

## PRELIMINARY PROGRAMME

### MONDAY, MARCH 23

08:30 REGISTRATION / WELCOME COFFEE

#### ROOM 1

##### CONFERENCE WELCOME

Louis LE PORTZ - President (*French Aeronautics and Astronautics Society*)

Roland FORTUNIER - Director (*ISAE-ENSMA*)

Yves JEAN - President (*University of Poitiers*)

Fabien GODEFERD (*DAS CNRS INSIS*)

Alain CLAEYS - President (*Grand Poitiers Communauté urbaine*)

Gérard BLANCHARD - Vice-President Research (*Région Nouvelle Aquitaine*)

Karl JOULAIN - Director (*Pprime Institute, UPR CNRS, ISAE ENSMA, University of Poitiers*)

09:30

##### KEYNOTE CONFERENCE N°1

Advanced turbulence modelling and wall turbulence simulation - Sébastien DECK (*ONERA*)

10:15

#### ROOM 1

##### SESSION 1A: DES

**Chairperson: Eric GONCALVES DA SILVA**  
*ISAE-ENSMA*

#### ROOM 2

##### SESSION 1B: Skin friction reduction

**Chairperson: Jean-Paul BONNET**  
*Pprime Institute*

#### ROOM 3

##### SESSION 1C: Supersonic flows

**Chairperson: Pierre DUPONT**  
*Aix-Marseille University/CNES*

11:00

Zonal Detached Eddy Simulation of unsteady airfoil aerodynamics  
**N. Renard and S. Deck** (*ONERA*)

A Bayesian optimisation framework for drag reduction and net-energy saving in a turbulent boundary layer using wall blowing  
**O. A. Mahfoze, A. Wynn, R. D. Whalley and S. Laizet** (*Imperial College London / Newcastle University*)

Large-eddy simulation of a supersonic air inlet in subcritical regime  
**P. Grenson and S. Beneddine** (*ONERA*)

11:25

Towards binary gas mixture ZDES for space launcher base flow prediction  
**J. Reynaud, P.-E. Weiss and S. Deck** (*ONERA*)

Turbulent skin friction reduction by spatial wall forcing oscillations with non-thermal plasma  
**N. Benard, K.D. Bayoda, M. Coma, J. Pons Prat, J.-P. Bonnet and E. Moreau** (*Pprime Institute / CIMNE*)

Numerical investigations of the subcavity aspect ratio on primary recirculation zone in supersonic turbulent cavity flows  
**V. Tekure and K. Venkatasubbaiah** (*Indian Institute of Technology Hyderabad*)

11:50

Progress in the development of a versatile ZDES-based methodology for aerospace flows  
**P.-E. Weiss and S. Deck** (*ONERA*)

Drag reduction control using DBD-plasma actuators  
**Yi Huang and Song Fu** (*Tsinghua University*)

Assessment of mixing tabs on supersonic jet characteristics  
**T. Thillaikumar, T. Jana and M. Kaushik** (*Indian Institute of Technology Kharagpur*)

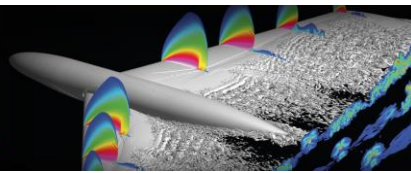
12:15

Large-Eddy Simulation of the transonic buffet around a diamond airfoil: effect of wall cooling  
**J. Dumon, N. Gourdain, Y. Bury and P. Molton** (*ISAE-SUPAERO / ONERA*)

High fidelity simulations of turbulent boundary layer over staggered three dimensional cavities  
**E. R. Gowree and R. Gojon** (*ISAE-SUPAERO*)

Effects of atmospheric turbulence parameters on sonic boom of a type of supersonic long-range civil transport  
**L. Yan, Q. Zhansen and Y. Long** (*AVIC Aerodynamics Research Institute / Aerodynamic Force Research*)

12:40 LUNCH



## PRELIMINARY PROGRAMME

### MONDAY, MARCH 23

#### ROOM 1

#### KEYNOTE CONFERENCE N°2

**The mission and requirements of a turbulence model - Philippe SPALART (Boeing Commercial Airplanes)**

#### ROOM 1

**SESSION 2A: Turbulence modeling/RANS**  
**Chairperson: Paola Cinnella**  
*Arts et Métiers – ParisTech*

#### ROOM 2

**SESSION 2B: Vortex flows**  
**Chairperson: Laurent JACQUIN**  
*ONERA*

#### ROOM 3

**SESSION 2C: Fluid structure/LBM**  
**Chairperson: Yannick HOARAU**  
*University of Strasbourg*

15:00

Revisiting the quadratic constitutive relation  
**K. Sabnis, P. Spalart, D. Galbraith,  
H. Babinsky and J. Benek**  
*(University of Cambridge / Boeing Commercial  
Airplanes / United States Air Force  
Research Laboratory)*

Application of high-order vorticity confinement  
schemes to turbulent flows  
**M. Costes, I. Petropoulos, F. Gand and  
P. Cinnella (ONERA / DynFluid Laboratory)**

Experimental study of a flapped wing with a  
pusher propeller configuration in turbulent flow  
**I. Echepresto Garay, J. Marañón Di Leo,  
J. S. Delnero, and J. Donati**  
*(Universidad Nacional de La Plata /  
Consejo Nacional de Investigaciones  
Científicas y Técnicas)*

15:25

Turbulence modeling improvements for APG  
flows on industrial configurations  
**G. Sporschill, F. Billard, M. Mallet  
and R. Manceau**  
*(Dassault Aviation / LMAP – IPRA)*

Investigation of the vortex forcing resulting from  
the aerodynamic interaction  
between two airfoils  
**J.-B. Portzer, T. Faure, O. Montagnier  
and E. Serre**  
*(Aix-Marseille University / CNRS / Centrale  
Marseille / French Air Force Academy)*

Multi-fidelity optimization of three-dimensional  
flapping wing aerodynamics  
**D. Diaz-Arriba, I. Reizabal-Arregui,  
T. Jardin, N. Gourdain, L. David and  
F. Pons (ISAE-SUPAERO / Pprime Institute)**

15:50

Estimates of turbulence modeling uncertainties  
in compressor flows predictions by Bayesian  
Model-Scenario Averaging  
**M. de Zordo-Banliat, X. Merle, G. Dergham  
and P. Cinnella**  
*(Safran Tech / DynFluid Laboratory)*

Evaluation of turbulence modelling for the  
incompressible flow simulations around a multi  
delta wing configuration  
**E. Guilmineau, M. Visonneau, G. Rubino  
and J. Wackers (LHEEA / Centrale Nantes)**

Morphing analysis of the Airbus A320 airplane  
during the take-off  
**A. Marouf, D. Charbonnier, Y. Hoarau,  
J. B. Vos and M. Braza**  
*(ICUBE Laboratory / IMFT / EPFL)*

16:15

#### COFFEE BREAK

16:45

Data-augmented turbulence modelling  
**M. Meyer, F. Renac, E. Martin, J. Dandois  
and O. Marquet (ONERA)**

Effect of grid-generated turbulence on the  
meandering of a wing-tip vortex  
**M. Dghim, K. Ben Miloud, M. Ferchichi  
and H. Fellouah (University of Sherbrooke /  
Royal Military College of Canada)**

An immersed boundary Lattice Boltzmann  
approach to simulate the fluid-structure  
interactions of Ram-Air canopies  
**T. Lodies, N. Gourdain, H. Belloc  
and M. Charlotte**  
*(ISAE-SUPAERO / University of Toulouse)*

17:10

Numerical simulation of NACA4412 airfoil in pre-  
stall conditions  
**V. Gleize, M. Costes and I. Mary**  
*(ONERA)*

Formation flight and wake vortex encounters  
with fully coupled hybrid RANS/LES  
**A. Stephan, S. Zholtovski and F. Holzäpfel**  
*(DLR)*

Simulation of high-lift flows  
through IDDES in LBM  
**J. Degrigny, J.-F. Boussuge and P. Sagaut**  
*(Cerfacs / Aix Marseille University)*

17:35

On the use of Zonal Immersed Boundaries on the  
FG5 missile configuration  
**L. Manueco, P.-E. Weiss and S. Deck**  
*(ONERA)*

Aircraft wake vortex and neural model for  
training pilots for the encounter case  
**I.S. Bosnyakov, A.M. Gaifullin and  
Yu. N. Sviridenko (TsAGI)**

Lattice Boltzmann simulations of a laminar  
separation bubble on a SD7003 profile  
**T. Guédény, E. Sleimi, S. Bocquet and  
N. Gourdain (CT Ingenierie / Sorbonne Science  
University / ISAE-SUPAERO)**

18:00

Industrial use of equivalent sand grain height  
models for roughness modelling  
in turbomachinery  
**E. Croner, O. Léon and F. Chedevergne**  
*(Safran Tech / ONERA)*

Experimental investigation of wind turbine wake  
during dynamic yaw variation  
**S. Macri, A. Leroy, S. Aubrun and  
N. Girard (PRISME Institute/French Air Force  
Academy/Centrale Nantes/ENGIE Green)**

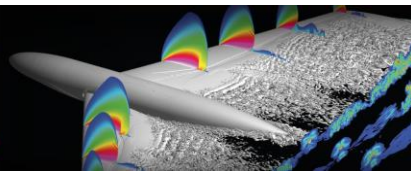
On the applicability of the Lattice Boltzmann  
Method for the aerodynamic characterization of  
a high-pressure axial compressor stage  
**J. de Laborderie, K. Fali, C. Babin and  
F. Fontaneto (Safran Aircraft Engines / VKI)**

18:30

END OF SESSIONS

19:30

BANQUET & AWARD



## PRELIMINARY PROGRAMME

### TUESDAY, MARCH 24

**08:00** REGISTRATION / WELCOME COFFEE

ROOM 1

**08:45** **KEYNOTE CONFERENCE N°3**  
**Laminar-turbulent transition in boundary-layer flows - Ulrich RIST (Stuttgart University)**

ROOM 1

**SESSION 3A: Transition**  
**Chairperson: Erwin R. GOWREE**  
*ISAE-SUPAERO*

ROOM 2

**SESSION 3B: Flow control/bluff bodies**  
**Chairperson: Aimee MORGANS**  
*Imperial College London*

ROOM 3

**SESSION 3C: SBLLI**  
**Chairperson: Holger BABINSKY**  
*University of Cambridge*

**09:30** On the calibration of the transitional  $k-\omega-\gamma$ - $Re_{\theta t}$  turbulence model  
**B. Barrouillet, É. Laurendeau and H. Yang**  
*(Polytechnique Montréal / Bombardier Aviation)*

Wavy leading edge performance in transonic flow  
**E. Degregori and J. W. Kim**  
*(University of Southampton)*

Studies of shock-wave/turbulent boundary-layer interaction through high-fidelity numerical simulations  
**J. Fang, A. A. Zheltovodov, Y. Yao, C. Moulinec and D. R. Emerson**  
*(STFC Daresbury Laboratory / Khristianovich Institute of Theoretical and Applied Mechanics / University of the West of England)*

**09:55** Assessment and modification of the  $k-\omega$  LKE transitional model for general purpose CFD applications  
**H. Medina, R. Cirstea, S. Aleksandrova and S. Benjamin**  
*(Coventry University)*

Aerodynamic control of a 3-D wing using distributed active bleed  
**M. DeSalvo, D. Heathcote, M. Smith and A. Glezer**  
*(Georgia Institute of Technology)*

Sidewall effects in shock wave/turbulent boundary-layer interactions on a compression corner  
**R. D. Williams and H. Babinsky**  
*(University of Cambridge)*

**10:20** Wall resolved large eddy simulation of Klebanoff-mode transition on a realistic flat-plate  
**L. Jecker, O. Vermeersch and H. Deniau**  
*(ONERA)*

Aerodynamic optimisation and exergy analysis of a conceptual blended wing body aircraft  
**B. Coyle, N. Gourdain, G. Dufour, E. Benard, M. Carini and B. Godard**  
*(ISAE-SUPAERO / ONERA)*

Performance investigation of a rectangular ramjet intake with throat flush slot bleed in the Mach range of 1.8 – 2.5  
**S. P. S. Pattnaik and N.K.S. Rajan**  
*(Indian Institute of Science)*

**10:45** COFFEE BREAK

**11:25** Control of laminar turbulent transition using wall suction through a porous metal foam  
**J. Methel, O. Vermeersch, C. Davoine, M. Forte and F. Mery**  
*(ONERA)*

Aerodynamical characteristics of a reduced scale ground vehicle according to yaw angle variations  
**S. Edwige, P. Gilotte, I. Mortazavi and N. Nayeri**  
*(Plastic Omnium / CNAM / TU Berlin)*

Low-frequency oscillations in a laminar separation bubble  
**F. Malmir, G. Di Labbio and J. Vétel**  
*(Polytechnique Montréal)*

**11:50** Experimental study on the effects of two-dimensional surface defects on the transition of a sucked boundary-layer  
**J. Methel, M. Forte, O. Vermeersch, F. Méry and G. Casalis**  
*(ONERA / ISAE-SUPAÉRO)*

Numerical investigation of the ground clearance effects on the wake flow of a squared back Ahmed body  
**W. Levy-Louapre, K. Depuru-Mohan and F. Murzyn**  
*(ESTACA / Cranfield University)*

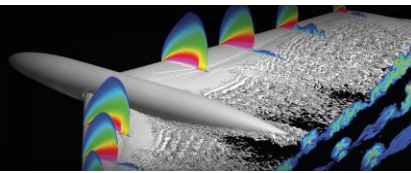
Controlled shock/boundary-layer interactions in hypersonic intake using cavity covered with porous surface  
**T. Jana, Thillaikumar T. and M. Kaushik**  
*(Indian Institute of Technology)*

**12:15** Evolution of conditionally-averaged structure functions in a transitional boundary layer due to free-stream turbulence  
**H. Yao and G. Papadakis**  
*(Imperial College London)*

Experimental and numerical study of flow separations over a D-shaped body  
**G. Huang, Z. Yang, R. C. K. Leung and K. H. Seid**  
*(Tongji University / The Hong Kong Polytechnic University / Beijing Aeronautical Science and Technology Research Institute)*

Controlled shock/boundary-layer interactions in hypersonic intake using micro-vortex generators  
**Thillaikumar T., T. Jana, and M. Kaushik**  
*(Indian Institute of Technology)*

**12:40** LUNCH



**PRELIMINARY PROGRAMME**

**TUESDAY, MARCH 24**

**ROOM 1**

**14:15** **KEYNOTE CONFERENCE N°4**  
**Non-equilibrium turbulence - John Christos VASSILICOS (Imperial College London)**

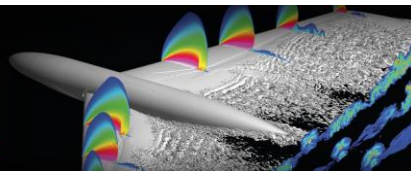
	<b>SESSION 4A: Transition/Heat transfer</b> <b>Chairperson: Olivier VERMEERSCH</b> <i>ONERA</i>	<b>SESSION 4B: Flow control</b> <b>Chairperson: Azeddine KOURTA</b> <i>University of Orléans</i>	<b>SESSION 4C: High speed flows</b> <b>Chairperson: Philippe REIJASSE</b> <i>ONERA</i>
<b>15:00</b>	Stability assessment of sinusoidal roughness-induced flows for crossflow transition control <b>Y. Ide, M. Hirota and N. Tokugawa</b> <i>(JAXA / Tohoku University)</i>	Assessment of a simplified simulation model for optimization of dielectric-barrier-discharge vortex generators <b>P. Sujar-Garrido, M. Becerra, P. H. Alfredsson and R. Örlü</b> <i>(KTH Royal Institute of Technology)</i>	Direct numerical simulation of hypersonic boundary layers in chemical non-equilibrium <b>D. Passiatore, L. Sciacovelli, P. Cinnella and G. Pascazio</b> <i>(Polytechnic University of Bari / DynFluid Laboratory)</i>
<b>15:25</b>	Roughness-induced transition in square air intakes <b>D. Modesti and S. Pirozzoli</b> <i>(University of Melbourne / University of Rome "La Sapienza")</i>	Genetic programming control applied to an open-cavity flow <b>E. Varon, F. Lusseyran, G. Y. Cornejo Maceda and B. Noack</b> <i>(LIMSI / Technische Universität Berlin / Harbin Institute of Technology)</i>	Stabilized finite element simulations for chemically reactive hypersonic non-equilibrium flows <b>S. Cengizci (Antalya Bilim University)</b>
<b>15:50</b>	Selectivity of plasma actuators in a boundary layer transition control applications <b>I. Moralev, I. Popov, I. Selivonin and M. Ustinov (JIHT RAS)</b>	Shock wave control at transonic speed by plasma actuators <b>Z. Sun (City, University of London)</b>	Development of a deployable propeller by means of wind tunnel tests and CFD <b>J. Collinet, C. Heranger and H. Sacilotto (ArianeGroup)</b>

**16:15** **COFFEE BREAK**

<b>16:45</b>	Analysis of upstream turbulence impact on wall heat transfer within acoustic liners with Large Eddy Simulations <b>S. Esnault, F. Duchaine, L. Gicquel and S. Moreau</b> <i>(Cerfacs / Sherbrooke University)</i>	Active flow control of wing-engine-slat cut-out flow separation using suction and pulsed blowing <b>M. Shay, P. Maayan, Y. Ariel, M. Bar, D. Ofek and A. Seifert</b> <i>(Tel-Aviv University)</i>	Global Stability analysis in over-expanded nozzles <b>C. Tarsia Morisco, J.-Ch. Robinet, J.-Ch. Loiseau and J. Herpe</b> <i>(CNES / DynFluid Laboratory)</i>
<b>17:10</b>	Sensitivity of the convective heat transfer coefficient to the uncertain surface roughness characteristics <b>K. Ignatowicz, F. Morency and H. Beaugendre</b> <i>(École de technologie supérieure / INRIA)</i>	Discrete adjoint-based sensitivity analysis for active control of Buffet <b>S. Sathyanarayana, R. Quadros, A. Nemili and M. Bernardini</b> <i>(University of Rome "La Sapienza" / Queen Mary University of London / BITS-Pilani Hyderabad Campus)</i>	Resonance of shock-induced separated jets in truncated ideal contour supersonic nozzles <b>F. Bakulu, G. Lehnasch, V. Jaunet, E. Goncalvès, S. Girard and J. Herpe</b> <i>(Pprime Institute / CNES)</i>
<b>17:35</b>	Thermal network for natural convection during engine soak back <b>G. Millot, A. Placko, A. Buchwalter and S. Magnabal (Altran)</b>	Feedback stabilization of a plane Couette flow exact coherent structure <b>G. C. P. Claisse and A. S. Sharma</b> <i>(University of Southampton)</i>	Delayed Detached Eddy Simulation of flow separation in an overexpanded dual-bell nozzle <b>M. Cimini, E. Martelli and M. Bernardini</b> <i>(University of Rome "La Sapienza" / University of Campania Luigi Vanvitelli)</i>
<b>18:00</b>	A Bioinspired Airfoil Optimization Technique Using Nash Genetic Algorithm <b>H. Isakhani, C. Xiong, S. Yue, W. Chen</b> <i>(University of Lincoln, Huazhong University of Science and Technology)</i>	Control of transient loads over an airfoil: efficient strategies for performance enhancement <b>A. Carusone, C. Sicot, J.-P. Bonnet and J. Borée (Pprime Institute / ISAE-ENSMA)</b>	Turbulent interaction of jet in co-flow <b>R. Sampat, F.F.J Schrijer and A. Gangoli Rao (TU Delft)</b>

**18:30** **END OF SESSIONS**

**19:15** **COCKTAIL IN POITIERS**



## PRELIMINARY PROGRAMME

### WEDNESDAY, MARCH 25

08:00	REGISTRATION / WELCOME COFFEE		
	ROOM 1		
08:45	<b>KEYNOTE CONFERENCE N°5</b> <b>Merging large-scale PIV and numerical modelling for aerodynamic applications - Fulvio SCARANO (TU Delft)</b>		
	<b>SESSION 5A: Data driven modelling</b> <b>Chairperson: Olivier MARQUET</b> <i>ONERA</i>	<b>SESSION 5B: Bluff bodies</b> <b>Chairperson: Vincent HERBERT</b> <i>PSA – Peugeot Citroën</i>	<b>SESSION 5C: Aeroacoustics</b> <b>Chairperson: Yves GERVAIS</b> <i>Pprime Institute</i>
09:30	Continuous state prediction of chaotic Lorenz system using neural networks approaches for data-driven modeling and data assimilation <b>P. Dubois, T. Gomez and L. Planckaert</b> <i>(Lille University / ONERA / Arts et Métiers ParisTech)</i>	Switching statistics of the asymmetric wake mode of an Ahmed body with free-stream turbulence variation <b>O. Cadot, M. Almarzooqi, A. Legea, L. Pastur and V. Parezanović</b> <i>(University of Liverpool / ENSTA ParisTech / Khalifa University of Science and Technology)</i>	High-fidelity numerical study of NACA0012 aerofoil wall-pressure fluctuations at Re=500,000 <b>M. B. R. Gelot and J.-W. Kim</b> <i>(University of Southampton)</i>
09:55	Dynamic model identification via a method combining data-driven and data-assimilation approaches <b>N. Kumar, F. Kerhervé and L. Cordier</b> <i>(Pprime Institute / ISAE-ENSMA)</i>	Three dimensional dynamics in the wake of an Ahmed body <b>B. Podvin, S. Pellerin, Y. Fraigneau and O. Cadot</b> <i>(LIMSI / University of Liverpool)</i>	Influence of spanwise domain length on aerofoil stall noise simulations <b>J. M. Turner and J. W. Kim</b> <i>(University of Southampton)</i>
10:20	Real-time flow estimation from reduced order models and sparse measurements <b>A. M. Picard, M. Ladvig, V. Resseguier, D. Heitz, E. Mémin and B. Chapron</b> <i>(SCALIAN DS / IRSTEA / INRIA / IFREMER)</i>	Large-scale Sweeping Jet actuation of a bistable 3D bluff body wake <b>V. Parezanović, A. Raouf Tajik and L. Pastur</b> <i>(Khalifa University of Science and Technology / ENSTA-ParisTech)</i>	Numerical study of flow-acoustic interactions over an SD7003 airfoil at transitional Reynolds numbers <b>D. Vittal Shenoy, R. Gojon, T. Jardin and M.C. Jacob</b> <i>(ISAE-SUPAERO)</i>
10:45	COFFEE BREAK		
11:25	Modeling of compressibility effects in a transonic airfoil with Deep Learning techniques <b>D. Costero, M. Bauerheim, N. Gourdain and V. Chapin</b> <i>(ISAE-SUPAERO)</i>	Nonlinear feedback control of the bi-modal flow behind a three-dimensional blunt bluff body <b>D. Ahmed, F. Hesse and A. S. Morgans</b> <i>(Imperial College London)</i>	Installed jet noise simulation in industrial framework <b>G. Pont, J. Huber, J.-P. Roméo and P. Brenner</b> <i>(Airbus Operations / ArianeGroup)</i>
11:50	Optimization process data reduction for computationally expensive problems: application to aeronautic design <b>R. Cavecchia, T. Sophy, J. Jouanguy, A. Da Silva and L. Le Moyné</b> <i>(University of Burgundy)</i>	Large-scale asymmetries of a turbulent wake: insights and closed-loop control for drag reduction <b>Y. Haffner, K. Mariette, J. Borée, É. Bideaux, T. Castelain, D. Ébéard, F. Bribiesca-Argomedo, A. Spohn, S. Sesmat and M. Michard</b> <i>(Pprime Institute / Centrale Lyon)</i>	A complex-mode model for screech-frequency predictions in supersonic jets <b>M. Mancinelli, V. Jaunet, P. Jordan, A. Towne and S. Girard</b> <i>(Pprime Institute / CNES / University of Michigan)</i>
12:15	Large eddy simulation of the tip leakage flow of an isolated airfoil <b>D. Lamidel, G. Daviller, M. Roger and H. Posson</b> <i>(École Centrale de Lyon / CERFACS / Safran Aircraft Engines)</i>	Planar PIV based pressure estimation: an optimal control approach <b>R. Shanmughan, P.-Y. Passaglia, N. Mazellier and A. Kourta</b> <i>(PRISME Laboratory)</i>	Numerical simulation of the broadband noise of the upstream rotor of a counter-rotative open rotor configuration using phase-lagged conditions <b>M. Fiore, J.-F. Bousuge and T. Node-Langlois</b> <i>(Cerfacs / Airbus)</i>
12:40	LUNCH		
14:00	TECHNICAL VISITS		
16:00	END OF AERO2020 CONFERENCE		