# AePW-4 High-Angle Working Group Meeting





May 8, 2025
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Bret Stanford

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## Agenda, May 8



- AIAA Aviation 2025: three sessions dedicated to DPW-8/AePW-4
- AIAA SciTech 2026 plans.....
- Summer/Fall 2025: New BSCW Experiment
- Next meeting, June 12
- AePW-4 website: <a href="https://nescacademy.nasa.gov/workshops/AePW4/publication">https://nescacademy.nasa.gov/workshops/AePW4/publication</a>
- AePW-4 HAWG objectives
- 2D BSCW flutter analysis status, Pawel
- 2D BSCW flutter analysis status, Jeff
- AIAA Aviation 2026: DPW-8 and AePW-4 Workshop

## AIAA Aviation 2025: three sessions dedicated to DPW-8/AePW-4



Session Title Session Title Session Title Session Title Session Title Residence of Title Session Title Residence Res								
Session 1  DPW-8/AePW-4: Overview and Recent Progress  APA-11	Session	Session Title	Session ID	Date and Time	Time	Scope	Paper Title	Primary Author
Session 1    DPW-8/AePW-4: Coverview and Recent Progress	Session 1		APA-11		3:30	All	Architecture, Scope, and Goals of the Multidisciplinary DPW-8/AePW-4 Workshop	Brent Pomeroy
Recent Progress  APA-11  APA-11  APA-11  ARarmoon  Age Existed Deformation & Buffet  An Overview of the Finite Element Models Available for the DPW-8/AePW-4 Hybrid Working Groups  Bret Stanford  AePW-4 High-Angle Working Group: An Overview of Recent Progress and Future Directions  Pawel Chwalowski  Bret Pomeroy  Bret Stanford  AePW-4 High-Angle Working Group: An Overview of Recent Progress and Future Directions  Rich Browner  Bret Stanford  AePW-4 High-Angle Working Group: An Overview of Recent Progress and Future Directions  Kirk Brouwer  Ages of High Speed  ITA and Embrare Aercelasticity Public Geometry Release and Summary  Brent Pomeroy  Are Power of Recent Progress and Future Directions  Kirk Brouwer  Angulo Antonio Veri  ITA and Embrare Aercelasticity Public Geometry Release and Summary  Brent Pomeroy  Are Power of Recent Progress and Future Directions  Kirk Brouwer  ITA and Embrare Aercelasticity Public Geometry Release and Summary  Brent Pomeroy  Are Power of Recent Progress and Future Directions  Kirk Brouwer  ITA and Embrare Aercelasticity Public Geometry Release and Summary  Brent Pomeroy  Are Power of Recent Progress and Future Directions  Kirk Brouwer  ITA and Embrare Aercelasticity Public Geometry Release and Summary  Brent Pomeroy  Are Power of Recent Progress and Future Directions  Kirk Brouwer  Correlation of Mathematical Model with AFRL RC-19 Aerothermoelastic Experiment  Luisa Piccolo Serafin  High Speed  Correlation of Mathematical Model with AFRL RC-19 Aerothermoelastic Experiment  Luisa Piccolo Serafin  High Speed  Correlation of Mathematical Model with AFRL RC-19 Aerothermoelastic Experiment  Luisa Piccolo Serafin  Harry Xu  Dywasia Pw-4: Buffet  Working Group - ONERA  OATISA Test Case Suffet Suffet Sumilation of the RC19 Test Cases of the Aercelastic Experimental Design  Dywasia Pw-4: Buffet Working Group - ONERA  OATISA Test Case  Dywasia Pw-4: Buffet Working Group - ONERA  OATISA Test Case  Dywasia Pw-4: Buffet Suffet Sumilation of the ONERA OATISA Airfoil for Dywasia Aercelastic Predic					3:50	Scatter	DPW-8/AePW-4 Scatter Working Group: An Overview of Mini Workshops 1 and 2	Marshall Galbraith
Recent Progress  Afternoon  4:50  Astric Deformation & Buffet  An Overview of the Finite Element Models Available for the DPW-8/APW-4 Hybrid Working Groups  Breat Stanford  4:50  High Angle  APW-4 High-Angle Working Group: An Overview of Recent Progress and Future Directions  Finite Pomeroy  Brent Stanford  AppW-4 High-Angle Working Group: An Overview of Recent Progress and Future Directions  Kirk Brouwer  AppW-4 High-Speed Working Group: An Overview of Recent Progress and Future Directions  Kirk Brouwer  AppBred Correlation of Mathematical Model with AFRL RC-19 Acrothermoelastic Experiment  Lips Speed Correlation of Mathematical Model with AFRL RC-19 Acrothermoelastic Experimental Design  Harry Xu  Buffet  DPW-8/AePW-4: Transonic shock Buffet URANS Simulations of the ONERA OAT15A Airfoll with the SU2 Solver  Hadar Ben Gida  DPW-8/AePW-4: Transonic shock Buffet URANS Simulations of the ONERA OAT15A Airfoll for DPW-8/AePW-4  Buffet  Working Group - ONERA  OAT15A Test Case  APA-31  Buffet  Wednesday  Afternoon  Afternoon  Afternoon  Afternoon  Buffet  USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoll for DPW-8/AePW-4  Buffet  Working Group - ONERA  OAT15A Test Case  Buffet  Wednesday  Afternoon  Afternoon  Afternoon  Afternoon  Buffet  USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoll for DPW-8/AePW-4  Working Group - ONERA  OAT15A Test Case  Buffet  Wednesday  Afternoon  Afternoon  Afternoon  Buffet  USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoll for DPW-8/AePW-4  Working Grou					4:10	Buffet	DPW-8/AePW-4 Buffet Working Group: An Overview of Mini Workshops 1 and 2	Andrea Sansica
Session 2  DPW-8/AePW-4: High-Speed Working Group: An Overview of Recent Progress and Future Directions Kirk Brouwer  APA-20  Tuesday Afternoon  APA-31  DPW-8/AePW-4: High-Speed Working Group: An Overview of Recent Progress and Future Directions Kirk Brouwer  Apa-31  Tuesday Afternoon  APA-31  DPW-8/AePW-4: High-Speed Working Group: An Overview of Recent Progress and Future Directions Kirk Brouwer  Apa-31  APA-31  APA-31  DPW-8/AePW-4: High-Speed Working Group: An Overview of Recent Progress and Future Directions Kirk Brouwer  Apa-31  APA-31  APA-31  APA-31  APA-31  DPW-8/AePW-4: High-Speed APW 3  Afternoon  APA-31  APA-31					4:30	Static Deformation & Buffet	An Overview of the Finite Element Models Available for the DPW-8/AePW-4 Hybrid Working Groups	Bret Stanford
Session 2  DPW-8/AePW-4: High-Speed Working Group  APA-20  APA					4:50	High Angle	AePW-4 High-Angle Working Group: An Overview of Recent Progress and Future Directions	Pawel Chwalowski
Session 2  DPW-8/AePW-4: High-Speed Working Group  APA-20  APA-20  APA-20  APA-20  Tuesday Afternoon  APA-20					5:10	Test Environment	National Transonic Facility Public Geometry Release and Summary	Brent Pomeroy
Session 2  DPW-8/AePW-4: High-Speed Working Group  APA-20  APA-31  APA	Session 2		APA-20		3:30	High Speed	AePW-4 High-Speed Working Group: An Overview of Recent Progress and Future Directions	Kirk Brouwer
Session 2 Working Group Afternoon 4:30 High Speed Computational Modeling of the HyMAX Experiment in Support of a New Aeroelastic Experimental Design Harry Xu High Speed AePW 3 Supersonic Aeroelastic Simulation of the RC19 Test Cases of the Aeroelastic Prediction Workshop III DPW-8/AePW-4: Buffet Working Group - ONERA OAT15A Test Case  APA-31  APA-3					3:50	High Speed	ITA and Embraer Aeroelasticity Cooperation in Preparation for the AEPW-4	Angelo Antonio Verri
Afternoon  Atternoon					4:10	High Speed	Correlation of Mathematical Model with AFRL RC-19 Aerothermoelastic Experiment	Luisa Piccolo Serafim
Session 3  PDW-8/AePW-4: Buffet Working Group - ONERA OAT15A Test Case   APA-31  APA-31  DPW-8/AePW-4: Buffet Working Group - ONERA OAT15A Test Case   APA-31  APA-31  DPW-8/AePW-4: Buffet Working Group - ONERA OAT15A Test Case   APA-31  APA-31  DPW-8/AePW-4: Buffet Working Group - ONERA OAT15A Test Case   APA-31  APA-31  APA-31  DPW-8/AePW-4: Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   Afternoon   According to the Company of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   According to the Character Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4   Acc					4:30	High Speed	Computational Modeling of the HyMAX Experiment in Support of a New Aeroelastic Experimental Design	Harry Xu
Session 3  PPW-8/AePW-4: Buffet Working Group - ONERA OAT15A Test Case  PPW-8/AePW-4: Buffet Working Group - ONERA OAT15A Test Case  APA-31  APA-31  APA-31  APA-31  APA-31  APA-31  Buffet DPW-8/AePW-4: Transonic shock Buffet URANS Simulations of the ONERA OAT15A Airfoil with the SU2 Solver Hadar Ben Gida  3:50  Buffet RANS, URANS and Hybrid RANS/LES Computations of the DPW-8 OAT15A Test Case using CFD++ Paul Batten  Charles Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4  4:10  Buffet USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4  Brent Pomeroy  Steve Lamberson  Steve Lamberson  Buffet CHAMPs' Contributions to the Eight Drag Prediction Workshop Buffet Working Group  Baptiste Arnould  CHAMPs' Contribution to DPW-8/AePW-4: Part I  Progress Towards the Fourth Aeroelastic Prediction Workshop: Shock Buffet and Stall Flutter Modeling with  Michael Candon  Tunable Turbulence Parameters  Study of Transonic Flutter and Shock Buffet on Benchmark Supercritical Wing  Daniel Nash  Declan Clifford					4:50	High Speed AePW 3	Supersonic Aeroelastic Simulation of the RC19 Test Cases of the Aeroelastic Prediction Workshop III	Dylan Dooner
Session 3  DPW-8/AePW-4: Buffet Working Group - ONERA OAT15A Test Case Wednesday Afternoon  4:10 Buffet charLES Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 Working Group - ONERA OAT15A Test Case Wednesday Afternoon  4:30 Buffet USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 Brent Pomeroy HPCMP CREATETM-AV Kestrel Simulations for the DPW-8/AePW-4 Static Aeroelastic Deformation and Buffet Working Group: Part I  Seession 4  DPW-8/AePW-4: Aeroelasticity Applications  APA-41  APA-41  APA-41  APA-41  APA-41  APA-41  APA-41  APA-41  APA-51  Buffet RANS, URANS and Hybrid RANS/LES Computations of the DPW-8/AePW-4 CharLES Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 HPCMP CREATETM-AV Kestrel Simulations for the DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 USM3D-ME Buffet					5:10			
PW-8/AePW-4: Buffet Working Group - ONERA OAT15A Test Case  APA-31  APA-31  Buffet charLES Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4  4:30  Buffet USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4  HPCMP CREATETM-AV Kestrel Simulations for the DPW-8/AePW-4 Static Aeroelastic Deformation and Buffet Working Groups: Part I  5:10  Buffet CHAMPS' Contributions to the Eight Drag Prediction Workshop Buffet Working Group Baptiste Arnould  Embracer Contribution to DPW-8/AePW-4: Part I  Progress Towards the Fourth Aeroelastic Prediction Workshop: Shock Buffet and Stall Flutter Modeling with Tunable Turbulence Parameters  Thursday Afternoon  4 Large Deformation On Flutter and Limit Cycle Oscillation Envelope of the Pazy Wing using a Reduced Order Model  Declan Clifford	Session 3	Working Group - ONERA	APA-31		3:30	Buffet	DPW-8/AePW-4: Transonic shock Buffet URANS Simulations of the ONERA OAT15A Airfoil with the SU2 Solver	Hadar Ben Gida
Session 3  Working Group - ONERA OAT15A Test Case  APA-31  APA					3:50	Buffet	RANS, URANS and Hybrid RANS/LES Computations of the DPW-8 OAT15A Test Case using CFD++	Paul Batten
Afternoon  4:30 Buffet USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4  4:50 Buffet HPCMP CREATETM-AV Kestrel Simulations for the DPW-8/AePW-4 Static Aeroelastic Deformation and Buffet Working Groups: Part I  5:10 Buffet CHAMPS' Contributions to the Eight Drag Prediction Workshop Buffet Working Group Baptiste Arnould  CHAMPS' Contributions to the Eight Drag Prediction Workshop Buffet Working Group Baptiste Arnould  Buffet CHAMPS' Contributions to the Eight Drag Prediction Workshop Buffet Working Group Baptiste Arnould  Buffet CHAMPS' Contribution to DPW-8/AePW-4: Part I  DPW-8/AePW-4: Aeroelasticity Applications  APA-41 Applications  APA-41 Afternoon  4:30 Buffet USM3D-ME Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4 Static Aeroelastic Deformation and Buffet Working Group  Baptiste Arnould  Embrace Contribution to DPW-8/AePW-4: Part I  Progress Towards the Fourth Aeroelastic Prediction Workshop: Shock Buffet and Stall Flutter Modeling with Tunable Turbulence Parameters  Michael Candon  Thursday Afternoon  4 Large Deformation On Flutter and Limit Cycle Oscillation Envelope of the Pazy Wing using a Reduced Order Model  Declan Clifford					4:10	Buffet	charLES Buffet Simulations of the ONERA OAT15A Airfoil for DPW-8/AePW-4	Konrad Goc
Session 4  DPW-8/AePW-4: Aeroelasticity Applications  APA-41					4:30	Buffet		Brent Pomeroy
Session 4  DPW-8/AePW-4: Aeroelasticity Applications  APA-41  APA-41  Buffet  CHAMPS' Contributions to the Eight Drag Prediction Workshop Buffet Working Group  Embraer Contribution to DPW-8/AePW-4: Part I  Buffet and High Angle  Thursday Afternoon  Tunable Turbulence Parameters  Study of Transonic Flutter and Shock Buffet on Benchmark Supercritical Wing  Drug Using a Reduced Order Model  Declan Clifford					4:50	Buffet		Steve Lamberson
Session 4  DPW-8/AePW-4: Aeroelasticity Applications  APA-41					5:10	Buffet		Baptiste Arnould
Session 4  DPW-8/AePW-4: Aeroelasticity Applications  APA-41	Section 4		APA-41		1	Scatter, Buffet, Static Deformation		Murilo Mestriner
Session 4 DPW-8/AePW-4: Aeroelasticity Applications APA-41 Thursday Afternoon 4 Large Deformation On Flutter and Limit Cycle Oscillation Envelope of the Pazy Wing using a Reduced Order Model Declan Clifford 5					2	Buffet and High Angle		Michael Candon
Applications Afternoon 4 Large Deformation On Flutter and Limit Cycle Oscillation Envelope of the Pazy Wing using a Reduced Order Model Declan Clifford					3	High Angle		Daniel Nash
					4	Large Deformation	On Flutter and Limit Cycle Oscillation Envelope of the Pazy Wing using a Reduced Order Model	Declan Clifford
6					5			
					6			

## AIAA SciTech 2026 plans....



Who is planning to submit an abstract/paper to SciTech 2026?

### Summer/Fall 2025: New BSCW Experiment



...we are supposed to be ready for the tunnel entry in July, ...but very likely test will take place in September.....

#### **Next Meeting, June 12:**



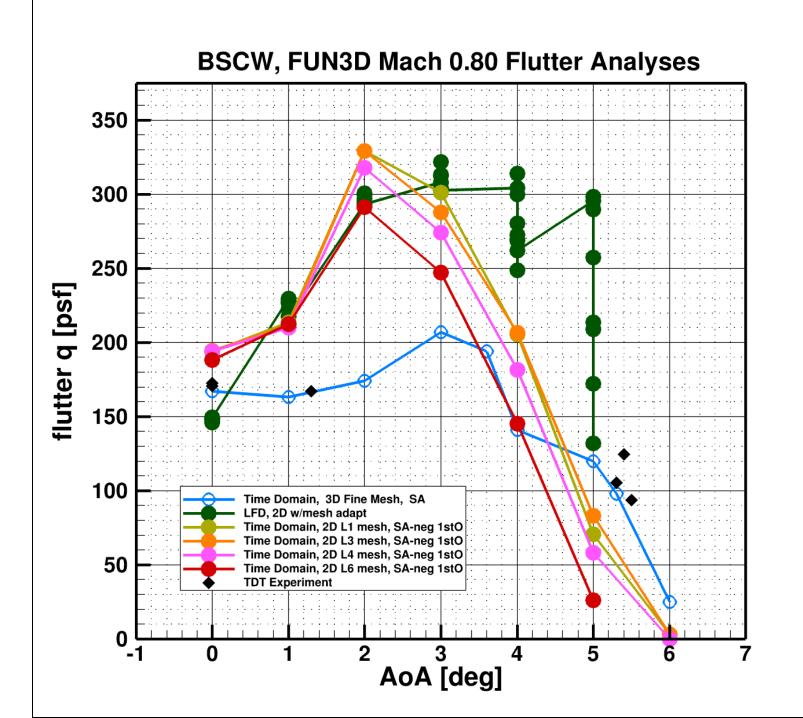
Pawel might not be here on June 12. If sending email, please 'cc' Bret Stanford.

# NASA

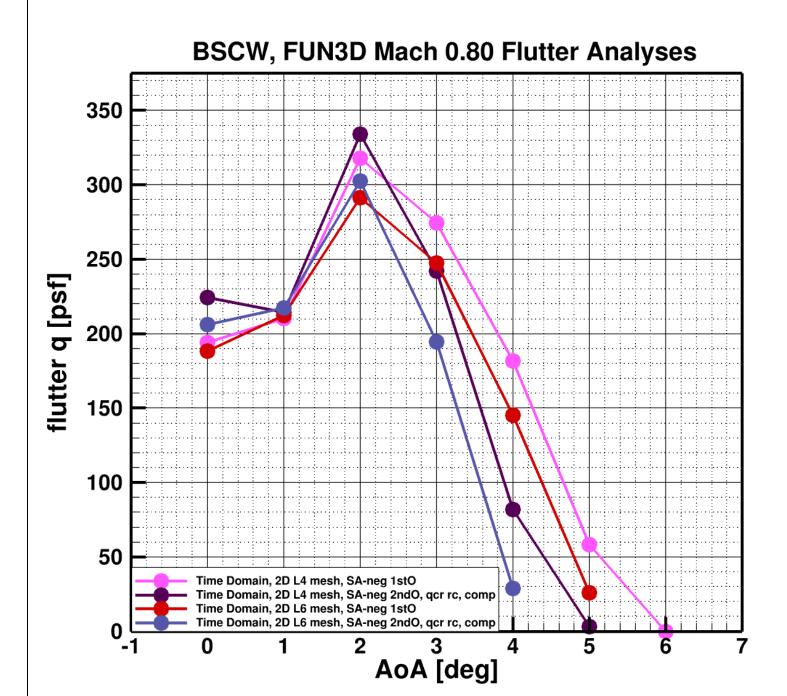
# AePW-4 High-Angle WG Cases

- Mandatory
  - Flutter prediction at Mach 0.80 and angle-of-attack sweep: 0° 6°
- Optional
  - Flutter prediction at Mach 0.78, 0.76, 0.74 and angle-of-attack 3°
- Mandatory
  - 2D BSCW flutter prediction at Mach 0.80 and angle-of-attack sweep: 0° 6°

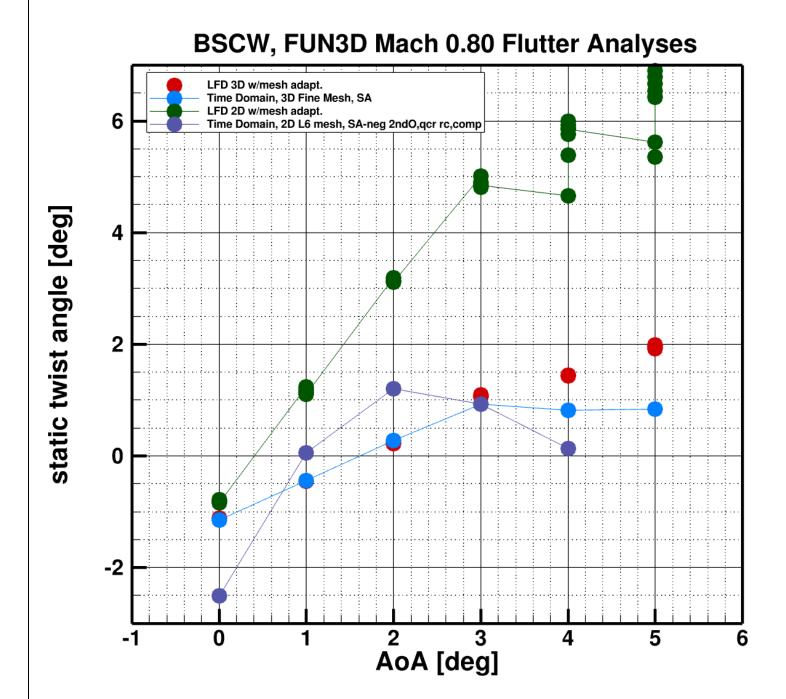
Currently we have five teams looking at 2D calculations













## **Duke update....**



# AePW-4 High-Angle Working Group Meeting





May 8, 2025
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