

PRELIMINARY PROGRAMME



Association Aéronautique  
et Astronautique de France

# 60<sup>th</sup> 3AF International Conference on Applied Aerodynamics

# Sixty Years of Innovation & Upcoming Challenges in Aerodynamics

Paris, France – February 23-24-25, 2026

[www.3af-aerodynamics.com](http://www.3af-aerodynamics.com)

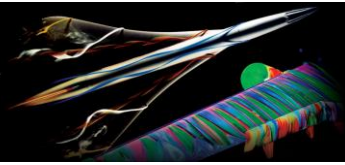
ONLINE REGISTRATION OPEN



Visualization of leading edge vortices shedding of Concorde  
Credit Henri Werlé

Wind tunnel test of the NASA's High-Lift Common Research Model at ONERA F1  
Visualization of surface flow pattern with colored oil flow technique - Credit ONERA





**PRELIMINARY PROGRAMME**

**MONDAY, FEBRUARY 23**

**08:15** **REGISTRATION & WELCOME COFFEE**

**ROOM 1 - Amphi Bézier**

**CONFERENCE WELCOME**

**08:45**  
**Jean-Christophe ROBINET** - Director, *DynFluid Laboratory - Arts et Métiers*  
**Bruno BERTHET** - President, 3AF  
**Eric CHAPUT** - President, *Scientific Committee AERO2026*

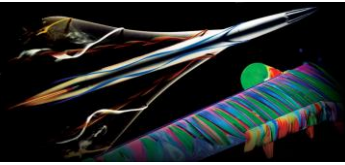
**KEYNOTE CONFERENCE N°1**

**09:15** **Decades of turbulent complementary concepts and methods in Experimental and Computational Fluid Dynamics**  
**Jean-Paul BONNET (CNRS - P' Institute) - Retired**

**10:00** **INTERSESSIONS**

|              | <b>ROOM 1 - Amphi Bézier</b>   | <b>ROOM 2 - Amphi Fournel</b>   | <b>ROOM 3 - Salle Guy Gautherin</b>   |
|--------------|--|---|---|
|              | <b>SESSION 1A</b><br>Advances in experimental techniques<br><b>Chairperson: Maxime FORTE (ONERA)</b>   | <b>SESSION 1B</b><br>Transition<br><b>Chairperson: Jean-Christophe ROBINET (DynFluid, Arts et Métier)</b>   | <b>SESSION 1C</b><br>Flow control<br><b>Chairperson: Azeddine KOURTA (PRISME, Université d'Orléans)</b>   |
| <b>10:10</b> | <b>53</b><br>Perspectives and challenges of aerodynamic testing in large wind-tunnels to support the future development of aeronautics and defence programmes<br><b>Gérald CARRIER (ONERA)</b> | <b>02</b><br>A Symbolic-Regression-Based Amplification Factor Transport Model for Transition Prediction<br><b>Lucas PASCAL (ONERA/DMPE, Université de Toulouse)</b> | <b>31</b><br>Control of a Backward-Facing Step flow Using Pulsed Counter-Rotating Jet Vortex Generators<br><b>Juan PIMIENTA (Photon Lines)</b>                      |
| <b>10:35</b> | <b>08</b><br>A micro-scale dual-wire probe for two-component velocity measurements in turbulent flows<br><b>Thibaut DUPUY (ONERA)</b>  | <b>24</b><br>Effects of distributed roughness on modal instabilities over a semi-infinite swept wing<br><b>Victoria PRIETO (ONERA)</b>                              | <b>45</b><br>Characterization of sensor domain of dependence in separated high-speed flows<br><b>Curtis HAAS (Johns Hopkins University)</b>                         |
| <b>11:00</b> | <b>12</b><br>Development of a Predictive Model for Aerodynamic Probe Design Based on Wind Tunnel Test Data<br><b>Snezana ZUROVAC (VTI)</b>   | <b>27</b><br>Experiment on a laminar separation bubble subjected to a time-varying streamwise flow<br><b>Erwin R. GOWREE (ISAE-SUPAERO, Université de Toulouse)</b> | <b>48</b><br>Regulation of Airfoil Motion and Unsteady Aerodynamic Loads using Active Aerodynamic Bleed<br><b>Michael DESALVO (Georgia Institute of Technology)</b> |
| <b>11:25</b> | <b>36</b><br>Ensemble Kalman Inversion for aerothermal mean flow reconstruction using Background-Oriented Schlieren observations<br><b>Luna LI (ONERA)</b>                                     |   | <b>13</b><br>Aerodynamic Analysis of a Cubical Body Under Yaw-Induced Motion in Turbulent Flow Regime<br><b>Ahmad FAWAZ (École Centrale de Nantes)</b>              |
| <b>11:50</b> | <b>61</b><br>Real-time Sensor Tracking Velocimetry (STV): Opportunities and challenges with a human in the loop (HITL)<br><b>Simon BARBE (Streamwise GmbH)</b>                                 |   |   |

**12:15** **LUNCH**



PRELIMINARY PROGRAMME

MONDAY, FEBRUARY 23

ROOM 1 - Amphi Bézier

13:30

**KEYNOTE CONFERENCE N°2:**  
**A Philosophy of Turbulence Modelling**  
**Philippe SPALART (Boeing Commercial Airplanes) - Retired**

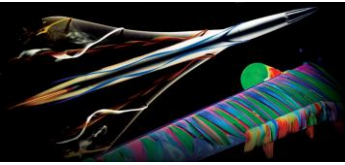
14:15

INTERSESSIONS

|       | ROOM 1 - Amphi Bézier  | ROOM 2 - Amphi Fournel   | ROOM 3 - Salle Guy Gautherin   |
|-------|--|--|--|
|       | <b>SESSION 2A</b><br><b>High fidelity CFD</b><br><b>Chairperson: Sébastien DECK</b><br><b>( ONERA )</b>  | <b>SESSION 2B</b><br><b>Ground vehicles</b><br><b>Chairperson: Guillaume BONNAVION</b><br><b>( PCB Piezotronics )</b>  | <b>SESSION 2C</b><br><b>Experimental techniques</b><br><b>Chairperson: Julien WEISS</b><br><b>( Technische Universität Berlin )</b>  |
| 14:25 | <p><b>21</b></p> <p>Delayed-DES simulation of NACA0012 aerofoil at near-stall conditions</p> <p><b>Fakreddine MADJ</b><br/>(UWE Bristol)</p>   | <p><b>16</b></p> <p>Towards symmetry breaking wake modes identification of a car in real driving conditions</p> <p><b>Olivier CADOT</b><br/>(University of Liverpool)</p>                      | <p><b>10</b></p> <p>Adaptive sampling with Gaussian Processes for experiments in wind-tunnel to efficiently learn an aerodynamic model for flight dynamics simulations</p> <p><b>Nicolas VAUCHEL</b><br/>(ONERA)</p> |
| 14:50 | <p><b>28</b></p> <p>A fully automatic and robust hybrid Reynolds-Averaged Navier-Stokes / Large Eddy Simulation approach based on the Menter Shear Stress Transport k-<math>\omega</math> model with application to a shock train</p> <p><b>Nicolas RENARD</b><br/>(ONERA)</p> | <p><b>20</b></p> <p>Numerical study of wheel-wake interaction using a square-back Windsor body with underbody perturbations</p> <p><b>Wilmo MONTERO</b><br/>(LMFA, École Centrale de Lyon)</p> | <p><b>19</b></p> <p>Facility-Independent, SQLite-Based, Wind Tunnel Data Reduction Software</p> <p><b>Djordje VUKOVIC</b><br/>(VTI (R))</p>  |
| 15:15 | <p><b>25</b></p> <p>Democratizing Scale-Resolving Aerodynamics with GPU-based CFD on Adaptive Octrees</p> <p><b>Christophe COREIXAS</b><br/>(BNBU/UNIGE)</p>   | <p><b>47</b></p> <p>Flow past a simplified ground vehicle at different turbulent intensities</p> <p><b>Jacob TARAMASCO</b><br/>(University of Liverpool)</p>                                   | <p><b>41</b></p> <p>An Experimental Methodology for Ground-Proximity Simulation: Development of New Moving Belt System for Low-Speed Wind Tunnel</p> <p><b>Arpit KOURAV</b><br/>(IIT-Kanpur)</p>                     |

15:40

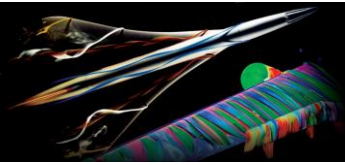
COFFEE BREAK



PRELIMINARY PROGRAMME

MONDAY, FEBRUARY 23

|       | ROOM 1 - Amphi Bézier  | ROOM 2 - Amphi Fournel   | ROOM 3 - Salle Guy Gautherin   |
|-------|--|--|--|
|       | <b>SESSION 2A</b><br>High fidelity CFD<br><b>Chairperson: Sébastien DECK</b><br>( ONERA )  | <b>SESSION 2B</b><br>Ground vehicles<br><b>Chairperson: Guillaume BONNAVION</b><br>( PCB Piezotronics )  | <b>SESSION 2C</b><br>Experimental techniques<br><b>Chairperson: Julien WEISS</b><br>( Technische Universität Berlin )  |
| 16:10 | <b>37</b><br>Advanced CFD developments in the new generation solver CODA for Analysis and Design<br><br><b>Vincent COUAILLIER</b><br>( ONERA )               | <b>09</b><br>Aerodynamic Influence of Train Speed and Running Direction on Underfloor Equipment Cabin Ventilation<br><br><b>Zhixin WANG</b><br>(Central South University, Politecnico di Milano) | <b>60</b><br>Low-Speed Experimental Investigation of an Over-the-Wing Jet Engine<br><br><b>Ankit KUMAR</b><br>( TU Delft )   |
| 16:35 | <b>67</b><br>Rosenbrock Wanner time integration methods for Hybrid RANS-LES.<br><br><b>Baptiste ARNOULD</b><br>(Polytechnique Montréal)                      | <b>11</b><br>Analysis of Single Pod Aerodynamic Phenomena in Hyperloop<br><br><b>João NICOLAU</b><br>(Technical University of Munich (TUM))  | <b>43</b><br>Wake Characteristics of a Free-Flying Quadrotor Hovering in Uniform and Shear Inflows<br><br><b>Antonios CENE</b><br>(University of Liverpool)  |
| 17:00 | <b>73</b><br>An Intermittent Shock Wave-Boundary Layer Interaction: New Insight of the Low-Frequency Unsteadiness<br><br><b>Baptiste LE GUEUX</b><br>(ENSAM) |  | <b>42</b><br>Mitigating Vortex Gust Loads with Wing Pitch<br><br><b>Paras VADHER</b><br>(University of Cambridge)  |
| 17:25 |  |  | <b>75</b><br>Three-Dimensional Vortex Flow Mapping with Particle Tracking Velocimetry for Induced Drag Assessment and Force Balance Validation<br><br><b>Merina AMON MWASANDUBE</b><br>(RMIT University) |
| 17:50 | <b>END OF SESSIONS</b>   |  |  |



PRELIMINARY PROGRAMME

**TUESDAY, FEBRUARY 24**

08:30 REGISTRATION & WELCOME COFFEE

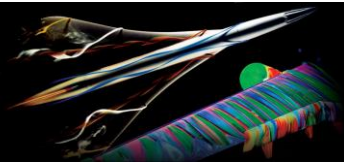
ROOM 1 - Amphi Bézier

09:15 **KEYNOTE CONFERENCE N°3**  
Historical perspectives on aircraft aerodynamic design and drag reduction  
Tom GIBSON (*Senior Expert for Aerodynamics design, AIRBUS*)

10:00 INTERSESSIONS

|       | ROOM 1 - Amphi Bézier   | ROOM 2 - Amphi Fournel  | ROOM 3 - Salle Guy Gautherin   |
|-------|---|---|--|
|       | <b>SESSION 3A</b><br>Sustainable Aviation<br><b>Chairperson: Pascal LARRIEU</b><br>(AIRBUS)   | <b>SESSION 3B</b><br>Data assimilation and Machine learning<br><b>Chairperson: Pedro S. VOLPIANI</b><br>(ONERA)   | <b>SESSION 3C</b><br>Low order modelling<br><b>Chairperson: Eric LAURENDEAU</b><br>(Polytechnique Montréal)  |
| 10:10 | <b>22</b><br>Clear-Air Turbulence Effect on Wing Aerodynamics Using a Nonlinear State Space Lifting Line and High-Fidelity Data<br><br><b>Ernest GRAU LOZANO</b><br>(Airbus Operations SAS)                                   | <b>35</b><br>Using Experimental Data to Constraint a Reduced Order Model with Stochastic Closure<br><br><b>Florian REGNAULT</b><br>(Scalian DS)   | <b>15</b><br>Assessment of methods for the breakdown between compressible and thermal components in the energy-based performance analysis of a NACA0012 airfoil<br><br><b>Mathis BUSSON</b><br>(ONERA) |
| 10:35 | <b>46</b><br>Upcoming Challenges for Aviation in a Warming Climate: Evaluating the Effects on Aircraft Engine Performances and Emissions at TakeOff<br><br><b>Victoria GALLARDO</b><br>(University of Murcia)                 | <b>52</b><br>Combining sensor placement strategies with data-driven models for the prediction of unsteady aerodynamic loads on a thick airfoil<br><br><b>Quentin BUCQUET</b><br>(École CentraleSupélec) | <b>17</b><br>Low-Fidelity Exergy Analysis for Conceptual Aircraft Design: A Wing-Body Case Study<br><br><b>Guillaume BOURREAU TIREL</b><br>(Aura Aero/ISAE-Supaéro)                                    |
| 11:00 | <b>04</b><br>Towards aerodynamically efficient cooling: A design framework for ram-air based ducted thermal management systems for electric aircraft.<br><br><b>Prasanna MUTHUKUMARAN</b><br>(Delft University of Technology) | <b>63</b><br>Adjoint-based assimilation of heterogeneous experimental data: reconstruction of a turbulent flow around an airfoil near stall<br><br><b>Ivan KHARSANSKY ATALLAH</b><br>(ONERA)            | <b>23</b><br>Validation of an Unsteady Exergy Balance with Non-Adiabatic Walls for an Airfoil under Vortex Shedding<br><br><b>Clément PAILLARD</b><br>(ISAE-SUPAERO)                                   |

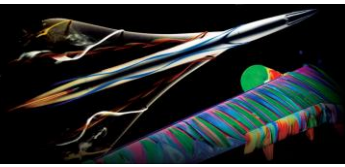
11:25 COFFEE BREAK



PRELIMINARY PROGRAMME

**TUESDAY, FEBRUARY 24**

|       | ROOM 1 - Amphi Bézier   | ROOM 2 - Amphi Fournel   | ROOM 3 - Salle Guy Gautherin  |
|-------|---|--|---|
|       | <p><b>SESSION 3A</b><br/>Sustainable Aviation<br/><b>Chairperson: Pascal LARRIEU</b><br/>( AIRBUS )</p>   | <p><b>SESSION 3B</b><br/>Data assimilation and Machine learning<br/><b>Chairperson: Pedro S. VOLPIANI</b><br/>( ONERA )</p>  | <p><b>SESSION 3C</b><br/>Low order modelling<br/><b>Chairperson: Eric LAURENDEAU</b><br/>( Polytechnique Montréal )</p>   |
| 11:55 | <p><b>06</b><br/>CFD studies of an all-electric fuel cell based aircraft with integrated cooling design<br/><br/><b>Florian SCHMIDT</b><br/>( German Aerospace Center (DLR) )</p>         | <p><b>64</b><br/>Travelling and standing wave morphing effects around an A320 wing prototype in subsonic regime by means of POD/SPOD at Reynolds number of 1 million<br/><br/><b>Nils MAYNARD</b><br/>( IMFT )</p> | <p><b>68</b><br/>Convergence Challenges in Full Potential Solvers:<br/>A Comparative Study of Face- and Cell-Centered Gradient Reconstruction<br/><br/><b>Hieu-Nhan TRAN</b><br/>( Polytechnique Montréal )</p> |
| 12:20 | <p><b>49</b><br/>Investigation in H2 Combustion engine concept for Hydrogen Aviation Lab application<br/><br/><b>Lothar KERSCHGENS &amp; Lucia MENKE</b><br/>( Lufthansa Technik AG )</p> | <p><b>65</b><br/>Reduced Order Modelling for travelling wave morphing actuations on an A320 wing prototype using POD and Machine Learning methods<br/><br/><b>Nils MAYNARD</b><br/>( IMFT )</p>                    | <p><b>29</b><br/>Vorticity Transport Model for rotary-wing aircraft: First steps before application to the predesign of advanced hybrid eVTOL aircraft<br/><br/><b>Wassime KOURAICH</b><br/>( ONERA )</p>       |
| 12:45 | <p><b>74</b><br/>Flow distortion generation using topology optimization<br/><br/><b>Nathan LANGLET</b><br/>( ONERA )</p>  |  |   |
| 13:10 | <b>LUNCH</b>  |  |   |



PRELIMINARY PROGRAMME

**TUESDAY, FEBRUARY 24**

ROOM 1 - Amphi Bézier

|       |   |
|-------|---|
| 14:15 | <p><b>KEYNOTE CONFERENCE N°4:</b><br/> <b>ARIANE 5 and Aerodynamics : A History and some Lessons for ARIANE 6</b><br/> <b>Philippe REIJASSE (ONERA) - Retired</b></p> |
|-------|---|

ROOM 1 - Amphi Bézier

ROOM 2 - Amphi Fournel

**SESSION 4A**

Aerospace applications

**Chairperson: Jean COLLINET**

( ArianeGroup )

**SESSION 4B**

Morphing wings

**Chairperson: Marianna BRAZA**

( IMFT )

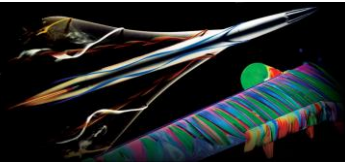
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| 15:00 | <p><b>14</b><br/> Low speed Experimental Analysis of Hypersonic Aircraft<br/> <b>Miguel Angel AGUIRRE (Stratos Industries)</b></p>  | <p><b>32</b><br/> Merger of multi co-rotating tip vortices for wake decay<br/> <b>Alden MIDMER (City, University of London)</b></p>  |
| 15:25 | <p><b>30</b><br/> High-Fidelity Simulation and Mitigation of Rocket Ignition<br/> Overpressure Using High-Performance Computing<br/> <b>Russel QUADROS (Cranfield University)</b></p>                     | <p><b>50</b><br/> Unsteady CFD analysis of embedded morphing actuators<br/> for take-off aerodynamic enhancement of an<br/> intermediate-scale A320 airfoil<br/> <b>Romain GAUTHIER (CFS Engineering SA)</b></p> |
| 15:50 | <p><b>38</b><br/> Past and emerging challenges in advanced numerical<br/> strategies for aerodynamics at ONERA: From expendable<br/> to reusable space vehicles<br/> <b>Pierre-Elie WEISS (ONERA)</b></p> | <p><b>55</b><br/> Aerodynamic performance increase of an A320 morphing<br/> wing in subsonic regime at Reynolds number of 1 M<br/> <b>Jacques ABOU KHALIL (IMFT)</b></p>   |

16:15 **COFFEE BREAK**

|       |  |  |
|-------|--|--|
| 16:45 | <p><b>44</b><br/> Detailed Characterization of Unsteady Dynamics of Highly<br/> Separated Jets in a Truncated Ideally Contoured Nozzle<br/> <b>Ilyan PINGAULT (ISAE ENSMA)</b></p>   | <p><b>56</b><br/> Aerodynamic performance gains in transonic regime on<br/> an A320 morphing wing at Reynolds number of 4.5<br/> million through numerical simulation<br/> <b>Jacques ABOU KHALIL (IMFT)</b></p> |
| 17:10 | <p><b>01</b><br/> Advancement of Refractory High Entropy Alloys (RHEAs)<br/> for High-Temperature Aerospace Applications<br/> <b>Asad ULLAH (Cranfield University , Accrofab ATF /<br/> Howmet Aerospace, Rolls-Royce plc)</b></p> | <p><b>57</b><br/> Electroactive morphing of high-lift wing-flap system at<br/> high Reynolds number through travelling waves actuation<br/> <b>Xavier DELON (IMFT)</b></p>                                       |
| 17:35 |  | <p><b>59</b><br/> Random switching dynamics and low frequency<br/> oscillations around airfoil stall<br/> <b>Ivan KHARSANSKY ATALLAH (ONERA)</b></p>   |

18:00 **END OF SESSIONS**

19:00 **BANQUET & AWARD CEREMONY**



PRELIMINARY PROGRAMME

**WEDNESDAY, FEBRUARY 25**

08:30 REGISTRATION & WELCOME COFFEE

ROOM 1 - Amphi Bézier

09:15 **KEYNOTE CONFERENCE N°5**  
**Aerodynamic Breakthroughs in Aircraft Propulsion**  
**From Early Civil Engines to the RISE Open Fan — 60 Years of Physics, Testing, and Computation**  
**Michaël SCHVALLINGER (SAFRAN)**

ROOM 1 - Amphi Bézier

SESSION 5A

**Turbomachinery & propellers**  
**Chairperson: Patrick GONIDEC**  
**( Safran )**

ROOM 2 - Amphi Fournel

SESSION 5B

**Aeroacoustics**  
**Chairperson: Denis GELY**  
**( ONERA )**

10:00 **18**  
A comparison between Body Force and Time-Marching Throughflow methods for source-term modeling of axial compressors  
**Paul GEORGEL**  
**(SafranTech, ISAE-Supaero )**

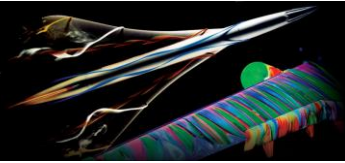
**40**  
Acousto-fluidic modeling, application of the DPSM method to noise levels mapping  
**Jean-Pierre BARBOT**  
**(Laboratoire SATIE/ENS Paris-Saclay )**

10:25 **07**  
Aerodynamic design and analysis of a coaxial VTOL UAV fuselage using CFD  
**Ritvik SWAMINATHAN**  
**(University of West England )**

**58**  
Characterization of static and dynamic stall noise of a NACA0012 airfoil using the Lattice Boltzmann Method  
**Milo GRIMBERG**  
**(CIFRE - Ecole Centrale de Lyon )**

10:50 **33**  
Unsteady Response of a Turbulent Boundary Layer Interacting with Propeller-Slipstream Vorticity  
**Aaron Duane SEQUEIRA**  
**(TU Delft )**

11:15 COFFEE BREAK



## PRELIMINARY PROGRAMME

### WEDNESDAY, FEBRUARY 25

#### ROOM 1 - Amphi Bézier

#### ROOM 2 - Amphi Fournel

##### SESSION 5A

**Turbomachinery & propellers**  
**Chairperson: Patrick GONIDEC**  
*( Safran )*

##### SESSION 5B

**Aeroacoustics**  
**Chairperson: Denis GELY**  
*( ONERA )*

**54**

Correlations between Blade Loadings and Wake Structures within the Vortex Ring State

**Archie FRANCIS**  
*(The University of Glasgow)*

**69**

Sound generation by turbulent flow over a D-shaped bluff body near a wall

**Guangyuan HUANG**  
*(Cranfield University)*

11:45

**05**

Multi-point shape optimisation of non-axisymmetric nacelles using an adjoint method

**Henry LUSHINGTON**  
*(Cranfield University)*

**71**

Computational aeroacoustic investigations of multi-propeller interaction in a distributed propulsion system

12:10

12:35

**LUNCH**

14:00

**END OF AERO2026 CONFERENCE**

14:00

#### TECHNICAL VISITS

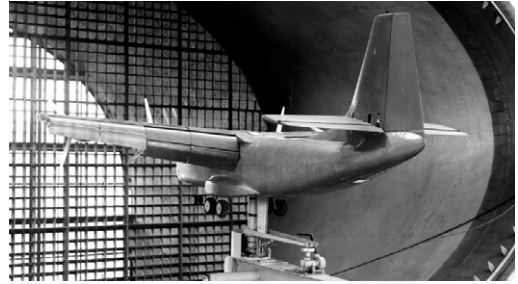
**Visit of the GIE S2A and the Institut Aerotechnique (IAT)**  
*Detailed agenda available online*

## EXECUTIVE SCIENTIFIC COMMITTEE

|                                |                           |
|--------------------------------|---------------------------|
| <b>BAÏRI</b> Abderrahmane      | Paris Nanterre University |
| <b>BONNET</b> Jean-Paul        | CNRS – P' Institute (R)   |
| <b>BOUCHET</b> Jean-Paul       | CSTB                      |
| <b>CHAPUT</b> Eric             | Airbus (R)                |
| <b>CINNELLA</b> Paola          | Sorbonne University       |
| <b>COLLINET</b> Jean           | ArianeGroup               |
| <b>GOWREE</b> Erwin R.         | ISAE-SUPAERO              |
| <b>JÉRÔME</b> Émilie           | DGA – Aero-engine Testing |
| <b>KOURTA</b> Azeddine         | Orléans University        |
| <b>LEOPOLD</b> Friedrich       | Institut Saint-Louis      |
| <b>REIJASSE</b> Philippe       | ONERA (R)                 |
| <b>ROBINET</b> Jean-Christophe | Arts & Métiers Paris      |
| <b>ROSENBLUM</b> Jean-Pierre   | Dassault Aviation         |
| <b>SARTOR</b> Fulvio           | ONERA                     |
| <b>SPALART</b> Philippe        | Boeing (R)                |

## SCIENTIFIC COMMITTEE

### Members of the 3AF Aerodynamics Technical Committee



Chalais-Meudon tests of flow separation control Bréguet Vultur, H. Poisson-Quinton, 1960 - Credit ONERA



Active flow separation control on NACA airfoil, PIV measurements, 2020  
Credit PPRIME



## CONFERENCE LOCATION

Arts et Métiers

151, boulevard de l'hôpital  
75013 Paris

<https://artsetmetiers.fr/en>

