

MONDAY MORNING, 15 JUNE 1981

SACRAMENTO ROOM			SAN FRANCISCO ROOM		
			0830-0900 OPENING SESSION Conference Chairman: A. Clavin		
MILLIMETER WAVE INTEGRATED CIRCUITS-DIELECTRIC AND IMAGE GUIDE Chairman—H. J. Kuno			MICROWAVE FET DEVICES Chairman—R. L. Camisa		
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1005 C3	Microwave Filter Design in the Time Domain E. A. Hosney, Military Technical College, Cairo, Egypt M. I. Sobhy, Univ. of Kent at Canterbury, Kent, England	57	0955 D3	Slotline-Microstrip Transition on ISO/Anisotropic Substrate: Broadband Design A. Podcameni, M. L. Coimbra, CETUS, Rio de Janeiro, Brasil	80
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MONDAY AFTERNOON, 15 JUNE 1981

SACRAMENTO ROOM			SAN FRANCISCO ROOM		
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0240 E3	Experimental Assessment of Bilateral Fin-line Impedance for Device Matching H. A. Willing and B. E. Spielman, Naval Research Lab., Washington, DC	105	0240 F3	A 4.5 W, 26 dB Gain FET Power Amplifier at Ku-Band V. Sokolov and R. C. Bennet, Texas Instruments, Dallas, TX	129
0300 E4	Experimental Characterization of Fin-Line Discontinuities Using Resonant Techniques Etienne Pic, Institute Nat'l Polytechnique, Grenoble, France W. J. R. Hoefer, Univ. of Ottawa, Ottawa, Canada	108	0300 F4	Compact Multi-Stage Single-Ended Amplifiers for S-C Band Operation K. B. Niclas, Watkins-Johnson, Palo Alto, CA	132
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SAN JOSE ROOM			SAN DIEGO ROOM		
THE SIX-PORT AND ITS APPLICATIONS			JAPANESE SESSION		
Chairman—S. F. Adam			Chairman—Y. Konishi		
0200 GI-1	Singularities in Calibration of Six-Port Network Analyzers H. F. Ebbesen, Aalborg Univ. Centre, Aalborg, Denmark	149	0200 H1	Progress of Microwave Semiconductor Devices in Japan (Invited) K. Sekido (NEC)	177
0220 GI-2	The Use of a Matched Symmetrical Five-Port Junction to Make Six-Port Measurements Gordon P. Riblet, E. R. Bertil Hansson, Microwave Development Labs, Natick, MA	151	0225 H2	Millimeterwave Integrated Circuits (Invited) H. Komizo, Y. Tokumitsu (Fujitsu Labs)	179
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DIELECTRIC RESONATORS Chairman—H. Howe Microwave Associates, Burlington, MA			0400 H5	Very Low Power Gigabit Logic Circuits with Enhancement Mode GaAs MESFET (Invited) M. Omori, T. Mizutani and K. Kato (NTT)	188
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PANEL SESSIONS

MONDAY EVENING, 15 JUNE 1981
2000-2200

Panel Session

STATUS AND TRENDS IN FIBER COMMUNICATIONS

Sponsored by MTT-3—Technical Committee On
Optical Techniques

ABSTRACT

This session will give a background of fiber optic communications, describe capabilities and applications of fiber systems, relate fiber links to microwave links in the marketplace and discuss actual installations to systems. Experts from both the fields of fiber optic and microwave communications will briefly present some aspect of fiber communications, followed by an audience participation forum.

SACRAMENTO ROOM

MODERATOR: M. K. Barnoski, TRW

PANEL MEMBERS:

- | | |
|--------------------|-----------------------|
| 1. J. Montgomery | Gnostic Concepts |
| 2. S. D. Personick | TRW Vidar Division |
| 3. T. Itoh | University of Texas |
| 4. Unidentified | Pacific Telephone |
| 5. D. J. Gray | General Telephone |
| 6. A. Popa | Hughes Research Labs. |

Panel Session

MICROWAVE DEVICES TECHNOLOGY TRANSFER FROM RESEARCH AND DEVELOPMENT TO MANUFACTURING

Sponsored by MTT-7—Technical Committee on Microwave and
Millimeter Solid State Devices

ABSTRACT

Microwave devices require comparatively far less production volume, tighter performance specifications, more stringent material parameter tolerances and more complex fabrication and testing techniques. This leads to challenges for automation, labor training, capital investment and cost effectiveness that are addressed by this panel.

SAN JOSE ROOM

MODERATOR: C. P. Wen, Rockwell

PANEL MEMBERS:

- | | |
|-----------------|-------------|
| 1. T. Midford | Hughes |
| 2. B. Berson | Avantek |
| 3. F. Paik | Raytheon |
| 4. B. Dunbridge | TRW |
| 5. R. Weck | U.S. Army |
| 6. F. Hasegawa | NEC, Japan |
| 7. J. Turner | Plessey, UK |

TUESDAY MORNING, 16 JUNE 1981

SACRAMENTO ROOM			SAN FRANCISCO ROOM		
PASSIVE COMPONENTS AND NETWORKS Chairman—H. C. Bell			SOLID STATE CIRCUITS AND DEVICES Chairman—C. T. Rucker		
0830 11	Problems in Microstrip Filter Design (Invited) R. J. Wenzel and W. G. Erlinger, Wenzel/Erlinger Associates, Woodland Hills, CA	203	0830 J1-1	Computer-Aided Design of Microwave Parametric Frequency Dividers A. Lipparni, Vittorio Rizzoli, Univ. of Bologna, Bologna, Italy E. Marazzi, SIQE Microelettronica, Milano, Italy	229
0900 12	Design of Filters with Ideal Amplitude and any Prescribed Phase S. A. Mohammed, British Telecom Research Labs., Ipswich, UK	206	0850 J1-2	Analysis of Waveguide Impatt Oscillator Circuits B. D. Bates and P. J. Khan, Univ. of Queensland, Queensland, Australia	232
0920 13	Miniaturized Microwave Filter Construction with Dielectric-Loaded Resonator and Space Coupling A. Fukasawa, T. Sato and K. Hosoda, OKI Electric Industry Co. Ltd., Tokyo, Japan	209	0910 J1-3	Coaxially Coupled Ridge Waveguide Tunable Oscillator R. S. Robertson, R. L. Eisenhart, Hughes Aircraft Co., Canoga Park, CA	235
0940 14	A New Diplexer Realized in Stripline I. Galin, Aerojet ElectroSystems Co., Azusa, CA	212	0930 J1-4	High Efficiency Mode in a 20 GHz MBE Impatt Diode Observed by a Computer-Aided Characterization System Hiroshi Kondoh, G. Conrad Dalman, Charles A. Lee, J. Berenz, Cornell Univ., Ithaca, NY	238
1030 15	Contiguous Broadband Matching of Multiple Resonant Loads J. D. Rhodes and M. J. Thornton, Filtronic Components Ltd., Leeds, UK	215	CHINESE SESSION Chairman—H. Jihong, Nanning Research Inst.		
1050 16	Inhomogeneous Broadside-Coupled Striplines A. G. D'Assuncao, Federal Univ. of Rio Grande, do Norte UFRN, Brazil A. J. Giarola, State Univ. of Campinas, Brazil D. A. Rogers, North Dakota State Univ., Fargo, ND	218	J2-1	A 12 GHz TV Receiver for Direct Satellite Broadcasting C. Changyan, S. Bogent, R. Binglin, Nanjing Solid State Devices Research Institute, Nanjing, China	243
1110 17	Rectangular Coaxial Line Split-T Power Devices L. H. Yorinks, RCA Corp., Moorestown, NJ	221	J2-2	V-Band GaAs Gunn Diode C. Xiaojian, D. Yanmao, H. Zhenqi, Nanjing Solid State Devices Research Institute, Nanjing, China	245
1130 18	New Differential Phase Shift Networks Combining All-Pass and Band-Pass Elements J. K. Hulton, GTE Products Corp., Mountain View, CA	223	J2-3	Status of Microwave Semiconductor Devices in China L. Jinting, Nanjing Solid State Devices Research Institute, Nanjing, China	246

SAN JOSE ROOM			SAN DIEGO ROOM		
HIGH POWER CIRCUITS AND SYSTEMS Chairman—K. Tomiyasu			FERRITE APPLICATIONS Chairman—C. R. Boyd		
0830 K1	A 100 KW Solid-State Coaxial Limiter for L-Band S. Patel and H. Goldie, Westinghouse Defense and Electronic Systems Center, Baltimore, MD	249	0830 L1	Coupled-Mode Theory Analysis of Distributed Nonreciprocal Devices I. Awai and T. Itoh, Univ. of Texas, Austin, TX	281
0850 K2	A 2 Kw CW MIC 20-500 MHz SPDT Pin Diode Switch Module R. Tenenholz, Microwave Associates, Burlington, MA	252	0850 L2	Analysis of Wideband Micro-strip Circulators by Point-matching Technique A. M. Khilli, Univ. of Duisburg	284
0910 K3	Development of High Power, Low Frequency Pin Diodes M. Caulton, A. Rosen, P. Stabile and A. Gombard, RCA Laboratories, Princeton, NJ	255	0910 L3	Performance Characteristics of Magnetoplasma Based Sub-millimeter Wave Non-reciprocal Devices S. H. Talisa and D. M. Bolle, Lehigh Univ., Bethlehem, PA	287
0950 K4	A Study of the High Power Pulsed Characteristics of Low-Noise GaAs MESFET's D. S. James and L. Dormer, Ferranti Electronics Ltd., Cheshire SK12 1NE UK	258	1000 L4	A Ferrimagnetic Resonance Thermometer for Microwave Power Environment J. A. Weiss, D. A. Hawks, Worcester Polytechnic Institute, Worcester, MA G. F. Dionne, MIT Lincoln Lab, Lexington, MA	290
1010 K5	Design of a Single-Anode, MIG-type Gyrotron Gun for a 35 GHz Gyro-TWT J. M. Baird and A. C. Attard, B-K Dynamics Inc., Rockville, MD	261	1020 L5	A K-Band High Power Low Loss Latching Switch M. J. Mlinar, W. S. Piotrowski, J. E. Raue, TRW, Redondo Beach, CA	293
1030 K6	Design of a High Power Earth Station Transmitter for the Band 7.9 to 8.4 GHz R. A. Gough, Filtronic Components Ltd., Leeds, England	264	1040 L6	Fin-Line Ferrite Isolator for Integrated Millimeterwave Circuits A. Beyer and K. Solbach, Univ. Duisburg	296
1050 K7	Design and Operation of an Orotion—A Tunable Source of Coherent MM-Wave Radiation H. Dropkin, R. P. Leavitt, D. E. Wortman, Harry Diamond Labs, Adelphi, MD	267			
1110 K8	Status of the Microwave Power Transmission Components for the Solar Power Satellite W. C. Brown, Raytheon Company, Waltham, MA	270			
1130 K9	A High Power Gyrotron Operating in the TE₀₄₁ Mode B. Arfin and M. Read, Naval Research Lab., Washington, DC	273			
1150 K10	A Nonlinear GyroDevice Theory G. Thomas, Varian Assoc., Beverly, MA	276			

TUESDAY AFTERNOON, 16 JUNE 1981

SACRAMENTO ROOM			SAN FRANCISCO ROOM		
MICROWAVE INTEGRATED CIRCUITS Chairman—W. E. Schroeder			MILLIMETER WAVE SOLID STATE DEVICES Chairman—T. T. Fong		
0200 M1	Asymmetric Microstrip DC Blocks with Rippled Response Darko Kafjez, S. Bokka and C. E. Smith, Univ. of Mississippi, University, MS	301	0200 N1	A 30 GHz — 100 mW GaAs FET Yoshinobu Kadowaki, Osamu Ishihara, Masaa Nakatani, A. Nara, K. Shirahata, LSI Research Lab., Itami, Japan	325
0220 M2	Simple Balun-Coupled Mixers Ben R. Halford, Collins Transmission, Dallas, TX	304	0220 N2	A 69 GHz FET Oscillator J. M. Schellenberg, H. Yamasaki, D. W. Maki, Hughes Aircraft Co., Torrance, CA	328
0240 M3	Computer-Aided Design of Semiconductor Mounts in Fin-Line Technology Hadia El Hennawy and Klaus Schuenemann, Institute fuer Hochfrequenztechnik, Braunschweig, Germany	307	0240 N3	Beam-Lead Schottky-Barrier Planar Mixer Diodes for Millimeter Wave Applications S. Jamson, A. Contolatis, P. Bauhahn, M. Helix, J. Abrokwhah, T. Peck, C. Chao, Honeywell, Bloomington, MN	331
0300 M4	A Measurement Method for Accurate Characterization and Modeling of MESFET Chips D. E. Peck, Watkins-Johnson, Palo Alto, CA D. F. Peterson, Electron Physics Lab, Ann Arbor, MI	310	0300 N4	A Wideband, Backshort Tunable Second Harmonic W-Band Gunn Oscillator H. Barth, AEG Telefunken, Ulm/Donau, Germany	334
0340 M5	A Frequency-Stabilized MIC Oscillator Using a Newly-Developed Dielectric Resonator Y. Komatsu, Y. Murakami, T. Yamaguchi, T. Otake and M. Hirabayashi, Sony Corp. Research Ctr., Yokohama, Japan	313	0340 N5	Metal Barrier-Metal Junctions for Room Temperature Millimeter-Wave Mixing and Detection C. W. Slayman, T. K. Gustafson, Electronics Research Lab., Univ of California, Berkeley, CA	338
0400 M6	A 1.75-6 GHz Miniaturized GaAs FET Amplifier Using Quasi-Lumped Element Impedance Matching Networks S. Moghe, R. Gray, W. Tsai, Raytheon Co., Northboro, MA	316	0400 N6	A 63W W-Band Injection-Locked Pulsed Solid State Transmitter H. C. Yen, K. Chang, Hughes Aircraft Co., Torrance, CA	341
0420 M7	A 10.5 GHz MIC Direction Sensitive Doppler Module Using a GaAs FET and a Ag Pd Thick Film T. Mori, H. Sawano, K. Kusunaki and O. Ishihara, LSI Research Laboratory, Hyogo 664, Japan	319	0420 N7	Millimeter Wave Solid State Devices Kai Chang, F. Thrower, G. M. Hayashibara, Hughes Aircraft Co., Torrance, CA	344
			0440 N8	Chip Level IMPATT Combining at 40 GHz C. T. Rucker, J. W. Amoss, G. N. Hill, Georgia Institute of Tech., Atlanta, GA	347

SAN JOSE ROOM			SAN DIEGO ROOM		
GaAs MONOLITHIC CIRCUITS Chairman—G. Chao			MICROWAVE ACOUSTICS Chairman—T. J. Lukaszek		
0200 O1	A Study of Optional Matching Circuit Topologies for Broadband Monolithic Power Amplifiers J. E. Degenford, D. C. Boire, R. G. Freitag and M. Cohn, Westinghouse Electric Corp., Baltimore, MD	351	0200 P1	Saw Based Direct Frequency Synthesizer Alan Budreau, RADCO, Hanscom AFB, MA	375
0220 O2	A Monolithic GaAs 0.1 to 10 GHz Amplifier W. C. Peterson, D. R. Decker, A. K. Gupta, J. Dully, D. R. Chen, Rockwell, Intl., Thousand Oaks, CA	354	0230 P2	SAW Stabilized Radiosonde D. J. Dodson, K. F. Lau, M. Y. Huang, TRW, Redondo Beach, CA T. J. Lukaszek, ERADCOM, Fort Monmouth, NJ	377
0240 O3	A 2-12 GHz Feedback Amplifier on GaAs K. B. Niclas and W. T. Wiser, Watkins-Johnson, Palo Alto, CA	356	0250 P3	SAW Oscillators UHF Transit Satellite B. Y. Lao, N. J. Schneider, D. A. Rowe, R. E. Dietterle, Magnavox Advanced Prod., Torrance, CA J. S. Schoenwald, E. J. Staples, J. Wise, Rockwell Intl., Thousand Oaks, CA	380
0300 O4	A Planar-Type Low-Noise GaAs Monolithic Microwave Amplifier Deng Xian-can, Zhu Guo-liang, Hebei Semiconductor Research Institute, China	359	0310 P4	Tunable Magnetostatic Surface Wave Oscillator at 4 GHz R. L. Carter, J. M. Owens, W. R. Brinlee, Y. W. Sam, C. V. Smith, Jr., Univ. of Texas, Arlington, TX	383
0340 O5	A High-Speed Monolithic GaAs 10/11 Counter R. E. Lundgren, D. E. Synder, J. M. Lull, Hughes Research Lab., Malibu, CA	362	0350 P5	IC Compatible SAW Device on GaAs (Invited) T. Grudkowski, G. Montress, M. Gilden, J. Black, United Technical Research Center, East Hartford, CT	386
0400 O6	An 8 GHz MMIC Preamp D. R. Decker, A. K. Gupta, W. C. Peterson and D. R. Chen, Rockwell Intl., Thousand Oaks, CA	365	0420 P6	SAW Bandpass Filter Components for Microwave Systems D. E. Allen, F. S. Hickernell, Motorola Inc., Scottsdale, AZ	389
0420 O7	A Comparison Between Actively and Passively Matched S-Band GaAs Monolithic FET Amplifiers J. R. Suffolk, R. S. Pengelly, Jr., R. Cocknall and J. A. Turner, Plessey Research, England	367	0440 P7	A SAW Interferometer Direction-Finding and Frequency Identification Method Dirk Klose, William Skudera, ERADCOM, Fort Monmouth, NJ	392
0440 O8	Use of Switching Q in the Design of FET Microwave Switches H. A. Atwater and R. W. Sudbury, M.I.T., Lexington, MA	370	0500 P8	Magnetostatic Wave Compressive Receiver C. E. Nothnick, J. F. Billing, Westinghouse, Baltimore, MD M. R. Daniel, T. D. Adams, Westinghouse, Pittsburgh, PA	395

WEDNESDAY MORNING, 17 JUNE 1981

SAN FRANCISCO/SAN JOSE ROOMS

PLENARY SESSION — Chairman—S. B. Cohn, S.B. Cohn Associates, Los Angeles, CA

0845 The Very Large Array Radio Telescope

Dr. Peter Napier, National Radio Astronomy Observatory, Socorro, New Mexico

The recently constructed Very Large Array (VLA) radio telescope allows solar system, galactic and extra galactic astronomical objects to be mapped at centimeter wavelengths with resolutions of tenths of arc seconds and sensitivities of approximately 100 microjanskies.

0925 Noise in Analog and Digital Microwave Communications

S. Okwit, LNR Communications, Hauppauge, NY

The design of efficient communication systems is based upon careful trade-offs in component selection and topologies that assure that the information in the transmitted signal is recoverable at some pre-determined quality relative to noise. This paper will qualitatively and quantitatively discuss the major parameters that affect this reception quality, in both analog and digital communication systems. Parameters such as antenna noise, noise figure, local oscillation noise, intermodulator noise, amplitude and delayed distortion AM to PM conversion, etc will be covered and curves showing the state-of-the-art of the key microwave components related to these parameters will be presented

BREAK—10:05 to 10:25

1025 Biological Effects & Medical Applications of Electro-magnetic Fields

O. P. Gandhi, University of Utah, Salt Lake City, UT

The talk will highlight replicable bio-behavioral effects and medical applications, including hyperthermia for cancer therapy. A new ANSI C95 recommended safety standard, its rationale, and the past, present and future role of electro-magnetic bio engineering will also be presented

1105 Voyager Encounter with SATURN

Dr. E. C. Stone, Physics Dept., Cal Tech, Los Angeles, CA, Chief Scientist, Jet Propulsion Laboratory

On November 12, 1980 Voyager One swung past Saturn sending back a wealth of information about the giant planet. Detailed observations of Saturn's rings revealed unsuspected structure and rapid changes. Voyager also disclosed new satellites, returned images of previously known ones and observed the interaction of the satellites and rings with Saturn's radiation belts. The space craft passed just 2500 miles above Saturn's large planet size satellite Titan making measurements of its atmosphere.

WEDNESDAY AFTERNOON, 17 JUNE 1981

SACRAMENTO ROOM

MICROWAVE AND MILLIMETERWAVE SYSTEMS

Co-Chairman—H. Sobol, Rockwell

0205 Q1	A Phase Alignment Network for Space Diversity Combining G. L. Heiter, H. Miedema, Bell Telephone Labs, North Andover, MA	399
0225 Q2	Direct Generation of MSK Modulation at Microwave Frequencies Sunder Kumar, W J Chudobiak and J. S. Wight, Carleton Univ., Ottawa, Canada	402
0245 Q3	A Dielectric Resonator Filter as Low-Loss Delay Element for 14-GHz On-Board 4-phase PSK Demodulation L. Accatino, A. Angelucci, CSELT-Centro Studi Laboratori, Telecomunicazioni, Torino, Italy	405
0335 Q4	14-GHz Differential QPSK Demodulator for Regenerative Satellite Repeater G. Ohm, M. Alberty and D. Rosowsky, AEG Telefunken, D7150 Backnang, W Germany	408
0355 Q5	Channelized Receiver Covering 26 to 60 GHz with Planar Integrated-Circuit Components P. J. Meier, K. D. Breuer, L. D. Cohen, N. Worontzoff, L. Lepore and J. Gunther, Eaton Corp., AIL Div., Deer Park, NY	411
0415 Q6	A W-Band Coherent Pulse-Compression Radar Transceiver Using Linear Frequency Modulation C. Brenneise, M. Beebe, T. Kihm and R. D. Weglein, Hughes Aircraft Co., Canoga Park, CA	414

SAN FRANCISCO ROOM

PHASED AND ACTIVE ARRAY TECHNIQUES

Chairman—R. VanWagoner

0200 R1	A Scanning Switch Matrix for a Cylindrical Array K. J. Keeping, D. S. Rogers, J. C. Sureau, MIT Lincoln Lab, Lexington, MA	419
0220 R2	Beam Steering Antenna Control Techniques A. R. Skatvold, Naval Weapons Center, China Lake, CA	422
0240 R3	35 GHz Active Aperture M. F. Durkin, R. J. Eckstein, M. D. Mills, M. S. Stringfellow, R. A. Nerdhard, Motorola Inc., Scottsdale, AZ	425
0300 R4	The Use of IMPATTs in Active Arrays S. Hamilton, G. Stern, Hughes Aircraft Co., Canoga Park, CA	428
0320 R5	Broadband Dual-Gate GaAs FET Continuously Variable Phase Shifter M. Kumar, H. C. Huang, R. J. Menna, RCA Research Ctr., Princeton, NJ	431
0350 R6	Active Microwave Power Combiner/Divider Using Dual Gate MESFET J. J. Pan, Harris Corp., Melbourne, FL	434
0410 R7	A Continuously Variable Ku-Band Phase/Amplitude Control Module Y. Gazit, H. C. Johnson, RCA Research Ctr., Princeton, NJ	436

PANEL SESSIONS

WEDNESDAY EVENING, 17 JUNE 1981
2000-2200

Panel Session

MANPOWER PROBLEMS IN MICROWAVE AND ANTENNA ENGINEERING

Sponsored by MTT and AP

ABSTRACT

A panel comprised of prominent members of the microwave and antenna engineering profession will give their views on the appropriate interaction between industry, government, universities and the IEEE with respect to manpower requirements in applied electromagnetics engineering. The panelists will also reply to questions posed by members of the audience.

SACRAMENTO ROOM

MODERATOR: R. E. McIntosh, U. of Mass.

PANEL MEMBERS:

1. V. Golindo-Israel
2. J. Guerrero
3. R. Lewis
4. I. Peden
5. L. Young

J. P. L.
Cal State Northridge
Raytheon
Univ. of Washington
N.R.L.

Panel Session

STATE-OF-THE-ART OF MM/SUB MM WAVE RECEIVERS

Sponsored by MTT-4—Technical Committee on Submillimeter Wave Technique and MTT-14, Technical Committee on Microwave Low Noise

ABSTRACT

The evolving state-of-the-art of millimeter and submillimeter technology will be presented. A diverse set of requirements from the large area of potential user groups makes system tradeoffs at this early stage a necessary task. The overlap region between millimeter and submillimeter wave receivers will be addressed as well.

SAN FRANCISCO ROOM

MODERATOR: Sven Roosild, DARPA

PANEL MEMBERS:

1. C. F. Krumm
2. D. H. Phillips
3. J. G. Oakes
4. R. Decker
5. R. A. Pucel
6. W. R. Wisseman
7. J. Turner

Hughes Research Laboratory
Aerospace Corporation
Westinghouse R&D Center
Rockwell Science Center
Raytheon Research Laboratory
Texas Instruments
Plessey Research

Panel Session

IMPACT OF GaAs ICs ON MICROWAVE SYSTEMS

Sponsored by MTT-9—Technical Committee on Digital Microwave Systems

ABSTRACT

The performance of state-of-the-art digital and analog GaAs ICs has attracted the attention of microwave system designers because of the potential for either lower cost, lower noise, wider bandwidths or higher data rate systems. The future impact of GaAs ICs on microwave systems will be discussed by a panel of leading industrial experts. Limitations imposed by material quality, power dissipation, on-and-off chip delays and packaging will be addressed. Audience participation will be encouraged to promote the exchange of ideas and information.

SAN JOSE ROOM

MODERATOR: J. Whelehan, Eaton Corp., AIL Div.

PANEL MEMBERS:

1. Jesse Taub
2. Frank Goodwin
3. J. C. Wiltse
4. H. Hieslmair
5. M. Luhman

Eaton Corp., AIL Div.
Hughes Aircraft Co.
Georgia Institute of Tech.
ERADCOM
UCLA

THURSDAY MORNING, 18 JUNE 1981

SACRAMENTO ROOM			SAN FRANCISCO ROOM		
LOW NOISE TECHNIQUES Chairman—S. Okwit			BIOLOGICAL EFFECTS AND MEDICAL APPLICATION Chairman—W. R. Adey		
0800 S1	A Low Noise Solid State Amplifier for Replacement of a Ka-Band TWTA P. H. Wolfert, J. D. Crowley, F. B. Fank, Varian Associates, Palo Alto, CA	441	0800 T1	27 MHz Waveguide Applicators for Localized Hyperthermia Treatment of Cancer R. W. Paglione, F. Sterzer, Microwave Technology Center, Princeton, NJ J. Mendecki, E. Friedenthal, C. Botstein Montefiore Hospital and Medical Ctr, Bronx, NY	463
0820 S2	Cooled Low Noise GaAs Monolithic Mixers at 110 GHz B. J. Clifton, G. D. Alley, R. A. Murphy, W. J. Piacentini, I. H. Mroczkowski and W. Macropoulos, Lincoln Lab., MIT, Lexington, MA	444	0820 T2	Microstrip Loop Radiators for Local Hyperthermia I. J. Bahl, S. S. Stuchly, Univ. of Ottawa, Ont., Canada J. W. Lagendijk, Academisch Ziekenhuis Utrecht, Utrecht, Holland M. A. Stuchly, Radiation Protection Bureau, Ottawa, Ont., Canada	465
0840 S3	A 4 GHz Low Noise GaAs FET Amplifier Li Hao-Mo, Hebei Semiconductor Research Institute Shijazhuang, Hebei, China	447	0840 T3	A New Optical Technique for the Measurement of Temperature in RF and Microwave Fields K. A. Wickersheim and R. V. Alves, Luxtron Corp., Mountain View, CA	468
0930 S4	Impact of Low Noise Technology on Present and Future Stacom Systems (Invited) H. C. Okean, LNR Communications, Hauppauge, NY	450	0900 T4	Non-Perturbing Temperature Probe and Thermography Measurements in Microwave Diathermy G. Kantor and C. Hochuli, Bureau of Radiological Health, Div. of Electronic Products, Rockville, MD	470
1000 S5	Highly Reliable Low Noise MM-Wave Mixers with Whisker-Contacted Honeycomb Diodes Joerg Schroth, AEG Telefunken, D-7900 Ulm, West Germany	451	0920 T5	Clinical RF Hyperthermia (Invited) F. Kristian Storm, UCLA School of Medicine, Los Angeles, CA	473
1020 S6	A Subharmonically Pumped Fin-Line Mixer for Satellite TV Receiver Applications Gunter Begemann, Institut fuer Hochfrequenztechnik, Braunschweig, West Germany	454	1010 T6	The Effects of High Power Microwave Pulses on Red Blood Cells and the Relation to Transmembrane Thermal Gradients Susan L. Gartner, A. W. Friend, Naval Medical Research Institute, Bethesda, MD K. R. Foster, Univ. of Pennsylvania, Philadelphia, PA H. Howe, Jr., Microwave Associates, Burlington, MA	476
1040 S7	Analysis of Balanced Subharmonically Pumped Mixers with Un-symmetrical Diodes R. G. Hicks and P. J. Khan, Univ. of Queensland, St. Lucia, Brisbane, Australia	457	1030 T7	Microwave Thawing of Frozen Packed Red Blood Cells Nancy L. Campbell, Naval Ocean Systems Center, San Diego, CA J. Drewe, San Diego State Univ., San Diego, CA	479
			1050 T8	Application of Moment-Methods to Electromagnetic Biological Imaging M. J. Hagmann, O. P. Gandhi, D. K. Ghodgaonkar, Univ. of Utah, Salt Lake City, UT	482
			1110 T9	Microwave Imaging: Numerical Simulation and Results M. F. Iskander, R. Maini and C. H. Durney, Department of Electrical Engineering, Univ. of Utah, Salt Lake City, UT	483

SAN JOSE ROOM			SAN DIEGO ROOM		
MICROWAVE FIELD AND NETWORK THEORY Chairman—S. March			GUIDED WAVE OPTICS AND SIGNAL PROCESSING Chairman—J. K. Butler		
0800 U1	Propagation Parameters of Coupled Microstrip-like Transmission S. K. Koul, B. Bhat, India Institute of Technology, Centre for Applied Research in Electronics, New Delhi	489	0830 V1	The Integrated Optic Spectrum Analyzer—A First Demonstration T. R. Raganath, Hughes Research Labs, Malibu, CA J. Lee, Hughes Aircraft, Carlsbad, CA T. Joseph, Hughes Aircraft, Fullerton, CA	515
0820 U2	Hybrid Mode Analysis of Microstrip Lines on Anisotropic Substrates A. M. El-Sherbiny, Ain Shams Univ., Cairo, Egypt	492	0900 V2	Guided Wave Optical RF Spectrum Analyzer (Invited) D. Mergerian, E. C. Malarkey, R. P. Pautenus, J. C. Bradley, A. L. Kellner, M. D. Mill, Westinghouse Electric Corp., Baltimore, MD	517
0840 U3	Analysis of Microstrip Line on Semiconductor Substrate M. Anbourg, J. P. Villotte, F. Godon and Y. Garault, Laboratoire d'Electronique des Microondes, Limoges Cedex, France	495	1000 V3	A Generalized Two-Dimensional Coupled-Mode Analysis of Curved and Chirped Periodic Structures in Open Dielectric Waveguides Zong-Q. Lin, Shu-Tong Zhou, William S. C. Chang, S. Forouhar, J. Delavaux, Univ. of Calif. San Diego, LaJolla, CA	520
0900 U4	Wave Propagation in Inhomogeneous Anisotropic Rectangular Waveguides by the Effective Index Method M. N. Armenise, M. DeSario, Universita Degli Studi di Bari, Italy	498	1020 V4	Nonreciprocal Propagation Characteristics of YIG Thin Film Tetsuya Mizumoto, Yoshiyuki Naito, Tokyo Institute of Tech., Tokyo, Japan	522
0940 U5	Improved Technique for Evaluation of Slot Discontinuities in Rectangular Waveguide P. K. Park, G. J. Stern, Hughes Aircraft Co., Canoga Park, CA	501	1040 V5	Experiment on Light Intensity Modulation Based on Guided-to-Radiation Mode Coupling in Hetero-Structure Thin Film Waveguide H. Onodera, I. Arai, M. Nakajima and J. Ikenoue, Kyoto Univ., Kyoto, Japan	525
1000 U6	Desegmentation of Two-Dimensional Microwave Circuits and its Application to Strip-line Power Dividers K. C. Gupta, P. C. Sharma, R. Chadha, Indian Institute of Technology, Kanpur, India	504	1100 V6	Polarization-Rotated Radiation Conversion in Electrooptic Waveguides S. Yamamoto, Osaka Univ., Osaka, Japan	528
1020 U7	A Generalized N-Port Cascade Connection Gary R. Simpson, Goodyear Aerospace Corp., Litchfield Park, AZ	507			
1040 U8	Projective Matrix Transformations in Microwave Network Theory Ross A. Speciale, TRW, Redondo Beach, CA	510			

WORKSHOP

**THURSDAY, 18 JUNE 1981
0830-1700**

(and continuing FRIDAY, 19 JUNE 1981)

SANTA ANITA ROOM A

WORKSHOP ON AUTOMATIC RADIO FREQUENCY MEASUREMENTS

Organizer: H. George Oltman

Sponsored by: ARFTG (Automatic R.F. Techniques Group) and MTT-11

Dates: June 18 8:30 A.M.-5:00 P.M. (Thursday)
 June 19 8:30 A.M.-5:00 P.M. (Friday)

This workshop covers state-of-the-art developments in computer-aided design, simulation, measurements, and calibration techniques—both software and hardware. The workshop will include short presentations and a panel discussion on millimeter wave network analyzers, both manual and automatic versions. Automated RF measurements and computer-aided design support equipment will be presented and demonstrated. A tour of the TRW automated RF measurement and calibration facilities will conclude the workshop on Friday. Registration also includes dinner on June 18 and lunches on June 18 and June 19.

WORKSHOPS

FRIDAY, 19 JUNE 1981

0830-1700

WORKSHOP ON AUTOMATIC RADIO FREQUENCY MEASUREMENTS

Organizer: H. George Oltman

Sponsored by: ARFTG (Automatic R.F. Techniques Group) and MTT-11

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SANTA ANITA ROOM A

WORKSHOP ON "POWER GaAs FET'S"

Organizers: J. W. Gewartowski
H. Q. Tserng

Sponsors: MTT-6—Technical Committee on Microwave and Millimeter Wave Integrated Circuits
and
MTT-7—Technical Committee on Microwave and Millimeter Wave Solid State Devices

This workshop will cover selected topics of current interest and important in the field of power GaAs FET devices, circuits, and applications. Invited papers will first present overviews on device designs, circuits, modeling and characterizations. Questions, answers, and general discussions from the participants will follow the presentation. In the afternoon, the participants will be divided into three groups to hold detailed discussions from all the attendees.

SACRAMENTO ROOM

WORKSHOP ON "ADVANCED COMPUTER AIDED DESIGN TECHNIQUES FOR THE 1980's"

Organizers: L. Besser
S. March

Sponsor: MTT-1—Technical Committee on Computer Oriented Microwave Practices

This workshop will address the latest in computer aided design (CAD) techniques for microwave circuitry and will offer insight into the merging integration of computer aided design, computer aided manufacture (CAM) and computer aided testing (CAT), and a single entity, computer aided production (CAP).

In the morning a number of invited speakers will present overviews followed by questions, answers, and discussions. The topics to be addressed by the invited speakers will include:

Linear and Nonlinear Circuit Design

Fully Interactive Analysis and Synthesis

The Latest in Handling of Active Design and Circuitry Discontinuity

The Latest in Modern Optimization Computer Layout and Topological Design

$CAP = CAD + CAM + CAT$

After lunch the workshop attendees will split into smaller working groups to further discuss the salient output of the lecture and to offer ideas on any aspect of computer aided design.

SANTA ANITA ROOM C