

**27th International Workshop on
Electromagnetic Nondestructive Evaluation (ENDE-2024)
March 4-6, 2024, Mamallapuram, TN, India
Ideal Beach Resort, Grand Pavilion**

Technical Schedule	
Day-1	4th March 2024 (Monday)
14:00 – 15:00	Registration
15:00 – 16:00	Inauguration
16:00 – 16:30	Inauguration of Stalls followed by High Tea
16:30 – 18:00	Plenary Session – I Session Chair: Prof. Walter Arnold
18:00 – 18:30	Visit to Stalls
18:30 – 19:15	‘A Cosmic Grandeur’ - Indian Classical Dance by Devaniya Group, Chennai
19:30 – 22:00	Welcome Dinner at the Beach Deck, Ideal Beach Resort, Mamallapuram

Day-2	5th March 2024 (Tuesday)
09:30 – 11:15	<u>Session-1: Modelling and Simulation</u> Session Chair: Dr. S. Thirunavukkarasu, IGCAR, Kalpakkam
11:15 – 11:30	Tea Break
11:30 – 13:00	Plenary Session - II Session Chair: Dr. R. Divakar, IGCAR, Kalpakkam
13:00 – 13:45	Lunch Break
13:45 – 15:15	<u>Session-2: Material Characterisation</u> Session Chair: Dr. S. Mahadevan, IGCAR, Kalpakkam
15:15 – 16:00	<u>Session-3: Special Online Session</u>
16:00 – 16:15	Tea Break
16:15 – 18:00	<u>Session-4: Nuclear Applications</u> Session Chair: Dr. Anish Kumar, IGCAR, Kalpakkam

Day-3	6th March 2024 (Wednesday)
09:30 – 11:15	<u>Session-5: Inverse Problems and Image Processing</u> Session Chair: Dr. Christophe, Reboud, CEA, France
11:15 – 11:30	Tea Break
11:30 – 13:30	<u>Session-6: Industrial Applications</u> Session Chair: Mr. Arbind Kumar, BARC, Mumbai
13:30 – 14:15	Lunch Break
14:15 – 15:45	<u>Session-7: Advanced ENDE Sensors Novel applications</u> Session Chair: Dr. John Philip, IGCAR, Kalpakkam
15:45 – 16:00	Tea Break
16:00 – 17:00	<u>Session-8: Microwave and Terra Hertz Imaging</u> Session Chair: Prof. Kavitha Arunachalam, IITM, Chennai
17:00 – 18:00	<i>Valedictory Session</i>

Detailed Technical Schedule

Day-1		4 th March 2024 (Tuesday)
16:30 – 18:00		Plenary Session – I
PL-01	16:30-17:15	<i>Role of Eddy Current Examination in Structural and Fuel Cladding Tubes for Nuclear Applications</i> Dr. Komal Kapoor , CE, Nuclear Fuel Complex, Hyderabad
PL-02	17:15-18:00	<i>Use of Artificial Intelligence for NDT Application</i> Dr. Christophe Reboud , Head, Simulation and Artificial Intelligence Service, CEA, France

Day-2		5 th March 2024 (Tuesday)
09:30 – 11:15		Session-1: Modelling and Simulation
S1-KL-01	9:30-10:00	<i>Interdependent Dynamics of Data, Model and Learning in Uncertainty Quantification for Nondestructive Evaluation: A New UQ Framework</i> Yiming Deng (KL-05)
S1-CP-01	10:00-10:15	<i>Exploring Pulsed Eddy Currents: A Finite Element Approach for Defect Detection in Multilayer Structures</i> Chinmay Bera, Vinod Belwanshi, Sarmishtha Palit Sagar and Tarun Kr. Das (CP-16)
S1-CP-02	10:15-10:30	<i>Approximation Models for Accounting the Yoke Effect in Eddy-Current Simulations</i> Anastassios Skarlatos, Athanasios Kyrgiazoglou and Theodoros Theodoulidis (CP-22)
S1-CP-03	10:30-10:45	<i>A Numerical Model of Parallel Disc Capacitor Probe used in Nondestructive Dielectric Permittivity Evaluation by Algebraic Topological Method</i> Arun A.D, M.P. Rajiniganth, Sharat Chandra and S. Thirunavukkarasu (CP-03)
S1-CP-04	10:45-11:00	<i>Semi-Analytical Simulation of Eddy Current Testing Inspections by means of Convergent Born Series</i> Christophe Reboud and Anastassios Skarlatos (CP-11)
S1-CP-05	11:00-11:15	<i>Impact of Conductivity and Magnetic Permeability on Induced Eddy Current for a Composite of Magnetic and Non-Magnetic Material: A Simulation Study</i> Vinod Belwanshi, Tarun Kr. Das, Chinmay Bera, Prem Kumar Das and Sarmishtha Palit Sagar (CP-09)
11:15 – 11:30		Tea Break

Day-2		5 th March 2024 (Tuesday)
11:30 – 13:00		Plenary Session-II
PL-03	11:30-12:15	<i>Characterisation of coatings using IR and THz</i> Prof. Krishnan Balasubramainam, IIT Madras, Chennai
PL-04	12:15-13:00	<i>Future Directions in Non-destructive Materials Characterization (NDMC) by Electromagnetic Techniques</i> Prof. Walter Arnold, Saarland University, Saarbrücken, Germany
13:00 – 13:45		Lunch Break

13:45 – 15:15		Session-2: Material Characterization
S2-CP-01	13:45-14:00	<i>Continuous Eddy-Current Monitoring of Fatigue Degradation in an Unnotched Steel Specimen</i> Anastassios Skarlatos, Christian Boller, Viktor Lyamkin, Bharath Kumar Reddy, Gerd Dobmann, Srinivasa Raghuraman and Peter Starke (CP-21)
S2-CP-02	14:00-14:15	<i>Investigation on the Effect of TiB₂ Nanoparticles on the Electrical Conductivity of Al-TiB₂ Nanocomposites</i> Suresh Kumar J and Deva Priya (CP-25)
S2-CP-03	14:15-14:30	<i>Ferromagnetic Steel Surface Treatment Assessment from Magnetic Signatures</i> Benjamin Ducharne (CP-17)
S2-CP-04	14:30-14:45	<i>Investigation of Surface Microhardness Variations on Induction Hardened Gear Shafts using Sweep Frequency Eddy Current Testing</i> A.R. Arjun, B. Sasi and Anish Kumar (CP-08)
S2-CP-05	14:45-15:00	<i>In-Situ Measurement of Tensile Deformation-Induced Magnetic Fields in High Strength Low Alloy Steels using GMR Sensor Based Metal Magnetic Memory Technique</i> W. Sharatchandra Singh, T. K. Haneef, S. Thirunavukkarasu and Anish Kumar (CP-14)
S2-CP-06	15:00-15:15	<i>Magnetic Barkhausen Emission as a Tool to Nondestructively Characterize AISI410 Stainless Steel</i> K.V. Rajkumar, S. Mahadevan, C.R. Das and Anish Kumar (CP-35)

Day-2		5 th March 2024 (Tuesday)
15:15 – 15:45		Session-3: Special Online Session
S3-CP-01	15:15-15:30	<i>In-Motion RCF Damage NDE: A Hybrid Approach Combining Motion-Induced Eddy Current and Electromagnetic Acoustic Transducers</i> Zebadiah Miles, Zi Li, Yufei Chu, Lei Peng, Takuma Tomizawa, Farzia Karim, Tarun Das, Bruce Maxfield, Ming Han, Lalita Udpa, Anish Poudel, S.K. Chakrapani, and Yiming Deng (CP-18)
S3-CP-02	15:30-15:45	<i>Enhancing CFRP Delamination Detection: A Bayesian Neural Network Approach Integrating Spatial and Temporal Information</i> Valentin Noel , Thomas Rodet and Dominique Lesselier
15:45 – 16:00		Tea Break

16:00 – 17:45		Session-4: Nuclear Applications
S4-KL-01	16:00-16:30	<i>Development and Application of Eddy Current Testing for Wall Thickness Measurement of Small Diameter Thin Wall Metallic Tube</i> Arbind Kumar (KL-03)
S4-KL-02	16:30-17:00	<i>Experiences on ECT for Steam Generator and Heat Exchanger Tubes & Other Applications</i> M.B. Jadhav (KL-06)
S4-CP-01	17:00-17:15	<i>Detection of Onset of Boiling in Sodium</i> M. P. Rajiniganth , N. Malathi and M. Sivaramakrishna (CP-06)
S4-CP-02	17:15-17:30	<i>In-Situ Hardness Evaluation of Hard Faced Coatings Through Eddy Current Technique</i> B. Sasi , Chittaranjan Das, S. Thirunavukkarasu and Anish Kumar (CP-07)
S4-CP-03	17:30-17:45	<i>Ex Vessel Sodium Level Detection using Mutual Induction-Based Electromagnetic Probe</i> Sarat Kumar Dash , Venkatesan N, Sabari Kumar R, Vijay Sharma, Prashant Sharma, Chandramouli S, Babu B And Sreedhar B. K. (CP-12)

Day-3		6 th March 2024 (Wednesday)
09:30 – 11:15		Session-5: Inverse Problems and Image Processing
S5-CP-01	09:30-09:45	<i>Implicit Data Fusion Between GPR Signals and IR Images Through Multimodal Transformers</i> Shuaib Ahmed (CP-33)
S5-CP-02	09:45-10:00	<i>Image Fusion of Magnetocardiogram (MCG)-Magnetic Field Maps and CT-Chest for Functional Mapping</i> S Sengottuvel, S. Shenbaga Devi, M. Sasikala, Santhosh Satheesh and Raja J Selvaraj (CP-26)
S5-CP-03	10:00-10:15	<i>Automated Detection of Defect Features from Eddy Current Inspection Data Using Machine Learning</i> S. Thirunavukkarasu, Anish Kumar, John Paul Martin, Harini T, Shilpa Emil, Sudheer Reddy and Chandramandra Balu (CP-27)
S5-CP-04	10:15-10:30	<i>Simultaneous Classification and Localization of Partial Discharges in Gas Insulated Switchgear using Recurrent Neural Networks</i> Krishna Chaitanya Ghanakota, Sarathi Ramanujam and Kavitha Arunachalam (CP-10)
S5-CP-05	10:30-10:45	<i>Automation and Optimisation of NDT Systems at Nuclear Fuel Complex, Hyderabad</i> Mansi Tayal, M.M. Ahmed, S. Singh, K. Sunder Krishna, S. V. Ramana Rao, B. Kamalesh Kumar and R.K Chaube (CP-30)
S5-CP-06	10:45-11:00	<i>Sweep Frequency Remote Field Eddy Current Technique for Thickness Estimation for Ferritic Steel Tubes</i> S. Thirunavukkarasu and Anish Kumar (CP-01)
S5-CP-07	11:00-11:15	<i>Singular Spectrum Analysis, A Potential Tool to Analyze Eddy Current Signature</i> Soumyakanti Maiti, Aparna C. Sheila-Vadde, Manoj Kumar KM (CP-34)
11:15 – 11:30		Tea Break

Day-3		6 th March 2024 (Wednesday)
11:30 – 13:30		Session-6: Industrial Applications
S6-KL-01	11:30-12:00	<i>Probability of Detection Studies with Eddy Current Array Probes</i> Aparna Sheila-Vadde (KL-04)
S6-KL-02	12:00-12:30	<i>Applications of ENDE Techniques in Thermal Power Plants</i> A.K. Das (KL-02)
S6-CP-01	12:30-12:45	<i>Automated Robotic Array Eddy Current as a Viable Alternative NDE Technique in-lieu of Shearography of Spacecraft Propellant Tank Evaluation</i> Poornima S, Ramprasad B, Ashish Kumar Pande, V D Ragupathy and C Suresh Kumar (CP-05)
S6-CP-02	12:45-13:00	<i>Detection of Subsurface Cracks in Steel Plate Using Transient Eddy Current Oscillations Method</i> B. Yeudasu, P. Manu Sainadh, C.S. Angani (CP-15)
S6-CP-03	13:00-13:15	<i>Field Application of Electromagnetic Methods for In-Situ Assessment of Material Degradation of Super30H Boiler Tubes- Case Study</i> Anil Kumar Das, Avijit Mondal, Ananad Verma, Satish Chand and Sandeep Kumar (CP-20)
S6-CP-04	13:15-13:30	<i>Enhanced POD of Wall Loss Detection in Carbon Steel Tube Under the Support Plate and Near to Tube Sheet by Remote Field Eddy Current Array</i> Subu-Subramanian, Mohammed Alkaabi, Ikesh Patel and David Veilleux, Jitendar Yadav (CP-32)
13:30– 14:15		Lunch Break

Day-3		6 th March 2024 (Wednesday)
14:15 – 15:45		Session-7: Advanced ENDE Sensors and Novel applications
S7-KL-01	14:15-14:45	<i>ENDE of Power Apparatus Using UHF Technology – Current Status and Requirements</i> Kavitha Arunachalam (KL-01)
S7-CP-01	14:45-15:00	<i>Advancement in Remote Field Array Technique for In-Situ Inspection of Ferromagnetic Tubes</i> Sébastien Savard, David Aubé and David Veilleux (CP-02)
S7-CP-02	15:00-15:15	<i>Near-Field Electromagnetic Sensing for Non-Contact Monitoring of Wire Electrical Discharge Machining</i> Kishor Kumar Kachari, Yugandhara Rao Yadam, Ezhil Santhakumar , N. Arunachalam, and Kavitha Arunachalam (CP-04)
S7-CP-03	15:15-15:30	<i>Electromagnetic Acoustic Detection of Defects in Thick Carbon Steel Plates Using High Frequency Guided Waves</i> R. Dhayalan , K.V. Rajkumar and Anish Kumar (CP-13)
S7-CP-04	15:30-15:45	<i>Multichannel Stress Magneto cardiogram Signal De-Noising using Blind Source Separation Method</i> C Kesavaraja, S Sengottuvel, Rajesh Patel and Awadhesh Mani (CP-23)
15:45 – 16:00		Tea Break

16:00 – 17:00		Session-8: Microwave and Terra Hertz Imaging
S8-CP-01	16:00-16:15	<i>Advancements in Terahertz Technology for Non-Destructive Testing Applications</i> Jyotirmayee Dash, Lenin B, Desh Praveen Kumar, Bala Pesala and Shyamsundar Mandyam (CP-31)
S8-CP-02	16:15-16:30	<i>Terahertz Imaging in Transmission Mode Using Terahertz to Thermal Converter,</i> Sharath D , Menaka M and B. Venkatraman (CP-29)
S8-CP-03	16:30-16:45	<i>Inkjet-Printed 2D Electric Field Sensor Array for Microwave NDE of Thin Dielectric Composites</i> Jayaram Kizhekke Pakkathillam , Nitheesh M Nair, Parasuraman Swaminathan and Kavitha Arunachalam (CP-24)
S8-CP-04	16:45-17:00	<i>Robust S-Transform Based Algorithm for SFCW Data Analysis</i> Srinath Patti and Pragyan Patnaik (CP-19)
17:00– 18:00		Valedictory Session