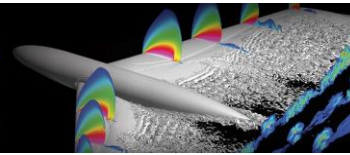


PRELIMINARY PROGRAMME
MONDAY, APRIL 12

09:00	<p>CONFERENCE WELCOME</p> <p>Louis LE PORTZ, President - <i>French Aeronautics and Astronautics Society 3AF</i> Roland FORTUNIER, Director - <i>ISAE-ENSMA</i> Virginie LAVAL, President - <i>University of Poitiers</i> Fabien GODEFERD - <i>DAS CNRS INSIS</i> Gérard BLANCHARD, Vice-President Research - <i>Région Nouvelle Aquitaine</i> Karl JOULAIN, Director- <i>Pprime Institute</i></p>		
09:45	<p>KEYNOTE CONFERENCE N°1</p> <p>Advanced turbulence modelling and wall turbulence simulation - Sébastien DECK (<i>ONERA</i>)</p>		
	<p>SESSION 1A: DES Chairperson: Eric GONCALVES DA SILVA <i>ISAE-ENSMA</i></p>	<p>SESSION 1B: Skin friction reduction Chairperson: Jean-Paul BONNET <i>Pprime Institute</i></p>	<p>SESSION 1C: Supersonic flows Chairperson: Pierre DUPONT <i>Aix-Marseille University/CNES</i></p>
10:30	<p>Zonal Detached Eddy Simulation of unsteady airfoil aerodynamics N. Renard and S. Deck (<i>ONERA</i>)</p>	<p>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 (<i>Imperial College London / Newcastle University</i>)</p>	<p>Large-eddy simulation of a supersonic air inlet in subcritical regime P. Grenson and S. Beneddine (<i>ONERA</i>)</p>
11:00	<p>Towards binary gas mixture ZDES for space launcher base flow prediction J. Reynaud, P.-E. Weiss and S. Deck (<i>ONERA</i>)</p>	<p>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 (<i>Pprime Institute / CIMNE</i>)</p>	<p>Experimental Investigation of Shock–Vortex Interactions K. Sabnis, H. Babinsky and C. Warsop (<i>University of Cambridge / BAE Systems</i>)</p>
11:30	<p>Progress in the development of a versatile ZDES-based methodology for aerospace flows P.-E. Weiss and S. Deck (<i>ONERA</i>)</p>	<p>On the development of a turbulent boundary layer over staggered three dimensional cavities F. Scarano, R. Gojon and E. R. Gowree (<i>ISAE-SUPAERO</i>)</p>	<p>Evaluation of High Aspect Ratio Actuator-Tabs with Corrugations on Supersonic Jet Mixing M. Kaushik and T. Jana (<i>Indian Institute of Technology</i>)</p>
12:00	<p>Large-Eddy Simulation of the transonic buffet around a diamond airfoil: effect of wall cooling J. Dumon, N. Gourdain, Y. Bury and P. Molton (<i>ISAE-SUPAERO / ONERA</i>)</p>	<p>Unsteady simulation of intake ground vortex ingestion in real wind tunnel conditions R. Mendonca E Costa, G. Millot, S. Raynal, J.-P. Bouchet and S. Courtine (<i>ALTRAN / CSTB</i>)</p>	<p>On the origin of the unsteadiness of the separation bubble for the laminar supersonic flow around a compression corner A.B. Gupta, G. Fournier and A. Chpoun (<i>LMEE Univ. d'Evry, Université Paris-Saclay</i>)</p>
12:30	<p>LUNCH</p>		



PRELIMINARY PROGRAMME

MONDAY, APRIL 12

14:00			
KEYNOTE CONFERENCE N°2			
The mission and requirements of a turbulence model			
Philippe SPALART (Boeing Commercial Airplanes, retired)			
SESSION 2A: Turbulence modeling/RANS Chairperson: Paola Cinnella Arts et Métiers – ParisTech	SESSION 2B: Vortex flows Chairperson: Laurent JACQUIN ONERA		SESSION 2C: Fluid structure/LBM Chairperson: Yannick HOARAU University of Strasbourg
14:45	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)
15:15	Turbulence modeling improvements for APG flows on industrial configurations G. Sporschill, F. Billard, M. Mallet and R. Manceau (Dassault Aviation / LMAP – IPRA)	A coupled LDVM / IBM investigation of incompressible flows around moving profiles at low Reynolds number J.-B. Portzer, T. Faure, O. Montagnier and E. Serre (Aix-Marseille University / CNRS / Centrale Marseille / French Air Force Academy)	Multy-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)
15:45	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)	Aerodynamic investigation of a morphing high-lift configuration using flap cambering A. Marouf, Y. Bmegaptche Tekap, D. Charbonnier, Y. Hoarau, J. B. Vos, J-F. Rouchon and M. Braza (ICUBE Laboratory / IMFT / EPFL)
16:15 COFFEE BREAK			
16:30	Hybrid RANS/LES of a generic high-lift aircraft configuration near maximum lift A. Probst and S. Melber-Wilending (DLR)	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. Lolies, N. Gourdain, H. Belloc and M. Charlotte (ISAE-SUPAERO / University of Toulouse)
17:00	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)	Comparison of Turbulence Modeling Approaches on a High-Lift Airfoil in LBM J. Degrigny, J.-F. Bousuge and P. Sagaut (Cerfacs / Aix Marseille University)
17:30	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)	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)
18:00	Industrial use of equivalent sand grain height models for roughness modelling in turbomachinery E. Croner, O. Léon and F. Chedevegne (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)	Propeller performances under realistic aerodynamic loads of a VTOL G. Millot, S. Raynal and B. Vasseur (ALTRAN)
18:30	On the sensitivity of the RANS-based correlation models to various parameters B. Barrouillet, É. Laurendeau and H. Yang (Polytechnique Montréal / Bombardier Aviation)		Numerical analysis of the surgery mask port impacts on breathing G.Millot, G.Grain, C. Stevenin and S. Boulesteix (ALTRAN)
19:00 END OF SESSIONS			

PRELIMINARY PROGRAMME
TUESDAY, APRIL 13

08:45	KEYNOTE CONFERENCE N°3 Laminar-turbulent transition in boundary-layer flows - Ulrich RIST (Stuttgart University)		
	SESSION 3A: Transition Chairperson: Erwin R. GOWREE <i>ISAE-SUPAERO</i>	SESSION 3B: Flow control/bluff bodies Chairperson: Olivier CADOT <i>University of Liverpool</i>	SESSION 3C: SBLL Chairperson: Holger BABINSKY <i>University of Cambridge</i>
09:30	Boundary layer transition over a low Reynolds number rotor T. Jaroslowski, M. Forte, G. Delattre, E. R. Gowree, J-M. Moschetta <i>(Onera / ISAE-SUPAERO)</i>	Wavy leading edge performance in transonic flow E. Degregori and J. W. Kim <i>(University of Southampton)</i>	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 <i>(STFC Daresbury Laboratory / Khristianovich Institute of Theoretical and Applied Mechanics / University of the West of England)</i>
10:00	An experimental study of the effects of surface roughness on Tollmien-Schlichting waves F. Ducaffy, M. Forte, O. Vermeersch and E. Piot <i>(Onera)</i>	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 <i>(ISAE-SUPAERO / ONERA)</i>	Corner effects for compression corner shock wave/boundary layer interactions R. D. Williams and H. Babinsky <i>(University of Cambridge)</i>
10:30	Three-dimensional receptivity of a paraboloid body E. Martini, P. Jordan, C. Caillaud, G. Lehnasch, L. Hallo and T. Bridel-Bertomeu <i>(Pprime Institute / CEA-CESTA)</i>	Local linear stability analysis of a turbulent one-sided diffuser flow C. Cura, B. Steinfurth and J. Weiss <i>(Technische Universität Berlin)</i>	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 <i>(Indian Institute of Science)</i>
11:00	COFFEE BREAK		
11:15	Sensitivity of the Hypersonic Boundary Layer Receptivity to Wall Roughness C. Caillaud, G. Lehnasch, E. Goncalves, P. Jordan, E. Martini, L. Hallo and T. Bridel-Bertomeu <i>(Pprime Institute / CEA-CESTA)</i>	Aerodynamical characteristics of a reduced scale ground vehicle according to yaw angle variations S. Edwige, P. Gilotte, I. Mortazavi and C. N. Nayeri <i>(Plastic Omnium / CNAM / TU Berlin)</i>	Low-frequency oscillations in a laminar separation bubble F. Malmir, G. Di Labbio and J. Vétel <i>(Polytechnique Montréal)</i>
11:45	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 <i>(ONERA / ISAE-SUPAERO)</i>	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 <i>(ESTACA / Cranfield University)</i>	Contribution of the breathing modes in the SWTBLI unsteadiness I. Ben Hassan Saïdi, G. Fournier and C. Tenaud <i>(Paris-Saclay University)</i>
12:15	Analysis of interscale energy transfer in a boundary layer undergoing bypass transition H. Yao and G. Papadakis <i>(Imperial College London)</i>	Experimental and numerical study of flow separations over a D-shaped body G. Huang, Z. Yang, R. C. K. Leung and K. H. Seid <i>(Tongji University / The Hong Kong Polytechnic University / Beijing Aeronautical Science and Technology Research Institute)</i>	Experimentation on the relation between Intake Surface Curvature and Transonic ShockWave—Boundary-Layer Interaction C. O'Pray, H. Babinsky and C. T. J. Sheaf <i>(University of Cambridge / Rolls-Royce)</i>
12:45	LUNCH		

PRELIMINARY PROGRAMME
TUESDAY, APRIL 13

13:50	BEST COMMUNICATION AWARD AERO2019		
14:00	KEYNOTE CONFERENCE N°4 Non-equilibrium turbulence - John Christos VASSILICOS (CNRS)		
	SESSION 4A: Transition/Heat transfer Chairperson: Maxime FORTE <i>ONERA</i>	SESSION 4B: Flow control Chairperson: Azeddine KOURTA <i>University of Orléans</i>	SESSION 4C: High speed flows Chairperson: Philippe REIJASSE <i>ONERA</i>
14:45	Stability assessment of sinusoidal roughness-induced flows for crossflow transition control Y. Ide, M. Hirota and N. Tokugawa <i>(JAXA / Tohoku University)</i>	Assessment of a simplified simulation model for optimization of dielectric-barrier-discharge vortex generators P. Sujar-Garrido, M. Becerra, P. H. Alfredsson and R. Örlü <i>(KTH Royal Institute of Technology)</i>	Effects of atmospheric turbulence parameters on sonic boom of a type of supersonic long-range civil transport L. Yan, Z. Qian and Y. Long <i>(AVIC Aerodynamics Research Institute / Aerodynamic Force Research)</i>
15:15	Towards the selectivity of plasma actuators in a boundary layer transition control applications I. Moraley, I. Popov, I. Selivonin and M. Ustinov <i>(JIHT RAS)</i>	Shock wave control at transonic speed by plasma actuators Z. Sun <i>(City, University of London)</i>	Direct numerical simulation of a hypersonic boundary layer in chemical non-equilibrium D. Passiatore, L. Sciacovelli, P. Cinnella and G. Pascazio <i>(Polytechnic University of Bari / DynFluid Laboratory)</i>
15:45	Robust control of convective instabilities in a 2D supersonic boundary layer using a feedback setup P. Nibourel, C. Leclercq, F. Demourant, E. Garnier and D. Sipp <i>(Onera)</i>	Overview of the GDR "Flow Separation Control" activities. Focus on Machine Learning in Flow Control L. Cordier <i>(Pprime Institute)</i>	Development of a deployable propeller by means of wind tunnel tests and CFD J. Collinet, C. Heranger and H. Sacilotto <i>(ArianeGroup)</i>
16:15	COFFEE BREAK		
16:30	Analysis of upstream turbulence impact on wall heat transfer within acoustic liners with Large Eddy Simulations S. Esnault, F. Duchaine, L. Gicquel and S. Moreau <i>(Cerfacs / Sherbrooke University)</i>	Active flow control of wing-engine-slat cut-out flow separation using suction and pulsed blowing Monat, S. Posti, M., Yaniv, A, Mizrahi, B, Drori, O and Seifert, A. <i>(Tel-Aviv University)</i>	Global Stability analysis in over-expanded nozzles C. Tarsia Morisco, J.-Ch. Robinet, J-Ch. Loiseau and J. Herpe <i>(CNES / DynFluid Laboratory)</i>
17:00	Sensitivity of the convective heat transfer coefficient to the uncertain surface roughness characteristics K. Ignatowicz, F. Morency and H. Beaugendre <i>(École de technologie supérieure / INRIA)</i>	Discrete adjoint-based sensitivity analysis for active control of Buffet S. Sathyanarayana, R. Quadros, A. Nemili and M. Bernardini <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 F. Bakulu, G. Lehnasch, V. Jaunet, E. Goncalvès and S. Girard <i>(Pprime Institute / CNES)</i>
17:30	Thermal network for natural convection during engine soak back G. Millot, A. Placko, A. Buchwalter and S. Magnabal <i>(ALTRAN)</i>	Control of transient loads over an airfoil: efficient strategies for performance enhancement A. Carusone, C. Sicot, J.-P. Bonnet and J. Borée <i>(Pprime Institute / ISAE-ENSMA)</i>	Delayed Detached Eddy Simulation of flow separation in an overexpanded dual-bell nozzle M. Cimini, E. Martelli, D. Modesti and M. Bernardini <i>(University of Rome "La Sapienza" / University of Campania Luigi Vanvitelli / TU Delft)</i>
18:00		Closed-loop wave-cancellation in transitional and turbulent jets I.A. Maia, P. Jordan and A. V. G. Cavalieri <i>(Pprime Institute / Instituto Tecnológico de Aeronáutica)</i>	Turbulent interaction of jet in co-flow R. Sampat, F.F.J Schrijer and A. Gangoli Rao <i>(TU Delft)</i>
18:30	END OF SESSIONS		

PRELIMINARY PROGRAMME
WEDNESDAY, APRIL 14

08:45	KEYNOTE CONFERENCE N°5 Merging large-scale PIV and numerical modelling for aerodynamic applications Fulvio SCARANO and Ferry SCHRIJER (TU Delft)		
	SESSION 5A: Data driven modelling Chairperson: Olivier MARQUET <i>ONERA</i>	SESSION 5B: Bluff bodies Chairperson: Vincent HERBERT <i>PSA – Peugeot Citroën</i>	SESSION 5C: Aeroacoustics Chairperson: Yves GERVAIS <i>Pprime Institute</i>
09:30	Data driven estimation of fluid flows: long-term prediction of velocity fields using machine learning P. Dubois, T. Gomez, L. Planckaert and L. Perret (<i>Lille University / ONERA / Arts et Métiers ParisTech / LHEEA</i>)	Switching statistics of the asymmetric wake mode of an Ahmed body with free-stream turbulence variation O. Cadot, M. Almarzooqi, A. Legeai, L. Pastur and V. Parezanović (<i>University of Liverpool / ENSTA ParisTech / Khalifa University of Science and Technology</i>)	Influence of spanwise domain length on aerofoil stall noise simulations J. M. Turner and J. W. Kim (<i>University of Southampton</i>)
10:00	Dynamic model identification via a method combining data-driven and data-assimilation approaches N. Kumar, F. Kerhervé and L. Cordier (<i>Pprime Institute / ISAE-ENSMA</i>)	Three dimensional dynamics in the wake of an Ahmed body B. Podvin, S. Pellerin, Y. Fraigneau and O. Cadot (<i>LIMSI / University of Liverpool</i>)	Numerical study of flow-acoustic interactions over an SD7003 airfoil at transitional Reynolds numbers D. Vittal Shenoy, R. Gojon, T. Jardin and M.C. Jacob (<i>ISAE-SUPAERO</i>)
10:30	Real-time flow estimation from reduced order models and sparse measurements A. M. Picard, M. Ladvig, V. Resseguier, D. Heitz, E. Mémin and B. Chapron (<i>SCALIAN DS / IRSTEA / INRIA / IFREMER</i>)	Large-scale Sweeping Jet actuation of a bistable 3D bluff body wake V. Parezanović, A. Raouf Tajik and L. Pastur (<i>Khalifa University of Science and Technology / ENSTA-ParisTech</i>)	Installed jet noise simulation in industrial framework G. Pont, J. Huber, J.-P. Roméo and P. Brenner (<i>Airbus Operations / ArianeGroup</i>)
11:00	COFFEE BREAK		
11:15	Modeling of compressibility effects in a transonic airfoil with Deep Learning techniques D. Costero, M. Bauerheim, N. Gourdain and V. Chapin (<i>ISAE-SUPAERO</i>)	Nonlinear feedback control of the bimodal flow behind a three-dimensional blunt bluff body D. Ahmed, F. Hesse and A. S. Morgans (<i>Imperial College London</i>)	A complex-mode model for screech-frequency predictions in supersonic jets M. Mancinelli, V. Jaunet, P. Jordan, A. Towne and S. Girard (<i>Pprime Institute / CNES / University of Michigan</i>)
11:45	Optimization process data reduction for computationally expensive problems: application to aeronautic design R. Cavecchia, T. Sophy, J. Jouanguy, A. Da Silva and L. Le Moyné (<i>University of Burgundy</i>)	Large-scale asymmetries of a turbulent wake: insights and closed-loop control for drag reduction Y. Haffner, K. Mariette, T. Castelain, É. Bideaux, J. Borée, D. Ébérard, A. Spohn, F. Bribiesca-Argomedo, M. Michard and S. Sesmat (<i>Pprime Institute / Centrale Lyon</i>)	Numerical simulation of the broadband noise of the upstream rotor of a counter-rotative open rotor configuration using phase-lagged conditions M. Fiore, J.-F. Bousuge and T. Node-Langlois (<i>Cerfacs / Airbus</i>)
12:15	CFD-driven Sparse Identification of Algebraic Reynolds-Stress Models I. Ben Hassan Saïdi, P. Cinnella and F. Grasso (<i>Cnam / Sorbonne University</i>)	Planar PIV based pressure estimation: an optimal control approach R. Shanmughan, P.-Y. Passaggia, N. Mazellier and A. Kourta (<i>PRISME Laboratory</i>)	
12:45	LUNCH		
14:00	PRESENTATION: Pprime Institute facilities S620 wind tunnel T200-S150 wind tunnels Anechoic wind tunnel BETI BATH High Temperature Wind tunnel PERGOLA Test Bench		
16:00	END OF AERO2020+1 CONFERENCE		

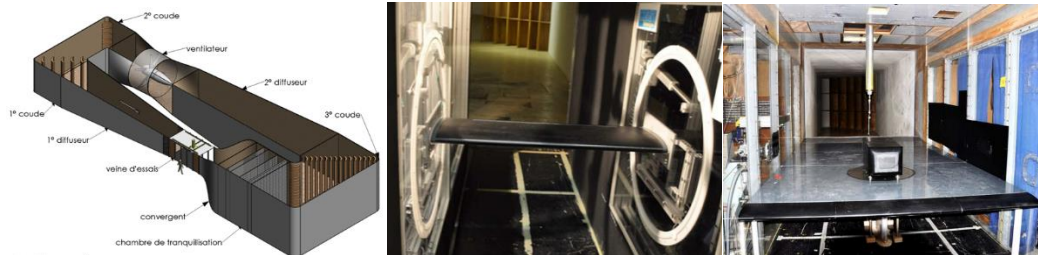


Virtual technical Visits AERO2020+1 - Wednesday April 14 2021

14h00 – 14h15 | S620 wind tunnel | Christophe SICOT

Web site : <https://equipex-gap-prometee.ensma.fr/installations-banc/soufflerie-s620/>

The S620 has a test section of $2.6 * 2.4 \text{ m}^2$ and a length of 6m. The wind speed range is from 5m/s to 60m/s with a turbulence intensity of less than 0.5%. Dedicated assemblies (current plane or raised floor) allow a wide range of tests ranging from ground transport (dedicated roller bank for rotating wheels) to aeronautics (aircraft or airfoil) through renewable energies (wind turbines). The wind tunnel is equipped with 6-component aerodynamic balances allowing the measurement of average or unsteady forces via the use of piezoelectric sensors. Regarding the pressure measurement, the wind tunnel has acquisition chains for average and unsteady pressure sensors. Velocity measurements are performed through the use of Particle Image Velocimetry (PIV) as well as the implementation of Laser Doppler Anemometry (LDA) or Constant Temperature Anemometry (Hot Wires or Films).

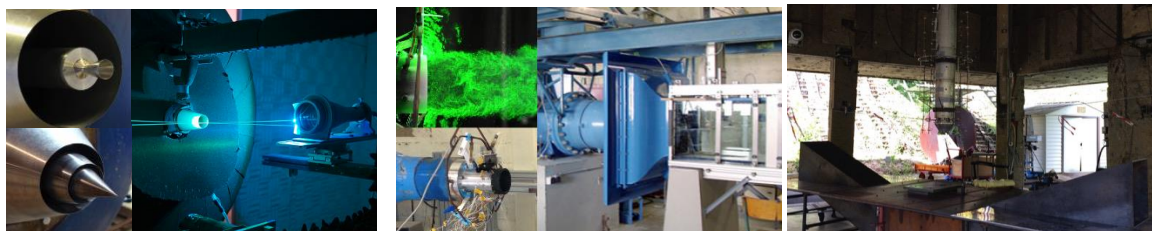


Left Wind tunnel S620; Centre: Control of partially separated flows on a NACA0015; Right: Drag reduction of automotive

14h15 – 14h30 | T200-S150 wind tunnels | Vincent JAUNET

Web site : <https://equipex-gap-prometee.ensma.fr/installations-banc/soufflerie-t200-s150/>

The compressible wind tunnels of P' Institute allow to study transonic and supersonic flows. Using a compressed air supply of 200 bars, these blowdown wind tunnels enable tests of a duration of approximately 10 minutes. The T200 wind tunnel features co-axial compressible jets (total pressure of primary jet < 150 bars, total pressure of the secondary jet < 3 bars). The S150 wind tunnel generates high velocities flows (Mach 0,8 to 2,8) with a test section of $150 \times 150 \text{ mm}^2$. Ongoing research projects are concerning compressible effects on turbulence and aerodynamic instabilities, separated nozzle flows, shock-turbulence interaction, boundary layer flows, ...

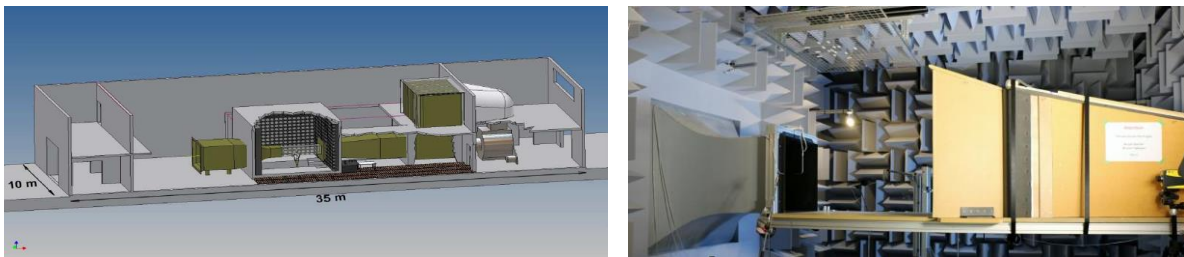


Left, T200 wind tunnel and LDA measurements, (pictures : FRESILLON, Cyril / CNRS Photothèque). Centre : S150 wind tunnel, Right : Martel test bench (collaboration CNES and Onera).

14h30 – 14h45 | Anechoic wind tunnel BETI | Vincent VALEAU

Web site : <https://equipex-gap-prometee.ensma.fr/installations-banc/soufflerie-beti/>

The anechoic wind tunnel BETI (Bruit-Environnement-Transport-Ingénierie), commissioned in 2013, is located in the premises of the University of Poitiers on the ENSI-Poitiers site. It is an Eiffel-type wind tunnel, with an open test-section located in a 90 m³ plenum acoustically treated to reproduce free field conditions from 200 Hz. It allows the study and optimization of the flow around obstacles and the associated acoustic radiation. Its main characteristics are: test-section with an area of 0.7 × 0.7 m² and a length 1.5 m, contraction ratio of 9, maximum speed of 60 m/s (216 km/h), rate of turbulence of less than 0.5%.



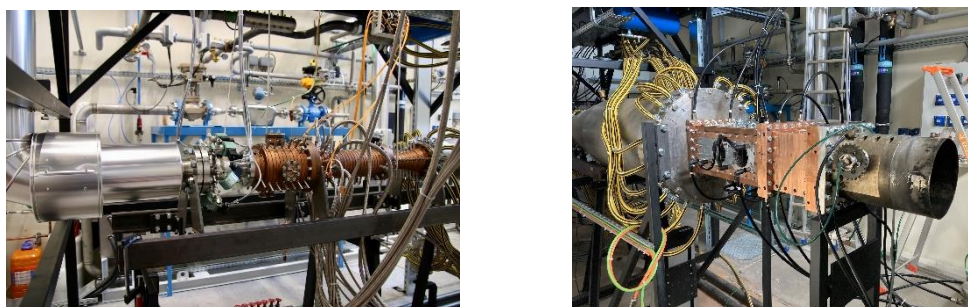
Anechoic wind-tunnel BETI: Left: general view; right: open test-section.

The BETI wind tunnel is equipped with several acoustic arrays (an array of 64 measurement microphones, an array of 1024 digital MEMS microphones), a wall-pressure fluctuation measurement system, and several flow-velocity field measurement systems (hot wire anemometry, LDV, PIV). These devices allow the location, identification, analysis and control of aeroacoustic sources. The BETI wind-tunnel is devoted to the aeroacoustic optimization of elements of land vehicles, to fundamental studies related to aeronautics or to metrological developments in aeroacoustics.

14h45 – 15h00 | BATH High Temperature Wind tunnel | Gildas LALIZEL

Web site : <https://equipex-gap-prometee.ensma.fr/installations-banc/soufflerie-ht-bath/>

BATH, (Banc AeroThermique in French language) is dedicated to studies of turbulent flows and interactions with solid structures under extreme temperature and pressure conditions (up to 1300 °C, 10 Bars, 166 m/s). The BATH test bench was designed and sized to obtain, in the test section with optical accesses, academic-type inlet conditions which consist of homogeneous conditions of temperature and low turbulent quantities. The design of this test section allows to study different types of flows by using advanced thermal and aerualic metrology (TOMO-PIV, PLIF-2 , ZnO phosphorescence ...).

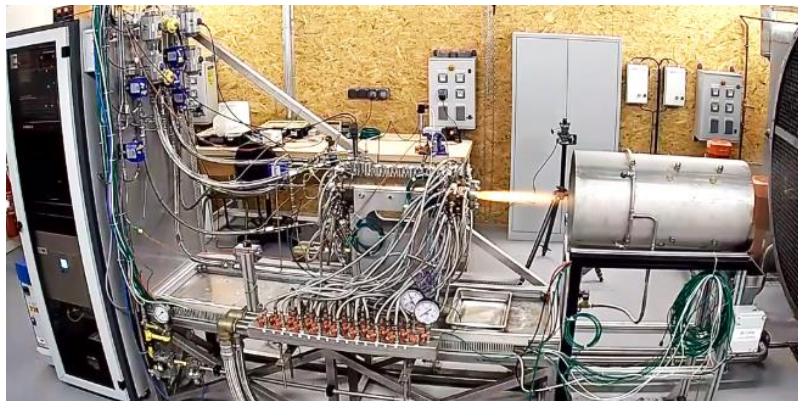


Left: kerosene combustion chamber et right: test section with optical accesses.

15h00 – 15h15 | PERGOLA Test Bench | Bastien BOUST & Marc BELLENOUE

Web site : <https://equipex-gap-prometee.ensma.fr/installations-banc/pergola/>

PERGOLA (for “Propulsion ERGOLs Avancés” in French) test bench has been developed by PPRIME and CNES to study green storable propellants for space propulsion in engine like condition. The specific objectives are to investigate and characterize the behaviour of the key physical phenomena involved in such combustors: atomization of propellant sprays, ignition ability, combustion stability, propulsion efficiency. PERGOLA is a mid-scale combustor (maximal total flow rate: 800 g/s, chamber maximal pressure: 50 bar, maximal thrust 1 kN, test duration : up to 1 mn) allowing physical measurements in its present configuration (opaque chamber). Using Hydrogen-Peroxyde as oxidizer, any kind of safe storable fuels like ethanol or kerosene can be studied. In the present configuration, ignition is performed using a H₂-air torch ignitor and injection and atomization are based on impinging liquid jets (doublet like or unlike triplet).



Hydrogen peroxide – ethanol combustion test in PERGOLA facility

15h15 – 15h30 | Conclusion and common discussion