



1993 IEEE MTT-S International Microwave Symposium Digest

Technical Program Contents

Technical Program Contents

Session A

(Plenary)

World Congress Center Auditorium

9:00 a.m. to 10:30 a.m.

Tuesday, June 15, 1993

Chairman: G.P. Rodrigue

“The Global Reach of Microwaves”

Speakers: John Day, Consultant, Strategies Unlimited

Richard Snelling, Retired Executive Vice President, Bell South Telecommunications

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Session B

(Joint with MMWMC Symposium)

Advanced MMIC Technology Auditorium

11:00 a.m. to 12:00 p.m.

Tuesday, June 15, 1993

Chairman: M. Kumar—Paramax Systems Corp., Great Neck, NY

Co-Chairman: W. C. Niehaus—AT&T Bell Laboratories, Reading, PA

B-1: A Highly-Efficient 7-Watt 16 GHz Monolithic Pseudomorphic HEMT Amplifier 87

11:00 a.m. H.Q. Tserng and P. Saunier

B-2: The Inductive Connection Effects of a Mounted SPDT in a Plastic SO8 Package 91

11:20 a.m. F. Ndagijimana, J. Engdahl, A. Ahmadouche and J. Chilo

B-3: An MMIC Linearized Amplifier Using Active Feedback 95

11:40 a.m. J.C. Pedro and J. Perez

Session C

(Special Session)

Intelligent Vehicle Highway Systems

Room: 216/217

11:00 a.m. to 12:00 p.m.

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Chairman: R.A. Sparks—Anro, Lexington, MA

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11:00 a.m. J.M. Sussman

C-2: Spectrum Allocations for IVHS *

11:30 a.m. D.J. Chadwick

C-3: Potential System Architectures for IVHS *

12:00 p.m. M.F. McGuire

*Paper not available at time of printing.

Session D
(Special Session)

Microwave Power Modules (MPM)
Room: 202

11:00 a.m. to 12:00 p.m. **Tuesday, June 15, 1993**

Chairman: R.K. Parker—Naval Research Laboratory, Washington, DC

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Manufacturing Methods, Production and Packaging
Room: 218/219

11:00 a.m. to 12:00 p.m. **Tuesday, June 15, 1993**

Chairman: T.C.Cisco—Hughes Aircraft Company, El Segundo, CA

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Session F

(Joint with MMWMC Symposium)

Broadband MMIC Circuits

Auditorium

1:30 p.m. to 3:00 p.m.

Tuesday, June 15, 1993

Chairman: D. Meharry—Lockheed-Sanders, Nashua, NH
Co-Chairman: H.-L. Hung—COMSAT Laboratories, Clarksburg, MD

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Session G

Millimeter-Wave Systems and Techniques

Room: 216/217

1:30 p.m. to 3:00 p.m.

Tuesday, June 15, 1993

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*Paper not available at time of printing.

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Session I

Special Session-Status of Microwave Ferrite Technology

Room: 218/219

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Tuesday, June 15, 1993

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*Paper not available at time of printing.

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*Paper not available at time of printing.

Session J
(Joint with MMWMC Symposium)

MMIC Control Circuits
Auditorium

3:30 p.m. to 5:00 p.m.

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Chairman E. Switzer—Electromagnetic Sciences, Inc., Norcross, GA

Co-Chairman: C. Huang—Anadigics, Warren, NJ

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Tuesday, June 15, 1993

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Co-Chairman: A.S. Omar—Tech. University of Hamburg-Harburg, Hamburg, Germany

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3:30 p.m. to 5:00 p.m.

Tuesday, June 15, 1993

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Tuesday, June 15, 1993

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Session N

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Wednesday, June 16, 1993

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*Paper not available at time of printing.

Session O

Millimeter-Wave Amplifier and Receiver Technology Room 216/217

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8:30 a.m. to 10:00 a.m.

Wednesday, June 16, 1993

Chairman: E.C. Niehenke—Westinghouse ESG, Baltimore, MD

Co-Chairman: M.N. Afsar—Tufts University, Medford, MA

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Session Q

(Focused Session)

Developments in Global Communications

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Wednesday, June 16, 1993

Chairman: G.L. Heiter—AT&T Bell Labs., North Andover, MA

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Session S

Phased Arrays II

Room 202

10:30 a.m. to 12:00 p.m.

Wednesday, June 16, 1993

Chairman: D. Rutledge—Cal. Tech., Pasadena, CA

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Wednesday, June 16, 1993

Chairman: M. Calcaterra, USAF Wright Lab., Dayton, OH

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Solid State Oscillators Room 218/219

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Wednesday, June 16, 1993

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Session V

Focused Session

Wireless Local Area Networks

Room 205

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Wednesday, June 16, 1993

Chairman: J.B. Horton—TRW, Redondo Beach, CA

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| | D.A. Williams | |

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Session W

Coplanar Structures

Room 215

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Wednesday, June 16, 1993

Chairman: T.A. Brunasso—Electromagnetic Sciences, Inc., Norcross, GA

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| | T. Becks and I. Wolff | |
| W-3: | Effects of Ground Equalization on the Electrical Performance of Asymmetric CPW | |
| 11:00 a.m. | Shunt Stubs | 701 |
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| | M. Yu, R. Vahldieck and J. Huang | |
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| | H. Jin, R. Vahldieck, P. Russer and J. Huang | |

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High Speed Fiber Optic Links-Systems Room 202

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Wednesday, June 16, 1993

Chairman: P.R. Herczfeld—Drexel University, Philadelphia, PA

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Wednesday, June 16, 1993

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Wednesday, June 16, 1993

Chairman: J.J. Whelehan—AIL Systems, Deer Park, NY

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Wednesday, June 16, 1993

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Planar Structures Room 215

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Wednesday, June 16, 1993

Chairman: J. Taub—AIL Systems, Deer Park, NY

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GWCC Ballroom

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Session CC

High Speed Fiber Optic Links-Components Session Room 202

3:30 p.m. to 5:00 p.m.

Wednesday, June 16, 1993

Chairman: H. Sobol—University of Texas at Arlington, Arlington, TX

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Session DD

CAD of Passive Components Room 216/217

3:30 p.m. to 5:00 p.m.

Wednesday, June 16, 1993

Chairman: I. Wolff—Düisberg University, Duisburg, Germany

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Receiver Components Room 218/219

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Wednesday, June 16, 1993

Chairman: E.W. Rezek—TRW, Torrence, CA

EE-1:	Low Noise Device and Amplifier Characterization for Deep Space Communication Applications	1095
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3:50 p.m.	M.N. Tutt, R. Menozzi and D. Pavlidis	
EE-3:	A 7 to 11 GHz AlInAs/GaInAs/InP MMIC Low Noise Amplifier	1103
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Session FF

Selected Russian Microwave Technologies Room 205

3:30 p.m. to 5:00 p.m.

Wednesday, June 16, 1993

Chairman: G.W. Ewell—Georgia Tech Research Institute, Atlanta, GA

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| FF-1: | High-Power Millimeter Wave Tubes | 1119 |
| 3:30 p.m. | M.I. Lopin, B.A. Belyavsky, K.G. Simonov, V.A. Cherepenin, A.D. Zakurdayev, B.S. Grishin, A.A. Negirev and A.S. Pobedonostsev | |
| FF-2: | A New Class of Self-Protecting Low-Noise Microwave Amplifiers | 1123 |
| 2:50 p.m. | Y.A. Budzinsky and S.P. Kantyuk | |
| FF-3: | “Istok” — A Leading Russian Microwave R&D Facility | 1127 |
| 4:10 p.m. | A.N. Korolyov | |
| FF-4: | Istok Achievements in Solid-State Microwave Devices | 1129 |
| 4:30 p.m. | S.A. Zaytsev, V.N. Lebedev, I.A. Ledov, A.S. Negirev, A.D. Rodyonov, E.I. Ryzhik and A.M. Temnov | |
| FF-5: | Multiple-Beam Microwave Tubes | 1131 |
| 4:50 p.m. | A.S. Pobedonostsev, A.E. Gelvich, M.I. Lopin, A.M. Alexeyenko, A.A. Negirev and B.V. Sazonov | |

Session GG

Biological Effects and Medical Applications Room 215

3:30 p.m. to 5:00 p.m.

Wednesday, June 16, 1993

Chairman: A. Rosen—David Sarnoff Research Center, Princeton, NJ

- | | | |
|------------------|---|-------------|
| GG-1: | (Invited) Microwave Bioelectromagnetics in Europe | 1137 |
| 3:30 p.m. | A. Vander Vorst | |
| GG-2: | An Improved Diffraction Tomography for Imaging of High-Contrast Dielectric Objects | 1141 |
| 3:50 p.m. | K.-W. Suh, S.-Y. Kim and J.W. Ra | |
| GG-3: | Dielectric Imaging for the Localisation and Detection of Breast Tumours | 1145 |
| 4:00 p.m. | A.W. Preece, R.H. Johnson, J.L. Green and M.P. Robinson | |
| GG-4: | Thermal Modelling of Non-Ideal Interstitial Microwave Antenna Array Hyperthermia for the Treatment of Cancer | 1147 |
| 4:10 p.m. | K.L. Clibbon and A. McCowen | |
| GG-5: | Finite Difference Time Domain Modelling of Hyperthermia Applicators for Cancer Therapy | 1151 |
| 4:30 p.m. | N.M. Potheary and C.J. Railton | |
| GG-6: | RF and Microwave Ablation for the Treatment of Ventricular Tachycardia | 1155 |
| 4:40 p.m. | R.M. Rosenbaum, A.J. Greenspon, S. Hsu, P. Walinsky and A. Rosen | |
| GG-7: | Nonlinear Dynamical Formulation for Describing Growth of Cancer Cells Based on Intracellular Constituents | 1159 |
| 4:50 p.m. | C.M. Krowne and A.P. Krowne | |

Session HH

Device Modeling and CAD

Room 218/219

8:30 a.m. to 10:00 a.m.

Thursday, June 17, 1993

Chairman: L. Dunleavy—University of South Florida, Tampa, FL

HH-1:	Millimetre-Wave Device Modelling Differences in Microstrip and Coplanar Waveguide	1173
8:30 a.m.	P.C. Walters, R.D. Pollard, J.R. Richardson and G. Gatti	
HH-2:	Accurate and Efficient Modeling of Hetero-FETs	1177
8:50 a.m.	A. Abou-Elnour and K. Schuenemann	
HH-3:	Characterization of Thermal Effects on Microwave Transistor Performance Using an Efficient Physical Model	1181
9:10 a.m.	J.S. Atherton, C.M. Snowden and J.R. Richardson	
HH-4:	Instabilities Diagnosis and the Role of K in Microwave Circuits	1185
9:30 a.m.	A. Platzker, W. Struble and K.T. Hetzler	
HH-5:	Convolution-Based Black-Box Approach for Incorporating Linear Circuit Blocks Described by Frequency-Domain Data into a Non-Linear Transient Time-Domain Simulator	1189
9:40 a.m.	P. Halloran and T.J. Brazil	

Session II

Coupling and Packaging Effects

Room 202

8:30 a.m. to 10:00 a.m.

Thursday, June 17, 1993

Chairman: A.A. Oliner—Polytechnic University, Brooklyn, NY

II-1:	Packaged Printed Transmission Lines: Modal Phenomena and Relation to Leakage	1195
8:30 a.m.	L. Carin, A.A. Oliner, G.W. Slade and K.J. Webb	
II-2:	Resonant Phenomena in Conductor-Backed Coplanar Waveguide (CBCPW)	1199
8:50 a.m.	W.-T. Lo, C.-K.C. Tzuang, S.-T. Peng, C.-C. Chang, J.W. Huang and C.-C. Tien	
II-3:	Coupling Phenomena in Conductor-Backed Slotline Structures	1203
9:10 a.m.	Y. Liu, T. Hirota and T. Itoh	
II-4:	Measurement of NRD-Guide Leaky Wave Coupler in Ka Band	1207
9:30 a.m.	D.-C. Niu, T. Yoneyama and T. Itoh	

Session JJ

High Power Sources and Control Components Room 216/217

8:30 a.m. to 10:00 a.m.

Thursday, June 17, 1993

Chairman: J. Goel—TRW, Redondo Beach, CA

JJ-1:	12 KW S-Band Solid State Transmitter for Modern Radar Systems	1213
8:30 a.m.	M. Hanczor and M. Kumar	
JJ-2:	High Power 14 GHz SSPA for SATCOM Applications	1217
8:50 a.m.	R. Mallavarpu and M.P. Puri	
JJ-3:	Monolithic Photoconductive Ultra-Wideband RF Device	1221
9:10 a.m.	A. Kim, L. Di Domenico, R. Youmans, A. Balekdjian, M. Weiner and L. Jasper	
JJ-4:	Solid State 6x6 Transfer Switch for Cylindrical Array Radar	1225
9:30 a.m.	M.E. Knox, P.J. Sbuttoni, J.J. Stangel, M. Kumar and P. Valentino	
JJ-5:	Shunt-Mounted Harmonically-Tuned Power Rectifier for Distributed Power	
9:50 a.m.	Converters	1229
	D.P. Garrison, A. Lam, J.M. Borrego and R.J. Gutmann	

Session KK

Microwave Measurements Room 215

8:30 a.m. to 10:00 a.m.

Thursday, June 17, 1993

Chairman: D. Wait—NIST, Boulder, CO

KK-1: 8:30 a.m.	A Broad Band Time Domain Technique for the Measurement of the Frequency Dependent Complex Permittivity in Lossy Transmission Line Systems K.M. Lape and T. Rahal-Arabi	1235
KK-2: 8:40 a.m.	Ultra-Wideband Characterization of Lossy Materials: Short-Pulse Microwave Measurements D. Kralj and L. Carin	1239
KK-3: 8:50 a.m.	MM-Wave Confocal Resonators for Vertical Structure Profiling in Semiconducting and Superconducting Materials J.S. Martens, L. Lee, K. Char, R. Withers, D. Zhang, V.M. Hietala, C.P. Tigges and J. Zolper	1243
KK-4: 9:00 a.m.	Finite Element Analysis of Open-Ended Coaxial Lines D. Blackham	1247
KK-5: 9:10 a.m.	Transistor Noise Parameter Extraction Using a 50 Ohm Measurement System P.J. Tasker, W. Reinert, B. Hughes, J. Braunstein and M. Schlectweg	1251
KK-6: 9:30 a.m.	A Novel Technique for Measuring Small Singal S-Parameters of an RF/ Microwave, Transistor, Power Amplifying Stage for use in Power Amplifier Stability Analysis G. Collinson and M. Jones	1255
KK-7: 9:40 a.m.	A Systematic Error Analysis of HP8510 Time-Domain Gating Techniques with Experimental Verification K. Lu and T.J. Brazil	1259
KK-8: 9:50 a.m.	A Robust Six- to Four-Port Reduction Algorithm C.M. Potter and G. Hji pieries	1263

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Session LL

Superconducting Filters

Room 218/219

10:30 a.m. to 12:00 p.m.

Thursday, June 17, 1993

Chairman: R. Withers—Conductus, Inc., Sunnyvale, CA

LL-1:	Novel Staggered Resonator Array Superconducting 2.3-GHz Bandpass Filter	1269
10:30 a.m.	G.L. Matthaei and G.L. Hey-Shipton	
LL-2:	High Temp. Superconducting 8.45-GHz Bandpass Filter for the Deep Space	
10:50 a.m.	Network	1273
	G.L. Matthaei and G.L. Hey-Shipton	
LL-3:	Superconducting Narrow Band Pass Filters for Advanced Multiplexers	1277
11:00 a.m.	A. Fathy, D. Kalokitis, V. Pendrick, E. Belohoubek, A. Pique and M. Mathur	
LL-4:	Design of Hybrid-Coupled Multiplexers and Diplexers Using Asymmetrical	
11:20 a.m.	Superconducting Filters	1281
	R.R. Mansour, F. Rammo and V. Dokas	
LL-5:	Narrow-Band YBCO Superconducting Parallel-Coupled Coplanar Waveguide	
11:40 a.m.	Band-Pass Filters at 10 GHZ	1285
	R. Weigel, M. Nalezinski, A.A. Valenzuela and P. Russer	

Session MM

New Structures and Leaky Modes

Room 202

10:30 a.m. to 12:00 p.m.

Thursday, June 17, 1993

Chairman: M. Dydyk—Motorola, Inc., Scottsdale, AZ

MM-1:	Existence of a Leaky Dominant Mode on Microstrip Line with an Isotropic	
10:30 a.m.	Substrate: Theory and Measurements	1291
	D. Nghiem, J.T. Williams, D.R. Jackson and A.A. Oliner	
MM-2:	Simultaneous Propagation of Both Bound and Leaky Dominant Modes on	
10:50 a.m.	Conductor-Backed Coplanar Strips	1295
	M. Tsuji, H. Sigesawa and A.A. Oliner	
MM-3:	Channelized Coplanar Waveguides (CCPW)—A New Transmission Line for	
11:10 a.m.	Wideband Applications in Integrated Microwave & Millimeter-Wave Circuits	*
	K. Wu, Y. Xu and R.G. Bosisio	
MM-4:	Microstrip Discontinuities on Cylindrical Surfaces	1299
11:30 a.m.	J. Huang, R. Vahldieck and H. Jin	
MM-5:	Analysis of Wave Propagation Effects on Microwave Field-Effect Transistors	1303
11:40 a.m.	M.S. Hakim and S.M. El-Ghazaly	

*Paper not available at time of printing.

Session NN

Microwave Integrated Circuits

Room 216/217

10:30 a.m. to 12:00 p.m.

Thursday, June 17, 1993

Chairman: J. Pierro—AIL Systems, Deer Park, NY

NN-1:	A Novel Approach for Integrating High-Q Band-Pass Filters into Microwave	
10:30 a.m.	Integrated Circuit Assemblies	1309
	G.E. Johnson, M.D. Meldey, R. Levy, R.W. Larson, P. Ng and D.S. Mackie	
NN-2:	A Microwave Active Bandstop Filter with Tunable Centre Frequency	1313
10:40 a.m.	R.G. Arnold and S.P. Marsh	
NN-3:	Coplanar Waveguide Filters	1317
11:00 a.m.	A.K. Rayit and N.J. McEwan	
NN-4:	Physically Based Circuit Model of GaAs MESFET as an Optical Port for Microwave	
11:10 a.m.	Systems	1553
	K.A.R. Razzooqi, N.J. Gomes and P.A. Davies	
NN-5:	Slot-Coupled Double-Sided Microstrip Interconnects and Couplers	1321
11:20 a.m.	C.-H. Ho, L. Fan and K. Chang	
NN-6:	A GHz-Band Ceramic Multi-Layer Substrate and Its Applications to a Hybrid IC	1325
11:30 a.m.	Y. Taguchi, K. Mayauchi, K. Eda and T. Ishida	
NN-7:	A 6.8-10.7 GHz EW Module Using 72 MMICs	1329
11:50 a.m.	G. Garbe, R. Becker, M. Patel, W. Guthrie, S. Moghe, R. Williams and G. Giacomino	

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Session OO

Microwave Probe Measurements Room 215

10:30 a.m. to 12:00 p.m.

Thursday, June 17, 1993

Chairman: M.A. Maury, Jr.—Maury Microwave Corp., Ontario, Canada

- | | | |
|-------------------|---|-------------|
| OO-1: | A New Probe for W-Band On-Wafer Measurements | 1335 |
| 10:30 a.m. | S.M.J. Liu and G.G. Boll | |
| OO-2: | Full Two-Port On-Wafer Vector Network Analysis to 120 GHz Using Active Probes | 1339 |
| 10:50 a.m. | R. Yu, M. Reddy, J. Puhl, S. Allen, M. Case and M. Rodwell | |
| OO-3: | Ka-Band Power PHEMT On-Wafer Characterization Using Prematched Structures | 1343 |
| 11:00 a.m. | A.K. Sharma, G.S. Dow, M. Aust, J. Canyon, B. Allen, S. Pak, D. Yang, Y. Hwang and K. Tan | |
| OO-4: | Non-Invasive Waveform Probing for Nonlinear Network Analysis | 1347 |
| 11:10 a.m. | C.J. Wei, Y.A. Tkachenko and J.C.M. Hwang | |
| OO-5: | Probe Tip Invasiveness at Indirect Electro-Optics Sampling MMIC | 1351 |
| 11:20 a.m. | W. Mertin, C. Roths, F. Taenzler and E. Kubalek | |
| OO-6: | 300-GHz-Bandwidth Network Analysis Using Time-Domain Electro-Optic Sampling | 1355 |
| 11:30 a.m. | H.-J. Cheng and J.F. Whitaker | |
| OO-7: | Time-Domain Network Analysis of MM-Wave Circuits Based on a Photoconductive Probe Sampling Technique | 1359 |
| 11:50 a.m. | J. Kim, J. Son, S. Wakana, J. Nees, S. Williamson, J. Whitaker, Y. Kwon and D. Pavlidis | |

Session PP

Transistor Power Amplifiers I Room 216/217

1:30 p.m. to 3:00 p.m.

Thursday, June 17, 1993

Chairman: D. Cahana—Avantek, Santa Clara, CA

- | | | |
|------------------|---|-------------|
| PP-1: | C-X Band 14W Power Amplifier Having Flat Gain and Power Response | 1365 |
| 1:30 p.m. | M. Mochizuki, Y. Itoh, M. Kohno, H. Masuno and T. Takagi | |
| PP-2: | A Power Amplifier Yields 10 Watts Over 8–14 GHz Using GAAS MMICS in an LTCC Serial Combiner/Divider Network | 1369 |
| 1:50 p.m. | J.W. Gippich, L.E. Dickens, J.A. Faulkner | |
| PP-3: | Ku-Band Monolithic 7-Watt Power Amplifier Using AlGaAs/GaAs 0.25-μm T-GATE Heterostructure FET Technology | 1373 |
| 2:10 p.m. | D.T. Bryant, K. Salzman and R. Hudgens | |
| PP-4: | 20 GHz High Power High Efficiency HEMT Module | 1377 |
| 2:30 p.m. | C.H. Chen, H.C. Yen, K. Tan, L. Callejo, G. Onak, D.C. Streit, P.H. Liu and J.M. Schellenberg | |
| PP-5: | Four-Watt 20-GHz Partial Monolithic Amplifier | 1381 |
| 2:40 p.m. | R. Yarborough, P. Saunier, H.Q. Tserng, K. Salzman, B. Smith and D. Heston | |

Session QQ

Optical Characterization and Device Modeling Room 202

1:30 p.m. to 3:00 p.m.

Thursday, June 17, 1993

Chairman: A. Paolella—Army Research Laboratory, Ft. Monmouth, NJ

- | | | |
|------------------|---|-------------|
| QQ-1: | Broadband and Real-Time Waveform Sampling Using Optic-Microwave | |
| 1:30 p.m. | Phase-Locking | 1387 |
| | S.L. Huang, H.-L.A. Hung and C.H. Lee | |
| QQ-2: | Noninvasive Probing System for Ultra-High Speed Testing of MMIC's and MCM's | * |
| 1:50 p.m. | M.K. Ravel, S.H. Pepper and M.D. Jones | |
| QQ-3: | Design and On-Wafer Testing of Millimeter-Wave External Optical Modulators | 1391 |
| 2:00 p.m. | D. Polifko, K. Matsui and H. Ogawa | |
| QQ-4: | Picosecond Photoconductive Switches Designed for On-Wafer Characterization of | |
| 2:10 p.m. | High Frequency Interconnects | 1395 |
| | L.P. Golob, S.L. Huang, C.H. Lee, W.H. Chang, K. Jones, M. Taysing Lara and T. DeAnni | |
| QQ-5: | MESFET as an Optically Activated Microwave Switch—Theory and Experiment | 1399 |
| 2:20 p.m. | A. Madjar, A. Paolella and P.R. Herczfeld | |
| QQ-6: | A Study on the Negative Photoresponse of AlGaAs/GaAs MODFETs | 1403 |
| 2:40 p.m. | M.A. Romero and P.R. Herczfeld | |
| QQ-7: | A New Lightwave-Microwave Signal Conversion Method | 1407 |
| 2:50 p.m. | T. Berceci, M. Izutsu and T. Sueta | |

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*Paper not available at time of printing.

Session RR

Superconducting Sub-System Technology

Room 218/219

1:30 p.m. to 3:00 p.m.

Thursday, June 17, 1993

Chairman: C.M. Jackson—TRW, Hawthorne, CA

- | | | |
|------------------|---|-------------|
| RR-1: | Superconductive Digital Instantaneous Frequency-Measurement Subsystem | 1413 |
| 1:30 p.m. | G.-C. Liang, C.F. Shih, R.S. Withers, B.F. Cole, M.E. Johansson and L.P. Suppan | |
| RR-2: | High-Temperature Superconducting Matching Networks for Electrically Short Monopole Antennas | 1417 |
| 1:50 p.m. | A.Y. Piatnicia, S.H. Talisa, J.R. Gavalier, M.A. Janocko, J. Talvacchio, M.J. Buckley, K.M. Leader, J.A. Moellers and M.R. Schrote | |
| RR-3: | Tunable High Temperature Superconductor Microstrip Resonators | 1421 |
| 2:00 p.m. | J.A. Beall, R.H. Ono, D. Galt and J.C. Price | |
| RR-4: | Parametric Interactions in High-Tc Superconducting Step Edge Junctions at X Band | 1425 |
| 2:10 p.m. | A.Z. Kain and H.R. Fetterman | |
| RR-5: | Noise Figure of HTS JJ MMIC Downconverter at 12GHz | 1429 |
| 2:20 p.m. | K. Suzuki, S. Yoshikawa, K. Yamaguchi, K. Hayashi, S. Fujino, T. Takenaka, T. Mitsuzuka, Y. Enomoto, K. Imai, F. Suginoshta and N. Yazawa | |

Session SS

EM Analytical and Numerical Techniques I Room 215

1:30 p.m. to 3:00 p.m.

Thursday, June 17, 1993

Chairman: M. Goetz—Stratedge Corp., San Diego, CA

SS-1:	The FDTD Diakoptics Method	1435
1:30 p.m.	T.-W. Huang, B. Houshmand and T. Itoh	
SS-2:	Performance Study of One-Way Absorbing Boundary Equations in 3-D TLM for Dispersive Guiding Structures	1439
1:50 p.m.	C. Eswarappa and W.J.R. Hoefer	
SS-3:	A New Look at the 3D Condensed Node TLM Scattering	1443
2:00 p.m.	P.P.M. So and W.J.R. Hoefer	
SS-4:	Rigorous and Efficient Analysis of Hybrid T-Junctions	1447
2:10 p.m.	F. Alessandri, M. Barba, M. Mongiardo and R. Sorrentino	
SS-5:	A Rigorous Analysis of the Higher Order Modes and Attenuation of Stripline of Arbitrary Dimensions	1451
2:20 p.m.	M.H. Burchett, S.R. Pennock and P.R. Shepherd	
SS-6:	Two-Dimensional Transmission Line Matrix (TLM) Simulation of the Electromagnetic Fields in a Rectangular Section of a Discretized GaAs MESFET Channel with Arbitrary Doping Profile	1455
2:30 p.m.	S. Dindo and M. Ney	

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Session TT

Transistor Power Amplifiers II

Room 216/217

3:30 p.m. to 5:00 p.m.

Thursday, June 17, 1993

Chairman: L.J. Kushner—MIT Lincoln Labs., Lexington, MA

TT-1:	Low Voltage GaAs Power Amplifier for Personal Communications at 1.9GHz	1461
3:30 p.m.	D. Ngo, B. Bechwith, P. O'Neil and N. Camilleri	
TT-2:	3V Operation L-Band Power Double-Doped Double Heterjunction FETs	1465
3:50 p.m.	N. Iwata, K. Inosako and M. Kuzuhara	
TT-3:	4GHz High-Power High-Efficiency Pseudomorphic Power HEMT	1469
4:00 p.m.	S.T. Fu, W.F. Kopp, M.Y. Kao, K.H.G. Duh, P.M. Smith, P.C. Chao and T.H. Yu	
TT-4:	Broadband High-Efficiency HBT MMIC Power Applifier Fabricated with Re-Aligned Process	1473
4:10 p.m.	J.J. Komiak, L.W. Yang, R.S. Brozovich, S.T. Fu and D.P. Smith	
TT-5:	X-Band GaInP/GaAs Power Heterojunction Bipolar Transistor	1477
4:30 p.m.	W. Lui, A. Khatibzadeh, T. Henderson, S.-K. Fan and D. Davito	
TT-6:	Quarter-Micron WSi/Au Gate AlGaAs/InGaAs HJFETs for Q-Band Power Applications	1481
4:50 p.m.	T. Matsumura, M. Kanamori, Y. Oikawa and S. Shinozaki	

Session UU

Simulation and CAD Frameworks

Room 202

3:30 p.m. to 5:00 p.m.

Thursday, June 17, 1993

Chairman: B.S. Perlman—Army Research Laboratory, Ft. Monmouth, NJ

UU-1:	An Introduction to MHDL	1487
3:30 p.m.	D.L. Barton and D.D. Dunlop	
UU-2:	The Globalizstion of Microwave CAD	*
3:50 p.m.	L. Carmichaels and P. Dueme	
UU-3:	Object-Oriented Design of Microwave Circuit Simulators	1491
4:10 p.m.	P. Carvalho, E. Ngoya, J. Rousset and J. Obregon	
UU-4:	Electromagnetic Simulator Interfacing to a General CAD Framework: Automatic, Electromagnetic-Based Mesh Generation	1495
4:30 p.m.	P. Draxler	

*Paper not available at time of printing.

Session VV

Acoustic Filters and Resonators

Room 218/219

3:30 a.m. to 5:00 a.m.

Thursday, June 17, 1993

Chairman: T. Lukaszek—US Army Research Laboratory, Ft. Monmouth, NJ

VV-1:	A New Low Loss SAW Filter Structure with Extremely Wide Bandwidth for Mobile Communication Systems	1501
3:30 p.m.	J. Machui, G. Müller, W. Ruile, L. Reindl, R. Weigel and P. Russer	
VV-2:	Design and Performance of Wide-Band IIDT-Type SAW Filters with Low Loss and Improved Sidelobe Suppression	1505
3:50 p.m.	R. Weigel, B. Bader, G. Fischerauer and P. Russer	
VV-3:	Transverse and Longitudinal Modes in Waveguide-Coupled Resonators	1509
4:00 p.m.	W.D. Hunt, T. Cameron, J.C.B. Saw, Y. Kim and M.S. Suthers	
VV-4:	A Physically-Based Small-Signal Circuit Model for Heterostructure Acoustic Charge Transport Devices	1513
4:10 p.m.	J.S. Kenney and W.D. Hunt	
VV-5:	High Q Microwave Acoustic Resonators and Filters	1517
4:20 p.m.	K.M. Lakin, G.R. Kline and K.T. McCarron	

Session WW

EM Analytical and Numerical Techniques II

Room 215

3:30 p.m. to 5:00 p.m.

Thursday, June 17, 1993

Chairman: W. Hoefer—University of Victoria, Victoria B.C., Canada

WW-1:	A Novel Treatment of Open Dielectric Waveguides	1523
3:30 p.m.	K. Sabetfakhiri and P.B. Katehi	
WW-2:	Full Wave Characterization of Microstrip Open End Discontinuities Patterned on Anisotropic Substrates Using Potential Theory	1527
3:50 p.m.	S.S. Toncich, R.E. Collin and K.B. Bhasin	
WW-3:	CPW Resonator Modelling on GaAs Using the Mixed Potential Integral Equation	1531
4:00 p.m.	S. Sattler, T. Felgentreff and P. Russer	
WW-4:	Vector Surface Integral Approach to Computing Inductances of General 3-D Structures	1535
4:10 p.m.	S. Kim, S. Ali and J. White	
WW-5:	A New Full-Wave Integral Equation Method for the Analysis of Coplanar Strip Circuit Using the Mixed-Potentials Eigenfunction Expansion Technique	1539
4:20 p.m.	W.-T. Lo and C.-K.C. Tzuang	
WW-6:	An Expression for the S-Parameters of Arbitrarily Oriented Microstrip Lines	1543
4:30 p.m.	L.C. Howard and J.M. Dunn	