Electromagnetics Education

M. F. Iskander and A. Prata

1:20 A Software Tool for Cost Optimization of Microwave Radio Relay Link
Ashraf Gasim Elsid Abdalla, Ahmad Faizal Mohd. Zain, Universiti Kebangsaan Malaysia

1:40 RASCAL - Interactive Freeware for Designing Classical Single- and Dual-Reflector Antennas
Aluizio Prata, Jr., Yung-Hsiang Lee, University of Southern California, Kenneth W. Brown, Hughes Aircraft Company*

2:00 Enhancement of High Frequency and Microwave Laboratories Through the Introduction of Multimedia
Atef Z. Elsherbeni, Asem Mokaddem, Mark D. Tew, University of Mississippi*

2:20 Computation and Graphic Visualization of Plane-Wave K-Space Spectra and Far-Field Patterns with MATLAB 4.0
Ross A. Speciale, Redondo Beach

2:40 A Student Programming Project: Part I - Computation of the Steady State Radar Cross Section of Realistic Targets
J. D. Pursel, P. M. Goggans, University of Mississippi*

3:00 BREAK

3:20 A Student Programming Project: Part II - Computation of One- and Two-Dimensional Radar Images of Realistic Targets
J.D. Pursel, P.M. Goggans, University of Mississippi*

3:40 Using Object-Oriented Programming in Computational Electromagnetic Codes
M. L. Zimmerman, P. Mallasch, Analex Corporation

4:00 Mixed Analytical-Numerical Calculations of Microstrip Antenna Green's Function Using Personal Computers C-language
M. Naguib, H. Ghali, H. El Hennawy, Ain Shams University*

Antennas for Personal Communications

S. S. Stuchly and Y. Rahmat-Samii

1:20 Performance of Circularly Polarized Patch Antennas for Personal Satellite Communications Including Biological Effects
M. A. Jensen, BYU, Y. Rahmat-Samii, UCLA*

1:40 Modeling of Hand-Held Receiving Antennas in the Presence of a Human Head
Xavier Thiry, Raj Mittra, University of Illinois

2:00 An Enhanced-Bandwidth Integrated Dual L Antenna for Mobile Communications Systems - Design and Measurement
K. Virga, Y. Rahmat-Samii, UCLA*

2:20 A Wideband Dual Meander Sleeve Antenna
M. Ali, S. S. Stuchly, K. Caputa, University of Victoria*

2:40 Gain Improvement of a Planar Inverted F Antenna on a Handset by Passive Loading
M. Hirose, M. Miyake, Casio Computer Co.*

3:00 BREAK

3:20 A Wide Band Microstrip Antenna for Portable Cordless Telephones
Mohamed Sanad, Nokia Mobile Phones

3:40 2 GHZ Compact Antennas on Handsets
C. Sabatier, France Telecom/CNET PAB

4:00 Analytical Study of a Planar Loop Antenna with U-Shape Notch
Hitoshi Itakura, Koichi Tsunekawa, NTT Mobile Communications Network Inc., Japan*

4:20 Experimental Study of Cavity-Backed Dielectric Disk and Ring Omnidirectional Antennas for Indoor Wireless Communications
Hongming An, Tongqing Wang, Renato G. Bosisio, Ke Wu, Ecole Polytechnique de Montreal*

4:40 Application of Non-uniform FDTD Method to PCS Antennas
N.T. Sangary, E.A. Navarro, C. Wu, J. Litva, McMaster University

5:00 A Dielectric-Loaded Miniature Antenna for Microcellular and Personal Communications
Yue-ping Zhang, Terry Kin-chung Lo, Yeong-ming Hwang, The Chinese University of Hong Kong*

Reflector Antennas II

D. C. Jenn and M. A. Thorburn

1:20 Coaxially Fed Dual-Frequency Horn for Offset Parabolic Reflector
M. Johansson, P-S. Kildal, Chalmers University of Technology*

1:40 Quasi-Non-Time-Differentiating Reflector Antennas for Short-Pulse Applications
Allen Wang, Hughes Aircraft Company, Aluizio Prata, Jr., University of Southern California*

2:00 Global vs. Bandlimited Basis Functions in the Analysis of Axisymmetric Reflector Antennas
F. L. Teixeira, J. R. Bergmann, Catholic University of Rio de Janeiro*

2:20 Near Field Measurement of a Facet-Approximated Reflector Antenna
Tadashi Takano Suguru Someya, Institute of Space and Astronautical Science, Eiji Hanayama, Polytechnic University*

2:40 Application of the PTD to Cross-Polarization Prediction in a Shaped-Reflector Antenna
S.G. Hay, CSIRO

3:00 BREAK

3:20 An Inexpensive Scanning Dual Offset Reflector Antenna with Rotating Flat Subreflector
E. Lorenzo, A. G. Pino, Universidad de Vigo, C. M. Rappaport, Northeastern University

3:40 Synthesis and Analysis of Shaped ADE Reflectors by Ray Tracing
Yueh-Chi Chang, Myung Jin Im, Raytheon Company

4:00 The Analysis of a Segmented Paraboliodal Reflector with Hexagonal Flat Sections
Alexander C. Brown, Jr., Phoenix, Arizona

4:20 Analysis of Uncontrollable Errors on the Performance of a Large Segmented Active Surface Reflector Antenna for Millimeter Wavelength
German Cortes-Medellin, Universidad de Los Andes, David R. Smith, University of Massachusetts-Lowell

4:40 Contoured Beam Design by Subreflector Shaping Only
H. Zhou, South Bank University

5:00 Eagle Vision Antenna Design
Gerry A. Seck, Datron/Transco, Inc.

Tuesday PM AP Session 32 Salon C

Microstrip Couplers and Filters
C. Nguyen and B. Rawat

1:40 Dispersion Analysis of Three-Line Microstrip Couplers
Lukang Yu, Banmali Rawat, University of Nevada*

2:00 Semi-Emperical Design Equations for Three-Line Microstrip Coupler
Lukang Yu, Banmali Rawat, University of Nevada*

2:20 Miniaturized Multi-Octave Band-Pass Filters
Cam Nguyen, Texas A&M University*

2:40 A High-Selectivity Low-Pass Filter Using a New Coplanar Waveguide with Tuning Septums
Pang-Cheng Hsu, C. Nguyen, Texas A&M University*

Tuesday PM AP Session 33 Salon C

Microstrip Patch Antennas on Unusual Substrates
L. P. B. Katehi and W. D. Burnside

3:20 Microstrip Patch Antennas on Micromachined Low-Index Materials
R.F. Drayton, I. Papapolymerou, L.P.B. Katehi, University of Michigan*

3:40 Synthesis of Tapered Resistive Ground Plane for a Microstrip Antenna
R. G. Rojas, D. Colak, M. F. Otero, W. D. Burnside, The Ohio State University*

4:00 Scattering Reduction of a Microstrip Patch with an In-Plane Biased Ferrite Cover Layer
David Hung Y Yang, University of Illinois at Chicago, Jesse A Castaneda, Phraxos R&D, Inc.

4:20 Cylindrical-Rectangular Patch on Fiber-Enhanced Composite Ground Plane
Jean-Fu Kiang, National Chung-Hsing University

4:40 Role of Chiral Images in the Design of Planar Integrated Structures
A. Toscano, L. Vegni, Third University of Roma*

Integral Equation Methods and Layered Media Green's Functions

A. A. Kishk and M. Orefice

1:20 Regularization of EFIE for Printed Structures: A Numerical Approach
Giuseppe Vecchi, Paola Pirinoli, Mario Orefice, Politecnico di Torino

1:40 Spectral-domain MoM using Subsectional Singular Functions
G. Vecchi, P. Pirinoli, L. Matekovits, M. Orefice, Politecnico di Torino

2:00 Method of Moment Solution of Multilayered Microstrip Structures with Thin Layers using Quasi-Static Images
J. Sercu, D. De Zutter, University of Ghent, J. Van Hese, N. Fache, HP-Belgium*

2:20 Radiation from 3D Sources in the Presence of 2D Composite Objects
Ahmed A. Kishk, University of Mississippi, Per-Simon Kildal, Chalmers University of Technology*

2:40 Modeling of a Cylindrical Wire Antenna With Flat End Caps Using a Rigorous Moment Method Technique
J. A. Huffman, D. H. Werner, The Pennsylvania State University*

3:00 BREAK

3:20 Wide-Band Evaluation of Communications Antennas Using [Z] Matrix Interpolation with the Method of Moments
Kathleen Virga, Yahya Rahmat-Samii, UCLA*

3:40 Mixed-Potential Integral Equation Technique for the Characterization of Microstrip Antennas Printed on Uniaxial Substrates
J. Plet, M. Drissi, J. Citerne, INSA/LCST*

4:00 Spectral Green's Functions for Multilayer Media in a Simple Form
Y. L. Chow, University of Waterloo, R. Faraji-Dana, S. Safavi-Naeini, University of Tehran, N. Hojjat, University of Waterloo

4:20 Efficient and Robust Approach for the Derivation of Closed-Form Green's Functions
M.I. Aksun, Bilkent University*

4:40 Frequency Derivatives of the Green's Functions of a Stratified Medium
J. Ureel, K. Blomme, D. DeZutter, University of Gent, J. Van Hese, HP-Alphabit*

Tuesday PM AP Session 35 Schooner/Sloop

Active Arrays
D. B. Rutledge and R. A. York

1:20 A 16-Element Tunnel Diode Grid Oscillator
Michael P. De Lisio, John F. Davis, Shi-Jie Li, David B. Rutledge, California Institute of Technology, James J. Rosenberg, Harvey Mudd College*

1:40 Generalized Scattering Matrices for Unit Cell Characterization of Grid Amplifiers and Device De-Embedding
Larry W. Epp, Raul M. Perez, R. Peter Smith, Jet Propulsion Laboratory*

2:00 Gain and Stability Models for HBT Grid Amplifiers
Cheh-Ming Liu, California Institute of Technology, Emilio A. Sovero, Rockwell International Corporation, Michael P. DeLisio, Alina Moussessian, David B. Rutledge, California Institute of Technology, James J. Rosenberg, Harvey Mudd College*

2:20 A Varactor Tuned 16-Element MESFET Grid Oscillator
A.C. Oak, Martin Marietta, R.M. Weikle, University of Virginia*

2:40 Monolithic Active Array Limitations Due to Substrate Modes
Donald W. Griffin, University of Adelaide

3:00 BREAK

3:20 A 100-Element MODFET Grid Amplifier
Michael P. De Lisio, Cheh-Ming Liu, Alina Moussessian, David B. Rutledge, California Institute of Technology, James J. Rosenberg, Harvey Mudd College*

3:40 Enhanced Scanning Range of Coupled Oscillator Arrays Utilizing Frequency Multipliers
Angelos Alexanian, Heng-Chia Chang, Robert A. York, University of California at Santa Barbara*

4:00 Coupled-Oscillator Scanning Technique for Receiver Applications
Xudong Cao, R.A. York, University of California at Santa Barbara*

Tuesday PM AP Session 36 Yawl

Electromagnetic Theory II
M. Gimersky and P. Chambelin

1:40 Tuning-Free Analysis of Planar Radiators Based on an Exact Numerical Evaluation of the Two-Dimensional Generalized Exponential Integral
Martin Gimersky, Smain Amari, Jens Bornemann, University of Victoria*

2:00 Analysis and Synthesis of Non-Uniform Waveguide by Tensorial Form of Maxwell's Equations
P. Chambelin, T. Dusseux, Alcatel Espace, R. Dusseaux, J. Chandezon, University of Clermont-Ferrand

2:20 The Direct Visualization of Complex Waves in Lossless Nonreciprocal Waveguides
B. Yu. Kapilevich, Tharek Abd. Rahman, University of Technology of Malaysia, T. N. Fedotova, Novosibirsk Telecommunication Institute

2:40 Full-Wave Analysis of Loaded Magnetron Oscillating Systems
A. E. Serebryannikov, D. M. Vavriv, Radio Astronomy Institute of Ukrainian Academy of Sciences*

Tuesday PM Joint/URSI-B Session 7 Salon E

Special Session

Parallel and Distributed Computation in Electromagnetics
T. Cwik and R. Mittra

1:20 Parallel Solution of Unstructured Sparse Finite Element Equations
N. Kapadia, B. Lichtenberg, J. A. B. Fortes, J. L. Gray, H. J. Siegel, K. J. Webb, Purdue University

1:40 Large Scale Finite Element Modeling Using Scalable Parallel Processing
Tom Cwik, JPL, Daniel Katz, Cray Research, Cinzia Zuffada, Vahraz Jamnejad, JPL

2:00 The Performance of Linear Algebra Routines on a Distributed Memory Massively Parallel Computer
Steven Castillo, Jay Martinez, William Dearholt, New Mexico State University*

2:20 Distributed Parallel Finite Difference Time Domain Calculations using Parallel Virtual Machine 3.2
V. Varadarajan, D. Oh, R. Mittra, University of Illinois at Urbana-Champaign*

2:40 Implementation of Advanced FDTD Methods on Parallel and Distributed Computers
Stephen D. Gedney, University of Kentucky, Faiza Lansing, Jet Propulsion Laboratory*

3:00 BREAK

3:20 Large Scale Integral Equation Modeling Using Scalable Parallel Processing
Tom Cwik, Jet Propulsion Laboratory, Daniel Katz, Cray Research, Inc. Jean Patterson, Jet Propulsion Laboratory*

3:40 Parallel Performance of the CARLOS-3D Method of Moments Code
J. M. Putnam, D. D. Car, McDonnell Douglas Corp., J. D. Kotulski, Sandia National Laboratories

4:00 Massive Parallelism is the Solution: Are We Kidding Ourselves?
Adrian S. King, Kent Lusted, Intel Corporation

4:20 Time and Space Parallel Solution of Maxwell's Equations on Massively Parallel MIMD Architectures
Michael A. Jensen, Brigham Young University, Amir Fijany, Jet Propulsion Laboratory, Yahya Rahmat-Samii, University of California at Los Angeles*

Tuesday PM Joint Session 8 Trimaran/Brigantine

Special Session

Image Reconstruction From Real Data
R. V. McGahan, R. Kleinman and M. Fiddy

1:20 Image Reconstruction from Ipswich Data
P. M. van den Berg, Delft University of Technology, R. E. Kleinman, University of Delaware*

1:40 Two-Dimensional Tomography Algorithms applied to the Ipswich Data
K. Belkebir, J. M. Elissalt, J. M. Geffrin, Laboratoire des Signaux et Systemes

2:00 Object Reconstruction from Far-Field Data Using Gradient and Gauss-Newton Type Methods
P. Lobel, CNRS/Universite de Nice-Sophia Antipolis, R. Kleinman, University of Delaware, Ch. Pichot, L. Blanc-Feraud, M. Barlaud, CNRS/Universite de Nice-Sophia Antipolis*

2:20 Microwave Tomography: Problems Related to Reconstructions from Experimental Data
J. Joachimowicz, J. Ch. Bolomey, A. Joisel, A. Franchois, M. Geleoc, SUPELEC/LSS*

2:40 On Modified Gradient Solution Methods Using the Binary Aspect of the Unknown Electromagnetic Parameters and Their Application to the Ipswich Data
B. Duchene, D. Lesselier, Laboratoire des Signaus et Systemes*

3:00 BREAK

3:20 Diffraction Tomography Reconstructions from Real Data
J. J. Stamnes, University of Bergen, L.-J. Gelius, Norwave Development AT, T. C. Wedberg, Norwegian Institute of Fisheries & Aquaqulture*

3:40 Processing Experimental Data with Local Shape Function Method and Distorted Born Iterative Method
C. C. Lu, W. C. Chew, University of Illinois*

4:00 Imaging of Unknown Targets from Measured Scattering Data
J. B. Morris, Rome Laboratory, D. A. Pommet, University of Massachusetts-Lowell, R. V. McGahan, Rome Laboratory, M. A. Fiddy, University of Massachusetts-Lowell

4:20 Application of Holographic Synthetic Aperture Radar Techniques to Monochromatic Swept-Angle Bistatic Data
Brian D. Jersak, Marc J. Byrd, Andrew J. Blanchard, Houston Advanced Research Center*

4:40 Three Dimensional Time Harmonic Electromagnetic Inverse Scattering: The Reconstruction of the Shape and the Impedance of an Obstacle
P. Maponi, Universita di Camerino, M.C. Recchioni, Universita di Ancona, F. Zirilli, Univesita di Roma "La Sapienza"*

5:00 An Improved MUSIC Algorithm for High Resolution Image Reconstruction
Fumie Kasahara, Hiroshi Shimotahira, ATR Optical and Radio Communications Research Laboratories*

Tuesday PM Joint/URSI-B Session 9 Yawl

Scattering by Wedges II
E. Marx and P. L. E. Uslenghi

3:20 Scattering by a Wedge with Variable Impedance Faces
G. Pelosi, Univ of Florence, G. Manara, P. Nepa, Univ. of Pisa*

3:40 A UTD Solution for the Diffraction of an Inhomogeneous Plane Wave Obliquely Incident on a Wedge
G. Manara, P. Nepa, University of Pisa, R. G. Kouyoumjian, The Ohio State University*

4:00 Solution for a DC Anomaly Caused by a Wedge in Conducting Ground
Keijo Nikoskinen, Mikko Flykt, Helsinki University of Technology*

4:20 Double Diffraction Coefficients for Source and Observation at Finite Distance for a Pair of Wedges
M. Albani, F. Capolino, S. Maci, Univ. of Florence, R. Tiberio, Univ. of Siena*

4:40 Diffraction at the Junction of a Two-Impedance Half-Plane
A.H. Serbest, Cukurova University, E. Luneburg, German Aerospace Research Establishment*

5:00 Further Notes on Electromagnetic Field Behavior Near Homogeneous Anisotropic Wedges
Yuad S. Brisker, Carey M. Rappaport, Northeastern University*

Remote Sensing of Terrestrial Media and Surfaces

K. Sarabandi and R. A. Simpson

1:20 A Coherent Scattering Model for Tree Canopies Based on the Fractal Theory
Yi-Cheng Lin, Kamal Sarabandi, University of Michigan*

1:40 Analysis and Application of Backscattered Frequency Correlation Function
Kamal Sarabandi, Adib Nashashibi, University of Michigan

2:00 Effective Permittivity of a Two-Dimensional Dense Random Medium: Comparison Between QCA and the Method of Moments
Paul Siqueira, Kamal Sarabandi, University of Michigan*

2:20 High Resolution Radar Rain Backscatter Measurements at NRL - Preliminary Report
William B. Gordon, Naval Research Laboratory

2:40 Application of Theoretical Models to Experimental Studies of Hydrometeors by Dual-Polarization Radars
A. B. Shupiatsky, S. V. Antipovsky, V. R. Megalinsky, Central Aerological Observatory

3:00 BREAK

3:20 Sensing of Ice Particles in Wintertime Thunderclouds Using C-Band Dual Polarization Radar
Yasuyuki Maekawa Osaka Electro-Communication University, Shoichiro Fukao, Kyoto University, Yasuo Sonoi, Kansai Electric Power Company, Katsunari Masukura, Ministry of Construction*

3:40 Experimental/Numerical Evaluation of Sky-Wave Directed Field for a Number of HF Antennas in the Vicinity of a Cliff
S. Saoudy, F. Hartery, D. Power, K. Hickey, Memorial University of Newfoundland*

4:00 FDTD Simulation of Scattering from Objects near a Dielectric Interface
J. E. Baron, G. L. Tyler, R. A. Simpson, Stanford University*

4:20 Coherent Multiple Scattering and Effective Polarization Anistropy of a Grass Layer
S. K. Kamzolov, V. L. Kouznetsov, The Moscow State Technical University of Civil Aviation

4:40 Radar Determination of Ocean State Parameters with Microwave Signal Doppler Spectrum (Quasispecular Backscattering)
M. B. Kanevsky, V. Yu. Karaev, Institute of Applied Physics, Russiam Academy of Sciences*

Hybrid Numerical Methods

X.-B. Xu and E. Heyman

1:20 Hybrid Ray-FDTD Moving Window Solution for Long Distance Modeling of Space-Time Wavepackets
B. Fidel, E. Heyman, R. Kastner, Tel-Aviv University, R. W. Ziolkowski, University of Arizona

1:40 An Investigation on the Electromagnetic Shielding of Sources Within a Ferromagnetic Pipe by a Hybrid Finite-Element and Unimoment Method Formulation Approach
Xiao-Bang Xu, Xiaomei Yang, Clemson University*

2:00 Using the Integral Form of Maxwell's Equations to Modify and Improve the FD-TD (2,4) Scheme
Mohammed F Hadi, Melinda Piket-May, University of Colorado at Boulder*

2:20 Study of Numerical Dispersion and Stability of the Discrete Surface Integral FDTD Method
H. Shi, J. L. Drewniak, University of Missouri-Rolla

2:40 Waveguide Coupler Modeling with the Discrete Surface Integral-FDTD Method
H. Shi, J. L. Drewniak, University of Missouri-Rolla

3:00 BREAK

3:20 A Modal Analysis Approach - An Exact Approach for the Investigation of the Causes of Spurious Solutions in Finite Element Techniques
C. F. Bunting, Old Dominion University, W. A. Davis, Virginia Polytechnic Institute and State University*

3:40 An Hybrid Finite Difference - Finite Volume Method for Solving Maxwell Equations in Time Domain
A. D. Kalfon, P. H. Klotz, Centre d'Etudes et de Recherches de Toulouse-ONERA*

4:00 Full-Wave Analysis and Design of Circular Waveguide Dual-Mode Filters by an Hybrid Technique Finite-Element Mode-Matching
J. R. Montejo Garai, J. Zapata, E. T. S. I. Telecomunicacion*

4:20 Computation of Wave Propagation on Microstrip Structures of Arbitrary Shape Using TLM and FEM
Jun Wei Lu, Derek Gray, David V. Thiel, Steven O'Keefe, Griffith University*

4:40 Method of Higher Order Basis Functions Applied to the MOM Portion of the SWITCH Code
Y. C. Ma, M. I. Sancer, G. E. Antilla, Northrop Corporation

5:00 Antenna Pattern Evaluations using a Hybridization of the Finite Element and High Frequency Methods
R. Kipp, S. W. Lee, DEMACO, T. Ozdemir, J. L. Volakis, University of Michigan, L. Kempel, J. Berrie, Mission Research Corporation*

Tuesday PM URSI-B Session 15 Salon A

High Frequency Techniques
A. F. Peterson and G. Pelosi

1:20 Extension of the Integral Equation - Asymptotic Phase Method to Three-dimensional Scattering
Kieth R. Aberegg, Andrew R. Peterson, Georgia Institute of Technology*

1:40 Scattering Matrix networks for the solution of high-frequency electromagnetic interaction problems with large structures
B. L. Michielsen, V. Gobin, ONERA*

2:00 Methods to Increase the Efficiency of a Planar Reflector
J. Shaker, L. Shafai, University of Manitoba*

2:20 Application of the Generalized Multipole Technique (GMT) to High-Frequency Electromagnetic Scattering from 3-D Perfectly Conducting and Dielectric Homogeneous Bodies of Revolution
J. M. Tranquilla, H. M. Al-Rizzo, University of New Brunswick*

2:40 TD-UTD Analysis of the Scattering from a Perfectly Conducting Finite Cylinder
Paul R. Rousseau, Prabhakar H. Pathak, The Ohio State University*

3:00 BREAK

3:20 Improving the Capabilities of High-Frequency Techniques with FEM
G. Pelosi, R. Coccioli, M. T. Suadoni, University of Florence, G. Manara, University of Pisa*

3:40 High Frequency Analysis of EM Scattering by Masts and Towers Present in Certain Propagation Enviornments
C. W. Chuang, P. H. Pathak, R. J. Burkholder, Ohio State University

4:00 Generalization of the Rubinowicz Ray Theory
P. Ya. Ufimtsev, Phraxos Research & Development, Inc., N. G. Alexopoulos, University of California at Los Angeles, J. A. Castaneda, Phraxos Research & Development, Inc.*

4:20 Diffraction Principles in Design and Detection of Invisible Objects
P. Ya. Ufimtsev, Phraxos Research & Development, Inc.

4:40 Uniform Asymptotic Solutions for Whispering Gallery Mode Radiation from Smooth Concave-To-Convex Boundary
T. Ishihara, K. Goto, National Defense Academy, Japan*

5:00 Asymptotics of Creeping Waves in a Vicinity of the Surface Discontinuity
Ivan V. Andronov, University of St. Petersburg

Tuesday PM URSI-A Session 16 Salon B

Material Characterization
S. Riad and J. Chen

1:20 Intercomparison of Magnetic Material Characterization using the Transmission/Reflection Method in 7-MM and 14-MM Coaxial Air Lines
Claude M. Weil, Eric J. Vanzura, National Institute of Standards and Technology*

1:40 Determination of EM Parameters of Anisotropic Materials Using a Waveguide Probe System
C. W. Chang, K. M. Chen, J. Qian, D. P. Nyquist, Michigan State University*

2:00 Dielectric Characterization Using a Shorted Circular Waveguide Fed By a Coaxial Line
Mohammad A. Saed

2:20 Measurement of Complex Dielectric Permittivity using Microstrip Transmission Line
Richard B. Keam, W. S. Holmes, Industrial Research Ltd.

2:40 Field Analysis of High TC Superconducting Strip Transmission Lines
Jeffrey S. Herd, Rome Laboratory

3:00 BREAK

3:20 Time Domain Analysis of Skin Effect Losses in Transmission Lines
Sedki M. Riad, Mohammed Abd-el Rahman, Iman M. Salama, Virginia Polytechnic Institute*

3:40 Variable-Temperature Microwave Dielectric Properties of Isotropic and Anisotropic Materials
Richard G. Geyer, NIST, Jerzy Krupka, Instytut Mikroelektroniki i Optoelektroniki*

Microstrip I

A. C. Cangellaris and L. Shafai

1:20 Series Fed Microstrip Array Antenna
Babau R. Vishvakarma, Banaras Hindu University, Milind B. Mahajan, Indian Space Research Organization

1:40 High Gain Cavity Back Microstrip Antenna as Active Array Element
L. Shafai, A. Asi, University of Manitoba, D. J. Roscoe, Communications Research Centre*

2:00 Effect of Superstrate Thickness and Permittivity on Stacked Electromagnetic Coupled Patch Antennas
Kai-Fong Lee, Wei Chen, University of Toledo, R. Q. Lee, NASA Lewis Research Center*

2:20 A Microstrip Phased Array Antenna with Low Q Elements for Southern Coverage Using MSAT
Radha Telikepalli, Tim Musclow, Peter Strickland, CAL Corporation*

2:40 Time Domain Analysis of Microstrip Networks using a Rational Function Approach
Thomas Karle, Tapan K. Sarkar, Syracuse University

3:00 BREAK

3:20 Resonance Properties of Rectangular Patch in the Presence of Laminated Ground Plane
Jean-Fu Kiang, Chung-Yuan Kung, National Chung-Hsing University*

3:40 Double-Layer Circularly Polarized Microstrip Antenna with a Single Coaxial Feed
Choon Sae Lee, Southern Methodist University, Vahakn Nalbandian, Felix Schwering, US Army CECOM*

4:00 Numerical Analysis of a Waveguide Simulation of A Microstrip Phased Array Antenna on a Normally Biased Ferrite Substrate
Kang H. Lee, Sharad R. Laxpati, University of Illinois at Chicago*

4:20 Application of the PML Grid Truncation Scheme for the FDTD Analysis of Microstrip Patch Arrays
M. Pasik, Sandia National Laboratories, G. Aguirre, A. C. Cangellaris, University of Arizona*

4:40 A Time-Domain Iterative Method for Microstrip Antennas
I. Baracco, Ch. Pichot, A. Papiernik, M. Scotto, CNRS/Universite de Nice-Sophia Antipolis*

5:00 Improved Design of a Quadrature Hybrid Using an Elliptic Patch
K. L. Chan, F. A. Alhargan, S. R. Judah, University of Hull*