CTR Summer Program 2006 – Final Presentation
Friday, August 4, Stanford, Bldg. 200, Rm 02

Agenda

8:00AM Breakfast served in the History Corner (Bldg. 200)

8:30AM Introduction – Prof. Moin

8:50AM **Predictive Science**

Overview by Dr. Gianluca Iaccarino, Stanford University, CTR

9:00AM **Technical Presenter –I: Prof. Ugo Piomelli, University of Maryland**

- Effect of grid discontinuities on LES statistics
  Prof. Ugo Piomelli, University of Maryland
  Mr. Seongwon Kang, Stanford University, CTR
  Dr. Gianluca Iaccarino, Stanford University, CTR
  Dr. Frank Ham, Stanford University, CTR

- Adaptive LES
  Prof. Oleg Vasilyev, University of Colorado, Boulder
  Dr. Daniel E. Goldstein, Colorado Research Associates
  Dr. Giuliano De Stefano, Seconda Università Napoli, Italy,
  Dr. Daniel Bodony, Stanford University, CTR
  Dr. Donghyun You, Stanford University, CTR
  Mr. Lee Shunn, Stanford University, CTR

- Multiscale modeling of subgrid scale stresses in LES
  Prof. Alexey Novikov, Penn State University, University Park
  Dr. Alan Wray, NASA Ames Research Center, CTR
  Dr. Daniel Bodony, Stanford University, CTR

- Shear improved Smagorinsky model
  Dr. Federico Toschi, IAC "Mauro Picone" (C.N.R.), Italy
  Prof. Ugo Piomelli, University of Maryland
  Dr. Gianluca Iaccarino, Stanford University, CTR
  Dr. Hiromichi Kobayashi, Stanford University, CTR

- Implicit subgrid-scale modeling for large-eddy simulation of passive scalar mixing
  Dr. Stefan Hickel, Technische Universität München, Germany
  Prof. Nikolaus Adams, Technische Universität München, Germany

- Subgrid scale modeling for the solar interior
  Dr. Mark Miesch, National Center for Atmospheric Research, Boulder, Colorado
  Dr. Nagi Mansour, NASA Ames Research Center, CTR
  Dr. Thomas Hartlep, NASA Ames Research Center, CTR

9:30AM **Technical Presenter –II: Dr. Stefan Paul Domino, Sandia National Laboratories**

- Towards verification of formal time accuracy for a family of approximate projection methods using the method of manufactured solutions
  Dr. Stefan Paul Domino, Sandia National Laboratories, Albuquerque
  Dr. Frank Ham, Stanford University, CTR

- Coupled LES-RANS for turbulent boundary layers
  Dr. Schluter Jorg, Nanyang technological University, Singapore

- Spectral simulations using the CSX600 accelerator
  Dr. Massimiliano Fatica, ClearSpeed Technology, San Jose, CA
  Dr. Alan Wray, NASA Ames Research Center, CTR

- Investigation of the opacity binning approach for solving the shock-generated radiation of the Apollo AS-501 re-entry
  Dr. Alan Wray, NASA Ames Research Center, CTR
  Dr. Jean-François Ripoll, Los Alamos National Laboratory
  Dr. Dinesh Prabhu, NASA Ames Research Center ,CTR

9:50AM **Technical Presenter –III: Prof. Javier Jimenez, Universidad Politecnica of Madrid, Spain and CTR, Stanford**

- Sheared homogeneous turbulence in rotating frames: CTR's inference regarding Keplerian disk accretion
  Prof. Stavros Kassinos, University of Cyprus
  Prof. Javier Jimenez, Universitad Politecnica of Madrid, Spain and CTR
  Dr. Alan Wray, NASA Ames Research Center, CTR
  Mr. Lee Shunn, Stanford University, CTR

- Simulation/Modeling of isolated trailing vortex evolution
  Dr. Karhikeyan Duraisamy University of Maryland, College Park
  Prof. Stavros Kassinos, University of Cyprus
  Dr. Gianluca Iaccarino, Stanford University, CTR
  Prof. Sanjiva Lele, Stanford University, CTR

- Advanced URANS calculation of the Bradshaw wing-tip vortex flow
  Dr. Alistair Revell, University of Manchester, UK
  Dr. Xiaohua Wu, Stanford University, CTR
  Dr. Gianluca Iaccarino, Stanford University, CTR

10:05AM **Technical Presenter –IV: Dr. Tamer Zaki, Imperial College London, UK**

- Transitional and separated turbomachinery flows
  Dr.Tamer Zaki, Imperial College London, UK
  Prof. Paul Durbin, Iowa State University
  Dr. Xiaohua Wu, Stanford University, CTR

- Influence of non-equilibrium on disturbance waves passing through a planar shock
  Dr. Christian Stemmer, Technische Universität München, Germany
  Prof. Nikolaus Adams, Technische Universität München, Germany

10:15AM **Technical Presenter –V: Prof. Jeff Eldredge, University of California, Los Angeles**

- Numerical investigation and preliminary modeling of a turbulent flow over a multi-perforated plate
  Prof. Jeff Eldredge, University of California, Los Angeles
  Mr. Simon Mendez, CERFACS, France
  Dr. Franck Nicoud, University of Montpellier II, France
  Dr. Thierry Poinsot, CERFACS, France
  Mr. Mohammad Shoeybi, Stanford University, CTR
  Dr. Gianluca Iaccarino, Stanford University, CTR

10:25AM Further discussion

10:35AM Coffee Break

10:55AM **Combustion**

Overview by Prof. Heinz Pitsch, Stanford University, CTR

11:05AM **Technical Presenter –I: Prof. Heinz Pitsch, Stanford University, CTR**

- Modeling turbulent flame brush thickness for premixed combustion
  Dr. Martin Oberlack, Technische Universität Darmstadt, Germany
  Dr. Alexey Kurenkov, Technische Universität Darmstadt, Germany
  Mr. Ed Knudsen, Stanford University, CTR
  Dr. Seonghyun Kim, Stanford University, CTR
  Prof. Heinz Pitsch, Stanford University, CTR

- Conditional-moment closure with differential diffusion for soot evolution in fires
  Dr. John C. Hewson, Sandia National Laboratories, Albuquerque
  Dr. Sheldon Tieszen, Sandia National Laboratories, Albuquerque
  Mr. Allen Ricks, Purdue University
  Prof. Rodney Fox, Iowa State University
  Prof. Heinz Pitsch, Stanford University, CTR

- A numerical simulation of soot formation in spray flames
  Dr. Hiroaki Watanabe, CRIEPI, Japan
  Prof. Heinz Pitsch, Stanford University, CTR

11:20AM **Technical Presenter –II: Prof. Vervisch Luc, CORIA, France**

- Auto-ignition, flame propagation and diffusion flame effects in LES of burnt gases diluted combustion
  Dr. Denis Veynante, INSA de Rouen - CNRS, France
  Prof. Luc Vervisch, INSA de Rouen - CNRS, France
  Dr. Pascale Domingo, INSA de Rouen - CNRS, France
  Prof. Heinz Pitsch, Stanford University, CTR

- Using self-similar behavior of chemistry tabulation for LES of multi fuel injection combustion systems
  Prof. Luc Vervisch, INSA de Rouen - CNRS, France
  Dr. Denis Veynante, CNRS – Ecole Centrale de Paris, France
  Dr. Xavier Paubel, CNRS - CORIA, France
  Dr. Alexandre Naudin, INSA de Rouen – CNRS, France
  Dr. Benoit Fiorina, Stanford University, CTR

- Budget of disturbance energy in gaseous reacting flows
  Dr. Alexis Giauque, CERFACS, France
  Dr. Michael Brear, The University of Melbourne, Australia
  Dr. Thierry Poinsot, CERFACS, France
  Dr. Franck Nicoud, University of Montpellier II, France

11:35AM Further discussion

11:50AM **Flow Control**

Overview by Prof. Julio Soria, Monash University, Australia

12:00PM **Technical Presenter –I: Prof. Julio Soria, Monash University, Australia**

- Validation study of model for Micro-ZNMF Jet lift enhancement of NACA0015 airfoil
  Mr. Vassili Kitsios, The University of Melbourne, Australia
  Mr. Rupesh B. Kotapati, The George Washington University
  Dr. Andrew Ooi, The University of Melbourne, Australia
  Prof. Julio Soria, Monash University, Australia
  Dr. Donghyun You, Stanford University, CTR
  Dr. Frank Ham, Stanford University, CTR

- Harnessing resonant interaction for active separation control
  Mr. Rupesh B. Kotapati, The George Washington University
  Mr. Vassili Kitsios, The University of Melbourne, Australia
  Dr. Andrew Ooi, The University of Melbourne, Australia
  Prof. Julio Soria, Monash University, Australia
  Dr. Donghyun You, Stanford University, CTR
  Dr. Frank Ham, Stanford University, CTR

- Flow separation control over a pitching airfoil using oscillatory jets
  Dr. Seonghyeon Hahn, Stanford University, CTR
  Dr. Donghyun You, Stanford University, CTR

12:15PM **Technical Presenter –II: Prof. Jovanovic Mihailo, University of Minnesota**

- Turbulence suppression in channel flows by streamwise traveling waves
  Prof. Jovanovic Mihailo, University of Minnesota
  Dr. Donghyun You, Stanford, CTR
  Mr Qiqi Wang, Stanford University, CTR

12:25PM Further discussion

12:40PM Lunch break. Lunch served in the Dohrmann Grove Garden

2:00PM

Magnetohydrodynamics

Overview by Prof. Andre Thess, Ilmenau University of Technology, Germany

2:10PM **Technical Presenter –I: Prof. Stravos Kassinos, University of Cyprus**

- Particle dispersion in MHD turbulence
  Dr. Damian Rouson, U.S. Naval Research Laboratory, Washington
  Prof. Stavros Kassinos, University of Cyprus
  Dr. Ioannis Sarris, Université Libre de Bruxelles, Belgium
  Dr. Federico Toschi, IAC "Mauro Picone" (C.N.R.), Italy

- LES simulations of the turbulent Hartman flows close to the transitional regime
  Dr. Ioannis Sarris, Université Libre de Bruxelles, Belgium
  Prof. Bernard Knaepen, Université Libre de Bruxelles, Belgium
  Prof. Stavros Kassinos, University of Cyprus

- Modeling quasi-2-D turbulence in MHD duct flows
  Dr. Sergey Smolentsev, University of California, Los Angeles

- MHD turbulence in channel flows
  Prof. Oleg Zikanov, University of Michigan
  Dr. Dmitri Krasnov, Ilmenau University of Technology, Germany
  Dr. Thomas Boeck, Ilmenau University of Technology, Germany

2:25PM **Technical Presenter –II: Oleg Zikanov, University of Michigan**

- Lorentz force flowmeter
  Prof. Oleg Zikanov, University of Michigan-Dearborn
  Prof. Andre Thess, Ilmenau University of Technology, Germany
  Prof. Bernard Knaepen, Université Libre de Bruxelles, Belgium
  Dr. Gianluca Iaccarino, Stanford, CTR
  Dr. Frank Ham, Stanford, CTR

- Numerical investigations of some lightning phenomena
  Dr. Jean-François Ripoll, Los Alamos National Laboratory
  Dr. Christopher Jeffery, Los Alamos National Laboratory
  Dr. Patrick Colestock, Los Alamos National Laboratory
  Dr. John Zinn, Los Alamos National Laboratory

2:35PM Further discussion

2:50PM **Multi-phase flow**

Overview by Dr. Thierry Poinsot, CERFACS, France

3:00PM **Technical Presenter –I: Dr. Thierry Poinsot, CERFACS, France**

- Evaluation of numerical strategies for LES of two-phase reacting flows
  Dr. Olivier Simonin, Institut National Politechnique, France
  Ms. Eleonore Riber, CERFACS, France
  Dr. Thierry Poinsot, CERFACS, France
  Ms. Marta Garcia, CERFAC, France
  Prof. Heinz Pitsch, Stanford University, CTR
  Dr. Vincent Moureau, Stanford University, CTR

- Testing semi-Lagrangian schemes of two-phase flow applications
  Dr. Thierry Poinsot, CERFACS, France
  Dr. Roberto Paoli, CERFACS, France

- Analysis of subgrid scale microphysics models for LES of turbulent condensation
  Dr. Roberto Paoli, CERFACS, France
  Mr. Anup Shirgaonkar, Stanford University, CTR

- Modeling of high-pressure mixing and combustion in liquid rocket injectors
  Dr. Matthias Ihme, Stanford University
  Dr. Luigi Cutrone, CIRA, Italy
  Dr. Marcus Herrmann, Stanford University, CTR

3:20PM Coffee Break

3:40PM **Technical Presenter –II: Prof. Rodney O. Fox, Iowa State University**

- Eulerian models for polydisperse sprays using quadrature methods
  Prof. Rodney O. Fox, Iowa State University
  Dr. Philippe Villedieu, ONERA-CERT, France
  Prof. Heinz Pitsch, Stanford University, CTR
  Mr. Olivier Desjardins, Stanford University, CTR

- Modeling evaporating droplets in complex unsteady flows
  Prof. Sandip Ghosal, Northwestern University
  Dr. Marcus Herrmann, Stanford University, CTR

- Stochastic modeling of the subgrid fluid velocity fluctuation seen by inertial particles
  Dr. Philippe Villedieu, ONERA-CERT, France
  Prof. Kyle D. Squires, Arizona State University
  Dr. Olivier Simonin, Institut de Mécanique des Fluides de Toulouse, France
  Dr. Pascal Fede, ONERA-CERT, France

3:55PM Further discussion

4:05PM

Acoustics

Overview by Dr. Daniel Bodony, Stanford University, CTR

4:15PM

Technical Presenter –I: Daniel Bodony, Stanford University, CTR

- Simulations of acoustic wave propagation in the solar interior
  Dr. Mark Miesch, National Center for Atmospheric Research, Boulder, Colorado
  Dr. Nagi Mansour, NASA Ames, Research Center, CTR
  Dr. Thomas Hartlep, NASA Ames Research Center, CTR

- Investigation of combustion-generated noise of open diffusion flames
  Dr. Manfred Kaltenbacher, Univeristy of Erlangen-Nuremberg, Germany
  Prof. Heinz Pitsch, Stanford University, CTR
  Dr. Matthias Ihme, Stanford University, CTR

- Numerical investigation of the acoustic behavior of a multi-perforated liner
  Mr. Mohammad Shoeybi, Stanford University, CTR
  Dr. Jeff Eldredge, University of California, Los Angeles
  Dr. Daniel J. Bodony, Stanford University, CTR

4:30PM

Technical Presenter –II: Prof. Meng Wang, University of Notre Dame

- Application of the Impedance Mismatch Method (IMM) to the Expansion about Incompressible Flow (EIF) Acoustic Equations
  Dr. Andrew Ooi, The University of Melbourne, Australia
  Mr. Raymond Cohen, The University of Melbourne, Australia
  Dr. Gianluca Iaccarino, Stanford University, CTR

- Green's function discretization of Pridmore-Brown wave operator
  Dr. Damiano Casalino, CIRA, Italy
  Dr. Daniel J. Bodony, Stanford University, CTR

- LES of a low speed fan airfoil: a step towards predicting blade self-noise
  Prof. Meng Wang, University of Notre Dame
  Mr. Douglas Neal, Michigan State University
  Dr. Stephane Moreau, VALEO Corporation,France
  Dr. Jessica Gullbrand, INTEL Corporation
  Mr. Yaser Khalighi, Stanford University, CTR
  Dr. Gianluca Iaccarino, Stanford University, CTR

4:45PM	Further discussion
5:00PM	Adjourn
6:30PM	Banquet, Stanford Faculty Club