PROVISIONAL PROGRAM

XXII International Workshop on

ELECTROMAGNETIC NONDESTRUCTIVE EVALUATION

September 6th – 8th, 2017
CEA Saclay Digiteo Labs, FRANCE

Official Website: http://www.ende2017.fr
E-mail Contact: ende2017@cea.fr

Contents

Welcome to the ENDE 2017 Workshop!

The 22nd International Workshop on Electromagnetic Nondestructive Evaluation (ENDE 2017), September 6-8, 2017, is being held in CEA SACLAY DIGITEO LABS in Saclay under the CEA LIST Institute and the Laboratoire des Signaux et Systèmes (L2S) in Gif-sur-Yvette, with label and support of the Digiteo-DigiCosme 2016 programme, the University Paris-Saclay, the COFREND organization, and the JSM learned society, under the co-chairpersonship of D. Lesselier (L2S) and C. Reboud (CEA LIST), and with the great help of the Standing and Scientific Committee members.

The ENDE Workshop series emphasizes both basic science and early engineering developments, so experts from theoreticians to research engineers in industry are participating while the contribution of PhD students and post-doctoral fellows is much sought after as well, in fast evolving and very demanding fields as

- Non-destructive Testing and Evaluation (NdT-NdE)
- Static to THz electromagnetics and beyond
- Smart models and high-performance computations
- Advanced sensors, from design to usage, involving single- or multi-physics
- Inverse problems, imaging and signal processing in context of uncertain and relatively scarce data
- Surrogate models, adaptive databases, model selection, and qualification of uncertainty
- Multi-sensor data fusion, towards automatic approaches, and decision making
- Complex material characterization from small scales to large scales
- Monitoring and diagnoses of mechanical structures
- Innovative industrial applications

The ENDE international workshop has been held every year since 1995. Its aim is to bring together engineers and scientists from universities, research institutions and industry who are active in research, development and industrial applications of Electromagnetic Nondestructive Evaluation. In addition to an array of premier contributions, those previous ENDE have been marked by edited peer-reviewed proceedings published by IOS Press as Electromagnetic Nondestructive Evaluation, within the series Studies in

Applied Electromagnetics and Mechanics. The first (with a slightly different title as Non-Destructive Testing of Materials) appeared in 1995 under R. Collins, W. D. Dover, J. R. Bowler, and K. Miya. Twenty followed, the 21th being out in Spring 2017, following ENDE 2016.

This suite of Proceedings does provide an unique perspective on the many challenges and advances of electromagnetic non-destructive evaluation, and it adds good value to the expert exchanges that are taking place at each Workshop. The 22th Proceedings, following ENDE 2017, will be out in February 2018. It will be, a first regarding those Proceedings, published as an Open Access publication on the IOS Press e-book platform.

Soon, one will then be welcoming more than 100 attendees, one third as PhD students. They will contribute and listen to more than 90 oral and poster contributions about half of each type, and three keynotes, one per day, will also be given by experts in their field. In addition a student competition (for the best three presentations, oral or poster indifferently) will be run. To facilitate interaction, presentations, lunches, and coffee breaks, all will be at the same site (the superb facilities of CEA LIST). And evidently there will be a gala dinner on the second evening, this one in the renowned Vallée de Chevreuse nearby.

The programme is detailed next, make it your own, and welcome!

ENDE International Standing Committee

Chairperson

Chen, Zhenmao	Xi'an Jiaotong University, China

Members

Capova, Klara	University of Žilina, Slovak Republic
Chady, Tomasz	West Pomeranian Univ. of Technology, Poland
Kojima, Fumio	Kobe University, Japan
Lee, Jinyi	Chosun University, South Korea
Lesselier, Dominique	Laboratoire des Signaux et Systèmes, France
Ramos, Helena Geirinhas	Instituto Superior Técnico Lisboa, Portugal
Rao, B. Purna Chandra	Indira Gandhi Centre for Atomic Research, India
Rebello, João Marcos Alcoforado	Federal University of Rio de Janeiro, Brasil
Reboud, Christophe	CEA LIST
Ribeiro, Artur	Instituto Superior Técnico Lisboa, Portugal
Rubinacci, Guglielmo	Università di Napoli Federico II, Italy
Song, Sung-Jin	Sungkyunkwan University, south Korea
Szielasko, Klaus	Fraunhofer-Institut IZFP, Germany
Takagi, Toshiyuki	Tohoku University, Japan
Tamburrino, Antonello	Università degli studi di Cassino, Italy
Theodoulidis, Theodoros	University of Western Macedonia, Greece
Tian, Gui Yun	Newcastle University, United Kingdom
Udpa, Lalita	Michigan State University, USA
Udpa, Satish	Michigan State University, USA
Yusa, Noritaka	Tohoku University, Japan

Local Organizing Committee

Chairpersons

Lesselier, Dominique	Laboratoire des Signaux et Systèmes, France
Reboud, Christophe	CEA LIST, France

Members

Chaumulot, Coralie	CEA LIST, France
Demaldent, Edouard	CEA LIST, France
Lobjois, Daniel	CEA LIST, France
Miorelli, Roberto	CEA LIST, France
Prémel, Denis	CEA LIST, France
Skarlatos, Anastassios	CEA LIST, France

Scientific committee

Bilicz, Sándor	Budapest University of Technology and Economics, Hungary
Bonnet, Marc	POems (CNRS-INRIA-ENSTA), France
Cai, Caifang	Laboratoire des Signaux et Systèmes, France
Calmon, Pierre	CEA LIST, France
Corcolle, Romain	Génie électrique et électronique de Paris, France NYU Shanghai, Chine
Demaldent, Edouard	CEA LIST, France
Joubert, Pierre-Yves	Centre de Nanosciences et de Nanotechnologies (CNRS-Univ. Paris-Sud), France
Lambert, Marc	Génie électrique et électronique de Paris, France
Le Bihan, Yann	Génie électrique et électronique de Paris, France
Lesselier, Dominique	Laboratoire des Signaux et Systèmes, France
Miorelli, Roberto	CEA LIST, France
Oliveri, Giacomo	Trento University, Italy
Prémel, Denis	CEA LIST, France
Reboud, Christophe	CEA LIST, France
Sergeeva-Chollet, Natalia	CEA LIST, France
Skarlatos, Anastassios	CEA LIST, France
Sollier, Thierry	Institut de Radioprotection et de Sûreté Nucléaire (IRSN), France
Vourc'h, Eric	Laboratoire SATIE, France

Keynote speakers

Numerical Tools for the Ultrasonic Non Destructive Testing of Anisotropic Plates

by Sonia Fliss, Associate Professor at ENSTA ParisTech, member of the POems Laboratory (UMR 7231 CNRS-INRIA-ENSTA), Palaiseau, France

Product Uniformity Control – A Research Collaboration of European Steel Industries to Non-Destructive Evaluation of Microstructure and Mechanical Properties

by Frenk van den Berg, Principal Scientist at Tata Steel, R&D IJmuiden, Netherlands

Intrinsic Modeling and Inversion of Ultra Wideband Microwave Radar Data for Nondestructive Testing of Soils and Materials

by Sébastien Lambot, Professor in Agricultural and Environmental Engineering at UCL & FNRS Scientist, Louvain-la-Neuve, Belgium

Program schedule

Wednesday 6th	
12:00 – 14:00	*Welcome buffet and registration*
14:00 – 14:20	**Introduction and opening ceremony**
14:20 – 16:00	**Oral session: High frequency applications I**
16:00 – 16:20	*Coffee break*
16:20 – 16:50	**Keynote: Numerical Tools for the Ultrasonic Non Destructive Testing of Anisotropic Plates**
16:50 – 18:10	**Oral session: Instrumentation I**
18:30	*Buses departure to Hôtel d'Orsay and Domaine de Saint Paul*
18:45	*Shuttles from Massy TGV to Hôtel d'Orsay and Domaine de Saint Paul for ISEM delegates*

Thursday 7th	
08:00	*Buses departure from Hôtel d'Orsay and Domaine de Saint Paul*
08:30 – 09:50	**Oral session: Theory and modelling**
09:50 – 10:10	*Coffee break*
10:10 – 10:40	**Keynote: Product Uniformity Control – A Research Collaboration of European Steel Industries to Non-Destructive Evaluation of Microstructure and Mechanical Properties**
10:40 – 12:00	**Oral session: Material Characterization I**
12:00 – 13:20	*Lunch break*
13:20 – 15:20	**Oral session: High frequency applications II**
15:20 – 16:40	**Poster session I** *(with coffee break)*
16:40 – 18:00	**Oral session: Eddy current testing**
18:30	*Buses departure to Domaine de Saint Paul and Gala Dinner*

Friday 8th	
08:00	*Buses departure from Hôtel d'Orsay and Domaine de Saint Paul*
08:30 – 09:50	**Oral session: Instrumentation II**
09:50 – 10:10	*Coffee break*
10:10 – 10:40	**Keynote: Intrinsic Modeling and Inversion of Ultra Wideband Microwave Radar Data for Nondestructive Testing of Soils and Materials**
10:40 – 12:00	**Oral session: Low frequency inversion**
12:00 – 13:20	*Lunch break*
13:20 – 15:20	**Oral session: Material characterization II**
15:20 – 16:40	**Poster session II** *(with coffee break)*
16:40 – 17:40	**Oral session: Time domain methods**
17:40 – 18:00	**Closing ceremony**
18:30	*Buses departure to Hôtel d'Orsay and RER B station of Le Guichet*

Detailed program: Wednesday 6th

Oral session: High frequency applications I **Chairs:** Helena Geirinhas Ramos and Dominique Lesselier	
14:20 – 14:40	**Imaging Comparison of GPR Based on Multi- and Bi-static Configurations (89)** Xiang Liu, Mohammed Serhir, Marc Lambert and Lionel Pichon
14:40 – 15:00	**Validation of a Numerical Calculation Process Aimed at Predicting the Effective Permittivity of an Unsaturated Sand Sample (13)** Vincent Guihard, Jean-Luc Adia, Julien Sanahuja, Frédéric Taillade, Jean-Paul Balayssac and Barthélémy Steck
15:00 – 15:20	**Broadband Dielectric Characterization of Bentonite for Hydromechanical Monitoring (76)** Eric Vourch, Thierry Bore and Caifang Cai
15:20 – 15:40	**THz Imaging Applied to the Structural Control of Composite Materials (17)** Antoine Guille, Meriam Triki and Thierry Antonini
15:40 – 16:00	**Structured Light Based Endoscopic Scanner for Small Diameter Gas Pipelines (78)** Mohand Alzuhiri and Yiming Deng

Keynote	
16:20 – 16:50	**Numerical Tools for the Ultrasonic Non Destructive Testing of Anisotropic Plates** Sonia Fliss

Oral session: Instrumentation I

Chairs: Thierry Sollier and João Marcos Rebello

16:50 – 17:10	**Characterisation of Surface Breaking Cracks in Carbon Steel Using Tangential Eddy Current Arrays (TECA^{TM}) (18)** Jonathan Berthier, Angélique Raude, Michael Sirois, Joël Crépeau and Hugo Lemieux
17:10 – 17:30	**Evaluation of Hardened and Non-hardened Region Using Eddy Current Testing (20)** Kenji Sakai, Takahiro Ito, Toshihiko Kiwa and Keiji Tsukada
17:30 – 17:50	**Pulsed Eddy Current Imaging Device for Enhanced Evaluation of Complex Parts (33)** Pierre-Yves Joubert and Yohan Le Diraison
17:50 – 18:10	**High-speed MFL Method Based on Multistage Magnetization Structure (63)** Song-Wei Gao, Hao Geng and Li-Jian Yang

Detailed program: Thursday 7th

Oral session: Theory and modelling **Chairs:** Guglielmo Rubinacci and Sándor Bilicz	
08:30 – 08:50	**Extension of the Edge Crack Model to Finite-Thickness Plates and Arbitrary Shape Coils (37)** Theodoros Theodoulidis and Christophe Reboud
08:50 – 09:10	**Fast Simulation Tools Dedicated to Pulsed Eddy Current Applications (92)** Roberto Miorelli and Christophe Reboud
09:10 – 09:30	**Asymptotic Expansion of the Maxwell Integral Equation Formulation Applied to Eddy Current Testing (87)** Marc Bonnet, Edouard Demaldent and Audrey Vigneron
09:30 – 09:50	**A Level Set Method for Magnetic Induction Tomography of Boxes in 3D (14)** Oliver Dorn and Alex Hiles

Keynote	
10:10 – 10:40	**Product Uniformity Control – A research collaboration of European steel industries to non-destructive evaluation of microstructure and mechanical properties** Frenk van den Berg

Oral session: Material Characterization I **Chairs:** Antonello Tamburrino and Toshiyuki Takagi	
10:40 – 11:00	**RESTMAB: a Self Calibrating NDT Method for Determining Micro Residual Stresses (52)** Meisam Amiri, Matthias Thielen, Christian Boller, Klaus Szielasko and Michael Marx
11:00 – 11:20	**Influence of the Plastic Deformation on Magnetic Properties of Austenitic Steels (39)** Milan Smetana, Vladimir Chudacik, Klara Capova and Peter Palcek
11:20 – 11:40	**EM Sensor System for Characterisation of AHSS Steels (50)** Mohsen Aghadavoudi, Jialong Shen, Lei Zhou and Claire Davis
11:40 – 12:00	**Development of Fast Modal Solutions For Ferromagnetic Material Evaluation Applications (72)** Anastassios Skarlatos and Theodoros Theodoulidis

Oral session: High frequency applications II

Chairs: Zhenmao Chen and Gui Yun Tian

13:20 – 13:40	**Computational Modeling and Imaging of Damaged Fibered Laminates from Low Frequency to Resonance (29)** Zicheng Liu, Changyou Li, Dominique Lesselier and Yu Zhong
13:40 – 14:00	**Linear Sampling Method for Localizing Small Anomaly in Microwave Imaging (4)** Won-Kwang Park
14:00 – 14:20	**Applicability Evaluation of Microwaves for Detecting Corrosion under Insulation (8)** Takuya Katagiri, Kota Sasaki, Noritaka Yusa and Hidetoshi Hashizume
14:20 – 14:40	**Metamaterial Based Lens for NDE of Composites (10)** Saptarshi Mukherjee, Yiming Deng, Mahmoodul Haq, Lalita Udpa, Satish Udpa and Antonello Tamburrino
14:40 – 15:00	**Nondestructive Evaluation of Hardening Degree of Epoxy Resin in CFRP with Eddy Current Testing (68)** Hiroyuki Kosukegawa, Rie Yamada, Noriyuki Sato, Keisuke Ura and Toshiyuki Takagi
15:00 – 15:20	**Rapid Electromagnetic Material Characterization of Composites (82)** Carlo Forestiere, Giovanni Miano, Guglielmo Rubinacci, Antonello Tamburrino, Roberto Tricarico and Salvatore Ventre

15:20 – 16:40 Poster session I

Chairs: Noritaka Yusa and Denis Prémel

Contribution to the Contactless Determination of a Subsoil Parameters (100)

Peter Fabo, Dagmar Faktorov, Adriana Savin, Nicoleta Iftimie and Rozina Steigmann

Influence of Magnetic Forces and Magnetostriction on the Vibration Behavior of an Induction Motor (51)

Sabin Sathyan, Anouar Belahcen, Ugur Aydin and Juhani Kataj

Sensitivity Analysis Using a Sparse Grid Surrogate Model in Electromagnetic NDE (56)

Arnold Bingler and Sándor Bilicz

Fast Models Dedicated to Simulation of Eddy Current Thermography (96)

Almpion Ratsakou, Christophe Reboud, Anastassios Skarlatos and Dominique Lesselier

Probe Based on Magnetoresistive Sensors for Magnetic Micro-Imaging and NDT (58)

Fawaz Hadadeh, Natalia Sergeeva-Chollet, Elodie Paul, Myriam Pannetier-Lecoeur and Claude Fermon

Advances in Modelling the ECT of U-Bend Steam Generator Tubes by the Boundary Element Method (88)

Edouard Demaldent, Christophe Reboud, Frédéric Nozais, Thierry Sollier and Gérard Cattiaux

Design of UHF Antenna Insensitive to Concrete Characteristics (28)

Théo Richard, Mohamed Latrach, Amine Ihamouten, Hartmut Gundel, Xavier Derobert and Caroline Borderon

Characterization of Different Kinds of Ceramic-Matrix-Composites Using High-Frequency Eddy Current Techniques (9)

Susanne Hillmann, Martin Schulze, Mykhailo Kyrychenko and Henning Heuer

Barkhausen Noise Behaviors of Deformed Low Carbon Steel During Heat Treatment (25)

Hiroaki Kikuchi, Hirotoshi Sodekawa, Kohei Takekawa and Fumiya Ito

Depth Crack Evaluation Using an Uniform Field Probe with GMR Sensors (85)

Artur Lopes Ribeiro, Dario Pasadas, Helena Ramos and Tiago Rocha

A Multi-Frequency EM Scanning Instrument for Weld and Crack Imaging (31)

Wuliang Yin

Multi-Sensor Prediction of Delamination Growth in GFRP Composites (42)

Portia Banerjee, Mahmood Haq, Lalita Udpa and Yiming Deng

Pulsed Eddy Current for Minor Resistivity Difference Measurement (46)

Chaofeng Ye, Zhiyi Su, Anders Rosell, Lalita Udpa, Satish Udpa and Antonello Tamburrino

Characterization of Corrosion Backside of Steel Plates Using Extremely Low-Frequency Eddy Current Testing with Multiplex Frequency Magnetic Field Exposure (19)

Tsuyoshi Goda, Yuta Haga, Takuya Tomioka, Kenji Sakai, Toshihiko Kiwa and Keiji Tsukada

Tri-Axis Tri-Dimensional Super High Definition Detection Technology of Pipeline Circumferential Excitation Magnetic Flux Leakage (65)

Bin Liu, Zhujun Wang and Lijian Yang

Eddy Current Transducer with Rotating Permanent Magnets (97)

Tomasz Chady and Ireneusz Spychalski

Continuous Wave and Pulse Wave Electromagnetic Acoustic Resonance for the Measurement of Pipe Wall Thickness (49)

Hongjun Sun, Ryoichi Urayama, Mitsuo Hashimoto, Fumio Kojima, Tetsuya Uchimoto and Toshiyuki Takagi

Detection of Inclined Crack in Pipeline Through Electromagnetic Helmholtz-Coil Probe (44)

Jiuhao Ge, Wei Li, Guoming Chen and Xinan Yuan

Detection and Evaluation of Weld Cracks in Stainless Steel Sheet Using a U-Shaped ACFM Probe (48)

Wei Li, Weiping Ma and Pan Qi

Metamaterials Application in Biological Tissue Characterization (26)

Adriana Savin, Nicoleta Iftimie, Rozina Steigmann, Katarna Istenkov, Dagmar Faktorov and Peter Fabo

Three-Dimensional Operational Modal Analysis Based on Self-Iteration Principal Component Analysis (11)

Tianshu Zhang and Cheng Wang

Analysis of Stress Influence on Metal Magnetic Memory Signal (70)

Hongmei Li

Surface Smoothing Method Based on Debonding Defects Identification for Lattice Sandwich Plate (81)

Shuxia Tian, Zhenmao Chen, Jianglei Fan, Wenliao Du and Dehai Zhang

Oral session: Eddy current testing **Chairs:** Artur Ribeiro and Theodoros Theodoulidis	
16:40 – 17:00	**COFREND Working Group in Eddy Current Modeling - Activities in Benchmarking (94)** Thierry Sollier, François Deneuville and Adrien Trillon
17:00 – 17:20	**Eddy Current System for Clad Pipe Inspection (61)** Cesar Camerini, João Marcos Rebello, Rafael Wagner Santos, João Marcio Santos, Tomasz Chady and Gabriela Pereira
17:20 – 17:40	**Fabrication of Imitative Stress-Corrosion Cracks for Electromagnetic NDE Using Synchrotron Deep X-Ray Lithography and Powder Metallurgy Processing (35)** Cherdpong Jomdecha, Wenlu Cai, Shejuan Xie, Zhenmao Chen, Isaratat Phung-On and Rungrueang Pattanakul
17:40 – 18:00	**Improved Electromagnetic Techniques for Sub-Surface Non-Destructive Evaluation (79)** Purna Chandra Rao Bhagi

Detailed program: Friday 8th

Oral session: Instrumentation II **Chairs:** Tomasz Chady and Fumio Kojima	
08:30 – 08:50	**Eddy Current Testing System with TMR Sensor Array for Inspection of Inner-Wall Cracks in Aluminum Tube (43)** Xin'An Yuan, Wei Li, Guoming Chen, Xiaokang Yin and Jiuhao Ge
08:50 – 09:10	**CIHaS Magnetic Camera, Beginning of the 4th Generation Eddy Current Testing (7)** Jinyi Lee and Jungmin Kim
09:10 – 09:30	**Enhancements of a Probe for Velocity Induced Eddy Current Inspection (86)** Helena Maria Ramos, Tiago Jorge Rocha and Artur L. Ribeiro
09:30 – 09:50	**Eddy Current Testing of Copper Alloy Combustion Chamber of Rocket Engine (93)** Tetsuya Uchimoto, Kazuhiro Nakajima, Toshiyuki Takagi, Eiichi Sato, Mitsuharu Shiwa, Shusuke Hori and Masao Takegoshi

Keynote	
10:10 – 10:40	**Intrinsic Modeling and Inversion of Ultra Wideband Microwave Radar Data for Nondestructive Testing of Soils and Materials** Sébastien Lambot

Oral session: Low frequency inversion

Chairs: Sébastien Lambot and Dominique Lesselier

10:40 – 11:00	**Resonance-Based Eddy-Current Inspection and Defect Characterization in Alloys with Fast Modeling (54)** Yew Li Hor, Yu Zhong, Christopher Lane, Viet Phuong Bui and Ching Eng Png
11:00 – 11:20	**Comparison of Time- and Frequency-Domain Analysis Performances in Swept Frequency Eddy Current Testing (84)** Luigi Ferrigno, Marco Laracca, Marco Ricci, Giuseppe Silipigni and Gui Yun Tian
11:20 – 11:40	**Evaluation of Electrical Conductivity of Metals via Monotonicity of Time Constants (30)** Zhiyi Su, Chaofeng Ye, Gaspare Giovinco, Salvatore Ventre, Lalita Udpa and Antonello Tamburrino
11:40 – 12:00	**B-Spline Sparse Grids for Eddy-Current Testing Inverse Problems (38)** Sándor Bilicz and József Pávó

Oral session: Material characterization II

Chairs: Frenk van den Berg and Yiming Deng

13:20 – 13:40	**Characterization and Modeling of Magnetic Barkhausen Noise Envelope under both Magnetic and Mechanical Stress Excitation (24)** Bhaawan Gupta, Benjamin Ducharne, Gael Sebald, Tetsuya Uchimoto and Yoann Herbrard
13:40 – 14:00	**Restoration of Obliterated Engraved Marks on Metallic Surface by Magneto-Optic Imaging and Chemical Etching (47)** Mariana Gaudencio, Clara Pacheco, Paloma Mineiro, Maria Nobrega and Gabriela Pereira
14:00 – 14:20	**New Sensor Development for Barkhausen Noise Technique (15)** Ulana Cikalova, Susanne Hillmann, Hendrik Funke, David Brosius and Claudius Birkefeld
14:20 – 14:40	**Combination Effect of Plastic Deformation and Fatigue Loads on Electromagnetic Properties for 304 Austenitic Stainless Steel (64)** Shejuan Xie, Lei Wu, Zongfei Tong, Hong-En Chen, Zhenmao Chen, Tetsuya Uchimoto and Toshiyuki Takagi
14:40 – 15:00	**A Rotational Single Sheet Tester Device (67)** Ugur Aydin, Paavo Rasilo, Anouar Belahcen, Floran Martin, Deepak Singh and Antero Arkkio
15:00 – 15:20	**Nondestructive Evaluation of Mechanical Properties of Cast Iron by Magnetic Incremental Permeability Method (66)** Takanori Matsumoto, Tetsuya Uchimoto, Toshiyuki Takagi, Gabor Vertesy, Hidehiko Kage and Gerd Dobmann

15:20 – 16:40 Poster session II

Chairs: Roberto Miorelli and Yiming Deng

Experimental Evaluation of a Flexible Eddy Current Sensor Pattern to Detect Burning Area in Ferromagnetic Material (41)

Jean-Marc Decitre, Benjamin Delabre and Le Bihan Yann

Fast Characterization of Multiple Cracks in Conductive Media Based on Adaptive Feature Extraction and SVR (80)

Shamim Ahmed, Roberto Miorelli, Christophe Reboud, Pierre Calmon, Nicola Anselmi and Marco Salucci

Characterization of Materials by Electromagnetic Non-Destructive methods (57)

Henri Walaszek and Fan Zhang

Time Domain Finite Element Modelling of Pulsed Meander Coil Electromagnetic Transducer (75)

Dhayalan Ratnam, Anish Kumar and Purna Chandra Rao Bhagi

Damage Measurements on Roll Bearings Using Barkhausen Noise and Alternative Electromagnetic Methods (16)

Ulana Cikalova, Susanne Hillmann and Jürgen Schreiber

Localisation of a Dielectric Inclusion Using Inductive RF Antennas and Artificial Neural Network (34)

Mengze Wang, Thi Hong Nhung Dinh, Stéphane Serfaty, Dominique Placko and Pierre-Yves Joubert

Analysis of the Effect of the Velocity and the Frequency on Motion-induced Eddy Currents (69)

Yuedong Xie and Wuliang Yin

Micromagnetic Measurement for Ferromagnetic Material Microstructural Properties Characterization (74)

Xiaodong Shi, Shuo Zhang and Yiming Deng

Measurement of Plating Thickness with High Liftoff by Eddy Current Testing (55)

Keisuke Moriyasu, Daigo Kosaka, Kazuhiko Kakishita, Mitsuo Hashimoto and Fumio Koyama

Thickness Measurement Using Extremely Low Frequency Eddy Current Testing via TMR Sensor Operated With AC Modulation (12)

Yatsuse Majima, Yoshihiro Nakamura, Kenji Sakai, Toshihiko Kiwa and Keiji Tsukada

Moisture Measurement for Green Civil Engineering Materials Using Dielectric Spectroscopty (77)

Eric Vourc'H, Thierry Bore, Abdelhatif El Fellahi, Mehdi Ferhat, Farid Benboudjema and Kamilia Abahri

Adaptive Image Reconstruction Algorithm for Electrical Capacitance Tomography (91)

Yan Wang and Hua Yan

Using Hybrid Algorithms to Solve Inverse Problem in Electrical Tomography to Examine Dampness in Buildings (21)

Tomasz Rymarczyk, Paweł Tchórzewski and Jan Sikora

Design and Development of RFID Sensors and Applications (95)

Guiyun Tian and Marco Ricci

Long-range Inspection of a Crack on the Inner Surface of a Pipe Using Microwaves (3)

Kota Sasaki, Takuya Katagiri, Noritaka Yusa and Hidetoshi Hashizume

Magnetic Sensor Development for Detection of Low Carburization in HP Steels Reformer Tubes (45)

Juan Lopez, Clara Pacheco, Luiz De Almeida, Laudemiro Nogueira, Carlos Eckstein, João Rebello and Gabriela Pereira

Positive and Negative Variations in Capacitive Images for Given Defects under Various Experimental Conditions (59)

Xiaokang Yin, Wei Li and Guoming Chen

Three-Dimensional Reconstruction of Deep Lying Defects from ECT Response Signals (40)

Lukas Behun, Milan Smetana and Klara Capova

A New MFL Testing Sensor Based on Local Micro Magnetization (5)

Shiwei Liu, Yanhua Sun, Wenjia Ma, Zhiyang Deng and Lingsong He

Discussion on the Ill-Posedness of Quantitative Evaluation of Stress Corrosion Cracking Using Eddy Current Signals (83)

Li Wang

New Electromagnetic Acoustic Transducers Development and Application (62)

Cuixiang Pei, Siqi Zhao, Tianhao Liu and Zhenmao Chen

C3D-CND: a simulation tool dedicated to Eddy Current Non Destructive Evaluation (101)

Pierre Thomas, Benjamin Goursaud and Eilin Guillot

Oral session: Time domain methods **Chairs:** Christophe Reboud and BPC Rao	
16:40 – 17:00	**Imaging of External Corrosion in Nonmagnetic Pipes via GPEC (27)** Yong Li, Bei Yan, Zhenmao Chen, Wenjia Li and Shuting Ren
17:00 – 17:20	**A Model to Predict the Electromagnetic and Magnetostrictive Sources Induced by EMAT in Nonlinear and Mechanically Stressed Magnetic Materials (71)** Bastien Clausse, Alain Lhémery and Henri Walaszek
17:20 – 17:40	**Void Detection of Steel Products for Process Monitoring System using Electromagnetic Acoustic Transducer (6)** Fumio Kojima and Naoyuki Kubota

COMING TO DIGITEO SACLAY

BY ROAD

CEA SACLAY DIGITEO LABS
Bât. 565
91191 GIF-SUR-YVETTE CEDEX
Tél : +33 (0)1 69 08 08 00

GPS
N 48°43' 38.54"
E 02°09' 24.54"

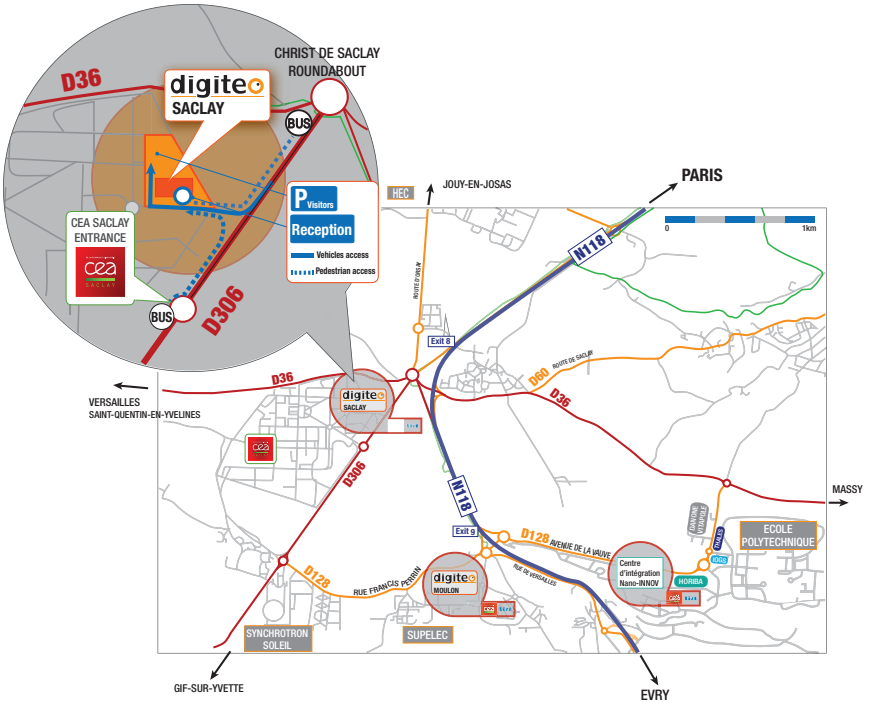
From Paris

➔ **By N118 via Pont de Sèvres**

Follow the N118 Nantes/Bordeaux to exit 8 (Saclay/Gif -sur-Yvette); at the roundabout, take the 3rd exit (RD 306) towards Gif-sur-Yvette; after 400m, turn right.

➔ **By A6 via Porte d'Orléans or Porte d'Italie**

Take A6a then follow E5/E50/Palaiseau/Étampes/Bordeaux/Nantes/Massy/Longjumeau; exit left towards D444/Versailles / Igny / Bièvres, join A126 then continue on D36 until Christ de Saclay roundabout; take the 4th exit (RD 306) towards Gif-sur-Yvette; after 400m, turn right.



BY PUBLIC TRANSPORT

➔ From Roissy-CDG or Paris : **RER B** (direction Saint-Rémy-les-Chevreuse) to "Le Guichet" station then Mobicaps bus line 9 towards Gare de Jouy-en-Josas, "INSTN - CEA/Saclay RN 306" station.
➔ From Orly : **bus line 91.10** (Orly ►► Massy ►► Saclay), "CEA Porte 306 (Saclay)" station.
➔ From Massy-Palaiseau station (**TGV or RER**) : **bus lines 91.06 B** (Massy ►► Saint-Quentin-en-Yvelines), or **91.06C** (Massy ►► Moulon ►► Saclay (Christ)), "CEA Porte 306 (Saclay)" station.

Student prizes

Students on condition of being first authors and attending the Workshop will be proposed to run for the best presentation. A prize will be awarded to each student being first author of one of three selected contributions. The jury keeps the right to select a lesser number of presentations.

Gala dinner

The gala dinner will be held at Domaine de Saint Paul, which is located in Saint-Rémy-lès-Chevreuse. Bus transportation from the conference site will be organized. Attendees lodged at the Hôtel d'Orsay will benefit of bus transportation back. If needed, the Domaine de Saint Paul can also be accessed using public transports and taxi.

SA Domaine de Saint-Paul
Direction Services Généraux
administration@domainestpaul.fr

Bâtiment 12 102 Route de Limours
78471 Saint-Rémy-lès-Chevreuse CEDEX
Phone: 00 33 1 30 85 22 00

SPONSORS OF THE WORKSHOP