

ENDE 2025 Conference Schedule (Updated Draft June 6, 2025)

Sunday July 6

5:00 PM Registration Open
6:00PM - 8:00 PM Opening Reception

Monday July 7

8:00 AM Registration Open

Keynote Talk #1: Practical Use of Models for Quantitative Eddy Current Nondestructive Evaluation (NDE) of Aerospace Materials and Structures
 John Aldrin, Principal, Computational Tools

Session 1A1: Terahertz and Eddy Current Applications | Chair Junliang Dong

	Abstract	Authors
9:00 AM AN ANALYTICAL SOLUTION FOR A COIL OUTSIDE A MULTIPLAYER PIPE IN EDDY CURRENT TESTING PROBLEM USING CHENG MATRIX METHOD	1991	Jiuhao Ge - Fei Xu
9:20 AM Efficient evaluation of localized metal losses in pipelines with large-thickness coating based on pulsed eddy current testing technique	2055	Jizhou Zhang - Shejuan Xie - Zhenmao Chen
9:40 AM INFLUENCE OF PLY ORIENTATION ON EDDY CURRENT BEHAVIOUR IN CFRPs USING INDUCTIVE COUPLING	2058	Atul Sharma - Robert Hughes
10:00 AM TERAHERTZ IMAGING FOR NONDESTRUCTIVE EVALUATION	2094	Junliang Dong
10:20 AM BREAK		

Session 1A2: AI and Machine Learning | Chair Matt Cherry

10:40 AM SHAPE ESTIMATION OF RECTANGULAR PERIODIC ROUGH SURFACES USING ULTRASONIC SIMULATION DATA	2052	Kotaro Fujii - Hiroyuki Nakamoto - Philippe Guy - Tetsuya Uchimoto
11:00 AM Overcoming Data Challenges in Heat Exchanger Tube Inspection with AI-Driven Tools	2061	Etienne Drouin-Provençal
11:20 AM Using 2.5D Super-Resolution to Improve Defect Detection in Steel Additively Manufactured Parts	2081	Haley Duba-Sullivan - Obaidullah Rahman - Singanallur Venkatakrishnan - Amirkoushyar Ziabari
11:40 AM A DATA EFFICIENT SPARSE MODELING FRAMEWORK FOR POWER ESTIMATION IN WATER TREATMENT SENSING OPERATIONS	2099	Subrata Mukherjee - Kris Villez - Alexander Melin

12:00 PM - 1:00 PM LUNCH

Session 1P1: Material State Awareness

1:00 PM Magneto-elastic interactions in iron-silicon single crystals: influence of tensile stress on magnetization, magnetostriction, and Barkhausen noise	2037	Benjamin Ducharme
1:20 PM DETECTION OF WELD LINE IN STEEL TUBES BASED ON EDDY CURRENT TESTING	2059	Dario J. Pasaddas - Prashanth Baskaran - Lian Xie - Mohsen Barzegar - Helena Ramos - Artur Ribeiro
1:40 PM Nondestructive Residual Stress Measurement of Deep Rolled Nickel Superalloys	2077	Jakob Lotfering - Martin Schulze - Till Schulze - Markus Meurer - Henning Heuer - Thomas Bergs
2:00 PM Rapid Time-Resolved 3D Characterization of Printing Flaws in LPBF Ni-282 During Creep	2079	Rahul Franklin - Obaidullah Rahman - Holden Hyer - Sebastien Dryepondt - Amirkoushyar Ziabari
2:20 PM PREDICTING COMPRESSIVE STRENGTH OF CONCRETE WITH SYNTHETIC APERTURE RADAR IMAGES	2089	Tzuyang Yu
2:40 PM Eddy Current Characterization of Microtexture Region Orientation in Titanium Alloys	2095	Matt Cherry - Laura Homa - John Wertz - Michael Rogers
3:00 PM BREAK		

Session 1P2: ECT and Magnetometry I

3:20 PM RESIDUAL STRESS DISTRIBUTION ANALYSIS WITH A NEW NEEDLE PROBE SETUP	2039	Patrick Fagan - Abdellahi Abderahmane - Mathieu Domenjoud - Laurent Daniel
3:40 PM Omnidirectional Eddy Current Imaging Technique With Phase-Amplitude Controlled Array	2098	Lei Peng - Na Zhang - Yiming Deng
4:00 PM A Pot-Cored Sensor for Advanced Corrosion Detection and Characterization	2022	Antonello Tamburrino - Alessandro Sardelli - Marco Laracca - Filippo Milano - Luigi Ferrigno - Gui Yun Tian
4:20 PM AN ECT PROBE COMPRISING TWO CIRCULAR ARRAYS OF TMR SENSORS FOR THE INSPECTION OF DEFECTS BENEATH RIVETS	2028	Chaofeng Ye - Chenzhi Zhang - Yu Tao - Yang Wang

Tuesday July 8

8:00 AM Registration Open

Keynote Talk #2: TBD

Ahmed Hassen, Group Lead, Composites Innovation, ORNL

Session 2A1: Modeling and Characterization I | Chair Matthew Newton

9:00 AM	Statistical Assessment of Inversion Robustness for Hysteresis Characterisation Using Harmonic Distortion Measurements	2104	Anastassios Skarlatos
9:20 AM	Modeling of the inter-layer resistance in carbon fiber reinforced plastic laminates to calculate eddy-current probe signal	2054	Sandor Bilicz - Arnold Bingler - Tetsuya Uchimoto - Jozsef Pavo
9:40 AM	Robust eddy-current transient calculations using a z-transform approach	2087	Anastassios Skarlatos
10:00 AM	A study of pinning effect on Barkhausen noise and hysteresis loop based on modified Ising model	2083	Hongen Chen - Zhijun Wang - Xin Wang - Xueyuan Chen - Shejuan Xie - Zhenmao Chen
10:20 AM	BREAK		

Session 2A2: Modeling and Characterization II | Chair Helena Ramos

10:40 AM	Interpolation-Based Analytical inversion for Stress Characterization in Ferromagnetic Materials	2049	Abdellahi Abderahmane - Laurent Daniel
11:00 AM	A NUMERICAL MODELLING APPROACH FOR OPTIMAL EDDY CURRENT SENSOR LOCATION IN AEROSPACE WING-SKIN BOLTHOLE INSPECTION	2033	Will Punter - Rob Hughes
11:20 AM	REFORMULATION OF THE DODD & DEEDS MODELS BY USING EIGENFUNCTION EXPANSIONS	2085	Theodoros Theodoulidis - Athanasios Kyrgiazoglou
11:40 AM	THEORETICAL PREDICTIONS OF MAGNETIC FIELD SIGNALS DUE TO A RECTANGULAR COIL IN A TUBE	2084	Artur Ribeiro - Prashanth Baskaran - Dario Pasadas - Helena Ramos

12:00 PM - 1:00 PM LUNCH

Session 2P1: Digital Twins, Data Fusion and Inverse Problems | Chair Ian Gravagne

1:00 PM	Metal artifact reduction in X-ray computed tomography of TRISO fuel compacts	2075	Obaidullah Rahman - William Chuirazzi - Ryan Dehoff - Amir Ziabari
1:20 PM	INVERSION OF CRYSTALLOGRAPHIC TEXTURE IN STEELS FROM MICROSTRUCTURAL MAGNETIC MODELLING AND MEASUREMENTS	2097	Jun Liu - Jun Liu - Yating Li - Claire Davis - Shuaichao Yue - Yongjian Li
1:40 PM	DATA FUSION APPROACH TO LAYUP CHARACTERIZATION OF CFRP LAMINATES USING ECT, UT, AND CT	2088	Matthew Newton - Rachel Van Lear - Pruthul Ravindranath Kokkada - David Jack - Ian Gravagne
2:00 PM	An Approximation Model for a Yoke Ferrite Core ECT Probe Simulation Using a Hybrid Approach	2070	Athanasios Kyrgiazoglou - Anastassios Skarlatos - Theodoros Theodoulidis
2:20 PM	SIMULTANEOUS ESTIMATION OF ELECTRICAL CONDUCTIVITY, THICKNESS, AND LIFT-OFF OF LAMINATES VIA EDDY CURRENT TESTING	2090	Vincenzo Mottola - Luigi Ferrigno - Marco Laracca - Filippo Milano - Alessandro Sardellitti - Antonello Tamburrino
2:40 PM	ECT THICKNESS MEASUREMENT OF METALLIC PLATES BY A NEW REAL-TIME AND LIFT-OFF INVARIANT METHOD	2091	Antonello Tamburrino - Luigi Ferrigno - Marco Laracca - Filippo Milano - Vincenzo Mottola - Alessandro Sardellitti
3:00 PM	BREAK		

Session 2P2: ECT and Magnetometry II | Chair Will Punter

3:20 PM	DETECTION OF SUBSURFACE DEFECTS IN STEEL TUBES WITH AN EXTERNAL SURFACE FERROMAGNETIC LAYER	2071	Helena Ramos - Prashanth Baskaran - Artur Ribeiro
3:40 PM	Advanced nondestructive detection of grinding burns via NV-center based magnetometry	2035	Benjamin Ducharme
4:00 PM	NOVEL TRANSMISSION UNIFORM EDDY CURRENT TESTING TECHNIQUE FOR INSPECTION OF STAINLESS STEEL CRACKS	2047	Xiangyang Wang - Wei Li - Xin'an Yuan - Xiaokang Yin - Xiao Li - Guoming Chen - Jianchao Zhao - Jianxi Ding - Qinyu Chen
4:20 PM	PULSED MULTIFREQUENCY EXCITATION AND SPECTROGRAM EDDY CURRENT TESTING (PMFES-ECT) METHOD	2082	Tomasz Chaday

6:00 PM - 9:00 PM CONFERENCE BANQUET

Wednesday July 9

Session 3A1: Structural Health Monitoring and Damage Diagnosis | Chair Benjamin Ducharne

9:00 AM	Eddy current experiments for monitoring sub-surface temperature dynamics: towards an in-situ metal additive manufacturing diagnostic	2109	Saptarshi Mukherjee - Ethan Rosenberg Edward Benavidez - Peng Lei - Yiming Deng - David Stobbe - Joseph W. Tringe
9:20 AM	A novel defect detection method for multilayered structures based on EMPECT and high-order statistical analysis	2053	Shuyan Yang - Shejuan Xie - Zhenmao Chen
9:40 AM	Feasibility of electrical impedance tomography for defect monitoring in graphite for microreactors	2092	Anant Raj - Brandon Schreiber - Pradeep Ramuhalli - Christian Petrie
10:00 AM	Advanced Surface Fitting Model of Monocular Underwater Laser Scanning	2078	Jicen Hu - Yiming Deng

10:20 AM BREAK

Session 3A2: Advanced Sensors and Sensing Systems | Chair Saptarshi Mukherjee

10:40 AM	Deep Learning Based Sparse X-ray CT Image Reconstruction of Thick and Complex AM Parts Made of High-Density Nickel Super-Alloys	2086	Amirkoushyar Ziabari - Zackary Snow - Julio Ortega - Vincent Paquit
11:00 AM	Double Modes of Torsional Guided Waves for Locating and Quantifying Cracks in Riser Using Electromagnetic Acoustic Transducer	2100	Jianlei Liu - Yanting Zhang - Wei Li - Xiao Li - Xiaokang Yin - Xin'an Yuan
11:20 AM	Spatial Light Path Analysis and Calibration Method for Underwater Structured Light Vision System	2103	Xingpei Chen - Wei Li - Xiao Li - Xin'an Yuan - Xiaokang Yin
11:40 AM	Domain wall activity and magnetic losses under rotational magnetization: classical and Barkhausen noise hysteresis cycles	2076	Benjamin Ducharne - Florian Martin - Anouar Belahcen

12:00 PM - 5:30 PM ORNL Tour Departs at 12:30 PM, box lunch provided. ** Pre-registration REQUIRED **