

18th International Forum on Aeroelasticity and Structural Dynamics

June 10-13, 2019

Savannah, Georgia

FINAL PAPER/PRESENTATION AGENDA

MONDAY, June 10, 2019

Computational Flutter I

[Flutter Prediction Based on Dynamic Eigen Decomposition of Coupled CFD-CSD Flight Simulation](#)

Taehyoun Kim
Pegase Avtech

[Predicting Transonic Flutter Using Nonlinear Computational Simulations](#)

Jennifer Heeg
NASA LaRC

[Assessment of T-Tail Flutter Using an Enhanced Potential Flow Theory Approach and Linearized Frequency Domain CFD Data](#)

Dominik Schaefer
Deutsches Zentrum fuer Luft und Raumfahrt

[Flutter Mechanisms Characterization Using Distributed Aeroelastic Energy Analysis](#)

Michael Iovnovich
Israel Air Force

Control of Very Flexible Aircraft I

[Maneuver Load Alleviation of Flexible Aircraft through Control Allocation: A Case Study using X-HALE](#)

John Hansen
USAF

[Very Flexible Aircraft Control Based on Loop-Separation and Reference Governor](#)

Pedro Jose Gonzalez Ramirez
Instituto Tecnológico de Aeronautica

[Design of Stability Augmentation Systems for Flexible Aircraft Using Projective Control](#)

Rafael Bertolin
Instituto Tecnológico de Aeronautica

[Fuzzy Gain-Scheduling for MIMO Systems Applied to Flexible Aircraft Control](#)

Flavio Silvestre
Technische Universität Berlin

Ground Vibration Testing I

[Taxi Vibration Testing: A New and Time Efficient Procedure for the Identification of Modal Parameters on Aircrafts](#)

Keith Soal

German Aerospace Center DLR

[FE-Model Update after GVT of a Gripen E Test Aircraft](#)

Erik Holmberg

Saab Aeronautics

[AIRBUS Beluga XL State-Of-The-Art Techniques to Perform a Ground Vibration Test Campaign of a Large Aircraft](#)

Cyrille Stephan

ONERA

[Structural Dynamics Assessment on a Full-Electric Aircraft: Ground Vibration Testing and In-Flight Measurements](#)

William Flynn

Siemens Industry Software NV

Unsteady CFD I

[Turbulence Modelling and Angle of Attack Effects on Transonic Flutter Boundary Using Unsteady Navier-Stokes Solvers](#)

Laurent Daumas

Dassault Aviation

[Fluid-Mode Flutter in Plane Transonic Flows](#)

Jens Nitzsche

German Aerospace Center DLR

[Aeroelastic Simulations of Complicated Configuration Using Overset Unstructured CFD Solver](#)

Hitoshi Arizono

Japan Aerospace Exploration Agency

[Control Surface Modelling of Unsteady Large Amplitude Motion via Chimera CFD Technique](#)

Bernd Stickan

Airbus Germany

Aeroelastic Optimization Frameworks

[Neopt an Optimization Suite for the Aeroelastic Preliminary Design](#)

Francesco Toffol

Politecnico of Milan

[Recent Developments of NeoCASS the Open Source Suite for Structural Sizing and Aeroelastic Analysis](#)

Sergio Ricci

Politecnico di Milano

[cpacs-MONA – An Independent and in Hi-Fi Based MDO Tasks Integrated Process for the Structural and Aeroelastic Design of Aircraft Configuration](#)

Matthias Schulze

DLR Institute of Aeroelasticity

[Flutter Sensitivity Analysis for Wing Planform Optimization](#)

Francesco Torigiani

DLR

Control of Very Flexible Aircraft II

[Model Predictive Control for Maneuver Load Alleviation in Flexible Airliners](#)

Carlos Cesnik

University of Michigan

[Active Control for Nonlinear Aeroelastic Systems](#)

Shakir Jiffri

Swansea University

[Advantages of Using Aeroelastic Feedback in Flexible Aircraft Control Instead of Applying Notch-Filtering](#)

Daniel Drewiacki

ITA

NASA Passive & Active Aeroelastic Wing Activities I (PRESENTATIONS ONLY)

Passive Aeroelastic Tailored Wing (PATW) Overview and Test Summary

Carol Wieseman

NASA Langley Research Center

Tow-steered Composite Wing Aerostructural Optimization—Test Article and Full Scale

Joaquim Martins

University of Michigan

Tow-steered Composite Passive Aeroelastic Tailored Wing Fabrication

Benjamin Smith

Aurora Flight Sciences

Passive Aeroelastic Tailored Wing Ground Vibration Test

Natalie Spivey

NASA

Reduced Order Models I

[Flutter and Limit Cycle Oscillations of a Cantilevered Plate in Supersonic/Hypersonic Flow](#)

Kevin McHugh
Duke University

[Self Adaptive POD Based ROM 3D Aeroelastic Simulations](#)

Ruben Moreno-Ramos
Altran Innovacion

[Error Estimation and POD-Based Reference Selection to Approximate GAF Matrices for Flutter](#)

Reik Thormann
Airbus Germany

[A Modular Implementation of the Time Spectral Method for Aeroelastic Analysis and Optimization on Structured Meshes](#)

Christophe Blondeau
ONERA

Unsteady CFD II

[Characterizing a Multi Delta Wing for Aeroelastic Wind Tunnel Experiments](#)

Jonas Zastrow
DLR German Aerospace Center

[RANS and DNS Study of Buffet in Subsonic and Transonic Flow](#)

Kai Mbali Kruger Bastos
Duke University

[Modeling of an Atmospheric-Boundary- Layer Profile in Support of Experiments in the NASA Langley Transonic Dynamics Tunnel](#)

Pawel Chwalowski
NASA Langley Research Center

Aeroelastic Design Applications I

[Dynamic Aeroelastic Tailoring of Strut Braced Wing Including Fatigue Loads](#)

Darwin Rajpal
Delft University of Technology

[Parametric Flutter Analysis of Strut Braced Wing Aircraft for Regional Aviation](#)

Ana Meinicke
Instituto Tecnológico de Aeronautica

[Approximation of Aerodynamic Geometrical Nonlinearities in Aircraft with High-Aspect-Ratio Wings](#)

Antonio Guimaraes Neto
ITA

[Flutter Analysis of Curved Wings Using Fully Intrinsic Equations](#)

Jonathan Cooper
University of Bristol

Experimental Active Control I

Low Cost Wind Tunnel Studies of Gust Alleviation Control Techniques

Bijan Barzgaran

University of Washington

Improving Piezoelectric Energy Harvesting from an Aeroelastic System

Dani Levin

Duke University

Numerical and Experimental Investigations on Active Flutter Suppression Technologies

Sergio Ricci

Politecnico di Milano

NASA Passive & Active Aeroelastic Wing Activities II (PRESENTATIONS ONLY)

Topology Optimization of Passive Aeroelastic Tailored Wing

Graeme Kennedy

Georgia Institute of Technology

Curvilinear Spar/Rib Structural Optimization

Rakesh Kapania

Virginia Polytechnic Institute & State University

Flutter Suppression Control Design and Flight Testing for the Performance Adaptive Aeroelastic Wing

Aditya Kotikalpudi

Systems Technologies

Distributed Strain Sensing for the Integrated Adaptive Wing Technology Maturation (IAWTM) Wind Tunnel Model

Patrick Heaney

NASA Langley Research Center

Reduced Order Models II

Analysis of Light Dynamic Stall Using Dynamic Mode Decomposition

Wrik Mallik

Technion

Effect of External Stores Aerodynamics on Analytic Fighter Aircraft Flutter Predictions: Evaluation of a Superposition Modeling Approach

Michael Iovnovich

Israel Air Force

Reduced Order Time Spectral Model for the ALE Formulation of the Compressible Navier-Stokes Equations

Fabrizio Di Donfrancesco

ONERA

Numerical and Experimental Study of Aeroelastic Tailoring Effect Using Flexible Composite Laminates for HAPS Application

Bertrand Kirsch

Centre de Recherche de l'Armée de l'air

Unsteady Aerodynamics

[Improvement of Unsteady Aero Loads Prediction of the Doublet-Lattice Method Using Small Disturbance CFD](#)

Cyrille Vidy

Airbus Defence & Space

[ONERA-Type Corrections into the Unsteady Vortex Lattice Method for Dynamic Stall Representation](#)

Carlos dos Santos

University of Sao Paulo

[Efficient Method of Aerodynamic Force Calculation](#)

Masato Tamayama

Japan Aerospace Exploration Agency

TUESDAY June 11, 2019

Aeroelastic Optimization I

[Sizing and Topology Design of an Aeroelastic Wingbox Under Uncertainty](#)

Bret Stanford

NASA Langley Research Center

[Aeroelastic Tailoring of Fully- Flexible Composite Aircraft](#)

Mario Natella

Delft University of Technology

[A State-Space Model for Loads Analysis Based on Tangential Interpolation](#)

David Quero Martin

DLR German Aerospace Center

[Multifidelity Flutter Prediction Using Local Corrections to the AICs](#)

Andrew Thelen

USAF AFRL

Aeroservoelasticity

[Two Views of the Same Problem: Aeroservoelasticity from a Controls and Flutter Perspective](#)

Raj Narisetti

Gulfstream

[Coupling of Aeroelastic and Pilot Dynamics via Biodynamic-Feedthrough in Pilot-Augmented Oscillations](#)

Daniel Drewiacki

ITA

[Aeroelastic Role in the Road to a Fully Automated Refuelling System](#)

Jesus Barrera Rodriguez

AIRBUS

Maneuver and Gust Loads

[Comparing VLM and CFD Maneuver Loads Calculations for a Flying Wing Configuration](#)

Arne Voss

German Aerospace Center

[Quantification of Nonlinear Effects in Gust Load Prediction](#)

Christoph Kaiser

German Aerospace Center DLR

[Nonlinear High Fidelity Static Aeroelastic Effect on the Flexible Pitching Moment Aerodynamic Coefficient for a Transport Aircraft](#)

Angelo Verri

Embraer SA

[Investigation into Gust Load Alleviation Using Computational Fluid Dynamics](#)

Philipp Bekemeyer

University of Liverpool

Whirl Flutter

Whirl Flutter-related Certification According to FAR/CS 23 and 25 Regulation Standards

Jiri Cecrdle

Czech Aerospace Research Centre VZLU

Whirl Flutter and the Development of the NASA X57 Maxwell

Jennifer Heeg

NASA Langley Research Center

Aeroelastic Stability Analysis of Wind Turbines Considering the Instabilities Known from Rotary Wing Dynamics

Alireza Rezaeian

MesH Engineering GmbH

Parametric Study and Mitigation Methods for Whirl Flutter after Occurrence on an Electric Propeller Aircraft

Christian Hoover

The University of Alabama

An Engineering Analysis for Panel Flutter of a Supersonic Inlet

Chenyu Liu

Beihang University

Aeroelastic Optimization II

Including Geometrically Nonlinear Flutter Constraints in High Fidelity Aircraft Optimization

Christopher Lupp

University of Michigan

A Full Potential Static Aeroelastic Solver for Preliminary Aircraft Design

Adrien Crovato

University of Liege

Transonic Flight and Movable Load Modelling for Wingbox Preliminary Sizing

Paul Lancelot

Delft University of Technology

Computational Flutter II

A New Flutter Prediction Algorithm to Avoid P-K Method Shortcomings

Ludovic Colo

DASSAULT AVIATION

Small-Disturbance-CFD-Based Aircraft Flutter Investigation Including Powered Engine Model

Vladyslav Rozov

Technical University of Munich

Influence on the Flutter Behavior of Pre-Stressed Wing Structures Under Aerodynamic Loading

Andreas Hermanutz

Technical University of Munich

Structural Damping Models for Passive Aeroelastic Control

Francesco Saltari

Sapienza University of Rome

Experimental Active Control II

[High Bandwidth Morphing Actuator for Experimental Aeroelastic Control](#)

Irma Isnardi

University of Liverpool

[Design and Optimization of an Aeroservoelastic Wind Tunnel Model](#)

Johannes Dillinger

DLR Institute of Aeroelasticity

[Experimental and Numerical Implementation of Robust Control for Attenuation of Buffet Loads](#)

Sheharyar Malik

Politecnico di Milano

[Design and Wind Tunnel Test of an Actively Controlled Flexible Wing](#)

Wolf Krueger

DLR German Aerospace Center

Flight Testing

[Online Monitoring of Flutter Stability During Wind Tunnel Testing of an Elastic Wing with Pylon and Engine Nacelle within the HMAE1 Project](#)

Marc Boeswald

DLR German Aerospace Center

[Small Scale Flying Demonstration of Semi Aeroelastic Hinged Wing Tips](#)

Thomas Wilson

Airbus

[Operational Modal Analysis for Simulated Flight Flutter Test of an Unconventional Aircraft](#)

Oezge Sueeloezgen

DLR German Aerospace Center

[Control Surface Dynamics at Transonic Airspeeds](#)

Holger Mai

DLR German Aerospace Center

Modeling for Design of Highly Flexible Aircraft I

[The Structural Dynamics of Flying Nonstop for 100 Days](#)

Carlo Aquilini

Airbus Defence & Space

[Flight Mechanical Design, Flight Dynamics and Flight Control for Multibody Aircraft: A Summary](#)

Alexander Koethe

Technische University Berlin

[Flight Mechanical Analysis and Test of Unmanned Multi-Body Aircraft](#)

Chao An

Beihang University

Aeroelastic Design Applications II/Sensing Measurement

[Thermal Correction of Strain Gage Measurements on Flexible XHALE Aircraft](#)

Jessica Martins

Instituto Tecnológico de Aeronautica ITA

[Surrogate-Based Optimization of a Morphing Winglet for Flexible Aircraft](#)

Martin Delavenne

ISAE

Computational Aeroelasticity

[Geometrically Nonlinear Aeroelastic Analysis with Unsteady Vortex-Lattice Method and CFD](#)

Natsuki Tsushima

Japan Aerospace Exploration Agency

[Flutter Analysis at Variable Mach and Angle of Attack Utilizing Reduced Order Models](#)

Christopher Talley

CFD Research Corp

[Theodorsen's and Garrick's Computational Aeroelasticity, Revisited](#)

Boyd Perry

NASA Langley Research Center (Retired)

Experimental Methods in Aeroelasticity

[Investigation of Gust Loads on a Flexible Forward Swept Wing](#)

Vega Handojo

DLR German Aerospace Center

[Wind Tunnel Testing of a High Aspect Ratio Wing Model](#)

Jonathan Cooper

University of Bristol

[Development Building and Testing of a Low- Cost Aeroelastic Wind Tunnel Model for Educational Purposes](#)

Marcello Righi

Zurich University of Applied Sciences

Modeling for Design of Highly Flexible Aircraft II

[Nonlinear Response of Very Flexible Aircraft Under Lateral Gusts](#)

Alfonso del Carre

Imperial College London

[Takeoff Dynamics of Flexible Aircraft with Multiple Underwing Pod- Mounted Landing Gears](#)

Antonio Guimaraes Neto

ITA

[A High Efficiency Nonlinear Flutter Analysis Method in Time Domain for Large Aspect Ratio Wing](#)

Yi Liu

Beijing Institute of Mechanical & Electrical

Reduced Order Models III

Aircraft Fuel Sloshing ROM's for Aeroelastic Analyses

Franco Mastroddi

Sapienza University of Rome

Model Order Reduction for Coupled Nonlinear Aeroelastic-Flight Mechanics of Very Flexible Aircraft

Carlos Cesnik

University of Michigan

Discrete Time Statespace Aeroservoelastic Modeling Using FUN3D

Zhicun Wang

ZONA Technology Inc

Aeroelastic Loads Predictions Using CFD-Based Reduced Order Models

Philipp Bekemeyer

DLR German Aerospace Center

WEDNESDAY, June 12, 2019

Aeroelastic Analysis Frameworks

[A New Open Fluid-Structure Interface for Steady and Unsteady Nonlinear Simulations](#)

Fausto Gill Di Vincenzo

MSC Software Corp

[Unified Framework for Aeroservoelastic Response and Stability Analysis, Design and Testing](#)

Moti Karpel

Technion Israel Institute of Technology

[Fast Fluid-Structure Computational Method Taking Into Account Non-Linear Aerodynamic](#)

Jean-Philippe Boin

Airbus Commercial Aircraft

Dynamic Loads I

[Ditching Loads Numerical and Experimental Alternatives](#)

Felix Arevalo Lozano

AIRBUS

[Statistical Analysis of Dynamic Loads](#)

Jose Luis Perez-Galan

AIRBUS

[A Hybrid Approach for the Analysis of Aircraft Ground Loads](#)

Wolf Krueger

DLR German Aerospace Center

Ground Vibration Testing II

[Modal Testing of a Flexible Wing on a Dynamically Active Test Fixture Using Fixed-Base Correction Method](#)

Natalie Spivey

NASA

[DGT A New Methodology for High Speed Aircraft Ground Vibration Tests](#)

Guillaume Osmond

Airbus Operation SAS

[An Abstract Ground Vibration Test System](#)

Louw van Zyl

Council for Scientific & Industrial Research

Unsteady Laminar Flow I

[High Reynolds Number Testing of a Laminar Airfoil Under Forced Harmonic Pitching Oscillations at Cryogenic Conditions](#)

Holger Mai

DLR German Aerospace Center

[Experimental Investigation of the Laminar–Turbulent Transition and Crossflow Instability of an Oscillating Airfoil in Low Speed Flow](#)

Arnaud Lepage

ONERA

Modeling for Design of Highly Flexible Aircraft III

[A Geometrically Nonlinear Finite Element Model for Aeroelastic Analysis of Plate-Like Wing Aerostructures](#)

Gefferson Silva

Instituto Tecnológico de Aeronautica

[Modal Rotations A Modal-based Method for Large Structural Deformations](#)

Ariel Drachinsky

Rafael Advanced Defense Systems

Dynamic Loads II

[Dynamic Response of an Elastic Aircraft to Ripple Store Ejection](#)

Daniel Kariv

Technion

[Aeroelastics Flight Dynamics Coupling Effects of the Semi Aeroelastic Hinge Device – IFASD 2019](#)

Andrea Castrichini

Airbus

[An Integrated Analysis Model for Assessment of Critical Load Conditions for the Vertical Tail Plane](#)

Thiemo Kier

DLR German Aerospace Center

[Prediction of Horizontal Tail Buffeting Loads Based on URANS and DES Approaches](#)

Lukas Katzenmeier

Airbus Defence & Space

Unsteady Laminar Flow II

[Numerical Investigation of Unsteady Transitional Boundary Layer Flows](#)

Michael Fehrs

DLR German Aerospace Center

[Mechanisms of Transonic Single Degree of Freedom Flutter of a Laminar Airfoil](#)

Marc Braune

DLR Institute of Aeroelasticity

[Assessment of CFD Methods taking into Account Laminar-Turbulent Transition for Aeroelasticity of Laminar Wings](#)

Cedric Liauzun

ONERA

[Hysteretic Response of a Laminar Airfoil undergoing Single Degree of Freedom Limit Cycle Oscillations in Transonic Flow](#)

Marc Braune

DLR Institute of Aeroelasticity

Experimental Methods in Structural Dynamics

[Experimental Evaluation of Fuel Sloshing Effects on Wing Dynamics](#)

Thomas Wilson

Airbus

[Analysis of a Sloshing Beam Experiment](#)

Jonathan Cooper

University of Bristol

[Aerolastic Coupling and Control Means for Reduction of Main Landing Gear Doors Responses Under Operational Conditions](#)

Ramon Abarca Lopez

Airbus

[Experimental Bifurcation Analysis of a Wing Profile](#)

Djamel Rezgui

University of Bristol

Limit Cycle Oscillation

[Numerical Analysis of Limit Cycle Oscillation of a Supersonic Transport Wind Tunnel Test Model](#)

Kenichi Saitoh

Japan Aerospace Exploration Agency

[Limit Cycle Oscillation Prediction for Aircraft with External Stores](#)

Ping Chih Chen

ZONA Technology Inc

[Model-Free Forecasting of Limit Cycle Oscillations in Geometrically Nonlinear Wings](#)

Cristina Riso

University of Michigan

[Application of 0-1 Test for Chaos in Wind Tunnel Aeroelastic Experiments of an Aluminum Flat Plate](#)

Michelle Westin

Technological Institute of Aeronautics

[Investigation on the Effects of Control Surface Freeplay on the Aeroelastic Characteristics of a Trainer Aircraft and Extension of Limits in Support of Maintenance Tasks](#)

Michele Frumusa

Leonardo Co

Panel Flutter

[Computational Study for the Design of a Hypersonic Panel Flutter Experiment](#)

Earl Dowell

Duke University

[A Multi-Objective Optimization Framework for Hypersonic Aerothermoelastic Scaling Laws and Its Application to Skin Panels](#)

Danling Huang

University of Michigan Ann Arbor

[Influence of Mixed Boundary Conditions on the Instability of Plates in Uniform Flow](#)

Ben Davis

University of Georgia

[Flutter of Periodically Stiffened Plates and Shells in Hypersonic Flow](#)

Gautam Sengupta

University of Washington

Wind Tunnel Testing

Wing Design for Wind Tunnel Flutter Testing

Ulf Ringertz

Kungliga Tekniska Hogskolan

Wind Tunnel Flutter Testing on a Highly Flexible Wing for Aeroelastic Validation in the Transonic Regime within the HMAE1 Project

Yves Govers

German Aerospace Center DLR

Linearized Navier-Stokes CFD Flutter Correlations with Wind Tunnel Measurements on a Transonic U-Tail Flutter Mockup

Gabriel Broux

DASSAULT AVIATION

Innovative Tail Configuration Numerical vs Wind Tunnel Test Data

Sylvie Dequand

ONERA

Design and Validation of a Numerical High Aspect Ratio Aeroelastic Wind Tunnel Model (HMAE1)

Huub Timmermans

Netherlands Aerospace Centre