Workshop on Turbulence in High-Speed Flow

Princeton University
May 2 - 4, 2011

All talks are 15 minutes with 10 minutes of discussion

Sunday, May 1
Accommodation available at the Nassau Inn
Make reservations under the group sales reservation for "THSF Group"

Monday, May 2

Registration 07:45-08:30

Welcome and Announcements: Lex Smits 08:30-08:45

Chair: Jean-Paul Bonnet, University of Poitiers
Opening Remarks: John Schmisseur 08:45-09:15

Session 1: Data Sets and Numerical Modeling **09:15-5:00**
(Chair: Noel Clemens)

Lex Smits, Princeton University 09:15-09:40
Review of experimental data on turbulence in flows at high Mach number

Michael Holden, CUBRC 09:40-10:05
Review of heat transfer and skin friction data in turbulent flow at high Mach number

Jean-Paul Dussauge, IUSTI, Marseille 10:05-10:30
Recent results on supersonic turbulent flows at IUSTI

Coffee Break 10:30-11:00

Yiannis Andreopoulos, CCNY 11:00-11:25
Turbulence through shocks: how far are computations and experiments?

Matthias Ihme, University of Michigan 11:25-11:50
LES-modeling of shock tubes

Sanjiva Lele, Stanford University 11:50-12:15
Numerical experiments with shock-turbulence interaction

Lunch 12:15-1:30

Session 2: Computations and Numerical Modeling **09:15-5:00**
(Chair: Matthias Ihme)

Pino Martin, University of Maryland 1:30-1:55
High-enthalpy turbulent boundary layer flows

Mahesh Krishnan, University of Minnesota 1:55-2:20
Towards DNS/LES of high-speed flows in complex geometries

Graeme Candler, University of Minnesota 2:20-2:45
DNS of Supersonic and Hypersonic Boundary Layers

Coffee Break 2:45-3:15

Pierre Comte, LEA University of Poitiers 3:15-3:40
Supersonic boundary layers in DNS with wall cooling or shock interaction: statistical characteristics and SGS modeling issues.

Nathan Mullenix, Ohio State University 3:40-4:05
Turbulent inflow boundary conditions suitable for investigating coherent structures in LES

Song Fu, Tsinghua University 4:05-4:30
Application of Gas-Kinetic Scheme in High-Speed Turbulence

Closing Discussion 4:30-5:00

Reception 5:00-6:30

Tuesday, May 3
Registration 08:30-09:00

Announcements: Lex Smits 09:00-09:15

Session 3: Experiments and Diagnostics **09:15-17:55**
(Chair: Jean-Paul Dussauge)

Mike Smith, AEDC 09:15-09:40
Advanced diagnostics for compressible turbulence

Dick Miles, Princeton University 09:40-10:05
FLETA: Femtosecond Laser Excitation Tagged Anemometry

Owen Williams, Princeton University 10:05-10:30
DPIV for Mach 8 turbulent boundary layer measurements

Coffee Break 10:30-11:00

Steven Beresh, Sandia 11:00-11:25
Fluctuating Wall Pressures Measured Beneath a Supersonic Turbulent Boundary Layer

Mike Holden, CUBRC 11:25-11:50
Surface and Flowfield Measurements on a Hollow Cylinder/Flare Model in High Reynolds Number flow at Mach 6 Flight Conditions

Emile Touber, Imperial College 11:50-12:15
Low-frequency shock unsteadiness in reflected-shock/boundary-layer interactions and a low order stochastic modeling approach

Lunch 12:15-1:30

Session 4: Flow Control and Modeling **09:15-17:55**
(Chair: Rodney Bowersox)

Lian Duan, National Institute of Aerospace 11:50-12:15
Effects of riblets on skin friction and heat transfer in high-speed flows

Mo Samimy, Ohio State University 1:30-1:55
Control of Shock Wave - Boundary Layer Interaction Using Plasma Actuators

Jean-Paul Bonnet, University of Poitiers 1:55-2:20
Flow separation: an actuator for supersonic jet hypermixing and/or thrust vectoring

Coffee Break 2:45-3:15

Greg Blaisdell, Purdue University 3:15-3:40
CFD of a supersonic boundary layer with protuberances

Rodney Bowersox, Texas A&M University 3:40-4:05
Algebraic Heat Flux Modeling in High-Speed Turbulent Flows with Thermal and Mechanical Non-Equilibrium

Session 5: Summary and Future Directions **4:05-6:00**
(Chair: Mo Samimy)

Session 1, 2, 3 & 4 Summary and Discussion (15 min. each) 4:05-5:05

Discussion & Future Directions 5:05-6:00
Closing remarks 6:00-6:15

Adjourn Workshop **6:15**

Reception (if there's any money left over) **6:15-7:00**