

2021 Unsteady Aerodynamics and Turbulent Flow Program Review Pt. 2

Dr. Gregg Abate | Aug. 30 - Sept. 1, 2021 | Virtually

Agenda Day 1 | Monday, August 30, 2021

Time EDT	Topic	Speaker
10:15-10:30	Zoom Room opens, test communications, breakouts	
10:30-10:40	Intro & Welcome	Gregg Abate, AFOSR
10:40-11:05	Surface Irregularity Effects on Laminar-Turbulent Transition - understanding the surface quality requirements for laminar flow on wings	Marcello Augusto Faraco de Medeiros Universidade de Sao Paulo (USP) (SOARD)
11:05-11:30	Resonant Metamaterials for Laminar Flow Control	Abby Juhl, Caleb Barnes; Albert Medina AFRL (RX & RQ)
11:30-11:45	Passive Control of Non-Canonical Flows with Anisotropic Porous Materials (New Start)	Lou Cattafesta, Florida State Rajat Mittal; Charles Meneveau Johns Hopkins University
11:45-12:10	Anisotropic Permeable Substrates for Turbulent Drag Reduction	Ricardo Garcia-Mayoral Cambridge, UK (EOARD)
12:10-12:35	Breakout Discussions	
12:35-13:00	Designer Porous Materials for Flow Control: Effective Property Characterization	Mitul Luhar, USC Shervin Bagheri, KTH, Sweden
13:00-13:25	(YIP) Tunable Porous and Patterned Surfaces for Turbulence Control	Mitul Luhar, University of Southern California
13:25-13:40	Harnessing Phononic Materials for Unsteady Aerodynamic Flow Control (New Start)	Andres Goza; Kathryn Matlack UIUC
13:40-14:05	Breakout Discussions	
14:05-14:30	Wall Turbulence Response to Large-scale Surface Heterogeneity: Physics-based Wall Models Derived from Coordinated Experiments and Simulations	William Anderson, University of Texas at Dallas Kenneth Christensen, Notre Dame University Carlos Pantano, University of Southern California
14:30-14:55	Unsteady Aerodynamics of Goal-based Propulsion and Flight Employing Cyber-physical Fluid Dynamics (CPFD)	Charles Williamson Cornell University
14:55-15:20	A Coordinated Experimental and Computational Study of Gusts on Wings	John Farnsworth; Ken Jansen University Of Colorado Boulder
15:20-15:45	Breakout Discussions	
15:45	Wrap-up & Adjourn	

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Agenda Day 2 | Tuesday, August 31, 2021

Time EDT	Topic	Speaker
10:35-10:50	Zoom Room opens, test communications, breakouts	
10:50-11:00	Intro & Welcome	Gregg Abate, AFOSR
11:00-11:25	Dynamic Response of the Shear Layer to Cavity Door Operation at Supersonic Speeds	Rajan Kumar, Florida Agricultural And Mechanical University Farrukh Alvi, Florida State University Kenneth Granlund, North Carolina State University Datta Gaitonde, Ohio State University
11:25-11:50	Aerodynamic & Aeroelastic behavior of Wings in Disturbances	Ashok Gopalarathnam, Matthew Bryant North Carolina State University
11:50-12:15	Dissecting the Flow Physics of Aeroelastic Wing Flutter	Rajat Mittal, Joe Katz Johns Hopkins University
12:15-12:40	Breakout Discussions	
12:40-13:05	Using Cyber-physical Systems to Study Unsteady Leading Edge Vortices in Flows	Kenneth Breuer, Brown University
13:05-13:30	Wing Sweep, Structural Motion and their Effect on Separation and Transition	Hermann Fasel; Jesse Little University of Arizona
13:30-13:55	Flow Physics and Distillation of the Gust-induced Stall of a Wing	Jeffrey Eldredge, University Of California Los Angeles Dave Williams, Illinois Institute of Technology Tim Colonius, California Institute of Technology
13:55-14:20	Breakout Discussions	
14:20-14:45	Separation Dynamics: the View from the Wall	Tamer Zaki, Johns Hopkins University
14:45-15:10	(YIP) Interpretable Nonlinear Models of Unsteady Flow Physics	Steven Brunton, University Of Washington
15:10-15:35	Active Flow Control via Low Aspect Ratio Rotating Cylinders	Alberto Medina, AFRL, Aerospace Systems Directorate (RQ)
15:35-16:00	Breakout Discussions	
16:00	Wrap-up & Adjourn	

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Agenda Day 3 | Wednesday, September 1, 2021

Time EDT	Topic	Speaker
10:35-10:50	Zoom Room opens, test communications, breakouts	
10:50-11:00	Intro & Welcome	Gregg Abate, AFOSR
11:00-11:15	Data-Driven Control of Unsteady Flows (New Start)	Sam Taira, UCLA Steve Brunton, University of Washington
11:15-11:40	Physics-based Control of Transverse Jets	Krishnan Mahesh, University Of Minnesota Ann Karagozian, University of California Los Angeles
11:40-12:05	Low-complexity Stochastic Modeling and Control of Turbulent Flows	Mihailo Jovanovic, University Of Southern California
12:05-12:30	Breakout Discussions	
12:30-12:55	Experimental Investigation of Unsteady and Asymmetric Flows of Pitching Asymmetric Bodies at Incidence	Benjamin Dickinson, AFRL Munitions Directorate (RW) Rajan Kumar, Florida State University
12:55-13:20	Disentangling Turbulent Structure with Nonlinear Dynamics and Machine Learning	Michael Graham, University of Wisconsin
13:20-13:45	Geometric Control Theoretic Formulation and Analysis of Unsteady Fluid Flow	Haithem Taha, University Of California Irvine
13:45-14:00	Birth and Control of Three-dimensional Lagrangian Separation: Optimal Control (New Start)	Guus Jacobs, SDSU Geoff Spedding, USC Maziar Hemati, University of Minnesota
14:00-14:25	Breakout Discussions	
14:25-14:50	Aerodynamically-adaptive Aero-structures using Flow-interactive Control by Distributed Bleed Actuation	Ari Glezer, Georgia Institute of Technology Massimo Ruzzene, University of Colorado Boulder
14:50-15:15	PECASE - Flow Control for Force Regularization in Large-disturbance Environments	Anya Jones, University of Maryland
15:15-15:30	Vortex Interactions on Multi-swept Wing Configurations (New Start)	Mehdi Ghoreyshi; Juergen Seidel USAFA
15:30-15:55	Breakout Discussions	
15:55	Wrap-up & Adjourn	