

# Third International Workshop on Wall-Bounded Turbulent Flows

Chicago Hilton, November 17-19, 2005

The workshop is organized to maximize discussion and introspection with an atmosphere that encourages an open-mind approach to the issues. The speakers are asked to prepare shorter talks rather than spill over the allotted time. All talks are limited to a maximum of 15 minutes, and are accompanied by discussion of approximately the same length. It is important for the speakers to make the main points rather than to be comprehensive and discursive. Prepared discussions should be limited to a maximum of two slides per individual. It will be at the discretion of the session chair as to how and when the discussion takes place. Each session should end with a general discussion of the main themes raised in the session.

## Wednesday, 16 November

Location: Suite 1979, Nineteenth Floor

- Registration and Social Gathering  
18:00 – 21:30

## Thursday, 17 November

Location: Lake Ontario Room; Eighth Floor

- Registration 7:30 – 8:10
- Welcome (Hassan Nagib)  
and Announcements (Lex Smits, Ivan Marusic) 8:10 – 8:30

### **Session 1: Pipe flows; Roughness 8:30 – 12:15** (Chair: K.R. Sreenivasan; Co-Chair: Bob Moser)

1. **Lex Smits, Gary Kunkel and James Allen** (Princeton University)  
*Flow in rough pipes*
2. **Beverley McKeon** (Imperial College)  
*Inertial scaling in wall-bounded flows*
3. **Jonathan Morrison** (Imperial College)  
*Interaction between inner and outer regions of turbulent wall-bounded flow*

Coffee Break 9:50 -10:10

4. **Min S. Chong and Jason Monty** (University of Melbourne)  
*Development lengths in duct and pipe flow*
5. **Alessandro Talamelli** (Universita di Bologna) **and Henrik Alfredsson** (KTH Stockholm)  
*Status and recent developments in CICLoPE project*  
(Includes Report on *First CICLoPE Symposium*, **Ivan Marusic** (U. Minnesota))
6. **Mike Schultz and Karen Flack** (US Naval Academy)  
*Comparison of Turbulence over Rough and Smooth Walls*
7. **Casimir van Doorne and Frans Nieuwstadt** (TU Delft)  
*Turbulence measurements in a pipe flow using high-speed PIV*

**Lunch 12:15 –13:30**

**Session 2: Structure and Organized Motions**  
(Chair: Roddam Narashima; Co-Chair: Min Chong)

**13:30 – 17:15**

1. **Ronald J. Adrian** (Arizona State University)  
*Some fundamental questions about wall turbulence structure*
2. **Javier Jimenez** (U. Politecnica Madrid)  
*Self-similar structures of the logarithmic region, up to  $Re_\tau = 2000$*
3. **Kaoru Iwamoto and Nobu Kasagi** (University of Tokyo)  
*Direct numerical simulation of turbulent channel flow at  $Re_\tau = 2320$  and evaluation of hierarchical structures*

Coffee Break

15:00 -15:20

4. **Ivan Marusic and Nick Hutchins** (University of Minnesota)  
*"Superstructures" in the logarithmic region of turbulent boundary layers*
5. **Hassan Nagib, Kapil Chauhan and Peter Monkewitz** (IIT Chicago & EPF Lausanne)  
*Non-Universality of Kármán coefficient in pressure-gradient boundary layers*
6. **Takahiro Tsukahara and Hiroshi Kawamura** (Tokyo University of Science)  
*Puff-like structure captured in DNS of the turbulent Poiseuille flow at low Reynolds numbers*

**Adjourn**

**17:15**

**Dinner at Greek Islands Restaurant ([www.greekislands.net](http://www.greekislands.net))**

**18:30 – 21:30**

- Ride Special Bus at 8<sup>th</sup> Street Entrance of Hilton 18:30
- Ride Special Bus Back to Hilton 21:15

**Friday, 18 November**

Location: Lake Ontario Room; Eighth Floor

- Announcements 8:15 – 8:30

**Session 3: Scaling I**  
(Chair: Lex Smits; Co-Chair: Beverley McKeon)

**8:30 – 12:15**

1. **K.R. Sreenivasan** (ICTP)  
*Log expansions in boundary layers*
2. **Robert Moser** (University of Texas at Austin)  
*Scaling of the small-separation two-point correlation in the log-layer*
3. **Peter Monkewitz, Kapil Chauhan and Hassan Nagib** (EPFL Lausanne & IIT Chicago)  
*Options for consistent scaling of ZPG boundary layers*

Coffee Break

9:50 -10:10

4. **Peter A. Davidson** (Cambridge University)  
*The structure function law for near-wall turbulence*
5. **Carlo M. Casciola and Renzo Piva** (Universita di Roma "La Sapienza")  
*Scaling laws and anisotropy in wall bounded flows*
6. **Joseph C. Klewicki** (University of New Hampshire)  
*Scale separation and momentum transport*
7. **Meredith Metzger** (University of Utah)  
*Reynolds number effects on the turbulent bursting frequency*

**Lunch**

**12:15 - 13:30**

**Session 4: Scaling II** **13:30 – 17:15**  
(Chair: Ron Adrian; Co-Chair: Joe Klewicki)

1. **Tim Nickels** (Cambridge University)  
*Spectra, scaling and structure functions in boundary layers*
2. **Kenneth T. Christensen** (University of Illinois at Urbana-Champaign)  
*Population trends of small-scale spanwise vortices in wall turbulence*
3. **Ron Panton** (University of Texas at Austin)  
*The complexities of a higher-order overlap law*

Coffee Break 15:00 - 15:20

4. **Gunnar Johansson and Bill George** (Chalmers University of Technology)  
*Momentum-integral force balance in turbulent boundary layers*
5. **Noor Afzal** (Aligarh University)  
*Inner and outer scalings in transitional rough wall-bounded turbulent flows*
6. **Jens Fransson and Arne Johansson** (KTH Stockholm)  
*Pressure and velocity intermittency studies throughout the turbulent boundary layer edge*

**Adjourn** **17:15**

**Saturday, 19 November**

Location: Astoria Room; Third Floor

- Announcements 8:45 – 9:00

**Session 1 Summary and Discussion** **9:00 - 9:40**

**Session 2 Summary and Discussion** **9:40 - 10:20**

Coffee Break 10:20 - 10:40

**Session 3 Summary and Discussion** **10:40 - 11:20**

**Session 4 Summary and Discussion** **11:20 - 12:00**

Closing remarks 12:00 - 12:10

**Adjourn Workshop** **12:10**

**Tour of Wind Tunnel Facilities & IIT** **14:00 – 16:00**

- Ride Special Bus at 8<sup>th</sup> Street Entrance of Hilton 14:00
- Tour NDF and Other Facilities & Visit IIT Campus  
Architectural Highlights 14:20 – 15:40
- Ride Special Bus Back to Hilton 15:30

## List of Attendees

Adrian	Ron	ASU	rjadrian@asu.edu
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