

# Transition Modeling Workshop

NASA Langley Research Center, Hampton, VA

Thimble Shoal Auditorium

**Lockheed Martin Center for Innovation (“The Lighthouse”)  
8000 Harbour View Boulevard, Suffolk, VA 23435**

## Planned Agenda (v. 5.0)

All presentations will be 25 minutes or less including QA, except for overview presentations of agency programs that will be 19 minutes or less.

**The sessions will end at 17:00 each day.**

Wednesday, September 13, 2017

**07:50-10:00** (Session Chair: Meelan Choudhari)

**Welcome Remarks: Greg Nosal, Director, Lockheed Martin Center for Innovation**

**Mujeeb Malik, NASA**

TTT-RCA/Vision 2030 Perspective on Transition Modeling

**Meelan Choudhari, C.-L. Chang, F. Li, M. Malik, P. Paredes, and P. Balakumar, NASA**

Physics Based Transition Modeling at NASA Langley

**James Heidmann and Scott Anders, NASA**

A Perspective on Transition Modeling Needs for Subsonic Transport Aircraft

**Susan Gorton/Brian Allan, NASA**

Why Transition Modeling Matters for Vertical Lift Vehicles

**Anthony Washburn, NASA**

Alternative Transport Vision Systems in the 2025-2035 Timeframe

**Scott Berry and Brian Hollis, NASA**

High Speed Boundary Layer Transition at NASA

**10:25-12:20** (Session Chair: Christopher Rumsey)

**Ivett Leyva, AFOSR**

High Speed Boundary Layer Transition Research at AFOSR

**Knox Millsaps, ONR**

Predicting Transition in Relevant High-Supersonic and Hypersonic Flows

**Jeffrey Crouch, Boeing**

Transition Modeling in the Design of Transport Aircraft

**Bruce Davis and Brian Smith, Lockheed Martin**

Transition Prediction at Lockheed Martin Aeronautics

**Om Sharma, Gorazd Medic, Tom Praisner, and Yuan Dong, United Technologies Research Center**

Role and Importance of Transition Modeling in Turbomachines used in Aircraft Propulsion Systems

**13:20-15:00** (Session Chair: Chau-Lyan Chang)

**Todd Magee and Matthew Lakebrink, Boeing**

Transition Modeling in the Design and Analysis of Supersonic and Hypersonic Vehicles

**Dev Rajnarayan and Peter Sturdza, Aerion, Inc.**

Need for an end-to-end nonlinear analysis toolchain for crossflow transition

**Stefan Wernz, Christopher Ward, and Edward Marquart, Raytheon**

Towards Improving Transition Prediction Capabilities in Industry Environment

**John Schmisser and Ryan Bond, University of Tennessee Space Institute (UTSI)**

A Test & Evaluation Perspective on Transition Estimation

**15:20-17:00 (Session Chair: Craig Streett)**

**Andreas Krumbein and Normann Krimmelbein, DLR**

Requirements and Challenges for Transition Modeling in CFD

**Estelle Piot, O. Vermeersch, H. Deniau, J. Perraud, L. Pascal, G. Begou, L. Jecker, J.Ph.**

**Brazier, J. Marty, D. Hue, F. Richez, V. Gleize, S. Deck, and E. Garnier, ONERA**

Overview of ONERA approach for modeling and prediction of boundary-layer laminar-turbulent transition in CFD computations

**Yuichi Matsuo, Yuki Ide, Kenji Yoshida, Atsushi Hashimoto, and Takashi Aoyama, JAXA/ARD**

Transition modeling research at JAXA aeronautics

**Michelle Lynde and Richard Campbell, NASA**

Experiences in Building a Natural Laminar Flow Design Capability

## Thursday, September 14, 2017

**07:30-09:35 (Session Chair: William Kleb)**

**Joseph Derlaga, P. Buning, N. Frink, C. Rumsey, and J. White, NASA**

Status of Transition Modeling Within NASA Langley RANS Solvers

**Jim Coder, University of Tennessee, Knoxville**

PDE-based Transition Modeling for Next Generation CFD Flow Solvers

**Matthew Tufts, Ryan Durscher, and John Benek, AFRL**

Overview of the Rapid Assessment Tool for Transition Prediction (RATTraP)

**Keith Walters, University of Oklahoma**

Recent Progress in Transition-Sensitive RANS Modeling

**James Baeder and Bumseok Lee, University of Maryland**

Medida-Baeder Transition Model with SA-DDES

**10:00-11:30 (Session Chair: Ponnampalam Balakumar)**

**Ramesh Agarwal, Washington University in Saint Louis**

Wray-Agarwal Two-Equation Transition Model

**Marilyn Smith, Joachim Hodara, and Nicholson Koukpaizan, Georgia Institute of Technology**

A Transition Model for Hybrid RANS-LES

**Adrian Lozano Duran, Philipp Hack, and Parviz Moin, Stanford University**

Modeling Pre-Transitional Flow using Parabolized Stability Equations

**Paul Durbin, Iowa State University**

Perspectives on modeling bypass transition

**12:30-14:25 (Session Chair: Mujeeb Malik)**

**Rohit Jain, Army**

Transition Modeling Applications

**Zachary Hall, Army**

Validation of Langtry-Menter Transition Model against Wind Tunnel testing

**Helen Reed, Travis Kocian, Alexander Moyes, Texas A & M University**

Transition Prediction and Design Criteria

**Graham Candler, Joseph Nichols, University of Minnesota**

Hypersonic Transition Analysis

**Dennis Bushnell, NASA**

Comments on the Boundary Conditions for Transition during Flight

**14:45-17:00**

**OPEN FORUM DISCUSSION: CFD Vision 2030 and Transition Modeling**

**Facilitators: Eli Reshotko (Professor Emeritus, Case Western Reserve University) and  
Philippe Spalart (Boeing)**