CTR Summer Program 2012
Presentation of Research Plans
Monday, June 25th, Room 420-040

AGENDA

10:00am   Introduction: Prof. Parviz Moin

10:15am   **ACOUSTICS**
                 Introduction by Joe Nichols

> ***Christophe Julien, Moreau Stéphane***
> Uncertainty quantification of turbo-engine fan noise

> ***Giret Jean-Christophe, Moreau Stéphane***
> Uncertainty quantification of the far-field noise from a Rod-Airfoil configuration using compressible LES simulations

> ***Motheau Emmanuel, Nicoud Franck, Selle Laurent***
> Thermo-acoustic instabilities in high-speed reacting flows: entropy-acoustic coupling and uncertainty quantification

> ***Venugopal Prem***
> Large eddy simulation of self-noise from a wind turbine airfoil at high angle of attack

10:35am   Further discussion

10:40am   **ALGORITHMS**
                 Introduction by Cottet Georges-Henri

> ***Adami Stefan, Xiangyu Hu***
> Simulating 3D turbulence with SPH

> ***Domingo Pascale, Ribert Guillaume, Vervisch Luc***
> A hybrid transported-tabulated strategy to downsize detailed chemistry for large eddy simulations

> ***Balarac Guillaume, Cottet Georges-Henri, Lagaert Jean-Baptiste***
> Particle method: an efficient tool for direct numerical simulations of high Schmidt number passive scalar in turbulent flow

10:55am   Further discussion

11:00am   **COMBUSTION**
               Introduction by Ihme Matthias

               Jin Tai, Luo Kun
               Priori and posteriori test of the extended flamelet model for supersonic
               combustion

               Cuenot Bénédicte, Mari Raphael, Selle Laurent
               Stabilization mechanisms of supercritical hydrogen/oxygen flame

               Richardson Edward
               Effects of scalar dissipation rate fluctuations on turbulent auto ignition: DNS
               analysis and modeling

               Boileau Matthieu, Moureau Vincent, Schmitt Thomas, Veynante Denis
               Analysis of dynamic models for turbulent combustion

               Attili Antonio, Bisetti Fabrizio
               DNS of soot formation and growth in turbulent non-premixed flames:
               Damkohler number effects and Lagrangian statistics of soot transport

               Chan Wai Lee, Ihme Matthias, See Yee Chee
               Jet noise receptivity of heated compressible jets and Flame-stabilization and
               heat-transfer analysis of a jet-in-cross-flow

               Cuenot Bénédicte, Trouvé Arnaud
               Deposition of Combusting-Generated Soot Particles on Cold Wall Surfaces

11:35am   Further discussion

11:40am   **CONTROLS/DYNAMIC MODE DECOMPOSITION**
               Introduction by Jovanović Mihailo

               Bodony Daniel
               Controller selection and placement in compressible turbulent flows

               Schmid Peter
               Dynamic mode decomposition of H-type and K-type transition to turbulence

               Richecoeur Franck
               Dynamic mode decomposition for experimental investigation of combustion
               instabilities

               Binh Lieu, Jovanović Mihailo
               Analysis of drag reduction by polymers in turbulent wall-bounded shear flows

12:00pm   Further Discussion

12:05pm	Lunch break (420 Patio)

1:00pm **LES**

Introduction by Domaradzki Julian

>*Cadieux François, Domaradzki, Julian*
>LES of separated flows at moderate Reynolds numbers appropriate for turbine blades and unmanned aero-vehicles

>*Hickel Stefan, Touber Emile*
>Wall modeling for LES of supersonic flows at realistic Reynolds numbers

>*Saeedi Mohammad, Wang Bing-Chen*
>Advanced subgrid-scale modeling for LES of Passive scalar dispersion in a turbulent boundary-layer

>*Balarac Guillaume*
>Subgrid-scale modeling of SGS scalar flux: a regularization of the gradient model

>*Joo Jongwook, Kalitzin, Georgi, Medic Goradz*
>Large eddy simulation for turbomachinery blades

>*Maheu Nicolas, Moureau Vincent, Domingo Pascale, Duchaine Florent, Balarac Guillaume*
>Large-Eddy Simulations of flow and heat transfer around a low-Mach turbine blade

1:30pm Further discussion

1:35pm **RANS**

Introduction by Kassinos Stavros

>*Kassinos Stavros, Panagiotou Konstantinos, Peçnik Rene, Radhakrishnan Hari*
>Validation of the algebraic structure-based model for internal flows with three-dimensional effects

>*O'Sullivan John*
>ASBM wall function modeling for the flow in a asymmetric three-dimensional diffuser

>*Jeyapaul Elbert, Rumsey Christopher*
>Advanced RANS modeling of separated flows

1:50pm Further discussion

1:55pm   **FUNDAMENTALS OF TRANSITION AND TURBULENCE**
Introduction by Terrapon Vincent

Gayme Dennice
Understanding large-scale momentum transfer mechanisms in turbulent
Couette flow

Nolan Kevin, Tamer Zaki
Conditional sampling and statistical analysis of transitional flows

Farrel Brian, Ioannou Petros
Statistical mean state dynamics of turbulent channel flows

Bernardini Matteo, Pirozzoli Sergio
Compressible boundary layer transition induced by isolated roughness elements

Marxen Olaf, Serino Gennaro
Boundary layer transition

Dubief Yves, Terrapon Vincent
Analysis of transitional polymeric flows and elastic instabilities

Wallace James
Spatially developing DNS databases

2:30pm   Further discussion

2:35pm   **TWO-PHASE**
Introduction by Herrmann Marcus

Herrmann Marcus
Improving atomization simulations

Gorokhovski Mikhael, Ovsyanniko Andrey
Development of new numerical models for turbulent flow with sprays at a high
Reynolds number

He Guo-Wei
A Germano-type identity for large-eddy simulation coupled with discrete
particle dynamics

Rimbert Nicolas
Sub-grid modeling of the secondary breakup mechanism in Two-Phase LES

Doisneau François, Fox Rodney, Larat Adam, Massot Marc, Vie Aymeric
Fully Eulerian Large Eddy Simulation of dilute-to-dense polydisperse turbulent sprays: modeling approaches and numerical methods

Fréret Lucie, Massot Marc
Direct numerical simulation of polydisperse evaporating sprays in 3D jet configurations

3:05pm   Further discussion

3:10pm   **UQ**
              Introduction by Qiqi Wang

Balakrishnan R., Bodoc V. Dombard Jerôme, Moureau Vincent, Poinsot Thierry, Savary Nicolas, Staffelbach
Quantification of uncertainties in LES and RANS of swirled flows in gas turbine injection systems

Congedo Pietro, Geraci Gianluca
Adaptive strategy in multiresolution framework for uncertainty quantification

Lucor Didier
Adaptive uncertainty quantification approaches for stiff systems and multi-scale modes

Cuenot Bénédicte, Rochoux, Mélanie, Ricci Sophie, Trouvé Arnaud
Towards predictive simulations of wildfire spread using data assimilation and uncertainty quantification

Arima Toshijuki, Tachikawa Hiroki
Robust optimization for windmill airfoil design considering variation in wind conditions

Blonigan Patrick, Chen Rui, Wang Qiqi
Sensitivity analysis of mixing in separated turbulent flows

3:40pm   Further discussion

3:45pm   **HPC Resources**
              Steve Jones