

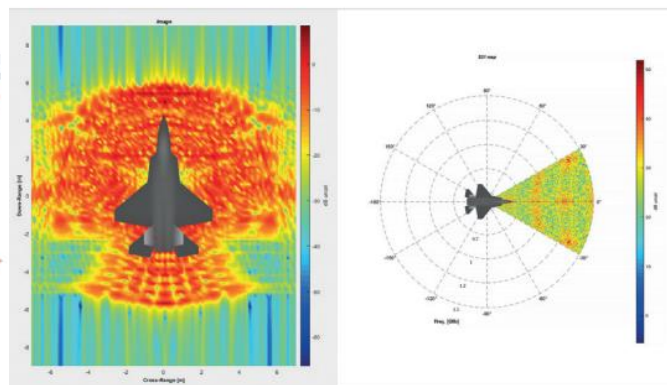
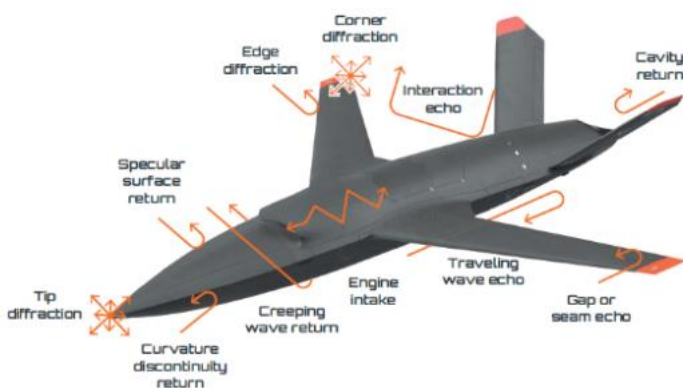
# SW1 - AMTA Workshop : Toward Improved Standardization of RCS Measurements.

## Abstract:

In this AMTA-supported workshop, we aim to provide an overview and facilitate discussion on widely accepted practices for conducting and reporting monostatic and bistatic radar cross-section (RCS) measurements in both near-field (NF) and far-field (FF) configurations. Topics will include calibration procedures, measurement configurations, data transformation techniques, and uncertainty evaluation, key elements in ensuring repeatable and traceable results across different facilities. By engaging experts from academia, industry, and government, this effort seeks to harmonize best practices, strengthen the foundation for global RCS measurement standardization, and provide valuable input to the update and review of IEEE Std 1502-2020 “Recommended Practice for Radar Cross-Section Test Procedures”.

## Workshop Outline:

The workshop will feature a series of invited presentations, each addressing a key aspect of radar cross section (RCS) measurements, with particular emphasis on topics relevant to upcoming revisions of the IEEE 1502 standard. Confirmed speakers include Pete Collins, Brian Fisher (Resonance Science, USA), and Ivan LaHaie (retired, USA), with additional contributions from Lars Foged (MVG, Italy) and Paul DeGroot (Boeing, USA) in support of the ongoing standardization effort. The program will cover complementary subjects spanning measurement methodologies, signal processing, error mitigation, and standardization insights. The workshop format is designed to encourage active discussion and knowledge exchange among leading experts from both industry and academia.



**SW1 - AMTA Workshop : Toward Improved Standardization of RCS Measurements.**

**Speakers:**

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**Lars Foged received his M.S. degree in Electrical Engineering from the California Institute of Technology (Caltech), USA, in 1990. He is currently Vice President of Research and Development at the Microwave Vision Group (MVG). He has held several leadership positions within the IEEE Antennas and Propagation Society (AP-S), including Chair of the Industry Initiatives Committee (IIC) and current Chair of the Antenna Standards Committee (ASC). In 2023, he received the IEEE AP-S Industrial Innovation Award. He served as Vice-Chair of the European Conference on Antennas and Propagation (EuCAP) in both 2011 and 2022, and is course organizer, and board member of the European School of Antennas (ESoA). He served as President of the Antenna Measurement Techniques Association (AMTA) in 2023 and is AMTA Fellow and Distinguished Achievement Award recipient. He is the author of two books and numerous scientific papers on antennas and measurement techniques. His work has earned multiple distinctions, including Best Technical Paper Awards at AMTA (2013) and EuCAP (2021).**



**Paul De Groot is a Technical Fellow at The Boeing Company and an Antenna Measurement Techniques Association (AMTA) Edmond S. Gillespie Fellow with expertise in RADAR Cross Section (RCS) and Antenna measurements and frequency spectrum management.**

**For over 35 years, Paul has engineered complex systems and lead teams to conduct RCS and antenna measurements at both the Boeing Enterprise and national levels.**

**Paul was AMTA Vice President while serving on the AMTA Board of Directors and is a member of IEEE, IEEE Antennas and Propagation Standards Committee and chairing the review of RCS standard IEEE Std 1502-2020.**



Ivan J. LaHaie received his BS degree from Michigan State University in 1976 and his MS and Ph. D. degrees from the University of Michigan in 1977 and 1981, respectively, all in electrical engineering. He joined the Environmental Research Institute of Michigan (ERIM) in 1980 and worked there for 30 years during its various incarnations as ERIM International, Veridian Systems, and General Dynamics Advanced Information Systems. He joined Integrity Applications Incorporated (later Centauri and KBR) in 2010 as a Senior Principal Scientist and Technical Fellow until his retirement in 2021. Dr. LaHaie is an internationally-recognized authority in the development of techniques for RCS measurement error mitigation, near field-to-far field RCS transformations, and RCS uncertainty analysis.

Dr. LaHaie is an IEEE life fellow and an AMTA fellow. In 1991, he received the IEEE Aerospace and Electronic Systems Society Radar Systems Panel Award, given annually to the nation's leading radar engineer under 40 years of age, for his contributions to synthetic aperture systems and electromagnetic modeling. He received the AMTA Distinguished Achievement award in 2004 for his pioneering work in the development of automated radar signature imaging technology, RCS measurement technology and standards, the design and evaluation of electromagnetic interference and error source mitigation techniques, and for his contributions to the field of radar signature target support interaction modeling



Brian E. Fischer is a Chief Engineer at Resonant Sciences in Dayton, Ohio. His research interests have focused on the development of electromagnetic optimization methods, signal processing, measurements, predictions, and associated uncertainty. Applications are in areas of synthetic aperture radar, antenna direction finding, and near-field measurements supporting a variety of US Government sponsors. His current technical focus is in the areas of high-speed electronic sensing and signal exploitation using adaptive antenna methods and generalized near-field RCS transformation. Dr. Fischer is a Distinguished Achievement Award recipient and Fellow of the Antenna Measurement Techniques Association (AMTA), and served as AMTA President in 2012. He is a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), and served as Associate Editor for the Measurements Corner in the IEEE Antennas and Propagation Society Magazine from 2007-2019. He is a retired US Air Force officer. Dr. Fischer received the BSEE from Michigan Technological University in 1988, the MSEE from the Air Force Institute of Technology in 1992, and the Ph.D. in Signal Processing from the University of Michigan in 2005.



**Peter J. Collins is currently a senior staff engineer with Resonant Sciences (RS), Dayton, Ohio. He is a Fellow of the Antenna Measurement Techniques Association (AMTA), Senior Member of the IEEE, and a member of the Eta Kappa Nu and Tau Beta Pi honor societies. With over 35 years of government subject matter expert experience, Dr. Collins has served in many positions throughout the Department of Defense (DoD). Highlights include a term as commander of the National RCS Test Facility (NRTF), where he led a diverse team of government and contractor scientists, engineers, and technicians to ensure testing and upgrades at the Air Force's premiere outdoor static RCS range.**

**Upon retirement from active duty, Dr. Collins joined the Air Force Institute of Technology (AFIT) where he served as Professor of Electrical Engineering. In addition to advising over 50 graduate students, Dr. Collins was the Low Observables (LO) Curriculum Chair responsible for ensuring AFIT's LO program met the needs of the Air Force and broader DoD.**

**While at AFIT, Dr. Collins received the 2013 Secretary of the Air Force Harold Brown Award for survivability technology development including efforts to develop low-frequency noise radar-enabled RCS measurement systems and a patented low clutter bistatic measurement concept for indoor RCS measurement. In addition to his academic service, Dr. Collins served the National RCS Measurement Facility Certification Program as an Executive Committee Member for five years, pushing for balance in QA best practices and test cost. His long association with the certification program includes time as an RCS range reviewer for the Air Force Research Laboratory's Advanced Compact Range, the AFRL Mobile Diagnostic Radar and Dynamic Measurement System, and Boeing management of the UK Ministry of Defense's Range and Dynamics Measurement System at the Ministry's SAF II Compact Range and the Tejon Outdoor Far-field Range.**