

Scientific Workshop

TITLE: Recent Advances in Antenna Measurement Traceability and Uncertainty at Reduced Distances

ABSTRACT: Measurements in scientific or engineering applications mandate consideration of measurement uncertainty. This workshop's central theme is assessing measurement uncertainty in electromagnetic compatibility and antenna characterization. It highlights innovative techniques for refining electromagnetic field measurement accuracy. Key areas of interest include near-field antenna gain calibrations with spherical near-field techniques and the evaluation of post-processing methods for antenna gain extrapolation. Real-world challenges in industrial antenna calibration underscore the significance of addressing errors induced by the measurement environment, such as reverberation chambers, anechoic chambers, robotic positioning systems, and phaseless near-field detection, particularly in the millimeter-wavelength frequency range.

WORKSHOP OUTLINE

DATE: Friday, March 22, 10:30 to 12:10

- Dennis Lewis, Boeing: Real World Challenges with Antenna Calibration in Industry
- Zhong Chen, ETS-Lindgren: Evaluation/Comparison of Post Processing Techniques for Antenna Gain Extrapolation Measurements
- Olav Breinbjerg, EIMaReCo: High-Accuracy Near-Field Calibration Techniques for Gain Reference Antennas
- David Ulm, PTB: Near-Field Antenna Gain Calibrations Employing Spherical Near-Field Techniques

SHORT CVs OF SPEAKERS

Dennis Lewis, The Boeing Company, received his BS EE degree with honors from Henry Cogswell College and his MS degree in Physics from the University of Washington. He has worked at Boeing in Seattle, Washington, for 35 years and is recognized as a Technical Fellow, leading the enterprise antenna measurement capability for the Boeing Test and Evaluation Electromagnetics group. Dennis holds 12 patents and received the 2013 and 2015 Boeing Special Invention Awards.

Zhong Chen, ETS-Lindgren, Chief Engineer, is located in Cedar Park, Texas. He has over 25 years of experience in RF testing, anechoic chamber design, EMC antenna and field probe



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design and measurements. He is Vice-Chairman of ANSC C63® responsible for the antenna calibration (ANSI C63.5) and chamber/test site validation standards (ANSI C63.4 and ANSI C63.25 series). His interests include measurement uncertainty, time domain measurements for site validation and antenna calibration, and development of novel RF absorber materials. Zhong Chen received his M.S.E.E. degree in Electromagnetics from the Ohio State University at Columbus. *Speaker is a candidate for the EuCAP 2024 Best Measurement Paper Award.*

Olav Breinbjerg received the Ph.D. degree from the Technical University of Denmark (DTU) in 1992. He was on the Faculty of DTU's Department of Electrical Engineering as an Assistant Professor, Associate Professor, and from 2006-2021 as Full Professor. From 1997 to 2021 he was also Head of the Electromagnetic Systems Group and the DTU-ESA Spherical Near-Field Antenna Test Facility, and he founded the DTU Electromagnetic Test Centre. He resigned his position at DTU in May 2021 and founded EIMaReCo for independent research consultancy. Olav Breinbjerg is Fellow of AMTA and IEEE and the 2024-2025 AMTA Distinguished Speaker. *Speaker is a candidate for the EuCAP 2024 Best Measurement Paper Award.*

David Ulm, Physikalisch-Technische Bundesanstalt, studied electrical engineering and information technology at Ostfalia University of Applied Sciences in Wolfenbüttel (Germany) from which he received his B.Eng. degree in 2016. Since then, he has been working as a measurement engineer in the working group Electromagnetic Fields and Antenna Measuring Techniques at Physikalisch-Technische Bundesanstalt, Germany's national metrology institute. His main tasks are the implementation of procedures for the characterization of antennas and electromagnetic field probes as well as the determination of the associated measurement uncertainty.