

Thermal & Fluid Sciences  
Industrial Affiliates and  
Sponsors Conference



February, 1-3 2017  
Huang Building – Mackenzie Room  
Stanford University  
**Final Program**

**TFSA17**

# TFSA Conference – At a Glance

## Wednesday February 1, 2017

1300-1345 - Welcome, Introductions and News

1345-1500 - Session I – **PSAAP Program – Prof. Iaccarino**

1500-1515 - Break

1515-1645 - Session II – **Reactive Flows – Prof. Ihme**

1645-1745 - Session III – **2016 CTR Summer Program Highlights – Prof. Moin**

## Thursday February 2, 2017

0800-0830 - Breakfast

0830- 1000 - Session IV – **Renewable Energy Systems – Prof. Dabiri**

1000-1030 - Break

1030-1215 - Session V – **Large Eddy Simulations – Prof. Moin**

1215-1330 - Luncheon

1330-1500 - Session VI – **Experimental Fluid Mechanics & Heat Transfer – Prof. Eaton**

1500-1600 - Session VII – **Faculty Round Table Discussion**

1600-1800 - Session VIII – **Poster Blitz & Poster Session**

1830-2030 - Dinner at the Faculty Club

## Friday February 3, 2017

0800-0830 - Breakfast

0830-1015 - Session IX – **Multiphase Flows – Prof. Mani**

1015-1030 - Break

1030-1200 - Session X – **Optimization & Uncertainty Quantification – Prof. Iaccarino**

1200-1215 - Closure & Send off

1330-1700 - Private meetings with Faculty and Lab Tours



# Wednesday Feb 1 – Day 1

## 1300-1345 – Welcome, Introductions, and News

### Session I – PSAAP Program

1345-1400	Gianluca Iaccarino	Overview
1400-1415	Mahdi Esmaily	Modeling of particle-laden wall turbulence
1415-1430	Ari Frankel	High-fidelity simulations of radiation transport
1430-1445	Maxime Bassenne	Subgrid-scale modeling and wavelet analysis of particle-laden turbulent flows
1445-1500	Jeremy Horwitz	Towards predictive point-particle models

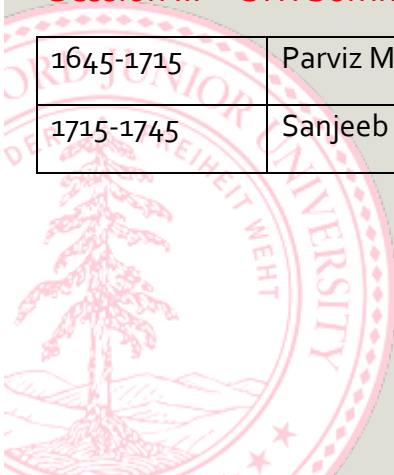
## 1500-1515 – Break

### Session II – Reactive Flows

1515-1545	Matthias Ihme	Overview
1545-1600	Sadaf Sobhani	Low-emission combustion in porous media burners
1600-1615	Hao Wu	Adaptive and efficient combustion modeling for turbulent reacting flows
1615-1630	Daniel Banuti	Advances on the fundamental understanding and modeling of trans- and supercritical flows
1630-1645	Rui Xu	HyChem approach to combustion chemistry of jet fuels

### Session III – CTR Summer Program Highlights

1645-1715	Parviz Moin	2016 CTR Summer Program
1715-1745	Sanjeeb Bose	On the use of LES for engineering design



# Thursday Feb 2 – Day 2

0800-0830 – Breakfast

## Session IV – Renewable Energy Systems

0830-0900	John Dabiri	Overview
0900-0915	Ian Brownstein	Large-scale field measurements of wind turbine aerodynamics
0915-0930	Mahdi Abkar	Large-eddy simulation of vertical-axis wind turbine wakes
0930-0945	Pedro Milani	Machine learning for scalar transport modeling in film cooling applications
0945-1000	Niranjan Ghaisas	Modeling and simulations of vertically-staggered multi-rotor wind farms

1000-1030 – Break

## Session V – Large Eddy Simulations

1030-1100	Parviz Moin	Overview
1100-1115	George Park	Wall modeling in Large-Eddy Simulation
1115-1130	Aditya Ghate	Physics-based enrichment of high Reynolds number LES
1130-1145	Adrián Lozano-Durán	Investigation of slip wall boundary condition for wall-modeled Large-Eddy Simulation
1145-1200	Jane Bae	Minimum-dissipation subgrid scale model for scalar transport and its applications
1200-1215	Philipp Hack	Modeling pre-transitional flow using PSE

1215-1330 – Luncheon



# Thursday Feb 2 – Day 2 (cont'd)

## Session VI – Experimental Fluid Mechanics and Heat Transfer

1330-1400	John Eaton	Overview
1400-1415	Daniel Borup	Measuring 3D particle concentration in complex flows using MRI
1415-1430	Pablo Vasquez-Guzman	Conjugate heat transfer measurements for a film cooling jet
1430-1445	David Ching	Unsteady measurements in 3D separated flows
1445-1500	Hadi Pouransari	Effects of clustering on heat transfer in particle-laden turbulence

## Session VII – Faculty Round Table Discussion

1500-1600	Gianluca Iaccarino Parviz Moin John Eaton Matthias Ihme	Discussion and audience participation
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1600-1800 – Session VIII – Poster Blitz and Poster Session

1830-2030 – Dinner at the Faculty Club



# Friday Feb 3 – Day 3

0800-0830 – Breakfast

## Session IX – Multiphase Flows

0830-0900	Ali Mani	Overview
0900-0915	Jongmin Seo	Interfacial robustness of gas pockets and design criteria for superhydrophobic surfaces in turbulent flows
0915-0930	Andrew Banko	Measurements in a radiatively heated two-phase channel flow
0930-0945	Man-Long Wong	High-order AMR simulations of shock-induced mixing
0945-1000	Ronald Chan	Computational modeling of breaking waves and bubbles
1000-1015	Akshay Subramaniam	Shock driven plastic flow at solid-solid interfaces

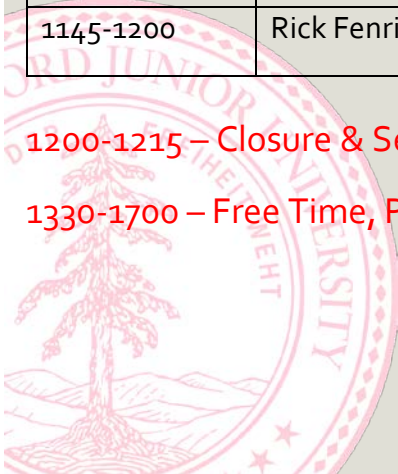
1015-1030 – Break

## Session X – Optimization & Uncertainty Quantification

1030- 1100	Gianluca Iaccarino	Overview
1100-1115	Zach del Rosario	Algorithm-driven insights
1115-1130	Aashwin Mishra	Eigenspace perturbations for RANS model uncertainty
1130-1145	Hojat Ghorbanidehno	Optimal management of large scale aquifers under uncertainty
1145-1200	Rick Fenrich	Multifidelity supersonic nozzle design under uncertainty

1200-1215 – Closure & Send off

1330-1700 – Free Time, Private Meetings with Faculty, and Lab Tours



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