



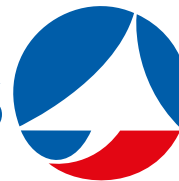
11th International Symposium «NDT in Aerospace» PARIS - SACLAY NOVEMBER 13 TO 15, 2019



Sponsored by

AIRBUS

GIFAS



SAFRAN

PROGRAMME



All information are available on the event website
www.ndt-aerospace2019.com

CONTACT T: + 33 1 44 19 05 30
Mailto: ndt-aerospace2019@cofrend.com

With the support of





The 11th International Symposium on NDT in aerospace will take place in France, organized by the COFREND in partnership with CEA LIST.

The symposium will be held in Paris-Saclay, November 13th to 15th , 2019.

Non-Destructive Testing and Evaluation (NDT&E) is one of the major requirements in aerospace structural design. Appropriate use of NDT guarantees safety in aerospace and is thus a subject of highest attention. The Symposium on NDT in Aerospace has been established in 2008 and is organized on an annual basis to allow to communicate on the latest R&D achievements and to discuss on advanced and improved methods between scientists as well as researchers and industrials. Since 2010, the symposium always takes place at a location where aerospace has a home.

Around 200 participants from twenty countries are expected to attend this event, which will include over 100 technical presentations. During the symposium an exhibition of 26 NDT materials and equipment will take place, followed by industrial visits.

COFREND and CEA list are pleased to welcome you in France for NDT in Aerospace, 2019.

One hundred and twenty-eight years after Clément Ader's first flight, France is the world second largest aeronautics and space market, with a turnover of around \$ 70 billion and some 190,000 employees, thanks to the performances of its industrialists like Airbus, Safran, Dassault Aviation, Ariane Group, Thales ...

France is, together with the United States, the only country exporting aircrafts, business jets, helicopters, fighter jets and the main contributor of the European space industry. Aeronautics and space are the second largest French manufacturing industry in terms of R & D expenses, behind the automotive industry.

Paris and its region Ile-de-France, are characterized by a marked positioning in the design and the supply of aeronautical equipment, including aircraft engines. Every 4 seconds, a plane takes off in the world with an engine assembled in Île-de-France. It is also one of the main French centres for space design and production, including the site of Les Mureaux (78) where the rocket Ariane 6 is partially assembled. Last specificity, the regional aeronautical industry has a strong defense component, with the design and manufacture of aircrafts, drones, missiles and embedded electronics.

The quality of the training is also a major element. The creation of a world class Campus for trades and qualifications around the aeronautics, supported by the French government and the key actors of the sector was recently born in the southern region of Paris, as well as a training platform supported by Safran and subcontractors in the sector.

Paris-Saclay, place of the NDT in Aerospace 2019 conference, brings together around a world-class academic hub, higher education institutions, research organizations and technology small and medium companies. This scientific concentration makes the Paris-Saclay cluster be one of the most important innovation centres in the world.



ORGANISING COMMITTEE

Pierre Calmon
Christian Boller
David Barnoncel
Bastien Chapuis
Nicolas Dominguez
Florence Giraud
Frédéric Jenson
Jean Marie Morvan
Christophe Parsis
Michael Stamm

CEA List, France, (Chairman of the 11th Symposium)
Saarland University, Saarbrücken, Germany, (Co-chair of the 11th Symposium)
Ariane Group, France
CEA List, France
Airbus, France
COFREND, France
Safran Tech, France
Dassault Aviation, France
Afenda FrANDTB
Brussels Airlines/KU Leuven, Belgium (Students Challenge)

SCIENTIFIC COMMITTEE

Christian Boller
Matthias Buderath
Pierre Calmon
Fu-Kuo Chang
Younho Cho
Esmeralda Cuevas
Nicolas Dominguez
Zheng Fan
Gary Georgeson
Christian Große
Srinivasan Gopalakrishnan
Alfredo Güemes
Henning Heuer
Frédéric Jenson
Johann Kastner
Wieslaw Ostachowicz
William Prosser
Matthias Purschke
Xinlin (Peter) Qing
Lei Qiu
Robert Smith
Zhongqing Su
GuiYun Tian
Shenfeng Yuan
Zhenggan Zhou

Saarland University, Germany
Airbus, Germany
CEA List, France
Stanford University, USA
Pusan National University, South Korea
Tecnatom, Spain
Airbus Group, France
Nanyang Technological University, Singapore
Boeing, USA
TU München, Germany
Indian Institute of Science, India
Polytechnic University of Madrid, Spain
Fraunhofer IKTS, Germany
Safran Group, France
FH Oberösterreich, Austria
Polish Academy of Sciences, Poland
NASA, USA
DGZfP, Germany
Xiamen University, China
Nanjing University of Aeronautics and Astronautics, China
University of Bristol, UK
Hong Kong Polytechnic University, HK
Newcastle University, UK
Nanjing University of Aeronautics and Astronautics, China
Beihang University, China

Wednesday, November 13th, 2019

8h00 - Departure of the Shuttles from Novotel Saclay & Mercure Massy TGV to Saclay, NDT Aerospace 2019 Symposium.

8h15 - Opening of the Symposium, Welcome Coffee and exhibition

OPENING CEREMONY

8h45 - 9h00 : Welcome & Introduction

PLENARY SESSIONS

9h00 - 9h45 : [Alvaro Espada Tejedor - Airbus](#)

NDE Challenges at Airbus

9h45 - 10h30 : [Seth Kessler - Metis Design Corp](#)

Structural Health Monitoring : Taking your NDT system along for the ride

10h30 - 10h50 - Coffee Break

TECHNICAL PROGRAM

SESSIONS		WE.1.A.	WE.1.B.		WE.1.C		
TOPICS		Advances in NDT Methods I		Structural Health Monitoring I		Modelling & Simulation I	
10h50-11h10	WE.1.A.1	Millimeter waves Radar : A way to see through the airplane covering ? Patrick Mounaix - Laboratoire IMS- UMR 5218 CNRS, Université Bordeaux	WE.1.B.1	Damage Quantification in Aluminium-CFRP Composite Structures using Guided Wave Wavenumber Mapping Yevgeniya Lugovtsova (BAM, Berlin)	WE.1.C.1	A Macro-element strategy dedicated to the transient modeling of the ultrasonic testing in carbon reinforced composite laminates : Efficient incorporation of local fiber orientation, visco-elastic behavior and thin intermediate layers Edouard Demaldent (CEA LIST)	
11h10-11h30	WE.1.A.2	Standardization, Influences, Possibilities and Risks of UV LED Technology to Fluorescent Magnetic Particle Inspection (MPI) and Penetrant Inspection (FPI) Marc Breit (Secu-Chek GmbH)	WE.1.B.2	Machine learning based temperature compensation for Guided Wave Imaging in Structural Health Monitoring Olivier Mesnil (CEA-List)	WE.1.C.2	Simulations of Guided Waves Propagation in Aircraft Components using CIVA and Application of Time-Reversed Acoustics in Non-Destructive Testing Fatma Sellami (Technical University of Munich)	
11h30-11h50	WE.1.A.3	New method for the evaluation of the Small Reflectors in the Ultrasonic Inspection of the Forging Titanium Alloy Teodor Tranca (Diac Servicii srl)	WE.1.B.3	Hybrid Structural Health Monitoring on composite plates with embedded and secondary bonded Fiber Bragg Gratings arrays and piezoelectric patches E. Monaco (Univ of Napoli)	WE.1.C.3	Improving Ultrasonic Inspection of Tapered CFRP Structures Using Cloud Based FEA Simulation Jeff Dobson (OnScale)	
11h50-12h10	WE.1.A.4	Study of the damage evaluation method using the frequency change in the tensile test of the CFRP Hiraku Kawasaki (IIC IHI Japan)	WE.1.B.4	Improving Lamb wave detection for SHM using a dedicated LWDS electronics Gladys Jaussaud - Cedrat Technologies	WE.1.C.4	Ultrasonic NDT and numerical simulation of adhesively bonded aluminium to CFRP materials Damira Smagulova (Ultrasound Research Institute of Kaunas University of Technology)	

12h10-12h30	WE.1.A.5	Contact less Terahertz Paint Thickness Measurements : specificity of aeronautics industry Patrick Mounaix - Laboratoire IMS- UMR 5218 CNRS, Université Bordeaux	WE.1.B.5	Thermal ageing evaluation of composite plates through electromechanical impedance Pierre Marechal - University of Le Havre	WE.1.C.5	Implicit-explicit scheme for the elastodynamic wave equation in plates Hajer Methenni (DISC, CEA-LIST)
12h30 - 14h00 - Lunch-Bufferet						
SESSIONS	WE.2.A.		WE.2.B.		WE.2.C	
TOPICS	Advances in NDT Methods II		Structural Health Monitoring I (cont.)		Modelling & Simulation II	
14h00-14h20	WE.2.A.1	Half Space NDT/NDE through Multi Frequency Bayesian Compressive Sensing Marco Salucci (ELEDIA Research Center)	WE.2.B.1	Strain and damage sensing by CNT modified adhesive films and fiber optic distributed sensing . Comparison of performances in a double lap bonded joint Alfredo Guemes (UPM)	WE.2.C.1	Parametric study by simulation of a thermography control by induction heating. Application to the detection and characterization of cracks. Olivier Ghibaudo (Safran Tech)
14h20-14h40	WE.2.A.2	Endoscopic Spatial Phase Shift Shearography With The Interferoskop For Turbine Blade Flaw Inspection M.Eng. Christopher Petry (University of Applied Sciences Trier)	WE.2.B.2	Interpreting results of NDT/SHM methods based on elastic guided waves in composite plate-like structures by a semi-analytic modal simulation tool Jordan Barras (CEA List)	WE.2.C.2	Semi-analytical modeling of eddy current inspection for anisotropic material presenting rough interfaces Houssem chebbi (CEA List)
14h40-15h00	WE.2.A.3	Neutron and synchrotron X-ray measurements: unique tools in the non-destructive toolbox Caroline Boudou (ILL)		STUDENT CHALLENGE I Team 1	WE.2.C.3	Reducing NDT Effort by Coupled Monitoring and Simulation of Liquid Composite Molding Processes Nico Liebers (German Aerospace Center, Institute of Composite Structures and Adaptive Systems)
15h00-15h20	WE.2.A.4	Non-destructive quality evaluation of additively-manufactured components Sam Yang (CSIRO)		Team 2	WE.2.C.4	The use of free-space microwave techniques for damage detection in materials with low electrical conductivity Daniela Munalli (The University of Nottingham)
15h20-15h40	WE.2.A.5	Real-time bolt looseness characterization using EMI-based PZT sensing network: a GCN perspective Lu Zhou (National Engineering Research Center on Rail Transit Electrification and Automation (Hong Kong Branch)		Team 3	WE.2.C.5	Non-Destructive Component Inspection and Numerical Simulation: Applications to Additive Manufacturing David Harman (Synopsis)
15h40 - 16h10 - Coffee Break						
SESSIONS	WE.3.A.		STUDENT CHALLENGE II		WE.3.C	
TOPICS	NDT Methods - Magnetics & Eddy Current				NDT Design & Production Integration	
16h10-16h30	WE.3.A.1	Micro-magnetic non-destructive testing on extreme condition aged samples. Benjamin Ducharne (LGEF, INSA Lyon)		Team 4	WE.3.C.1	Local Acoustic Resonance Spectroscopy: An Escalation Approach for efficient NDT of fiber reinforced composites Philipp Jatzlau (Technical University of Munich)
16h30-16h50	WE.3.A.2	Development of Portable Wireless Non-Destructive Crack Identification Method by Using GMR Sensor Array for Overhead Crane Bridges Arun Kumar Yadav (AGH University of Science & Technology)		Team 5	WE.3.C.2	3D X-ray Inspection System for Helicopter Rotor Blades Michael Krumm (RayScan Technologies GmbH)

16h50-17h10	WE.3.A.3	Sizing method of crack length on carbon steels for eddy current testing using transmitter-receiver probe Shurui Zhang - Institute of Fluid Science, Tohoku University		Team 6	WE.3.C.3	Millimeter-sized non-contact ultrasound probe based on fiber-coupled laser excitation and detection Wolfgang Rohringer - XARION Laser Acoustics
17h10-17h30	WE.3.A.4	MR sensors arrays for eddy current testing N. Sergeeva-Chollet (CEA List)		Team 7	WE.3.C.4	Efficient implementation of correlation-based tilt filter for imaging of CRFP ply waviness using laser ultrasound Lukasz Ambrozinski (AGH University of Science and Technology, Krakow, Poland)
17h30-17h50	WE.3.A.5	Eddy current testing of carbon composites in aerospace industry Marie Bohacova (INDETEC ndt)		Team 8	WE.3.C.5	Nondestructive evaluation of thermal barrier coating thickness degradation using infrared thermography and terahertz-tds imaging Sreedhar Unnikrishnakurup (Center for non-destructive evaluation, IIT Madras, Chennai, India)
End of the technical programme & departure to the CEA List						

SOCIAL EVENT

Participants will be welcomed in CEA List for an exclusive visit of the labs, followed by a cocktail dinner.

18h00 - Shuttles transfers to CEA List

18h15 - 20h00 - Welcome in CEA List: - Visits of the labs & Cocktail Dinner

20h15 - Shuttles transfers back to;

- the Symposium at CentraleSupélec

- Novotel Saclay

- & Mercure Massy TGV



STUDENTS CHALLENGE

A novelty this year will be a student challenge, where mainly postgraduate students will have to detect hidden flaws in composite samples including to present a concept on how to get those damages monitored in the sense of structural health monitoring (SHM), all being inspired by damage tolerant design.

8 teams of 4 members of students from Belgium, Denmark, Germany, Lithuania, Poland, Spain and the France/UK will present their solutions of detecting on composites (COTESA) during a special session with a rewarding at the Conference Dinner.

The study case gives five different internal defects in the sample whose minimum size is 3 mm x 3 mm. One defect is located in the bonding area of the T-bar to the specimen. The challenge is high ! Each team will be evaluated on 3 main criteria : detectability of the defects, approach of their works and the presentation on november at the 11th NDT in Aerospace.



Thursday November 14th, 2019

8h00 - Departure of the Shuttles from Novotel Saclay & Mercure Massy TGV to Saclay, NDT Aerospace 2019 Symposium.

8h15 - Opening of the Symposium, Welcome Coffee and exhibition

8h30 - 10h00 - PLENARY SESSION

8h30 - 9h15 : **Elliott Kramer - NASA Langley**

NDE Challenges at NASA

9h15 - 10h00 : **Pr Krishnan Balasubramanian - ITT Madras**

Ultrasonic and Thermal Techniques from CNDE@IITM for Aerospace Applications

10h00 - 10h30 - Coffee Break

SESSIONS		THU.1.A.	THU.1.B.		THU.1.C	
TOPICS		NDT Methods - From Microwave to Thermography	Structural Health Monitoring II		Data processing & Statistical methods I	
10h30-10h50	THU.1.A.1	Sizing the width of tilted cracks using laser spot lock-in thermography Arantza Mendioroz (Universidad del País Vasco UPV/EHU)	THU.1.B.1	A toolbox concept to configure a shm solution on ageing aircraft structures based on acoustic and thermal methods Ramanan, Sridaran Venkat (Saarland University)	THU.1.C.1	Innovative Learning-by-Examples Approaches for Real-Time NDT/NDE of Complex Structures Marco Salucci (ELEDIA Research Center)
10h50-11h10	THU.1.A.2	Radome Inspection with Terahertz Waves Joachim Jonuscheit (Fraunhofer ITWM, Kaiserslautern, Germany)	THU.1.B.2	Structural health monitoring system for moisture ingress detection in sandwich composite structures Sevilla Sunetchiieva (KU Leuven)	THU.1.C.2	Options to undertake the AI digital transformation journey for NDT in Aerospace Peter Chow (Fujitsu)
11h10-11h30	THU.1.A.3	Single-shot pulsed terahertz non-destructive evaluation systems for in-line production control and automated inspection Uli Schmidhammer - Teratronics	THU.1.B.3	Wireless system for structural health monitoring with Guided Ultrasonic Waves: Detection of defects Marwen Aouini (Institut de Soudure)	THU.1.C.3	Microwave NDT/NDE through a Probabilistic Compressive Sensing Method Lorenzo Poli (ELEDIA Research Center)
11h30-11h50	THU.1.A.4	Non-destructive inspection on heat damaged composite materials Andrew Ngo (IMRE, A*STAR)	THU.1.B.4	Damage assessment of composite structures using electromechanical impedance method Tomasz Wandowski (Polish Academy of Sciences, Institute of Fluid-Flow Machinery, Poland)	THU.1.C.4	Efficient TR-MUSIC damage detection in composites with a limited number of sensors Vasileios Dimopoulos (DMMS Lab)
11h50-12h10	THU.1.A.5	3d Surface Topography Measurement Using Elastomeric Contact Thierry Mantel (GelSight Inc.)	THU.1.B.5	Vibration health criterion based on the combination of bending and torsional modes to monitor the health status of safety-critical composite structures Olivier Ponte Felgueiras (Mines Paristech)	THU.1.C.5	NDT 4.0 : Application of Industry 4.0 in NDT and impact on aerospace companies Philippe Meynard (Visiconsult)
12h10-12h30	THU.1.A.6	Flying Line Active IR Thermography applied to the inspection of environmental barrier coatings Ludovic Gaverna (Onera)	THU.1.B.6	Structural health monitoring framework based on probability modeling under time-varying conditions Fang Fang (Nanjing University of Aeronautics and Astronautics)	THU.1.C.6	Deep Learning frameworks for wave propagation-based damage detection in 1D-waveguides Mahindra Rautela (Department of Aerospace Engineering, Indian Institute of Science, Bangalore, India)

12h30 - 14h00 - Lunch-Buffer

SESSIONS		THU.2.A.	THU.2.B.		THU.2.C	
TOPICS		NDT Methods- Phased Array I	NDT & SHM Reliability assessment		Data processing & Computed Tomography	
14h00-14h20	THU.2.A.1	Application of TFM imaging for enhanced NDT in Aerospace Hubert Voillaume (Eddyfi Europe)	THU.2.B.1	Model Assisted Probability of Detection in Structural Health Monitoring applied to impacted composite structures Olivier Mesnil (CEA-List)	THU.2.C.1	Computed Radiography for High Resolution Imaging Applications of Aircraft Structures Muzibur Khan (National Research Council Canada)
14h20-14h40	THU.2.A.2	Multi-element ultrasonic evaluation of scattering solids by reflection matrix analysis Cécile Brütt (Safran Tech, Institut Langevin)	THU.2.B.2	Digital Twin and Birth Certificate approach to reduce risk of failure Thomas Köhler (Vibrant GmbH)	THU.2.C.2	A new bi-imaging NDT system for simultaneous recovery of attenuation and electronic density maps Cécilia Tarpau Laboratoire de Physique Théorique et Modélisation (LPTM)
14h40-15h00	THU.2.A.3	Aircraft Engine Fan Blade Inspection by means of UT Phased Array and Eddy Current Array Thibault Darmedru (Safran AE)	THU.2.B.3	Effect of Oxide Induced Microstructure Degradation in Aero-Engine Components on POD of NDT Techniques Vamsi Krishna Rentala (School of Engineering Sciences and Technology, University of Hyderabad, India)	THU.2.C.3	X-ray scatter removal for artifact free CT imaging Martin Krenkel (Carl Zeiss IMT GmbH)
15h00-15h20	THU.2.A.4	Ensuring complete integrity of aeronautic composite parts thanks to a fully automated non-destructive inspection solution and process Angélique Raude (Testia)	THU.2.B.4	Integration of experimental data in Model Assisted Probability Of Detection computations Xavier Artusi (CEA)	THU.2.C.4	Computed Tomography in NDT and Metrology for Additively Manufactured Aerospace Components Dominik Schlösser (Yxlon International GmbH)
15h20-15h40	THU.2.A.5	Flexible wedge phased array transducers for inspecting variable-geometry or complex components Philippe Dumas - Imasonic	THU.2.B.5	Identification of Key Performance Indicators for SHM in Structures of Increasing Complexity Based on Artificial Neural Networks Aadhik Asokkumar (Dresden International University (DIU), Dresden/Germany)	THU.2.C.5	Computed Tomography and Digital Radiography for Additive Manufacturing process Quality Assurance and parameters definition Carlos Galleguillos (FADA-CATEC)

15h40 - 16h10 - Coffee Break

SESSIONS		THU.3.A.	THU.3.B.		THU.3.C	
TOPICS		NDT Methods- Advanced Ultrasonics	Components		Data processing & Statistical methods II	
16h10-16h30	THU.3.A.1	Imaging of impact damage in stitched carbon-fiber reinforced plastic composites using laser ultrasonic technique J. Mrowka (AGH University of Science and Technology)	THU.3.B.1	X-ray digital radiology to infer welding defects depth Emmanuel Siryabe (Safran Helicopter Engines)	THU.3.C.1	Automatic analysis of ultrasonic data for large and complex CFRP aircraft components Julien Walter (Centre technologique en aérospatial, Canada)
16h30-16h50	THU.3.A.2	Evaluation of metallic bonded plates with nonlinear ultrasound and comparison with destructive testing Ribay Guillemette (CEA, List)	THU.3.B.2	Electromagnetic pulse-induced acoustic testing and its application to the non-destructive evaluation of adhesive bonding between carbon fiber composite and metal Toshiyuki Takagi (Tohoku University)	THU.3.C.2	Development of dedicated classification tools for the automated diagnostic from non-destructive testing data Xavier Artusi (CEA List)

16h50-17h10	THU.3.A.3	Non-contact detection of disbonds in adhesively bonded metallic plates using laser-excited zero group velocity Lamb modes Jakub Spytek (AGH University of Science and Technology in Kraków)	THU.3.B.3	Surface characterization using multi-orientation light technique Clément Skopinski (Framatome Intercontrôle)	THU.3.C.3	Defect sizing in guided wave imaging using a convolutional neural network Andrii Kulakovskiy (Safran Tech and CEA-List)
17h10-17h30	THU.3.A.4	Noncontact laser-based ultrasonic detection of dynamic stress modulated cracks Peilong Yuan (Katholieke Universiteit Leuven)	THU.3.B.4	Laser-based Free-form Surface Modelling for NDT and SHM Xiangyang Xu (Faculty of Civil Engineering and Geodetic Science, Leibniz University Hanover, Germany)	THU.3.C.4	NDT of Welds Using High Speed Data Collection and an Artificial Neural Network Real-Time Processing System During the Welding Operation Jerald E. Jones (EnergynTech, Inc.)
17h30-17h50	THU.3.A.5	Innovative Ultrasonic Nondestructive Testing Technique for Bonding Quality Evaluation Bengisu Yilmaz (Ultrasound Research Institute, Kaunas University of Technology)	THU.3.B.5	A study on factors influencing the accuracy evaluation of dimensional X-ray computed tomography with multi-sphere standards Shixiang Su (Nanjing University of Aeronautics and Astronautics, PR China)	THU.3.C.5	On The Improvement of Height Indication Measurement in Welds Abd Ennour Bouzenad (Institut de Soudure / Laboratoire d'Acoustique de l'Université du Mans)
End of the technical programme - snack in the exhibition area & departures of the shuttles for the Conference Dinner						

CONFERENCE DINNER

18h30 - Shuttles transfers to Vaux le Cernay

19h15 - 22h30 - Gala Dinner at the Abbaye of Vaux le Cernay



Welcome in the Vaux le Cernay Abbey.

Located in the Chevreuse valley in the Rambouillet state-owned forest, is an enchanted place. Founded in 1118 by a group of monks from Savigny Abbey (in Manche) the Vaux-de-Cernay Abbey enjoys more than eight centuries of history.



22h30 - Shuttles transfers back to;

- the Symposium at CentraleSupélec

- Novotel Saclay

- & Mercure Massy TGV

Friday, November 15th, 2019

8h00 - Departure of the Shuttles from Novotel Saclay & Mercure Massy TGV to Saclay, NDT Aerospace 2019 Symposium.

8h30 - 9h15 - **PLENARY SESSION**

8h30 - 9h15 : **John Aldrin - Computational Tools**

Applications of Modeling in Aerospace NDT: Past, Present and Future

9h15 - 9h30 - Coffee Break

SESSIONS		FRI.1.A.	FRI.1.B.		FRI.1.C	
TOPICS		NDT Methods- Mobile NDT	Components - Composites		Materials Characterisation	
9h30-9h50	FRI.1.A.1	Automatic Inspection of Aeronautical Mechanical Assemblies using 2D and 3D computer vision Jean-José Orteu (IMT Mines Albi/Institut Clément Ader (ICA))	FRI.1.B.1	Advanced thermographic NDT applied on composite aircraft components Jérôme Raynal (Institut de Soudure Industrie)	FRI.1.C.1	Comparative study of thermal degradation of GFRP composite using strain , electromechanical impedance and guided waves-based methods Aditya Choure (Dresden International University)
9h50-10h10	FRI.1.A.2	Accurate & Flexible Solution for Non Destructive Testing in Aerospace Industry Using Robotised System Mr Thomas Gramberger (Fill Gesellschaft m.b.H)	FRI.1.B.2	Comparative study of NDT methods for stamping -overmolding process Xavier Tardif (IRT Jules Verne)	FRI.1.C.2	The use of low power high frequency based techniques: characterization of electromagnetic properties of fibre-reinforced polymer composites Daniela Munalli (The University of Nottingham)
10h10-10h30	FRI.1.A.3	Ultrasound Non Destructive Testing of Stage 8-10 Spools On Wing Brian Pradalet (Air France Industries KLM Engineering and Maintenance)	FRI.1.B.3	Comparison of Advanced Post-Processing Techniques for Flash Thermography for Rapid NDT of CFRP Aircraft Component: A Case Study Gaétan Poelman (Mechanics of Materials and Structures (UGent-MMS))	FRI.1.C.3	Use of microfocus X-ray system and pulse thermography to measure porosity content into aerospace composite parts Pierre Servais (NDT service composite testing, Belgium)

10h30 - 10h45 - Coffee Break

SESSIONS		FRI.2.A.	FRI.2.B.		FRI.2.C	
TOPICS		NDT Methods- Phased Array II	Components - Composites		Materials Characterisation	
10h45-11h05	FRI.2.A.1	High-Performance Ultrasonic Transducers based on PMN-PT Single Crystals for NDT of aerospace materials Thomas Herzog (Fraunhofer Institute for Ceramic Technologies and Systems IKTS)	FRI.2.B.1	Electromagnetic nondestructive inspection of fiber misalignment in CFRP with directional eddy current Hiroyuki Kosukegawa (Institute of Fluid Science, Tohoku University)	FRI.2.C.1	Contribution of ultrasonic NDT to the assessment of the effect of out-of-plane waviness defects on the mechanical strength of thermoplastic composite materials Camille Trottier (Onera)

Friday, November 15th, 2019

11h05-11h25	FRI.2.A.2	Advanced DDF for inspection of thick Aluminium and Titanium materials Xavier Harrich (Socomate International)	FRI.2.B.2	Ultrasound defect detection in thick composites with out-of-plane waveness Cui Fangsen (Institute of High Performance Computing, A*STAR, Singapore)	FRI.2.C.2	Non-Destructive Magnetic Testing of the Physical and Mechanical Properties of Mission-Critical Mounting Components in Aviation Technology Sergey G. Sandomirski (Joint Institute of Mechanical Engineering of the NAS of Belarus, Minsk, Belarus)
11h25-11h45	FRI.2.A.3	Dynamic tracking of phased-array probe and 3D C-scan reconstruction for in-service inspection of CFRP aircrafts components Alexandre Beausoleil (Centre technologique en aérospatiale)	FRI.2.B.3	Ad-hoc solutions for ultrasonic inspection of radii in closed composite structures Rosairo Fernandez (CATEC-Advanced Center for Aerospace Technologies)	FRI.2.C.3	Materials Fatigue Characterization through Feature Extraction from Thermographic Images Alexandr Lozak (Saarland University, Saarbrücken/Germany)
11h45-12h05	FRI.2.A.4	Inspection of Composite Laminate Material using Adaptive Focusing Technology Etienne Grondin (Olympus)	FRI.2.B.4	Full wave field signal processing techniques for NDT of CFRP aircraft panel: A case study Joost Segers (Mechanics of Materials and Structures (UGent-MMS), Ghent University)	FRI.2.C.4	Micro-magnetic non-destructive testing: aerospace bearing application Benjamin Ducharne (LGEF)
12h05-12h25	FRI.2.A.5	Modeling and Inspection Challenges for Evaluation of Composite Materials and Structures Deborah Hopkins, Bercli	FRI.2.B.5	Laser-generated shock waves for NDE : application to structural bonding and delamination of composite materials Mathieu Ducouso (Safran Group)	FRI.2.C.5	Ultrasonic guided waves as a tool for the evaluation of effective elastic moduli of laminate composite materials Artem Eremin (Institute for Mathematics, Mechanics and Informatics, Kuban State University, Krasnodar, Russia)
End of the Symposium programme and departures for industrial visits						

INDUSTRIAL VISITS

Participants will have the choice between 4 industrial sites to visit. Each visits will last between 2h00 & 2h30. Shuttles transfers are organized, and will drop the participants off on the way back at Orly Airport, with a stop at Centrale Supélec.

At the Airport of Orly, participants can find different options for their travel connexions:

- Air France Bus shuttles to Roissy Charles de Gaulle airport
- Public transport: Orly Val, RER
- Taxi.

Once registered, you will receive by email the registration link for the visit of your choice.

Please, consider the timetables with approx arrival hours for your flights booking.

Friday, November 15th, 2019



SAFRAN AIRCRAFT ENGINES

ST QUENTIN EN YVELINES

12h30 Shuttle departure with Lunch on Board

13h30 - 15h30 Visit of the site

17h30 approx. arrival at Orly Airport



AIR FRANCE

Engine Part Repair Center

ELANCOURT

12h30 Shuttle departure with Lunch on Board

13h30 - 15h30 Visit of the site

17h30 approx. arrival at Orly Airport



ARIANE GROUP

LES MUREAUX

12h30 Shuttle departure with lunch on Board

14h00 - 16h00 Visit of the site

18h30 approx. arrival at Orly Airport



SYNCHROTRON SOLEIL

PARIS-SACLAY

12h15 Lunch-snack at CentraleSupélec

13h15 Shuttle departure

13h30 - 15h30 Visits of the site

17h00 approx. arrival at Orly Airport

EXHIBITION

A vendor exhibition will be conducted to complement the technical presentations, from November 13 to 15, 2019
26 exhibitors will welcome you on their stand



GENERAL INFORMATION

Venue

Centrale Supelec,
3 rue Joliot Curie
91192 Gif/Yvette Cedex



By Airplane

From Orly airport (about 30 minutes):

Take ORLYVAL to Antony,
RER B towards « Saint-Rémy-lès-Chevreuse » – Stop at Massy-Palaiseau
Then see the access by public transport

From Roissy Charles de Gaulle airport (about 1 hour):

Take RER B towards Saint-Rémy-lès-Chevreuse – Stop at Massy-Palaiseau
Then see the access by public transport



By Public transport and train

RER from Paris to Massy-Palaiseau then Bus (20-minutes):

RER B – direction to Saint-Rémy-lès-Chevreuse – Stop at Massy-Palaiseau
Bus Express # 91 or 10
Bus Express # 06 B and C
Stops at Université Paris Saclay, Moulon or Joliot-Curie

RER from Paris to « Le Guichet » then Bus (5 minutes ride):

RER B – direction Saint-Rémy-lès-Chevreuse – Stop at «Le Guichet »
Bus «Le Guichet» # 9 – Stop at Joliot-Curie



By Taxi or Uber

You can find cabs at the official Taxi station of the airport, both Orly and Roissy Charles de Gaulle.

You can order through Mobile Application an Uber or Taxi G7



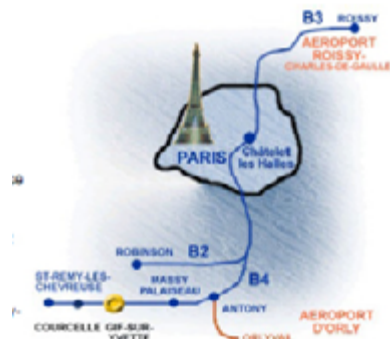
By Car

GPS #

48°42'34.9»N 2°10'02.3»E

709705, 2.167308

Parkings are available and free



Hotel Reservation

Special conditions with Hotels are proposed
Code to mention with your booking => NDT Aerospace

- CAMPANILE: located inside the Campus, 5 min walk
- NOVOTEL Saclay located at 3 km from CentraleSupelec
Shuttles are organized every day from and to the 11th Symposium NDT in Aerospace 2019
- MERCURE Paris Massy Gare TGV – located at 6 km from CentraleSupelec
Shuttles are organized every day from and to the 11th Symposium NDT in Aerospace 2019.



NDT Aerospace Shuttles

A shuttle system is set up from 13 to 15 November 2019. It will provide the following transfers:

- Round Trip Novotel Paris Saclay and Mercure Massy TGV to NDT Aerospace
- Round trip transfers to the conference dinner on Nov 14, and back to Saclay, to the Novotel and to Mercure Massy TGV
- On the 15th, transfers to various industrial sites and back to Saclay and to Orly airport (connection, Air France shuttles to Roissy Charles de Gaulle airport or public transport: Orly Val, RER, Taxi.)

Important Deadlines

Early registration deadline

September 15th, 2019

Deadline for full papers

October 15th, 2019

Fees (VAT included)

Registration until 15 Septembre 2019	680.00 €
Registration after 15 Septembre 2019	750.00 €
Presenting authors	600.00 €
Students (max. 30 years)	250.00 €

including all conference activities, proceedings, Gala dinner, coffee breaks, lunch and technical visits, from November 13 to 15, 2019.

Conference Secretariat

COFREND, French NDT Society
(64 rue Ampère, 75017 Paris, France)

Contact: P.: +33 1 44 19 05 30 | E-mail: ndt-aerospace2019@cofrend.com

All information are available online
www.ndt-aerospace2019.com