48th Annual Meeting and Symposium of the Antenna Measurement Techniques Association

PRELIMINARY PROGRAM

Hosted by

ETS·LINDGREN®
An ESCO Technologies Company

Welcome

Welcome to the 48th Annual Meeting and Symposium of the Antenna Measurement Techniques Association (AMTA). On behalf of ETS-Lindgren and the AMTA 2026 Host Committee, it is our pleasure to welcome you to Austin, Texas.

We have organized an exciting week reflecting the best of the AMTA tradition: a world-class technical program, vibrant exhibition, and opportunities to connect with colleagues and exchange ideas. ETS-Lindgren is honored to host the Symposium for the third time, following successful events in 2006 and 2016.

The week begins with AMTA Boot Camp, introducing antenna and measurement fundamentals, and Professor Yahya Rahmat-Samii of UCLA's Short Course, Modern Antenna Measurements and Diagnostics: Principles, Practices, and Emerging Trends. Invited speakers will share perspectives on advances in computational electromagnetics, antenna measurements, and emerging technologies.

Visit the Exhibit Hall, where approximately 30 companies will showcase products and technologies supporting the antenna and wireless measurement community. The week concludes with a technical tour of ETS-Lindgren's global headquarters in nearby Cedar Park.

Our social program offers more opportunities to connect, beginning with Sunday's Welcome Reception. Monday evening features a Lone Star Riverboat cruise on scenic Lady Bird Lake, while companion tours highlight local history, culture, and cuisine.

The Hyatt Regency Austin offers an ideal location for experiencing the city. We hope you'll find time to explore South Congress, enjoy Austin's culinary scene, and experience the Live Music Capital of the World.

Whether you are here to present your work, expand your technical knowledge, discover new technologies, or reconnect with colleagues, we hope your AMTA 2026 experience is rewarding and memorable.

On behalf of the Host Committee and ETS-Lindgren, welcome to Austin. We look forward to an exceptional week together!

Joel Kellogg
ETS-Lindgren

Who is Exhibiting?

The following companies will be exhibiting this year:

Advanced Test Equipment Corp (ATEC)
Albatross Projects
AMTA 2027
Anechoic Solutions
Anritsu
Braden Shielding Systems
Chamber Services, Inc.
Compass Technology Group
CPI Electron Device Business
Delta Sigma Company (DSC)
ETS-Lindgren
Faraday Defense
Hiller Fire Protection
Impulse Technologies, Inc.
Junkosha
Keysight
MVG, the Microwave Vision Group
Next Phase Measurements (NPM)
NSI-MI Technologies
NULLSPACE
Ohmplus Technology
Ophir RF
Orb Instruments
Planar Monolithics
Resonant Sciences
Rohde & Schwarz USA
Samtec, Inc.
Sensor Concepts, a Raptor Scientific Company
Sprinkler Innovations
STAR Dynamics
TDK RF Solutions
TEVET
Virginia Diodes, Inc. (VDI)
WavePro

Future Symposia

2027	San Francisco, CA	Hosted by The Boeing Company
2028	Savannah, GA	Hosted by NSI-MI Technologies
2029	Detroit, MI	Hosted by Oakland University
2030	Dallas, TX	Hosted by Rohde & Schwarz

Symposium Benefits

- High-quality technical papers presented on a continuous basis over four days
- A short course and boot camp led by world-class experts in antenna measurements
- Exhibits showcasing antenna and measurement related products and services
- The latest innovations in antenna and RCS measurements
- Known leading companies related to antenna measurements products and services
- Networking opportunities with industry experts
- A lunch and learn and technical tour showcasing historical programs that benefitted from industry techniques
- Unique social events in and around the Austin, Texas area
- Daytime guest tours to area highlights

Board and Committees

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Spencer Wallentine, STAR Dynamics*

Brendan Wilson, STAR Dynamics

Reza Zeinolabedin, VSEI-AMD*

*In addition, Student Best Paper Committee Member

**In addition, Student Best Paper Committee Chair

About the Hotel - Venue for AMTA 2026

The Hyatt Regency Austin Downtown

208 Barton Springs, Austin, TX 78704
Phone: +1-512-477-1234

Rooms are available at the AMTA group rate of $289 USD plus tax for single or double occupancy, available on a first- come, first-served basis for reservations made by October 1, 2026. This group rate includes guestroom internet service and discounted overnight self-parking of $35.00 per night.

Explore Austin from Our South Congress Hotel Near Downtown
Nestled along the shores of Lady Bird Lake, just across from downtown Austin, our AMTA Host Hotel offers convenient access to South Congress entertainment, Rainey Street nightlife, and the vibrant bars and restaurants of 6th Street. Take a refreshing dip in the Hyatt's newly renovated pool or unwind in one of the private cabanas, all while enjoying spectacular views of the downtown Austin skyline.

Whether you're here to relax, work, or entertain, our hotel rooms and suites provide stunning views of downtown Austin and Lady Bird Lake. Select accommodations feature private balconies, and all rooms are pet-friendly.

Step outside your room and explore the beauty of Lady Bird Lake. Enjoy the scenic hiking and biking trails along the water's edge.

Cypress Grove, the Hyatt's bright and spacious new restaurant, invites you to savor local flavors in a serene lakefront setting. With its elevated position overlooking Lady Bird Lake, the restaurant offers a tranquil atmosphere and showcases the talents of a skilled culinary team, welcoming both guests and locals.

With over 45,000 square feet of flexible event space, the Hyatt Regency Austin is equipped to host everything from grand ballrooms to intimate meeting rooms. Supported by expert meeting planners, a talented catering team, and a prime location near downtown Austin and Austin-Bergstrom International Airport, the AMTA 2026 Host Hotel is the perfect venue for a memorable 48th Annual Meeting and Symposium.

Making Reservations
A dedicated website is now available for all attendees to book their hotel rooms online. Reservations can be made at this web address: **https://www.hyatt.com/events/en-US/group-booking/AUSRA/G-KAM1**

Social Calendar

Sunday, November 1
Welcome Reception
6 - 7:30 p.m.

Sponsored by NSI-MI Technologies
Cost: Complimentary with Registration

Enjoy drinks and appetizers with friends and colleagues in the Foothills Ballroom 17th Floor. This event is complimen¬tary to all registered symposium participants and their guests.

Monday, November 2
Lone Star Riverboat Cruise
5:30 – 7:30 p.m.

Sponsored by Microwave Vison Group (MVG) and Next Phase Measurements (NPM)
Cost: $100

Experience one of Austin's most iconic attractions with an unforgettable evening aboard the Lone Star Riverboat. Cruise the scenic waters of Lady Bird Lake and enjoy breathtaking views of the downtown Austin skyline from the comfort of an electric-powered paddle wheeler. As the sun sets, witness the spectacular nightly emergence of approximately 1.5 million Mexican free-tailed bats from beneath the Congress Avenue Bridge. Your evening includes a Texas BBQ dinner with appetizers and dessert, along with assorted soft drinks, bottled water, and a full-service cash bar. Boarding begins at 5:00 PM next to the Hyatt Regency Austin; the boat departs promptly at 5:30 PM.

Tuesday, November 3
Student Day 11 a.m. - 7 p.m.

Dinner Sponsored by STAR Dynamics
Team Prize Sponsored by IEEE AP-S TCAM
Location: Hill Country Ballroom
Cost: Complimentary

Student Day will provide an opportunity for local university students to get a taste of antenna engineering and related disciplines by interacting with practicing engineers in a variety of venues. Students will be able to tour vendor exhibits, sit in on papers, and enjoy a complimentary meal while listening to a presentation targeting issues relevant to those soon entering the engineering profession. Students should bring their resumes as the AMTA community is actively recruiting. In addition, AMTA will present an "Antenna Measurements 101" course followed by a field trip to Silicon Labs in downtown Austin to see these measurements in real-time. Students will enjoy an educational and entertaining "design contest" with prizes! Please register in advance on the AMTA 2026 website.

Tuesday, November 3
Young Professionals Reception 6 - 8 p.m.

Sponsored by ETS-Lindgren
Cost: $25 per person
Location:
Lady Bird I & II

AMTA would like to invite all Young Professionals (BS within 15 years) and Undergraduates to our Networking Event at the AMTA 2026 Symposium! We will play "AMTA Jeopardy!" – Trivia, with a Twist! This event is great at building your expertise in antenna measurement techniques as well as providing a welcoming, informal environment to network with Young Professional (YP) colleagues and experienced professionals alike. You'll have the opportunity to play alongside AMTA Experts and prizes will be awarded to the winners! Come mingle with your fellow YPs and the AMTA gurus, who will share their experiences and insights from volunteering within the AMTA community. We'll also be highlighting the student papers on the AMTA technical program! Heavy appetizers with beer and wine service included.

Wednesday, November 4
Banquet Reception
6:30 - 7:30 p.m.
Banquet Dinner & Awards
7:30 - 9:30 p.m.,
Texas Ballroom 1-4

Banquet Wine Sponsored by the Microwave Vison Group (MVG).
Cost: Included in full registration;
$90 per additional ticket.

We will start the Awards Banquet with a Reception on the Texas Ballroom Foyer at 6:30, then at 7:30 move into the Texas Ballroom 1-4 for the Dinner and Awards.

Thursday, November 5
Women in Engineering Reception 6 - 8 p.m.

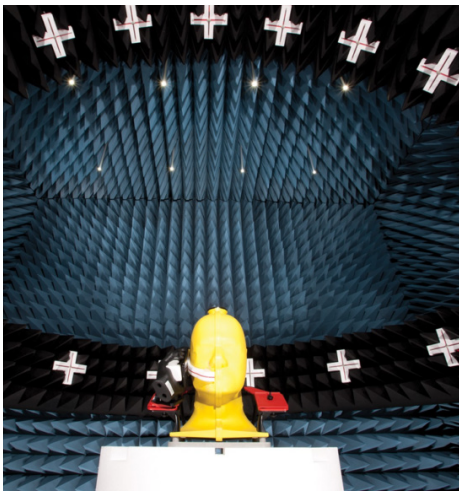
Sponsored by ETS-Lindgren
Cost: $30 per person, Lady Bird I & II

This event welcomes all members of AMTA and IEEE, men and women, to promote collaboration. Join us for enlightening presentations on innovation, leadership, and teamwork, then enjoy the networking opportunities during the reception! See the website for more information. Heavy appetizers with wine tasting and beer included.

Friday, November 6
Technical Tour: ETS-Lindgren Global Headquarters
9:30 a.m. – 3:00 p.m.

Cost: $75 per person

Go behind the scenes at ETS-Lindgren in Cedar Park, Texas, and experience premier facilities for electromagnetic compatibility (EMC), wireless, and antenna measurement testing. This exclusive technical tour offers a unique opportunity to explore the technologies, laboratories, and test environments that support the development of today's most advanced electronic and wireless products. As the global headquarters, supporting nearly 800 employees worldwide, the facility showcases many of the innovative test solutions the company has pioneered throughout its history.



Companion Tours*

Austin History Day $80
Monday, November 2
11:30 a.m. to 3:30 p.m.

Transportation included; lunch on your own

Discover the history, architecture, and charm of Texas's capital city on this Austin companion tour. Enjoy a narrated sightseeing ride aboard a Double Decker Austin bus, with views from the open-air upper deck or climate-controlled lower deck. Highlights include historic 6th Street, The Driskill Hotel, Texas State Capitol, and Texas Governor's Mansion. Following lunch on your own, enjoy a guided walking tour of the magnificent State Capitol, including its grand Rotunda, Senate Chambers, and landscaped grounds. Experience the perfect blend of Austin's vibrant energy and Texas heritage!

San Antonio Alamo and Riverwalk $100
Tuesday, November 3
10 a.m. to 3:30 p.m.

Transportation included; lunch on your own

Experience San Antonio's rich history and vibrant culture on this memorable companion tour. Led by Alamo History Interpreters, the Remember the Alamo™ guided tour brings the legendary Battle of the Alamo to life as you explore historic Alamo Plaza. Following the tour, enjoy lunch on your own at colorful Mi Tierra Café y Panadería, a beloved San Antonio landmark since 1941. Before returning to Austin, explore Historic Market Square, featuring more than 100 locally owned shops and artisan stalls. From Texas history and authentic cuisine to local treasures, enjoy a memorable taste of San Antonio's unique heritage and culture.

Austin Food Tour $75
Wednesday, November 4, 2026
11 a.m. to 2:30 p.m.

Walking tour with lunch included

Experience Austin one bite at a time on this guided walking food tour through the city's vibrant downtown. Discover local favorites and hidden culinary gems while learning about the history and culture behind Austin's eclectic food scene. Sample mouthwatering Texas barbecue brisket, Austin-style breakfast tacos, authentic Italian cannoli, and more as your guide shares insider stories and local recommendations along the way. A delicious lunch is included. Come hungry and enjoy a memorable taste of the flavors, culture, and unmistakable charm that make Austin a celebrated food destination!

* *Attendance is limited at all Companion Tours; tours will be filled on a first-come, first-served basis. Comfortable walking shoes are recommended for all tours. Please bring money for lunch on Monday and Tuesday, plus any incidentals throughout the week. NOTE: Tour(s) may be cancelled if a minimum is not met; refunds will be provided.*

Boot Camp

Sunday, November 1

7:15 - 8 a.m. Registration

8 a.m. - 5:20 p.m. Technical Program

The AMTA Boot Camp is a 1-day course on antenna and related measurement fundamentals. Live hands-on demonstrations complement the material presented. The Boot Camp is an ideal training opportunity for those new to the antenna and related measurements community and for those who would appreciate an update or "refresher" course on these topics. Instructors are academic and industry experts who were selected based not only on their expertise, but for their ability to communicate effectively.

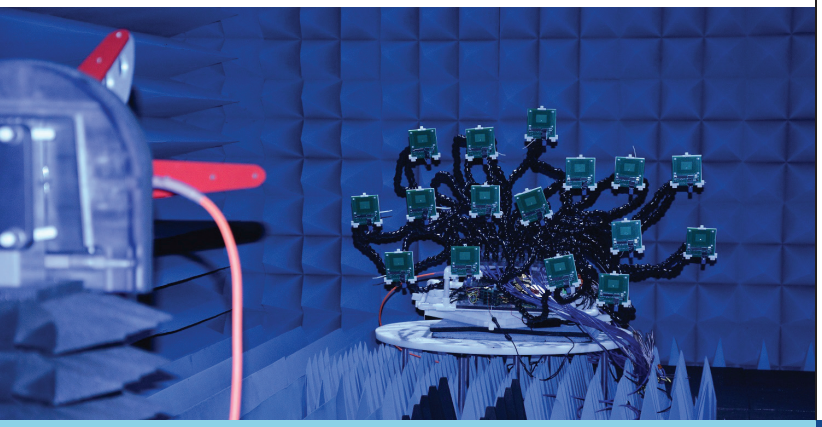
The AMTA Boot Camp Back-to-Basics Topics Include:

- General RF Measurements
- Material Measurements
- Antenna Measurements
- RCS Measurements
- EMC/EMI Measurements
- New Innovations and Trends

Technical Goals and Objectives of the AMTA Boot Camp Include:

- Gain basic understanding of the AMTA-relevant measurement systems and associated equipment
- Obtain basic understanding of the theory and physical principles of each measurement system
- Acquire technical vocabulary for each measurement system
- Gain appreciation for similarities and differences of each measurement system
- Establish appreciation for the challenges/applications that are driving the need for each measurement system
- Identify common themes in each measurement system (calibration, standards, best practices, uncertainties, etc.)

Attendance at the Boot Camp is limited.
Space will be filled on a first come, first served basis.



Short Course

Sunday, November 1

7:15 - 8 a.m. Registration

8 a.m. - 5:20 p.m. Technical Program

Modern Antenna Measurements and Diagnostics: "Principles, Practices, and Emerging Trends"
Instructor: Prof. Yahya Rahmat-Samii
Distinguished Professor and Holder of Northrop Grumman Endowed Chair
University of California, Los Angeles (UCLA)

Course Outline:

- Fundamental of EM Concepts for Antenna Characterizations
- Antenna Radiated Fields, Ideal Dipole, Solution of Wave Equations and Special Functions
- Classifications of None Near-Field Antenna Measurement Techniques
- Far Field Measurements, Compact Ranges and Others
- Fundamentals of Various Near-Field Measurement Techniques
- Equivalence Theorem, Spectral Formulation and Probe Compensations
- Understanding Antenna Near-Field Diagnostic Techniques
- Simulation Models, Back-Projections, Sampling Theorems
- Case Studies of Several Reflector and Array Antenna Measurements
- Ground and Space Reflector and Array Antenna Measurement Examples
- Phaseless Measurements and Recent Advances
- Why Phaseless Measurements, Phase Retrieval Algorithms, AI Implementation
- Drone Based Antenna Measurements
- Fundamentals, Various Approaches, Representative Examples

Dr. Rahmat-Samii is the recipient of the 2011 IEEE Electromagnetics Field Award and has previously served as Chair of the UCLA Electrical Engineering Department. He received his M.S. and Ph.D. degrees from the University of Illinois at Urbana–Champaign. Prior to joining UCLA, he was a Senior Research Scientist at Caltech/NASA's Jet Propulsion Laboratory. He has authored or coauthored more than 1,100 journal and conference papers, over 40 book chapters, and seven books, and his work has appeared on the cover of IEEE publications more than 20 times. Please see the AMTA 2026 website for the complete instructor's biography.

Keynote Speaker

Emanuele Galiffi, PhD

Assistant Professor, Silicon Labs Endowed Faculty Fellow,
Chandra Family Dept. of Electrical and Computer Engineering
The University of Texas at Austin
www.galiffilab.org

Monday, November 2

8:15 - 8:55 a.m.

Four-Dimensional Electromagnetics

Abstract: Linear time-invariant media constitute the foundations of our understanding and applications of electromagnetics, from antenna radiation to wave propagation and scattering. The static nature of time-invariant structures imposes stringent limitations on their properties, and particularly their performance bandwidth, giving rise to fundamental limits such as the Harrington-Chu limit on radiation bandwidth by a small antenna and the Rozanov bound on the bandwidth of a thin perfect absorber. Recently, a new paradigm has been gaining traction, focused on the use of time-modulated elements to overcome these limitations and realize phenomena inaccessible to static electromagnetic systems. In this tutorial lecture, the speaker will provide an overview of the rising field of four-dimensional electromagnetics, elaborating on the new ideas ushered in by combining spatial and temporal degrees of freedom to manipulate electromagnetic waves, envisioning their potential for future applications, and the related challenges and limitations along the way.

Biography: Prof. Galiffi received his bachelor's and master's degrees in physics from Imperial College London in 2016, where he subsequently completed his doctoral studies under the supervision of Prof. Sir John Pendry. For his doctoral research, he was awarded the Johnson Matthey PhD Thesis Prize and a 2020 EPSRC Doctoral Prize Fellowship. He was subsequently awarded a prestigious three-year Junior Fellowship from the Simons Society of Fellows, through which he joined Prof. Andrea Alù's group at the Advanced Science Research Center of the City University of New York in 2021. He later began a tenure-track appointment at The University of Texas at Austin. His research interests span fundamental and applied electromagnetics and photonics, with a particular focus on metamaterials exhibiting extreme electromagnetic properties, including time-varying, singular, epsilon-near-zero, and highly anisotropic structures. He has co-authored more than 40 peer-reviewed articles in leading journals, including Science, Nature Physics, Nature Photonics, Physical Review X, Physical Review Letters, Nature Communications, and PNAS. His work has received approximately 4,000 citations. For his work on electromagnetic phenomena in time-varying media, he received the 2026 URSI Santimay Basu Award in Radio Science, the 2026 Nanophotonics Early Career Award, and the 2025 SPIE Advanced Photonics Young Innovator Award.

Featured Speaker
IEEE AP-S President

Dr. C. J. Reddy

Fellow IEEE,
AMTA Ed Gillespie Fellow
Siemens Fellow, Siemens
Digital Industries Software

Tuesday, November 3

8 - 8:25 a.m.

Pushing the Boundaries of Computational Electromagnetics – Application to Antenna Designs, Placement, Co-Site Interference Simulations and Digital Twins

Simulation-driven design changed product development forever, enabling engineers to reduce design, iterations, and prototype testing. Increasing scientific computing power expanded the opportunity to apply analysis, making large design studies possible within the timing constraints of a program. This talk will focus on advanced CEM simulation tools that incorporate numerical methods, such as Method of Moments (MoM), Multilevel Fast Multipole Method (MLFMM), Finite Element Method (FEM), Finite Difference Time Domain (FDTD), Physical Optics (PO), Ray Lunching Geometrical Optics (RL-GO), and Uniform Theory of Diffraction (UTD). As the complexity of connected devices increases each day, designers are taking advantage of AI/ML to generate trained models for their physical antenna designs and perform fast and intelligent optimization on these trained models. Using the trained models, different optimization algorithms and goals can be run quickly, in seconds, that can be utilized for comparison studies, stochastic analysis for tolerance studies etc. Use of cloud computing combined with AI/ML, many design iterations can be performed in a short period and reducing the time to market. This talk will also focus on future trends in cloud computing for physics-based simulations and the emerging topics such as Digital Twins.

Featured Speaker
EurAAP

Maria Alberica Saporetti

Head of Security and Support to Space Systems
Italian Space Agency

Wednesday, November 4

8 - 8:25 a.m.

RF Security for Civilian Space Systems

Space systems play an increasingly vital role in modern society by providing and supporting critical services. Through its Security Directorate, the Italian Space Agency is committed to protecting space assets and missions. Among the most widespread threats in the space domain are intentional malicious attacks targeting the electromagnetic spectrum. Although such attacks are often primarily military in nature, radio frequency interference (RFI) can also affect governmental and civilian systems and users, resulting in serious safety concerns and economic losses.

To enhance the resilience of space systems, effective countermeasures such as anti-jamming antennas with null-steering capabilities are essential. For these applications, radiation performance, sidelobe characteristics, and signal signatures must meet stringent requirements for robustness and a low probability of intercept.

Monitoring RFI both onboard spacecraft and on the ground is becoming increasingly important.

Finally, emerging needs and challenges in antenna design and measurement for resilient governmental space systems will be presented.

Note: See the website for complete biographies of the **Featured Speakers**.

Lunch & Learn

Professor Ji Chen

University of Houston

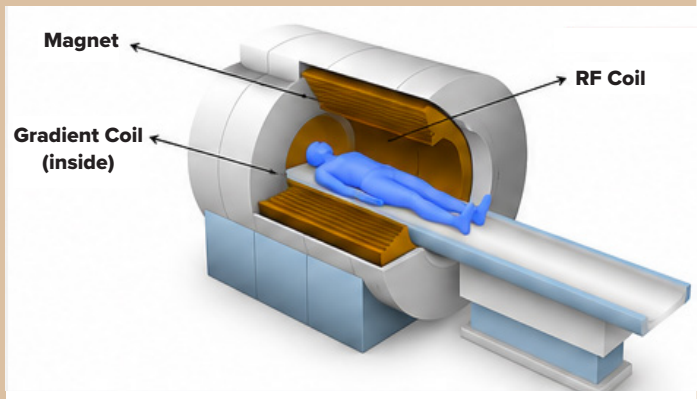
Thursday, November 5

Noon - 1:30 p.m.

Electromagnetic Coupling, Antenna Effects, and Solutions for MRI Safety of Medical Implants

Electromagnetic interactions between MRI systems and medical devices are central to implant safety. MRI exposes patients and devices to static, switched-gradient, and radiofrequency (RF) electromagnetic fields, and conductive implants and leads can couple to these fields in ways that create induced currents, localized electric-field enhancement, and RF heating. From an antenna perspective, the MRI RF transmit coil provides the excitation, while elongated conductive implants and leads can behave as receiving structures whose resonance, orientation, and coupling strongly influence induced currents and localized heating. In this talk, we will present recent research on these electromagnetic mechanisms together with computational, experimental, and certification-oriented methods for evaluating MRI safety. Examples will include passive implantable devices, passive external fixation devices, and active medical devices, with emphasis on RF coupling, antenna and resonance effects, field and current distributions, and measurement and modeling approaches relevant to device and patient safety.

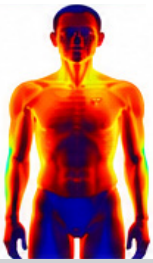
Ji Chen received his Ph.D. degree from the University of Illinois at Urbana–Champaign. After three years at the Motorola Cell Phone Research Laboratory, he joined the University of Houston, where he is currently a Professor in the Cullen College of Engineering. He serves as Director of the NSF Center for Electromagnetic Compatibility Research and the Center for Subsurface Modeling and Characterization. His research focuses on the interactions between medical devices and electromagnetic fields. Dr. Chen is a Fellow of IEEE and AIMBE and has served as Chair of the Department of Electrical and Computer Engineering since September 2024.



Major Components

- **Strong Static Magnetic Field (B_0)**
- **Gradient Coils**
- **RF Coil (Transmit/Receive)**
- **Patient Table and Shielding**

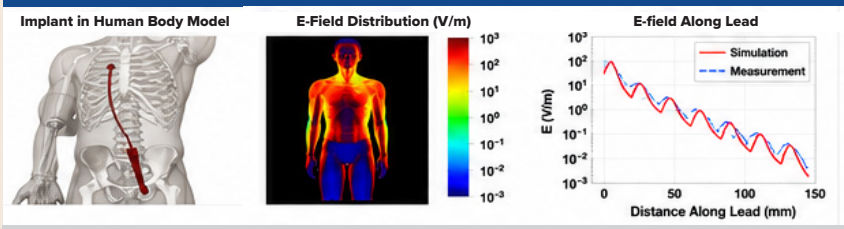
Interactions Between Implanted Devices and MRI Fields: Potential Hazards



- **RF-induced Heating**
- **Gradient-induced Extrinsic Electric Potential**
- **Gradient-induced Malfunction**
- **Gradient-induced Heating**
- **Gradient-induced Vibration**
- **B_0-induced Force/Torque**
- **B_0-induced Malfunction**

Risks to both the device and the patient must be evaluated.

Computational Modeling Example: Electric Field Distribution Near Implant



Patient-specific modeling to predict RF electric fields and identify potential hot spots.

IEEE Standards Committee Meetings

These meetings are open to anyone interested in learning more about or contributing to standards development. You do not need to be an IEEE member to attend.

IEEE STD 1502:
Revision Status, Proposed Outline, and Input from AMTA

Wednesday, November 4
Working Lunch Meeting
Noon to 1:30 p.m.
Room Lady Bird I & II

IEEE Std 1502-2020, Recommended Practice for Radar Cross-Section Test Procedures, is currently being revised, with Paul De Groot serving as chair of the IEEE APS working group. This AMTA working lunch meeting will provide an update on the progress of the revision and give members of the AMTA community an opportunity to share their comments and recommendations.

Paul will briefly introduce the purpose and scope of the standard, explain the IEEE revision process, and summarize the work completed so far, including feedback gathered during a similar session held at EuCAP 2026. The proposed outline of the revised standard will then be presented followed by open discussion.

The main purpose of the meeting is to hear suggestions from the audience regarding the proposed structure, technical priorities, and topics that may require further clarification or guidance. We will also explain how interested participants can join the working group and contribute to the revision. Anyone involved or interested in RCS measurement, processing, calibration, uncertainty evaluation, or reporting is warmly encouraged to attend and take part in the discussion.

Paul De Groot, IEEE 1502
Working Group Chair
The Boeing Company

IEEE STD 1128:
Revision Planning and Input from AMTA

Thursday, November 5
Working Refreshment Break Meeting
2:30 to 3:30 p.m.
Room Lady Bird I & II

IEEE Std 1128, Recommended Practice for RF Absorber Testing, is currently on hiatus while the working group seeks additional support for editorial work and preparation of the document using the IEEE Standards template. The technical subgroups have completed a substantial amount of technical writing, and this AMTA working refreshment break meeting will provide an update on the status of the effort and discuss plans to restart the revision.

Working Group Chair Zhong Chen will briefly review the work completed to date, the current organization of the technical subgroups, and the remaining editorial and technical tasks needed to move the standard forward. The primary goal is to engage members of the AMTA community who can contribute either technical expertise or assistance with IEEE standards editing and document preparation.

Anyone involved or interested in absorber characterization, RF measurements, EMC/anechoic chamber testing, material measurements, or related standards development is encouraged to attend and learn how to contribute to the effort.

Zhong Chen, IEEE 1128
Working Group Chair
ETS-Lindgren

Preliminary Technical Program

Scheduled for presentation from
Monday, November 2 to Thursday, November 5
as a continuous session (no parallel sessions).

Please note the content below is preliminary and subject to change.

Session 1

Advanced Measurements

000215: Snr-Controlled Sampling for Multifrequency Multimonostatic Linear Inverse Scattering Via Constrained Svo, Amedeo Capozzoli (Università di Napoli Federico II), Claudio Curcio (Università di Napoli Federico II), Angelo Liseno (Università di Napoli Federico II)

000220: Far-Field Group Delay Measurements of Embedded Low Frequency Converters, Thorsten Lueck (Rohde & Schwarz), Jaydeep Singh (Microwave Vision Group, MVG), Daniel Mueller-Remer (Rohde & Schwarz GmbH & Co. KG), Francesco Saccardi (Microwave Vision Group, MVG), Chiara Villante (Rohde & Schwarz GmbH & Co. KG), Andrea Giacomini (Microwave Vision Group), Lars Foged (Microwave Vision Group, MVG), Nicolas Gross (Microwave Vision Group, MVG)

000274: Practical Aspects of Making G/T Measurements on a Near-Field Range, Mihai Berbeci (NSI-MI Technologies), Eddy Park (NSI-MI Technologies), Johnston Hou (NSI-MI Technologies), Bruce Williams (NSI-MI Technologies)

Session 2

Advances in Robotic Antenna Measurements and Processing (EurAAP/EuCAP Convened Session)

000185: Near-Field to Far-Field Transformation of Irregular, Non-Equiangular, Spherical Near-Field Measurements Utilizing a Non-Equispaced Fft, Marc Dirix (Albatros Projects Belgium, institute of High Frequency Technology, RWTH-Aachen), Stuart Gregson (NPM & Queen Mary University of London)

000197: Frequency Smear Correction in Non-Canonical Robotic Near-Field Antenna Measurements, Henrik Jansen (institute of High Frequency Technology, RWTH Aachen University), Roland Moch (NSI-MI Technologies AMETEK), Dirk Heberling (Fraunhofer - FHR)

000207: Error Identification Technique for Planar Systems Tested Using a Robotic Arm, Celia Fonta Romero (Universidad Politecnica de Madrid), Manuel Sierra Castañer (Universidad Politecnica de Madrid), ana Arboleya (Universidad Rey Juan Carlos)

000231: External Position Feedback for Robot-Based Antenna Measurements, Roland Moch (NSI-MI Technologies AMETEK), Henrik Jansen (institute of High Frequency Technology, RWTH Aachen University), Dirk Heberling (Fraunhofer - FHR)

000241: W-Band Near-Field Measurement Techniques Using a Portable Laser Guided Robotic Metrology System, Bryan Schoenholz (NASA Glenn Research Center), James Downey (NASA Glenn Research Center), Seth Waldstein (NASA Glenn Research Center), Sarah Dever (NASA Glenn Research Center)

Session 3

Antenna Design and Analysis

000190: Accurate and Efficient Full Wave Modelling of Large Phased Arrays: Methods and Applications, Tonny Rubæk (TICRA), Mark Whale (TICRA), Pasquale Giuseppe Nicolaci (TICRA), Edoardo Baldazzi (TICRA), Nafsika Memeletzoglou (TICRA), Erik Jørgensen (TICRA), Martin Haulund Gæde (TICRA), Cecilia Cappelin (TICRA)

000191: Visualization of The Near-Field to Far-Field Transition Region of a Circular Array, Ryan Cutshall (Nullspace, inc.), Justin Dobbins (Raytheon an RTX Business)

000254: Material Characterization and Measurement Strategies for A Novel 3D-Printed Lightweight Transmit Array Antenna, Wenman Hu (University of California Los Angeles), Yahya Rahmat-Samii (University of California Los Angeles), Shuo Zhang (University of California Berkeley), Xiaoyu Rayne Zheng (University of California Berkeley)

000265: Surrogate-Based Design tool for Irregular Linear Antenna Arrays Using Machine Learning, Gustavo Vicentine1, (National institute of Telecommunications (Inatel), Pei Xiao (University of Surrey), Carmelo Bastos-Filho (University of Pernambuco (UFPE), Evandro Conforti (Laboratory of Advanced Photonic Communication and Microwaves (LAPCOM), FEEC (Unicamp), Arimsar Cerqueira (Lab WOCA, Inatel (National institute of Telecommunications)

000283: Air-Gap Optimization and Tradeoff Analysis of Bandwidth, Gain, and Power Capacity in A K-Band Gap Waveguide-Based Antenna, Nayan Sarker (Graduate Student, UT Dallas), Ifana Mahbub (Associate Professor, UT Dallas)

Preliminary Technical Program

Session 4

Antenna Measurements 1 and Antenna Measurements 2

000177: The Enhanced Gain Extrapolation Technique, Josh Gordon (National institute of Standards and Technology (NIST), Benjamin Moser (National institute of Standards and Technology (NIST)

000181: Numerical analysis of Error Sources on Extrapolation Ranges, Vicente Rodriguez (NSI-MI Technologies), Gwenael Dun (NSI-MI Technologies), Esra Celenk (NSI-MI Technologies), Mark Ingerson (NSI-MI Technologies)

000204: A Parametric analysis of The Limitations of Far-Field Gain Extrapolation, Dale Canterbury (Raytheon an RTX Business), Dylan Ybarra (Raytheon an RTX Business), William Dykeman (Raytheon an RTX Business)

000228: Experimental Validation of A Two-Stage Method for Correcting 3-D Position Errors in A Spherical Scan, Francesco D'Agostino (University of Salerno), Flaminio Ferrara (University of Salerno), Lars Foged (Microwave Vision Group, MVG), Claudio Gennarelli (University of Salerno), Andrea Giacomini (Microwave Vision Group, MVG), Rocco Guerriero (University of Salerno), Massimo Migliozzi (University of Salerno), Luigi Pascarella (University of Salerno), Francesco Saccardi (Microwave Vision Group, MVG), Jaydeep Singh (Microwave Vision Group, MVG)

000277: Revisiting The Effects of Reference Point Selection on Antenna Gain Extrapolation and A Novel Method for Optimal Reference Point Search, Yibo Wang (ETS-Lindgren), Zhong Chen (ETS-Lindgren)

000239: The Role of the Antenna's Reference Point and Number of Terms in The Extrapolation Method, Teun van den Biggelaar (ANTENNEX BV)

000240: From Spherical Wave Expansion to Wilcox Expansion to Extrapolation formula – Three Pillars of Antenna Measurement Theory, Olav Breinbjerg (ElMaReCo)

000242: toward Rapid Fixed-Probe Calibration of Finite Dual-Polarized Phased Arrays Across Scan Angle Via Electronic Beam Diversity, Jeff Massman (analog Devices inc.)

000259: Neighbor-State Dependence of Rev-Extracted Coefficients in Phased Array Calibration, Joao Ferreira (Keysight Technologies, Katholieke Universiteit Leuven), Xiaoqian Jiang (Keysight Technologies, University of the Basque Country), Carles Navarro Manchon (Keysight Technologies), Dominique Schreurs (Katholieke Universiteit Leuven)

000261: Combined Reverberation/anechoic Chamber Characterization of OTA Noise Figure and G/T for integrated Antenna Systems, Roel Budé (ANTENNEX BV)

000237: Mode-Domain Translation for Compressed Sensing-Based Cylindrical Mode Filtering from Single-Cut Measurements with Offset Rotation, Zhong Chen (ETS Lindgren, inc.), Yibo Wang (ETS Lindgren, inc.)

Session 5

Antennas and Measurements for 5G and Future Communication Systems

000202: Cross-Band Simulation of Vehicular 5G Nr MIMO OTA Throughput Via the Radiated Two-Stage Method, Daniel Aloi (Oakland University), John Locke (Molex), Prashant Chaudhary (Oakland University)

000225: Experimental Demonstration of Angle of Arrival Detection Using a Finite Hybrid Reconfigurable intelligent Surface, Sajedeh Keshmiri (Arizona State University), Kavian Zirak (Arizona State University), Mohammadreza Imani (Arizona State University)

000271: Elementwise Calibration of a 28 GHz Reconfigurable Metasurface for Optimized Beam Steering, Florian Reher (institute of High Frequency Technology, RWTH Aachen University), Spandan Manna (institute of High Frequency Technology, RWTH Aachen University), Dirk Heberling (Fraunhofer - FHR)

000273: Detection and Tracking of Tagged Objects Using Harmonic Micro-Doppler and Communications Signals of Opportunity, Cory Hilton (Michigan State University), Jeffrey Nanzer (Michigan State University)

000280: Pushing The Boundaries of a Compact Range Quiet Zone, Thorsten Hertel (Keysight Technologies), Michael Foegelle (Keysight Technologies)

Session 6

Imaging, Algorithms, and Processing Techniques

000188: Recent Advances in The Use of Compressive Sensing Techniques for The Rapid Production Test of Commercial Nose-Mounted Radomes in a Robotic Antenna Measurement System, Clive Parini (Queen Mary University of London), Stuart Gregson (NPM & Queen Mary University of London), Dennis Lewis (The Boeing Company), Wayne Cooper (The Boeing Company)

000232: One-Port to Two-Port S-Matrix Extrapolation, Prashant Chaudhary (Oakland University), Ravi Kumar Arya (Zhongshan institute of Changchun University of Science and Technology, China), Daniel Aloi (Oakland University)

000238: On The Location and Approximation of Far-Field Antenna Pattern Peaks for The Determination of Electrical Pointing, Gain, and Directivity, Marc Dirix (Albatross Projects Belgium, Belgium, institute of High Frequency Technology, RWTH-Aachen, Germany), Stuart Gregson (Next Phase Measurements (NPM), CA, USA, Queen Mary University of London, UK)

000257: Further Exploration of The Spectral-Tuning Approach to Element-Excitation Measurement, Scott McBride (NSI-MI Technologies)

Session 7

Near-Field Measurements 1 and Near-Field Measurements 2

000175: Millimeter-Wave First-Order Probe for Spherical Near-Field Measurements: Design and Validation, Justin Geerarts (TU Eindhoven), Bart Smolders (TU Eindhoven), Ad Reniers (TU Eindhoven)

000187: Mechanical Error analysis in a Vertical Near-Field Scanner for Millimeter and Submillimeter Wave Antennas, Laurent Le Coq (IETR UMR CNRS 6164), Stephane Plus (IETR UMR CNRS 6164), Samuel Corre (IETR UMR CNRS 6164)

000196: The Pattern Uncertainty induced By Single-Pol Probe Correction, Ryan Cutshall (Nullspace, inc.), John Sangiolo (Raytheon an RTX Business)

000211: Uncertainty Budget Estimation in Microwave Holography Using the Nist 18-Term Error Model, Rakesh Kumar (Space Applications Centre, ISRO), Jaswant (Space Applications Centre, ISRO), Jigar M Pandya (Space Applications Centre, ISRO), Sanjeev Kulshrestha (Space Applications Centre, ISRO)

000213: Compact Plane-Wave Generator for Beam Peak Search at 28 GHz in The Fresnel Region, Gaeun Song (Chosun University), HuiJun Woo (Chosun University), Soonsoo Oh (Chosun University)

000216: A Generalized Sampling Theorem and its Applications to Near-Field Antenna Measurements, Kyriakos Kaslis (Antenna Systems Solutions)

000219: Design, Development and Calibration of Golden Probe for Near Field Measurement System, Sri Priyanshu (Space Applications Centre (ISRO), Dinesh Jangid (Space Applications Centre (ISRO)

000236: investigation of Planar Near Field Technique for Group Delay Measurement of Frequency Converting Antenna Systems, Daniel Mueller-Remer (Rohde & Schwarz GmbH & Co. KG), Thorsten Lueck (Rohde & Schwarz GmbH & Co. KG), Chiara Villante (Rohde & Schwarz GmbH & Co. KG), Francesco Saccardi (MVG | Microwave Vision Group), Jaydeep Singh (MVG | Microwave Vision Group), Andrea Giacomini (MVG | Microwave Vision Group), Nicolas Gross (MVG | Microwave Vision Group), Lars Foged (MVG | Microwave Vision Group)

000281: Rapid infrared Thermal-Film Screening of Feed Amplitude and Phase Imbalance in Patch Antenna Arrays, Ion Kolkhuis Tanke (University of Wisconsin - Madison), Henry Czupryna (University of Wisconsin - Madison), Sumit Kumar (University of Wisconsin - Madison), Kevin Ryu (University of Wisconsin - Madison), Daniel van der Weide (University of Wisconsin - Madison)

000286: Phased Array Calibration with High-Accuracy Near-Field Holographic Techniques: The Role of Spatial Sampling in Cross-Polarization Recovery, Jorge Salazar (University of Oklahoma), Leandro Takeda (University of Oklahoma), Luis Felipe Moncada (University of Oklahoma), Alexis Oblitas (University of Oklahoma)

Session 8

Range Design, instrumentation, and Characterization

000173: Uncertain About Uncertainty: A Standard Approach to Antenna and RCS Uncertainty analysis, Logan Van Itallie (BAE Systems, inc.), Craig Wheeler (BAE Systems, inc.), Zack Peasha (BAE Systems, inc.)

000186: A High-Precision Octave Dual-Polarized Feed for Optimal Quiet-Zone Performance in Compact Antenna Test Ranges, Esra Celenk (NSI-MI Technologies), Vince Rodriguez (NSI-MI Technologies), Mark Ingerson (NSI-MI Technologies)

000198: analysis of Calibration Techniques for Plane Wave Generator Systems, Francesco Saccardi (MVG | Microwave Vision Group), Vincenzo Schirosi (MVG | Microwave Vision Group), Andrea Giacomini (MVG | Microwave Vision Group), Jaydeep Singh (MVG | Microwave Vision Group), Gaia Guida (MVG | Microwave Vision Group), Enrico Benso (MVG | Microwave Vision Group), Lars Foged (MVG | Microwave Vision Group), Nicolas Gross (MVG | Microwave Vision Group), Evgueni Kaverine (MVG | Microwave Vision Group), Jimmy Howell (MVG | Microwave Vision Group), tom Kauffman (MVG | Microwave Vision Group)

000199: Digital Twin Method for Radome Performance Verification, John Schultz (Compass Technology Group), Ren Geryak (Compass Technology Group)

000200: Low-Cost Turntable Designed for RF Phased Array Antenna Active Element Pattern Measurement, Rebekah Edwards (Baylor University), Taylor Martini (Baylor University), Jonathan Swindell (Baylor University), David Cox (Baylor University), Adam Goad (Baylor University), Austin Egbert (Baylor University), Charles Baylis (Baylor University), Robert Marks (Baylor University)

000221: Computational and Modelling Techniques for Optimizing Icatr Dual-Reflector Configuration to Support C to Ka-Band Antenna Characterization, Jaswant Jaswant (Space Applications Centre ISRO Ahmedabad), Jigar M Pandya (Space Applications Centre ISRO Ahmedabad), Sanjeev Kulshrestha (Space Applications Centre ISRO Ahmedabad), Milind B Mahajan (Space Applications Centre ISRO Ahmedabad)

000270: Distributed Sensor Coherence for Radar Applications, Spencer Wallentine (STAR Dynamics Corporation), Brendan Wilson (STAR Dynamics Corporation), Jerry Jost (STAR Dynamics Corporation)

000278: Further Development of a Spectrally Filtered Matched Filtering Method for Fast Anechoic Chamber Evaluation Using Circular Scanning, Yibo Wang (ETS-Lindgren), Zhong Chen (ETS-Lindgren)

Session 9

RCS Measurements

000192: Design Considerations for an Antenna Radar Cross Section Test Fixture, James Rooney (Raytheon El Segundo)

000194: Full-Wave Prediction of Pylon Radar Cross Section, Cecilia Cappelin (TICRA), Andreas Lindberg Jakobsen (TICRA), Sergiy Pivnenko (ANTENNA SYSTEMS SOLUTIONS S.L. (ASYSOL) (VAT ESB85908454)

000206: Validation of Mbet-Free Scattered-Field Transformation for Fixed Bistatic angle, Yoshihiko Akamine (Acquisition, Technology and Logistics Agency (ATLA), Ministry of Defense (MoD)

000224: Computationally Efficient RCS Simulations of Electrically Large Targets Using Characteristic Basis Function Method (CBFM), VENKATA BHYRAVA MURTHY DEVATA (Siemens Digital industries Software), C J Reddy (Siemens Digital industries Software)

000269: A Low-Cost Approach to MmWave RCS Measurements for The Space Qualification of a 3D Printed Luneburg Lens, James Bargeron (The Aerospace Corporation), Andrew Tillinghast (The Aerospace Corporation)

000272: 3D Printed RCS Calibration Targets, Spencer Wallentine (STAR Dynamics Corporation), Brendan Wilson (STAR Dynamics Corporation), William Carter (STAR Dynamics Corporation), Jerry Jost (STAR Dynamics Corporation)

000276: Simultaneous Co-Polarization and Cross-Polarization Calibration Using a Rotating Bruderhedral, Brendan Wilson (STAR Dynamics), Jeffery Godman (National RCS Test Facility), Spencer Wallentine (STAR Dynamics), William Carter (STAR Dynamics Corporation), Timothy Conn (STAR Dynamics), Jerry Jost (STAR Dynamics)

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Recent European Activities on Antenna Measurements
(EurAAP/EuCAP Convened Session)

000189: Rf Assessment of The Predicted Thermo-Mechanical Deformations of The Compact Antenna Test Range for Hertz 2.0, Cecilia Cappellin (TICRA), Pasquale Giuseppe Nicolaci (TICRA), Giuseppe Valsecchi (Medialario), Mauro Maggioni (Medialario), Claudio Franchini (Medialario), Marco Pedrali (Medialario), Luis Rolo (ESA/ESTEC), Antonio Riccardi (ESA/ESTEC)

000195: Recent Developments in Antenna Measurement for Future European Missions, Ines Barbary (ESA-ESTEC), Eric van der Houwen (AKKODIS for ESA), Paul Moseley (ESA-ESTEC), Luis Rolo (ESA-ESTEC), Alexander Freyer (AKKODIS for ESA), Antonio Riccardi (STARION for ESA), Ainhoa Gorriti (AURORA for ESA), Daniel Churchill (AKKODIS for ESA), Elena Saenz (ESA-ESTEC)

000208: Evaluation of Multiprobe Systems for Non-Redundant Sampling Grids and Phaseless Measurements, Jorge Calatayud Maeso (Universidad Politecnica de Madrid), Celia Fontá Romero (Universidad Politecnica de Madrid), Hector Cespedes (Universidad Politecnica de Madrid), Fernando Rodriguez Varela (Universidad Rey Juan Carlos), ana Arboleya (Universidad Rey Juan Carlos), Manuel Sierra Castañer (Universidad Politecnica de Madrid)

000235: investigating The Phase Uncertainty of a Multiprobe Antenna System for Complex Platform Testing, Francesco Saccardi (MVG | Microwave Vision Group), Andrea Giacomini (MVG | Microwave Vision Group), Lars Foged (MVG | Microwave Vision Group), Thierry Blin (MVG | Microwave Vision Group), Nicolas Gross (MVG | Microwave Vision Group), Arthur Romeijer (Pulsaart by AGC)

000260: Comparison of Tarc-Based Radiation Efficiency of Mimo Antennas in an Anechoic Chamber and a Reverberation Chamber, Jerdvisanop Chakarothai (National institute of information and Communications Technology), Tian Hong Loh (National Physical Laboratory)

000263: Real-Time 3D Radiation Pattern Measurement: Example of X-Band Horn Antenna, Mohammad Azadifar (EM Path), Mahdi Yousefi (EM Path), Maxime Marchiono (EM Path)

000268: Using Tightly Coupled Antenna Array Over an Arch to Achieve Ultra-Compact Spherical Scanner, Fabien Ferrero (Université Côte d'Azur), Benoit Derat (Viavi Solutions Deutschland GmbH)

Session 11

RF Material Design and Characterization

000233: Application of High-Frequency Modeling for Mosfet Response Under Large Signal Gate Injection, Mohammad Abedi (University of New Mexico), Sameer Hemmady (University of New Mexico), Edl Schamiloglu (University of New Mexico), Payman Zarkesh-Ha (University of New Mexico)

000266: Comparative Uncertainty analysis of Material Measurement Techniques, David Kay (BAE SYSTEMS (Operations) Ltd), Edward Baker (BAE SYSTEMS (Operations) Ltd), Adam Petrus (BAE SYSTEMS (Operations) Ltd)

Session 12

Robotic and UAV Antenna Measurements

000182: Linear Rail Kinematic Calibration Using a Legendre Polynomial Model, Benjamin Moser (National institute of Standards and Technology (NIST), Joshua Gordon (National institute of Standards and Technology (NIST), Andrew Petruska (Colorado School of Mines)

000217: Digital Twin Framework for Robotic Antenna Measurements at Sub-THz Frequencies, Asad Husein (University of Oulu), Kimmo Rasilainen (University of Oulu), Juha-Pekka Mäkelä (University of Oulu), Aarno Pärssinen (University of Oulu), Marko E. Leinonen (University of Oulu)

Session 13

Poster Session

000209: A Low-Profile Radiation Reconfigurable UWB Antenna Array for Sub-6GHz Communication, Grace Monetti (The College of New Jersey), Mahrukh Khan (The College of New Jersey)

000223: Design of an Integrated Antenna for Implantable Cardiac Pacemaker for Bluetooth Low Energy Communication, Jaehoon Kim (Siemens Digital industries Software)

000247: A Shared-Aperture Dual-Wideband Siw-Based Leaky Wave Antenna for K-Band and Millimeter-Wave 5G Applications, Muhammad Iqbal (Oklahoma State University), Syed Jehangir (Oklahoma State University)

000248: Dual-Circularly Polarized Wideband Leaky Wave Antenna Array for Millimeter-Wave 5G Satcom Applications, Muhammad Iqbal (Oklahoma State University), Syed Jehangir (Oklahoma State University)

000249: A Novel Wideband Dual-Circularly Polarized Patch Antenna for Satcom Applications, Muhammad Iqbal (Oklahoma State University), Syed Jehangir (Oklahoma State University)

000183: Broadband Radial Near Magnetic Field Probe, James McLean (TDK Corp.)

000234: Systematic Resonance Detuning and Power Coupling Enhancement of Antennas in a Reverberation Chamber, Mohammad Abedi (University of New Mexico), Edl Schamiloglu (University of New Mexico), Sameer Hemmady (University of New Mexico), Christos Christodoulou (University of New Mexico)

000226: Optimizing Distance-Cluster Windows for Absolute Antenna Gain Measurements in Sub-THz Bands, Asad Husein (University of Oulu), Kimmo Rasilainen (University of Oulu), Juha-Pekka Mäkelä (University of Oulu), Aarno Pärssinen (University of Oulu), Marko E. Leinonen (University of Oulu)

000244: Ku-/Ka-Band Shared Aperture Antenna for Satellite and 5G Communication, Hina Munsif (COMSTS University Islamabad, Abbottabad, Pakistan), Muhammad Ikram (College of Engineering and Applied Sciences, American University of Kuwait, Salmiya, Kuwait.), Abdulrahman Alqadami (Department of Electrical Engineering, King Fahd University of Petroleum and Minerals, Saudia.), Syed Jehangir (School of Electrical and Computer Engineering (ECE), Oklahoma State University, Stillwater, OK, USA)

000255: Improved Fast TIS Measurement in a Reverberation Chamber Via Quality-Based Sample Filtering, Jun Luo (ETS-Lindgren)

000193: Ultra-Wide Band Dual Circular Polarization Antenna, Yuya Yokota (Ohmplus Technology inc.), Chih-Wei Chiu (Ohmplus Technology inc.), Chih-Yuan Chu (Ohmplus Technology inc.), Hsi-Tseng Chou (National Taiwan University), Suyun Wang (National institute of information and Communications Technology)

000212: Reduced-Line Planar Near-Field Measurement Using Zigzag Double-Sampling Scan and Gaussian Process Regression, Michitaka Ameya (AIST), Yuto Kato (AIST)

000229: XNFT: An Open Near-Field Antenna Measurement Software Suite, Jason Merlo (Michigan State University), Mauro Ettorre (Michigan State University)

Preliminary Technical Program

000250: AI-Enabled Self-Healing Antenna Systems for Robust Automotive V2x Communication in Harsh Environments, Mohammad Pervez (Oakland University), Amanpreet Kaur (Oakland University), Kamran Mohammed (Chrysler)

000252: Energy-Efficient Wireless Communication in Mobile Devices, Mohammad Pervez (Oakland University), Amanpreet Kaur (Oakland University), Kamran Mohammed (Chrysalis LLC)

000210: Performance Analysis of Antenna Sensors in UWB Radar-Based Noninvasive Human Activity Detection, Rezaul Karim Mamun (The College of New Jersey), Mahrukh Khan (The College of New Jersey)

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