
 - Discussion 8:45 – 9:00
 - *Hassan Nagib* 9:00 – 9:30
"Non-Equilibrium High Reynolds Number Boundary Layers"
 - *Chris Christophorou and Kapil Chauhan* 9:30 – 9:45
"How Well Do We Know The Wall Shear Stress in ZPG Layers and Initial Computations of Boundary Layers from NDF"
 - Discussion, including prepared comments 9:45 – 10:30
 - **Coffee Break** 10:30 – 11:30
 - *John Eaton* 11:30 – 11:45
"Scaling the Reynolds Stresses in Adverse Pressure Gradient Boundary Layers"
 - Discussion 11:45 – 12:00
 - *Carlo Massimo Casciola and Renzo Piva* 12:00 – 12:15
"Energy Cascade and Spatial Fluxes in Wall Turbulence"
 - Discussion 12:15 – 12:30

- *Jonathan Morrison* 12:30 – 12:45
"Scaling Issues in Rough Pipes"
- Discussion 12:45 – 13:00
- **Lunch** **13:00 – 14:30**
- **Session IV: Why should we focus on large fully-developed pipe (Chair: K. R. Sreenivasan; Co-Chair: Tim Nickels)** 14:30 – 18:30
 - *Alexander Smits and Gary Kunkel* 14:30 – 15:00
"Turbulence Measurements and Scaling in Fully-Developed Pipe Flow"
 - Discussion, including prepared comments 15:00 – 15:30
 - *Alessandro Talamelli, Henrik Alfredsson, Jens Österlund and Arne Johansson* 15:30 – 15:45
"A 'Blue-Print' for the Pipe-Flow Experiment at CICLoPE"
 - Discussion, including prepared comments 15:45 – 16:15
 - **Coffee Break** **16:15 – 17:00**
 - *Beverley McKeon* 17:00 – 17:15
"The Mixing Transition in Fully-Developed Pipe Flow"
 - Discussion 17:15 – 17:30
 - *Rainer Friedrich* 17:30 – 17:45
"Compressible Turbulent Pipe flow"
 - Discussion 17:45 – 18:00
 - *Frans Nieuwstadt* 18:00 – 18:15
"Small Perturbations and Their Control in Cylindrical Pipe Flow"
 - Discussion 18:15 – 18:30
- **Dinner and Social Gathering** 19:30 – ?

Friday, 5 November

- Announcements 8:15 – 8:30
- **Closing Session: Session Summaries & Future Directions (Chair: Lex Smits)** 8:30 – 13:00
 - Session I Summary 8:30 – 8:50
John K. Eaton and Hassan Nagib
 - Discussion 8:50 – 9:30
 - Session II Summary 9:30 – 9:50
Peter Monkewitz and Ivan Marusic
 - Discussion 9:50 – 10:30
 - **Coffee Break** **10:30 – 11:30**
 - Session III Summary 11:30 – 11:50
Bob Moser and Rodam Narasimha
 - Discussion 11:50 – 12:30
 - Session IV Summary 12:30 – 12:40
Tim Nickels and K. R. Sreenivasan
 - Discussion 12:40 – 13:00
- **Lunch** **13:00 – 14:30**