

Date: 01 Dec 2010

To: EuCAP Organizing Committee
EuCAP2011@realize-events.de

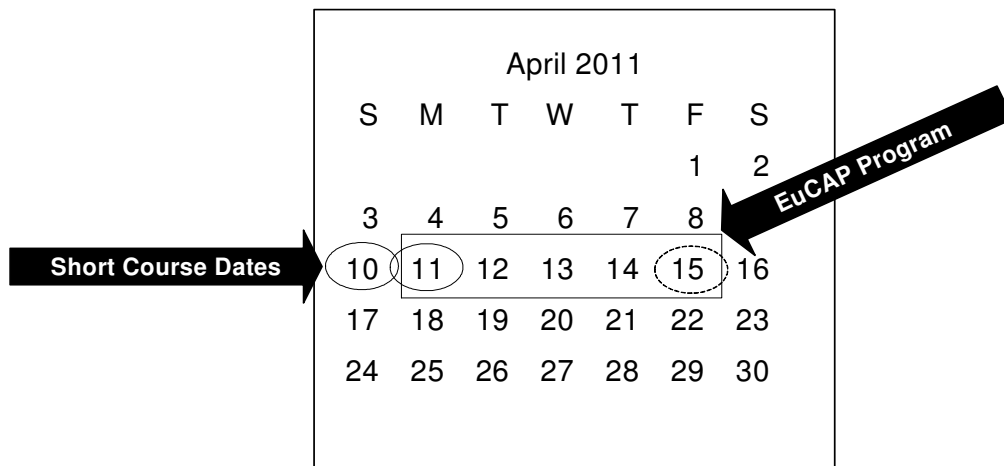
From: Doren W. Hess
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Subj: Proposal: A Half Day Short Course for EuCAP 2011
 Entitled: Extensions of Spherical Near-Field Scanning
 Instructor: Doren W. Hess

Distribution:				
Giuseppe Vecchi	Lars Foged	Carlo Rizzo	Jan Kendall	
Chair, Short Courses EuCAP 2011	Vice Chair, EuCAP 2011	AMTA Liaison EuCAP 2011	Vice President, MI Technologies	

Sirs:

Please find on the following page a description for a half-day short course which I propose to present in advance of the main EuCAP program either on Sunday, 10 April 2011 as in Edinburgh or on Monday, 11 April 2011, as in Barcelona.



Extensions of Spherical Near-Field Scanning

A Half-Day Short Course

Contact

Dr. Doren Hess
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Course Instructor: Dr. Doren W. Hess

Title: *Extensions of Spherical Near-Field Scanning*

Who Should Attend:

- * Design Engineers Using Spherical Scanning Measurements
- * Test Engineers Implementing a Spherical Near-Field Range
- * Individuals Desiring an Introduction to Spherical Near-Field Scanning
- * Individuals Interested in Recent Innovations with Spherical Scanning

Synopsis

Spherical near-field (NF) scanning has become a key element in antenna engineering practice. Maturing from its research beginnings in the 1970's to the wide variety of applications found today, it represents a fundamental approach to determination of performance for almost all types of antennas. Nevertheless a full understanding of the theoretical basis and the principles of measurement practice is held by only some in the antenna engineering community. The reason for this is that commercial software alleviates the need for a knowledge of the underlying theory on the part of technicians operating an antenna range. This course offers participants an opportunity to appreciate the relationship between fundamental knowledge and its application in the practice of antenna measurement. Furthermore, over the past five years additional aspects of spherical near-field scanning measurements have afforded the addition of holographic back-projection and spherical modal filtering. A review of these more recently developed methods will provide the participant with knowledge that is up-to-date with current practice.

Outline

A Formal Introduction to Spherical Near-Field Scanning

Maxwell Equations and Spherical Modes, Evanescence, Cutoff of Spherical Modal Sum, Scattering Matrix Description of Antennas, Spherical NF Transmission Equation, Sampling Criterion for NF Data

Determination of Pattern and Gain from the Transmission Equation

Inversion of the Spherical NF Transmission Equation, Rotation and Translation Theorems for Spherical Modes, Computation of the Far Field, Accounting for Antenna Impedance, Gain by Range Insertion Loss, Gain by Comparison to a Standard, Application of Numerical Modeling

Back-Projection to the Aperture from Spherical Scanning

Concept of Aperture Back-Projection, Computing the Aperture Field from Far-Field Pattern, Equivalence to Theory of Planar Near-Field Scanning, Examples of Back-Projected Spherical Near-Field Measurements

Coordinate Origin Translation Plus Spherical Modal Filtering - IsoFilter™

Ranges for Vehicle-Mounted Antennas, Individual Radiators and Nearby Reflections, Theory of the IsoFilter™ Technique, Filtering to Remove Nearby Reflections, Modeling of Nearby Sources of Radiation, Examples of Improvement of Measured Patterns, Modeling of IsoFilter™ Rejection Curve

Previous Offering:

This short course was first presented in November 2009 at the Antenna Measurement Techniques Association in Salt Lake City, Utah, USA. The number of registered attendees was >32; the total registration for that conference was ~ 435.

Background of the Instructor

Doren W. Hess received his Bachelor of Science degree from Duke University in 1965 and his Ph.D. from The University of North Carolina at Chapel Hill in 1973. He joined the Microwave Instrumentation Division of Scientific-Atlanta in 1974. There his work was centered on industrial applications of compact ranges and near-field scanning. He was responsible for final development of the first Scientific-Atlanta compact range product, and for the first commercial spherical near-field product offered by Scientific-Atlanta and was the senior technical member of a design team for Scientific-Atlanta's planar near-field system. He is the author of articles and conference presentations on spherical and planar near-field scanning, compact range measurements, and automatic antenna measurements. Dr. Hess is a member of the IEEE Antenna and Propagation Society, where he has served as a member of the AdCom. He is a past editor of the Measurements Column of the AP-S Magazine and a past President of the Antenna Measurement Techniques Association. In 1997 the Antenna Measurement Techniques Association honored him with its Distinguished Achievement Award. In October 2001, he joined MI Technologies, located in Suwanee, Georgia as a Senior Staff Engineer. His work there is focused on near-field scanning and compact range applications

Suggested Afternoon (or Morning) Lecture Schedules

Extensions of Spherical Near-Field Scanning A EuCAP 2011 Half-Day Short Course Sunday/Monday Afternoon, 10/11 April 2011		
Topic		Scheduled Time
A Formal Introduction to Spherical Near-Field Scanning		13:00 - 14:00
Determination of Pattern and Gain from the Transmission Equation		14:00 - 15:00
Break		15:00 - 15:30
Back-Projection to the Aperture from Spherical Scanning		15:30 - 16:30
Coordinate Origin Translation and Spherical Modal Filtering - <i>IsoFilter</i> TM		16:30 - 17:30

OR

Extensions of Spherical Near-Field Scanning A EuCAP 2011 Half-Day Short Course Sunday/Monday Morning, 10/11 April 2011		
Topic		Scheduled Time
A Formal Introduction to Spherical Near-Field Scanning		08:00 - 09:00
Determination of Pattern and Gain from the Transmission Equation		09:00 - 10:00
Break		10:00 - 10:30
Back-Projection to the Aperture from Spherical Scanning		10:30 - 11:30
Coordinate Origin Translation and Spherical Modal Filtering - <i>IsoFilter</i> TM		11:30 - 12:30