



EDITOR: G. P. Rodrigue

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MTT SPONSORS SUBMM WAVES CONFERENCE

The International Conference on Submillimeter Waves and their applications will be held June 5 through 7 on the campus of the Georgia Institute of Technology with the Sheraton-Biltmore Hotel serving as the Conference headquarters. This conference is sponsored by the IEEE Society on Microwave Theory and Techniques with the cooperation of the Optical Society of America and the joint IEEE/OSA Council on Quantum Electronics.

A total of twenty technical sessions will be spread over the three day period. Topics covered in the 90 papers include sources, laser, instrumentation and components, detectors, semiconductors and magnetic materials, plasma interactions and cosmic and atmospheric physics. A digest of Technical Papers will be available at the meeting and the Proceedings of the Atlanta Submillimeter Wave Conference will appear as Part 11 of the December, 1974 issue of the IEEE Transactions on Microwave Theory and Techniques.

James J. Gallagher, Georgia Tech Engineering Experiment Station, is conference Chairman and Kenneth J. Button National Magnet Laboratory, MIT, is Program Chairman.

ATLANTA-GA. TECH READY FOR '74 MICROWAVE SYMPOSIUM

Arrangements on the Georgia Tech campus and at the Sheraton-Biltmore Hotel are essentially complete for the '74 Microwave Symposium. The Symposium, scheduled for June 12 through 14, will contain twenty technical sessions including three held jointly with APS. All daytime sessions will be held on the Georgia Tech campus and shuttle bus service from the hotel will be provided. Wednesday evening sessions are scheduled for the Sheraton-Biltmore meeting rooms, and the Thursday evening cocktail party and banquet will also take place at the Biltmore.

A full slate of exhibitors will be on hand at the Symposium. Exhibits are being held on Thursday and Friday immediately adjacent to the technical session rooms. A social program featuring tours of interesting local areas is planned for those accompanying the conference participants.

It all promises to be an interesting experiment in "togetherness" with MTT, AP, USNC/URSI, and the Symposium on Electromagnetic Windows all meeting on the Georgia Tech campus during the same week. We hope to see you there.



Aerial view of the Sheraton-Biltmore Hotel (foreground) and portions of the Georgia Tech campus (upper center) where meetings will take place.



John J. Guarrera, Keynoter

IEEE President, John J. Guarrera will give a keynote address at the 1974 IEEE/S—MTT International Microwave Symposium opening session on Wednesday, June 12th. Also highlighting this session will be an official welcome from Joseph Pettit, Georgia Tech President, and talks by C.H. Walter and R.A. Rivers, AP and MTT Society Presidents, respectively. These same individuals will also participate in the special Technology Assessment and Planning sessions scheduled for Wednesday morning from 10 to 12:30. These special sessions are part of the activities being held jointly between AP and MTT on June 12th.

Mr. John J. Guarrera is President of the Institute of Electrical and Electronics Engineers, Inc. (IEEE), the world's largest technical society, a transnational organization of more than 160,000 members.

Mr. Guarrera, a 1943 graduate of M.I.T., has had a distinguished career both in academia and industry. His major area of technological concern has been with microwaves and he has made numerous contributions to the advancement of that art over the years.

Mr. Guarrera founded his own corporation, SaCOM, which is now a public company. It is engaged in the design and manufacture of microwave equipment and law enforcement communications systems.

Mr. Guarrera, a Fellow in the Institute, has been involved in IEEE activities since his days as a Student member. He has served as Chairman of the San Fernando Valley Subsection and the Los Angeles Section as well as Chairman of the Board of Wescon in 1968. Since elected as a Regional Director in 1971, he has also served on the Long Range Planning Committee, the Finance Committee, and the Executive Committee. His term of office as President of IEEE is for the calendar year 1974.



C. Lester Hogan, Banquet Speaker

Attendees at the annual awards banquet of the Microwave Symposium will hear an address by Dr. C. L. Hogan, President and Chief Executive Officer of Fairchild Camera and Instrument Corp. Dr. Hogan is generally acknowledged to be one of the outstanding executives in the Electronics field, combining business acumen and decisiveness with an outstanding scientific background, based on his experience as an educator at Harvard University and a member of the world-famous technical staff at Bell Laboratories.

At Bell Labs, Dr. Hogan performed experiments which demonstrated non-reciprocity at microwave frequencies and also carried out a theoretical analysis substantiating the experiments. This work, published in 1952, has become a classic reference. At Harvard, Dr. Hogan was Gordon McKay Professor of Applied Physics and led the widely-acclaimed 1956 Harvard Symposium on Microwave Properties and Applications of Ferrites. As General Manager of Motorola Semiconductor Products division from 1958 to 1968, Dr. Hogan built the division from essentially a laboratory operation producing a single line of transistors to one of the major semiconductor companies in the world. Dr. Hogan joined Fairchild Camera and Instrument Corporation August, 1968, as President and Chief Executive Officer, and a member of the Board of Directors. Dr. Hogan was born in 1920 in Great Falls, Montana. He was graduated from Montana State University in 1942 with a B.S. degree in chemical engineering. After serving three years as a U.S. Naval Officer, during World War II, he did graduate study at Lehigh University, earning M.S. and Ph.D. degrees in Physics, with emphasis on solid state and electromagnetic theory. Dr. Hogan was awarded an Honorary A.M. degree from Harvard in 1954, an Honorary Doctorate of Engineering from Montana State University in 1967, and an Honorary Doctorate of Science degree from Worcester Polytechnic Institute in 1969.

Dr. Hogan is a fellow of the IEEE and a member of the Visiting Committee at Lehigh University. He served on the Advisory Council of the Electrical Engineering Department of Princeton University from 1957 to 1968 and was a member of the Standing Committee on Fundamental Aspects of Material Research of the Materials Advisory Board. Dr. Hogan is listed in Who's Who in America and American Men of Science.

At this year's banquet, a number of MTT Society awards will be made including Fellow Awards, the Microwave Prize, Microwave Career Award, and Microwave Applications Award. The banquet will be preceded by a cocktail party sponsored by Scientific Atlanta, Inc. All these Thursday evening activities will be held at the Sheraton-Biltmore Hotel.



ADCOM HIGHLIGHTS

by H. W. Cooper

President Bob Rivers called another two-day meeting of ADCOM for the Intercon Session in New York on Sunday and Monday, the 24th and 25th of March. The Sunday session was again directed to the areas in which the MTT Society should be moving. The consensus of the dozen or so ADCOM members present was that we should be moving more in the direction of interacting with society as a whole and not simply with other microwave professionals or with electrical engineers in general. Because of the movement of microwave applications into the consumer field, we are in a position to provide guidance to civil and government organizations once our credibility has been established with the public.

Specifically, the microwave oven controversy is one in which our technical expertise in microwave measurements can contribute, although the amount of microwave exposure which is tolerable is a medical problem. Secondly, the area of engineering professional standards is an important one in which a program for working with the other groups of the IEEE which has been started by the Committee on Social Implications of Technology must be established. The third interface area is that with the universities. What role should the MTT Society have in encouraging or discouraging students from entering the microwave field? What sort of courses may be desirable for students, etc.?

The fourth area is simply that of publicizing the MTT to the community as a whole.

I have asked several ADCOM members to serve on a planning committee together with additional members from outside ADCOM. We welcome the inputs from any of the Microwave Society members with suggestions as well as volunteers to help implement the committee activities.

The Monday meeting opened with President Bob Rivers' report. This included efforts on career developments which have been instituted by the IEEE, interdisciplinary and special committees which have been established to address those problems that effect more than one of the IEEE groups and that allow the attendant cynicism. The Advanced Planning Committee will take care of recommending which of these interdisciplinary and special committees the MTT will participate in and establish a means of participation.

Steve Adams, Chairman of the 1975 Symposium, reported that things are moving well.

Jim Gallagher and Frank Adams reported on the Quantum Electronics Council - - the Conference on Laser Engineering Applications was attended by 1300 to 1400 people and made money. We now have four members on the Quantum Electronics Council.

Bill Brown reported that Merlin Corrington, a mainstay of the Solid State Circuits Conference in Philadelphia, is retiring and they are searching for a successor to him.

George Haddad has been appointed to replace Bill From as our representative on the Solid State Circuits Council and Bill received our thanks for the fine job which he has done during his tenure on the Council.

Bill Guy submitted a written report on the activities of COMAR (Committee on Man and Radiation). Bill Mumford, past Chairman of MTT and one of our honorary life members for his many contri-

butions to our field, has volunteered to help on the COMAR Committee.

Al Clavin has reported that the Technology Forecasting & Assessment Committee has to have a concrete definition of goals - - Bob Rivers has undertaken to provide this definition.

Standards Coordinating Committee Chairman Bob Beatty reported that Hal Schrank is the new Chairman of the Waveguide Standards Committee. Several waveguide standards are in process and should be issued within the next year. Steve Adams is Chairman of a west coast committee on Microwave Measurements including spectrum analysis, frequency, power, noise, and other parameters and expects first drafts in by November for new standards in those areas. In addition, they are coming out with a IEEE book on recommended practices for microwave measurements. The Standards Committee is also providing liaison with the IEC, chaired by Gus Shapiro. A draft of material on millimeter wave flanges has been submitted by Sargent of BTL. The Standards Committee is interfacing with other IEEE Committees on network analyzer standards, spectrum analyzer standards, precision connectors standards and flanges above 26 GHz.

Hal Sobol reviewed the status of the Technical Committees. Dick Sparks also reported that he has not been able to locate our Procedures Handbook and requests that if anyone has a copy of the MTT ADCOM Procedures Handbook or information pertaining thereto, he would appreciate receiving copies of the material. He also proposed a modification in the bylaws to increase the monetary awards for certain of our prizes. More detailed information is included in the bylaws changes presented in this issue of the Newsletter.

George Oltman reported that according to a survey conducted in the United States by the Policy and Planning Committee of the Regional Activities Board, the young engineer does not like our Transactions in its present form and feels that it is lacking in applications material. George has been charged by Bob Rivers with chairing a task force to establish what should be done towards providing an applications journal for the MTT. George would welcome any inputs from you. His address is Hughes Aircraft Company, 268/A55, 8433 Fallbrook Ave., Canoga Park, Calif. 91304.

Larry Whicker, Chapter Activities Chairman, reported that a 16mm movie print of our last year's National Lecturer (John Allen) has been obtained and four prints are available for circulation to the Chapters.

Larry also reported that a Chapter Chairmans meeting has been scheduled for 8:00 p.m. Tuesday evening, June 11 at the Atlanta Symposium. A detailed report on Chapter records will be presented at that meeting.

B.D. Bearninis reported that the New Jersey, jointly with the Jersey Coast, New York, Long Island, and Philadelphia Chapters are submitting a proposal for the 1976 Symposium. Under a bylaws change last year both the 1976 and 1977 Symposia come up for decision in the June ADCOM meeting. Boston and Toronto are also considering submitting a proposal for 1976.

Pete Rodrigue requested guidance from ADCOM on help wanted ads in the Newsletter. The consensus was that they would be a service to our members as well as a source of income and ADCOM directed him to go ahead with accepting such ads.

National Lecturer Sy Okwit reported that he already has ten lectures scheduled starting with Fort Wayne, Indiana. Other requests are pending and it appears as though he will probably deliver 13 to 20 lectures this year.

Membership Chairman Dave Wait reported that he had been working with the 1974 Symposium Committee and plans for a membership drive at the Symposium are pretty well set.

(continued on page 4, column 1)



PRESIDENT'S MESSAGE

by R. A. Rivers

Our two days of meetings on Sunday, March 24th and Monday, March 25th, resulted in some significant progress. We have rounded out our discussion of where we are going. We had previously considered three potentially beneficial additional technically oriented activities: Applications Publications, Book Summarization of the State of Knowledge in the Microwave Field, and roving One Day Symposias. These programs are under consideration by Task Forces that will make recommendations if we should and how we can engage in these activities. The latest planning meeting resulted in a conclusion that we have an obligation to respond to public questions in our area of expertise. For example, a consensus was reached that we should support the Division IV Committee on Man and Radiation in taking public and technically supportable positions. It was also voiced that in those areas where there are no answers presently available we should promote the support of research to get the answers. Subsequently there has been an opportunity for us to respond to Federal rule making activities regarding Electromagnetic Pulses. In this case, less than a month is available to produce an output. It is probable that the COMAR committee will be able to respond in that limited time.

Recently an acquaintance cornered me looking for advice. It seemed that he has owned a Microwave Oven for thirteen months and his wife was afraid to use it because of the radiation hazard scare. This kind of problem presents us with an opportunity to work with the outside world to our mutual benefit.

(ADCOM Highlights continued)

Pete Rodrigue reported on plans for the 1974 Symposium. A session is planned on Interdisciplinary and Real World Education organized by Sol Rosenthal in conjunction with the AP. This session will be held on Wednesday afternoon, 12 June.

Jim Gallagher reported on the Submillimeter Wave Symposium which is being sponsored by MTT the week before the MTT Symposium, also in Atlanta. The advanced program has been mailed.

Fred Rosenbaum, Transactions Editor, was unable to be at the meeting but Don Parker, Page Charge Chairman, reported that the page charge response was improving although there was an increasing number of university papers on which page charges were not received. Page charges are an important aspect of financing our Transactions, and all members should do their best to help with the page charge collection. It was brought out that page charges cover only half of the actual cost of publication and that although our page charge rate is about \$55 a page, the actual cost of publication is about \$105.

Nat Lipetz's treasurer report showed that the MTT was solvent. President Bob Rivers did an excellent job of running the meeting on schedule and was able to complete the meeting well before 6:00 p.m. scheduled close of the meeting.



EDITORS NOTES

by Pete Rodrigue

There are several items relevant to this issue that warrant a few words.

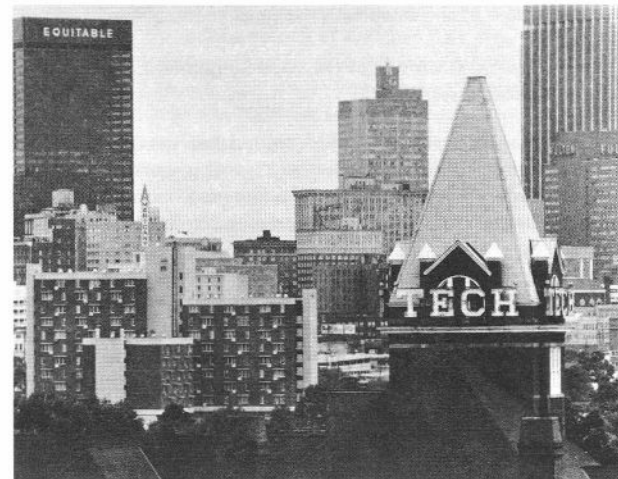
One innovation that may be noticed is the appearance of "Want Ads." As noted in Warren Cooper's ADCOM Highlights approval was given at the March meeting to accept certain types of want ads for the Newsletter. The two appearing in this issue are representative of "acceptable" material. The rates for such advertising has been established at \$20.00 per column inch. I hope that the membership will find this addition helpful.

A second item worthy of comment is the availability of the '73 National Lecture on film (see Chapter Activities). While the quality of cinematography leaves something to be desired, it is an interesting, provocative talk. I believe that not only chapters but also certain groups in industry or government labs might find it useful to show, perhaps in plant and "during working hours." It might stimulate some people who never can find the time to attend an evening chapter meeting. It's worth a try.

With respect to the '74 Symposium two sessions that did not make the digest or the Advance Program should be brought to your attention. One is a joint AP-MTT session on Electromagnetic Education. The theme is "Interdisciplinary and Real World Electromagnetic Education." The discussion will be sparked by some invited speakers with liberal allowance for audience participation. The two hour session will be held on Wednesday afternoon, June 12 in the Physics Building on the Georgia Tech Campus.

In response to the obligation that we feel MTT bears to facilitate communication between the "Body of Knowledge" and the Public a special session dealing with "Microwave Safety" is scheduled for Wednesday evening, June 12. This promises to be a lively exchange between advocates of differing persuasions, and will be held in the Seminar Theater of the Sheraton-Biltmore Hotel. Mark Grove, COMAR Chairman, is organizing this session.

We hope to see you all in Atlanta in June. If you have any questions or comments, write or call; we'd be glad to hear from you.



1974 IEEE/S-MTT INTERNATIONAL MICROWAVE SYMPOSIUM
Georgia Institute of Technology
Sheraton-Biltmore Hotel
Atlanta, Georgia

CONDENSED SCHEDULE OF EVENTS

Tuesday, 11 June 1974						
		1000	ADJOURN Meeting (Carolina Room, Sheraton-Biltmore)			
		1800 - 2200	Registration (Sheraton Hall, Room C, Sheraton-Biltmore)			
		1900 - 2200	Opening Night Social (Sheraton Hall, Room C, Sheraton-Biltmore)			
		2000	Chapter Chairman's Meeting (Carolina Room, Sheraton-Biltmore)			
Wednesday, 12 June 1974						
		0800 - 1600	Registration (Lobby, Van Leer EE Building)			Ladies' Program
		0900 - 0945	Welcome and Keynote Address (Benjamin J. Dasher Auditorium, EE Building)			
1000 - 1230	Special Sessions. Technology Assessment and Forecasting (EE Bldg., Rooms C-240, 241, 340)	Session 1. Phased Arrays I, Benjamin J. Dasher (EE) Auditorium.	Session 2. Analysis and Application of Microwaves in Biology and Medicine, Textile Auditorium.			Roswell, Ga.
1400 - 1700	Session 3. Phased Arrays II, Benjamin J. Dasher (EE) Auditorium.	Session 4. Microwave Theory, Van Leer Electrical Engineering Building, Classroom C-240.	Session 5. Biological Effects on Microwaves, Textile Auditorium.	Session 6. Millimeter Astronomy and Related Topics, Space Science Building, Room 5.		
2000 - 2200	Session 7. Microwave Technology for Phased Arrays, Sheraton Hall, Room A, Sheraton-Biltmore Hotel.	Session 8. (Panel) Recent Advancements in GaAs Devices, Sheraton Hall, Room B, Sheraton-Biltmore Hotel.	Session 9. Millimeter Waves, Sheraton Hall, Room C, Sheraton-Biltmore Hotel.	Special Session. Microwave Radiation and Consumers (Panel), Seminar Theater, Sheraton-Biltmore Hotel.		
Thursday, 13 June 1974						
0900 - 1220	Session 10. Planar Microwave Active and Passive Components, Space Science Building, Room 3.	Session 11. Applications of Acoustic Devices in Microwave Systems, Textile Auditorium.	Session 12. Millimeter Integrated Circuits and Components, Space Science Building, Room 5.		E X H I B I T S R O O M	Residential Tour, Governor's Mansion Swann House
1400 - 1710	Session 13. Parametric Amplifiers and Upconverters, Space Science Building, Room 3.	Session 14. Microwave Acoustic Devices, Textile Auditorium	Session 15. Microwave Automated Measurements and Computer Optimization Techniques, Space Science Building, Room 5.			
1830 - 1930	Cocktail Party, Sheraton Hall, Sheraton-Biltmore Hotel.					
1930 -	Banquet, Georgian Ballroom, Sheraton-Biltmore Hotel.					
Friday, 14 June 1974						
0900 - 1200	Session 16. Ferrite Control Components, Space Science Building, Room 3.	Session 17. Active Solid State Devices I, Space Science Building, Room 5.	Session 18. (Panel Discussion) The Real World of MIC Packaging Space Science Building, Room 2		# 4	Stone Mountain
1330 - 1630	Session 19. Microwaves in Communication and Industrial Systems, Space Science Building, Room 3.	Session 20. Active Solid State Devices II, Space Science Building, Room 5.				

1974 IEEE/S-MTT INTERNATIONAL MICROWAVE SYMPOSIUM

WEDNESDAY, 12 JUNE

0900 - 0945 INTRODUCTORY SESSION - Benjamin J. Dasher (EE) Auditorium

Welcoming Remarks - G. P. Rodrigue, Chairman, Symposium Steering Committee
 J. M. Pettit, President, Georgia Institute of Technology
 R. A. Rivers, President, S-MTT Administrative Committee
 C. H. Walter, President, AP-S Administrative Committee

Keynote Address - John J. Guarrera, President, IEEE

SPECIAL SESSION
 1000-1230 Technical Forecasting and
 Assessment (Joint AP-S
 and S-MTT)
 Van Leer Electrical Building

Round Table Discussions:

"What is hot - - what is not"

Classroom C-240

1000 MICROWAVE SENSORS FOR
 MILITARY AND CIVIL USE
 J.J. Guarrera

1050 MICROWAVE APPLICATIONS
 FOR MATERIAL AND FOOD
 PROCESSING
 T.S. Saad

1140 MICROWAVES FOR COMMUNI-
 CATIONS AND COMPUTERS

Classroom C-241

1000 MICROWAVE GIGAWATTS -
 A NEW PARADIGM FOR ELEC-
 TRICAL ENERGY
 W.C. Brown

1050 GUIDED PROPAGATION AND
 PROCESSING AT OPTICAL
 FREQUENCIES

1140 PHASED ARRAY TECHNOLOGY -
 PRESENT AND FUTURE

Classroom C-340

1000 MICROWAVE AND MILLIMETER
 WAVE ANTENNAS
 A.C. Schell

1050 NUMERICAL METHODS -
 ANTENNAS AND SCATTERING
 IN FREQUENCY AND TIME DO-
 MAINS
 C.E. Baum

1140 OPTICS AND QUASI - OPTICS
 R.H. Lang

SESSION 1. PHASED ARRAYS I (JOINT
AP-S AND S-MTT)

1000-1220 Benjamin J. Dasher (EE) Audi-
 torium

Chairman: R.C. Hansen

1-1 THE PHASED ARRAY SUCCESS
 STORY; SIX YEARS OF AN/FPS-85
 OPERATION
 J.E. Reed

1-2 SELECTION OF PHASED ARRAY
 CONFIGURATION
 D.T. Thomas

1-3 HEMISPHERICALLY SCANNED
 ARRAYS
 1040

A.T. Villeneuve, M.C. Behnke, and
 W.H. Kummer

1-4 A CONICAL BEAM SHIP ARRAY
 ANTENNA WITH INFINITELY
 VARIABLE CONTROL OF ELEVATION
 ANGLE
 1100

H. Foster, H.H. Mattes, and A. Schrott
 AN EXPERIMENTAL EVALUATION
 OF ADAPTIVE RADAR
 1120

F.M. Staudaheer
 1-6 ANTENNA DESIGN - INCEPTION
 TO RANGE TEST
 1140

J.H. Stachlin
 1-7 X-BAND REFLECT - ARRAY
 WITH INTEGRATED PIN DIODES
 J.A. Salmon, R. Pierrot, and
 Y. Commaut
 1200

SESSION 2. ANALYSIS AND APPLICATION
OF MICROWAVES IN BIOLOGY
AND MEDICINE

1000-1230 Textile Auditorium

Chairman: H. Allen Ecker

2-1 A SURVEY OF THE POTENTIAL
 FOR BENEFICIAL APPLICATIONS
 OF MICROWAVES IN MEDICINE
 AND BIOLOGY (Invited)
 J.M. Osepchuk

2-2 INSECT CONTROL POSSIBILITIES
 USING MICROWAVES AND LOWER
 FREQUENCY RF ENERGY
 S.O. Nelson
 1030

2-3 NERVE STIMULATION BY IM-
 PLANTED DIODE
 1050

C.C. Johnson, J.L. Lords, and
 M.A. Coombs

2-4 LIQUID CRYSTAL FIBEROPTIC
 TEMPERATURE PROBE FOR THE
 MEASUREMENT OF ELECTRO-
 MAGNETIC POWER ABSORPTION
 IN TISSUE
 1110

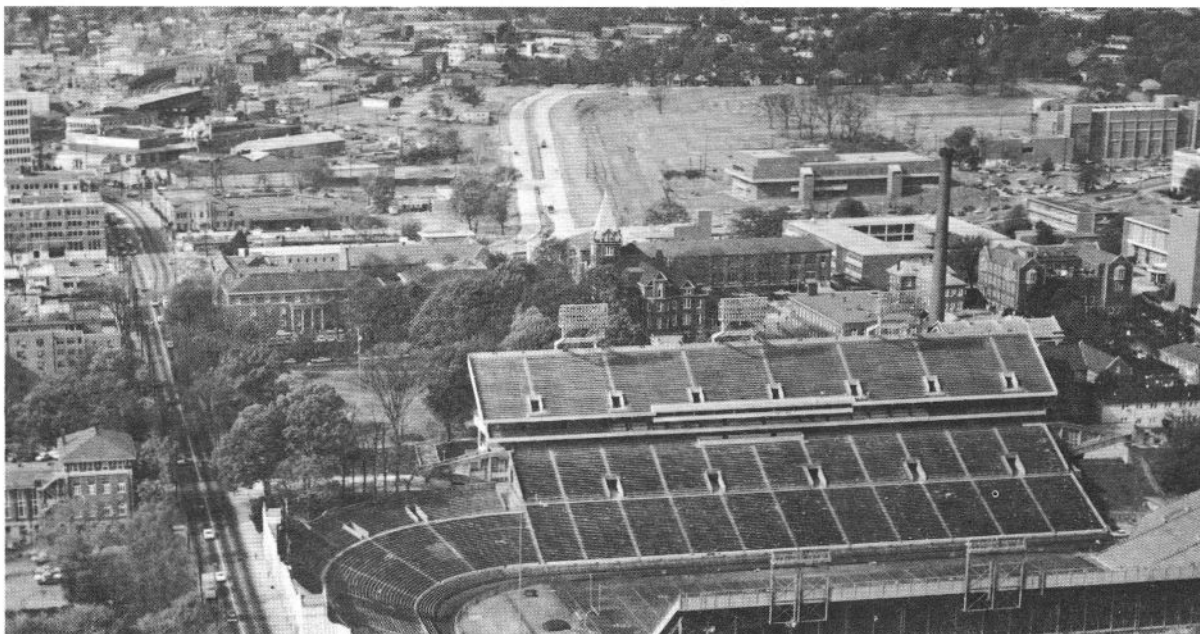
C.C. Johnson, C.H. Durney, and
 J.L. Lords

2-5 ELECTROMAGNETIC FIELDS
 INDUCED INSIDE OF BIOLOGICAL
 BODIES
 1130

D. Livesay and Kun-Mu Chen
 2-6 MULTI-FREQUENCY ELEC-
 TROMAGNETIC THAWING OF
 FROZEN KIDNEYS
 C.P. Burns and C.E. Burdette
 1150

2-7 SOME THEORY AND PRELIM-
 INARY EXPERIMENTS ON
 MICROWAVE RADIOMETRY
 OF BIOLOGICAL SYSTEMS
 J. Bigu del Blanco, C. Romero-
 Sierra, and J.A. Tanner
 1210

----- LUNCH -----



Aerial View of Georgia Tech Campus.

1974 IEEE/S-MTT INTERNATIONAL MICROWAVE SYMPOSIUM
WEDNESDAY, 12 JUNE
Afternoon Sessions

SESSION 3. PHASED ARRAYS II (JOINT AP-S AND S-MTT)

1400-1720 Benjamin J. Dasher (EE) Auditorium
 Chairman: B.C. Dodson
 G.N. Tsandoulas

- 3-1 REQUIREMENTS FOR OPTICALLY PROCESSING INFORMATION FROM A PHASED ARRAY
 1400 J.E. Rhodes
- 3-2 COMMERCIAL MICRO-COMPUTER CHIPS FOR INTEGRATED PHASED ARRAY CONTROL
 1420 F.J. Langley
- 3-4 SOLID STATE PHASED ARRAY RADAR
 1440 A.Y. Harper and J.D. Carlson
- 3-4 THE AN/TPS-59 ANTENNA ROW-BOARD DESIGN
 1500 R.R. Kinsey
- 3-5 TPS-59 ARRAY ELECTRONICS
 1520 R.C. Litt

----- 1540 COFFEE BREAK -----

- 3-6 RF POWER MODULES FOR L-BAND SOLID STATE TRANSMITTERS
 1600 D.J. Hoft and L.R. Lavallee
- 3-7 OPERATION OF SOLID STATE TRANSCEIVERS IN AN L-BAND ARRAY
 1620 R.Sudbury, K. Fischer, F. Palmer, G. Jones
- 3-8 SOLID STATE S-BAND TRANSMIT/RECEIVE MODULE
 1640 G. Hanley, R. Viola, and P. Koegler
- 3-9 AN X-BAND TRANSCEIVER MODULE FOR MAIR
 1700 R.J. Bauer, R.J. Taylor, and J.P. Muhbaier

SESSION 4. MICROWAVE THEORY

1400-1700 Van Leer E.E. Building, Classroom C-240
 Chairman: L. Lewin

- 4-1 DESIGN OF MULTIMODE WAVEGUIDE TRANSITION SECTIONS BASED ON RADIAL AND RECTANGULAR MODE ANALYSES
 1400 E. Bahar and G. Govindarajan
- 4-2 SYMMETRY-INDUCED MODAL CHARACTERISTICS OF UNIFORM WAVEGUIDES
 1420 P.R. Mclsaac
- 4-3 UPPER AND LOWER VARIATIONAL BOUNDS IN EM SCATTERING
 1440 K. Kalikstein, C.J. Kleinman, R. Rosenberg and L. Spruch
- 4-4 PROXIMITY EFFECTS ON TRANSMISSION LINE DISCONTINUITIES
 1500 T. Parker and T. Cisco
- 1520 COFFEE BREAK -----
- 4-5 ITERATIVE SOLUTION OF THE WAVEGUIDE-HORN JUNCTION
 1540 M.F. Iskander and M.A.K. Hamid
- 4-6 SOME NEW RESULTS ON COUPLED OR MEANDER MICROSTRIP LINES BY APPLICATION OF MATRIX THEORY
 1600 R. Daumas, D. Pompei, E. Rivier, and A. Ros
- 4-7 A FULL-WAVE ANALYSIS OF MICROSTRIP RESONATORS
 1620 T. Itoh
- 1640 N-WAY BRANCH LINE DIRECTIONAL COUPLERS
 C.L. Chao

SESSION 5. BIOLOGICAL EFFECTS OF MICROWAVES

1400-1700 Textile Auditorium
 Chairman: A.W. Guy

- 5-1 EXPERIMENTAL MODELS FOR THE EVALUATION OF MICROWAVE BIOLOGICAL EFFECTS
 1400 (Invited)
 P. Czerski
- 5-2 AN INTERNATIONAL PROGRAM FOR MICROWAVE EXPOSURE PROTECTION
 1430 S.M. Michaelson and M.J. Suess
- 5-3 THERMOGENETIC AND CARDIO-DYNAMIC REGULATION IN DOGS CRANIALLY EXPOSED TO 2450 MHz(cw) MICROWAVES
 1450 Shin-Tsu-Lu, R. Bogardus, J. Cohen, J. Jones, E. Kinnen, and S. Michaelson
- 5-4 MICROWAVE EFFECT ON RABBIT SUPERIOR CERVICAL GANGLION
 1510 K. Courtney, J.C. Lin, A.W. Guy, and C.K. Chou
- 1530 COFFEE BREAK -----
- 5-5 BEHAVIORAL CHANGES OF RATS EXPOSED TO MICROWAVE RADIATION
 1600 J.C. Lin, A.W. Guy, L.R. Caldwell
- 5-6 ABSORPTION CHARACTERISTICS OF MULTI-LAYERED SPHERE MODELS EXPOSED TO UHF/MICROWAVE RADIATION
 1620 C.M. Weil
- 5-7 A MICROWAVE DOSIMETRY SYSTEM FOR MEASURING SAMPLED INTEGRAL DOSE RATE
 1640 C.L. Christman, H.S. Ho, and S. Yarrow

SESSION 6. MILLIMETER ASTRONOMY AND RELATED TOPICS

1400-1700 Space Science Building, Room 5
 Chairman: J.J. Gallagher

- 6-1 MILLIMETER WAVE RECEIVERS AND THEIR APPLICATIONS TO RADIO ASTRONOMY
 1400 (Invited)
 T.G. Phillips and K.B. Jefferts
- 6-2 MOLECULAR MILLIMETER WAVE ASTRONOMY
 1430 (Invited)
 L.E. Snyder
- 6-3 A MILLIMETER WAVE RADIO-METER FOR COSMIC BACKGROUND RADIATION MEASUREMENTS
 1500 R.J. Pedersen and F.L. Vernon, Jr.
- 1520 COFFEE BREAK -----
- 6-4 DEVELOPMENT AND TESTING OF A RECEIVER AT 230 GHz
 1550 M.V. Schneider and G.T. Wrixon
- 6-5 MILLIMETER WAVE INTERFEROMETRY
 1610 (Invited)
 W.J. Welch
- 6-6 MILLIMETER WAVE SOLAR OBSERVATIONS
 1640 (Invited)
 J.P. Castelli

----- DINNER -----

SESSION 7. MICROWAVE TECHNOLOGY FOR PHASED ARRAYS

2000-2220 Sheraton Hall, Rm. A, Sheraton-Biltmore
 Chairman: B.L. Smith
 J.B. LaGrange

- 7-1 FIDELITY OF PULSED MICROWAVE TRANSISTOR AMPLIFIERS
 2000 D. Staiman and J. Liston
- 7-2 DESIGN CONSIDERATIONS OF ACTIVE ELEMENT ARRAY TRANSCEIVERS
 2020 J.N. Jansen, R.F. Wade, D. Renkowitz, and H. Balshem
- 7-3 A COMPUTER-AIDED DESIGN OF L-BAND TRANSISTOR POWER AMPLIFIERS
 2040 G.T. O'Reilly, R.E. Neidert, and L.K. Wilson
- 7-4 R.F. RELIABILITY TESTING OF L-BAND POWER TRANSISTORS
 2100 W. Weisenberger, B.C. Dodson, Jr., and A. Christou
- 7-5 INVESTIGATIONS OF RF INDUCED BURNOUT IN MICROWAVE MIXER DIODES: A CONTINUING STUDY
 2120 G.E. Morris, G.A. Hall, C.F. Cook, and V.J. Higgins
- 7-6 S-BAND, 3-BIT, 1 kW PEAK, 0.8 dB AVERAGE LOSS, DIODE PHASE SHIFTER AND DRIVER UNDER \$100
 2140 J.F. White
- 7-7 A HIGH POWER MICROWAVE WAVEGUIDE WINDOW DESIGN
 2200 H.L. Bassett, G.T. Colwell, J.M. Schuchardt, and B.L. Smith

SESSION 8. RECENT ADVANCEMENTS IN GALLIUM ARSENIDE DEVICES (PANEL)

2000-2200 Sheraton Hall, Room B, Sheraton-Biltmore
 Panel Moderator: Gary L. McCoy, J.A. Eisenberg, Berin Fank, C.K. Kim, R.A. Murphy

SESSION 9. MILLIMETER WAVES

2000-2200 Sheraton Hall, Room C, Sheraton-Biltmore
 Chairman: J.W. Dees

- 9-1 MILLIMETER WAVE RADARS
 2000 F.B. Dyer and E.K. Reedy
- 9-2 HIGHLIGHTS AND REVIEW OF THE NELC MILLIMETER CONFERENCE
 2040 (Invited)
 L.R. Whicker
- 9-3 HIGHLIGHTS AND REVIEW OF THE INTERNATIONAL CONFERENCE ON SUB-MILLIMETER WAVES AND THEIR APPLICATIONS
 2120 (Invited)
 J.J. Gallagher

1974 IEEE/S-MTT INTERNATIONAL MICROWAVE SYMPOSIUM

THURSDAY, 13 JUNE

SESSION 10. PLANAR MICROWAVE ACTIVE AND PASSIVE COMPONENTS

0900-1220 Space Science Building, Room 3

Chairman: W.H. From

10-1 FUNDAMENTAL EVEN-AND
0910 ODD-MODE WAVES FOR NON-SYMMETRICAL COUPLED LINES IN NON-HOMOGENEOUS MEDIA
R.A. Speciale10-2 INHOMOGENEOUS COUPLED-LINE FILTERS
0930 J.L. Allen10-3 FOLDED-LINE AND HYBRID
0950 FOLDED-LINE BANDSTOP FILTERS
P.A. Dupuis and E.G. Cristal10-4 DISPERSION AND FIELD
1010 ANALYSIS OF A MICROSTRIP MEANDER LINE SLOW-WAVE CIRCUIT
J.A. Weiss

----- 1030 COFFEE BREAK -----

10-5 THE DESIGN OF A PLANAR
1100 CIRCUIT MOUNTED IN WAVEGUIDE AND THE APPLICATION TO LOW NOISE 12 GHz CONVERTER
Y. Konishi, U. Uenakada, and N. Hoshino10-6 HARMONIC MIXING WITH AN
1120 ANTI-PARALLEL DIODE PAIR
M. Cohn, J.E. Degenford, and B.A. Newman10-7 HIGH POWER PIN DIODE SWITCH
1140 MATRIX
H.R. Malone, M.L. Matson, and P.D. Kennedy10-8 FAST ACTING VARACTORS
1200 FOR SUBNANOSECOND POWER LIMITING IN RECEIVER PROTECTORS
T.M. Nelson and H. Goldie

SESSION 11. APPLICATIONS OF ACOUSTIC DEVICES IN MICROWAVE SYSTEMS

0900-1210 Textile Auditorium

Chairman: R.A. Sparks

11-1 RADAR APPLICATIONS OF
0910 ACOUSTIC SURFACE WAVE DEVICES
(Invited)
J.D. Carlson11-2 APPLICATIONS OF SURFACE
0940 ACOUSTIC WAVE DEVICES IN SPREAD SPECTRUM COMMUNICATIONS
(Invited)
C.E. Wheatley

----- 1010 COFFEE BREAK -----

11-3 THE ECONOMIC FUTURE OF
1040 SURFACE ACOUSTIC WAVE DEVICES
(Invited)
M.G. Holland11-4 ANALOG SIGNAL PROCESSING
1110 USING SURFACE WAVE AND CHARGE TRANSFER DEVICES
(Invited)
L.T. Claiborne11-5 INDUSTRIAL APPLICATIONS OF
1140 ACOUSTIC WAVE PHENOMENA
(Invited)
G.A. Alers

----- LUNCH -----

SESSION 13. PARAMETRIC AMPLIFIERS AND UP CONVERTERS

1400-1710 Space Science Building, Room 3

Chairman: J.J. Taub

13-1 A LOW COST X-BAND MIC PARAMP
1400 D.A. Fleri, J.J. Taub, J.J. Whelehan, and J.M. Wolczok13-2 AN INTEGRATED X-BAND PARAMETRIC AMPLIFIER
1420 L.E. Dickens and R.S. Littlepage13-3 A COOLED MIC PARAMETRIC
1440 UP CONVERTER
G.V. Kopsay, R.A. Lange, E.W. Sard, and J.J. Taub13-4 OCTAVE INPUT, S- TO K-, BAND
1500 LARGE SIGNAL UPPER-SIDEBAND VARACTOR UP CONVERTER
H.C. Okean and L.J. Steffek

----- 1520 COFFEE BREAK -----

13-5 A LOW NOISE, ROOM TEMPERATURE
1540 12 GHz PARAMETRIC AMPLIFIER
S.D. Lacey, B.T. Hughes, and J.C. Vokes13-6 K- BAND SPACECRAFT PARAMETRIC AMPLIFIER
1600 E. Kraemer, J. Leeper, and J. Whelehan13-7 MINIATURIZED NON-DEGENERATE
1620 K- BAND PARAMP FOR EARTH TO SATELLITE COMMUNICATIONS
M.A. Balfour, A. Larsen, and S. Nussbaum13-8 AN IMPATT PUMP FOR A LOW
1640 NOISE PARAMETRIC AMPLIFIER
T. Smith, B. Smilowitz, G. Irvin, and K. Kaminsky13-9 LOW NOISE DOWN-CONVERTER
1650 AND HIGH EFFICIENCY UP-CONVERTER FOR 60-86 GHz TRANSMITTER-RECEIVER
N. Kanmuri, S. Kitazume, H. Kobayashi, and H. Ishihara

SESSION 14. MICROWAVE ACOUSTIC DEVICES

1400-1710 Textile Auditorium

Chairman: N. Lipetz

14-1 ONE HUNDRED CHANNEL
1400 SELECTABLE SURFACE WAVE BANDPASS FILTER
R.M. Hays, R.C. Rosenfeld, and C.S. Hartmann14-2 ELECTRONICALLY VARIABLE
1420 CHIRP SIGNAL CORRELATION WITH THE DIODE-CORRELATOR
T.M. Reeder14-3 ACOUSTIC SURFACE WAVE
1440 BURST CORRELATOR
H.M. Gerard, T.W. Bristol, E.H. Ross, W.R. Smith, and P.B. Snow14-4 DEVELOPMENT OF A PULSE
1500 COMPRESSION DME SYSTEM USING SURFACE ACOUSTIC WAVE DEVICES
D.W. Mellon and W.D. Daniels

----- 1520 COFFEE BREAK -----

14-5 RADAR PULSE EXPANSION/
1550 COMPRESSION FILTERS UTILIZING SURFACE ACOUSTIC WAVES
E.H. Gregory and J. Burnsweig14-6 SYNTHESIS OF PERIODIC
1610 APODIZED SAW FILTERS IN THE PRESENCE OF DIFFRACTION
A.J. Slobodnik, Jr. and T.L. Szabo14-7 MULTI-PIEZO FILM MICROWAVE
1630 ACOUSTIC TRANSDUCERS
R. Kaul, T.M. Reeder, and J.T. Flynn14-8 MAGNETOSTATIC SURFACE
1650 WAVE DELAY LINES
J.C. Sethares and M.R. Stiglitz

SESSION 12. MILLIMETER INTEGRATED CIRCUITS AND COMPONENTS

0900-1220 Space Science Building, Room 5

Chairman: J.C. Wiltse

12-1 MILLIMETER-WAVE
0900 MICROSTRIP OSCILLATORS
B.S. Glance and M.V. Schneider12-2 PLANAR DIELECTRIC STRIP
0920 WAVEGUIDE FOR MILLIMETER-WAVE INTEGRATED CIRCUITS
T.T. Fong and S.W. Lee12-3 INTEGRATED FIN-LINE
0940 MILLIMETER COMPONENTS
P.J. Meier12-4 SEMICONDUCTOR MILLIMETER WAVE INTEGRATED CIRCUITS
1000 H. Jacobs

----- 1020 COFFEE BREAK -----

12-5 QUASI-OPTICAL DIPLEXERS
1050 (Invited)
A.A.M. Saleh12-6 AN EXPANDED JOINT FOR
1120 A MILLIMETER WAVEGUIDE TRANSMISSION SYSTEM
J.W. Carlin and R.J. Colardeau12-7 H₀₁ CIRCULAR WAVEGUIDE
1140 LOW PASS FILTER FOR MILLIMETER WAVE TRANSMISSION SYSTEM
Chung-Li Ren and Han-Chiu Wang12-8 FOUR GIGABITS/SECOND
1200 MILLIMETER WAVE EXCITER-MODULATOR-AMPLIFIER MODULE
Y. Chang, D.L. English, and H.J. Kuno

SESSION 13. PARAMETRIC AMPLIFIERS AND UP CONVERTERS

1400-1710 Space Science Building, Room 3

Chairman: J.J. Taub

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1650 WAVE DELAY LINES
J.C. Sethares and M.R. Stiglitz

SESSION 15. MICROWAVE AUTOMATED MEASUREMENT AND COMPUTER OPTIMIZATION TECHNIQUES

1400-1730 Space Science Building, Room 5

Chairman: B.S. Perlman

15-1 TESTING MICROWAVE TRANSMISSION LINES
1400 A.R. Howland15-2 AN ALTERNATIVE CALIBRATION
1420 TECHNIQUE FOR AUTOMATED NETWORK ANALYZERS WITH APPLICATION TO ADAPTOR EVALUATION
G.F. Egen15-3 AN APPLICATION OF THE POWER
1440 EQUATION CONCEPT AND AUTOMATION TECHNIQUES TO PRECISION BOLOMETER UNIT CALIBRATION
E.L. Komarek15-4 TIME DOMAIN OSCILLOGRAPHIC
1500 MICROWAVE NETWORK ANALYSIS USING FREQUENCY DOMAIN DATA
H.E. Stinehelfer

----- 1530 COFFEE BREAK -----

15-5 AN AUTOMATED GENERAL PURPOSE TEST SYSTEM FOR SOLID STATE L.O.'s
1550 J.R. Humphrey15-6 AUTOMATIC LOAD CONTOUR
1610 MAPPING FOR MICROWAVE POWER TRANSISTORS
J. Cusack, S. Perlow, and B.S. Perlman15-7 GENERALIZED DESIGN OF
1630 BANDPASS AND OTHER FILTERS BY COMPUTER OPTIMIZATION
S.B. Cohn15-8 COMPUTER AIDED TOLERANCE
1650 OPTIMIZATION APPLIED TO MICROWAVE CIRCUITS
J.W. Bandler, P.C. Lin, and J.H.K. Chen15-9 TECHNIQUES FOR NEW MICROWAVE SYNTHESIZERS THAT SHOW BROADER BANDWIDTH AND INCREASED SPECTRAL PURITY
1710 P.G. Tipon

1974 IEEE/S-MTT INTERNATIONAL MICROWAVE SYMPOSIUM

FRIDAY, 14 JUNE

SESSION 16. FERRITE CONTROL COMPONENTS

0900-1200 Space Science Building, Room 3
Chairman: L.R. Whicker

- 16-1 0900 MANUFACTURING METHODS STUDIES OF FERRITE PHASERS (Invited)
M. Mohr
- 16-2 0930 THE FERRITE-LOADED WAVE-GUIDE DISCONTINUITY PROBLEM
F.J. Bernues
- 16-3 0950 A NEW EDGE MODE ISOLATOR IN THE VHF RANGE
L. Courtois, B. Chiron, and G. Forterre
- 1010 COFFEE BREAK -----
- 16-4 1040 A NARROW-BAND MILLIMETER WAVE Y-JUNCTION CIRCULATOR WITH WIDE-BAND TUNING CAPABILITY
B. Owen
- 16-5 1100 BANDWIDTH ENLARGEMENT OF A MILLIMETER WAVE Y-CIRCULATOR WITH HALF WAVELENGTH LINE RESONATORS
Y. Akaiwa
- 16-6 1120 A 1.7 GHz LUMPED-ELEMENT CIRCULATOR HIGHLY STABILIZED WITH TEMPERATURE
I. Ikushima and M. Maeda
- 16-7 1140 THEORY OF 4-PORT NONRECIPROCAL CIRCUIT-FILTER AND CIRCULATOR
M. Igarashi and Y. Naito

SESSION 17. ACTIVE SOLID STATE DEVICES I

0900-1210 Space Science Building, Room 5
Chairman: R.A. Weck

- 17-1 0900 MEASUREMENT OF THE LARGE SIGNAL CHARACTERISTICS OF MICROWAVE SOLID STATE DEVICES USING AN INJECTION LOCKING TECHNIQUE
J.C.I. Young and I.M. Stephenson
- 17-2 0920 DETERMINATION OF SEMI-CONDUCTOR JUNCTION DEVICE PACKAGE NETWORKS
R.W. Laton and P.T. Greiling
- 17-3 0940 PERFORMANCE OF AVALANCHE DIODE OSCILLATORS WITH LARGE LEAKAGE CURRENT
R.J. Gutman and J.M. Borrego
- 17-4 1000 HIGH EFFICIENCY READ DIODE AMPLIFIER
W.C. Tsai, C.K. Kim, and R.E. Gray
- 17-5 1020 PULSED AND CW DOUBLE-DRIFT SILICON IMPATTS
C. Pfund, C.P. Snapp, and A.F. Podell
- 1030 COFFEE BREAK -----
- 17-6 1050 PERFORMANCE AND RELIABILITY OF K_B-BAND GaAs IMPATT DIODES
R.A. Murphy, W.T. Lindley, D.F. Peterson, and P. Staecker
- 17-7 1110 A FOUR-STAGE, 30 dB GAIN, 100 mW GUNN EFFECT AMPLIFIER IN K_B-BAND
J.G. de Koning, R.E. Goldwasser, R.J. Hamilton, Jr., and F.E. Roszczyc
- 17-8 1130 TUNABLE MILLIMETER-WAVE PACKAGED IMPATT DIODE OSCILLATORS
H.J. Kuno, K.P. Weller, and D.L. English
- 17-9 1150 A LOW NOISE 80 GHz SILICON IMPATT OSCILLATOR HIGHLY STABILIZED WITH A TRANSMISSION CAVITY
S. Nagano, S. Ohnaka, K. Sekido, and K. Ayaki

SESSION 18. THE REAL WORLD OF MIC PACKAGING

0900-1200 Space Science Building, Room 2

Panel Discussion

Chairman: Fred Rosenbaum

Keynote Address: Microwave Integration - Promises and Problems,
L. Young, M.L. Reuss, and B.E. Spielman, NRL, Washington, DC

Presentation by Panel Members:

Packaging L-band MIC Modules for Ground Based Applications, R.J. Taylor and P.S. Schaus

Impact Extruded MIC Packaging, J. Miley and K. Derdarian

Thermal Expansion Problems in Hybrid Package Assembly, R. Jackson

Microwave Planar Packages, D. Nelson

High Reliability Packages for Space Craft
P. Petrelis

----- LUNCH -----

SESSION 19. MICROWAVES IN COMMUNICATION AND INDUSTRIAL SYSTEMS

1330-1630 Space Science Building, Room 3
Chairman: S.F. Adam

- 19-1 1330 TRENDS IN TRANSPONDERS IN COMMERCIAL COMMUNICATION SATELLITES (Invited)
D.P. Sullivan
- 19-2 1400 MODERN MICROWAVE TECHNOLOGY IN HIGH SPEED QPSK COMMUNICATION SYSTEMS (Invited)
C.L. Cuccia
- 19-3 1430 RECENT PROGRESS IN POWER RECEPTION EFFICIENCY IN A FREE SPACE MICROWAVE POWER TRANSMISSION SYSTEM
W.C. Brown and C.K. Kim
- 1450 COFFEE BREAK -----
- 19-4 1510 MORE THAN 4 PERCENT EFFICIENCY SOLID-STATE TRANSMITTER FOR 4 GHz RADIO RELAY
Y. Kitahara, T. Kyuzaki, and R. Tamura
- 19-5 1530 3.7 TO 4.2 GHz PORTABLE MICRO-WAVE REPEATER (Invited)
W.W. Raukko
- 19-6 1550 SOLID STATE LINEAR FM/CW RADAR SYSTEMS - THEIR PROMISE AND THEIR PROBLEMS
P. Dennis and S.E. Gibbs
- 19-7 1610 BIDIRECTIONAL MICROWAVE REPEATER FOR OBSTACLE DETECTION RADAR IN GUIDED GROUND TRANSPORTATION
H.H. Tan, and M.S. Gupta

SESSION 20. ACTIVE SOLID STATE DEVICES II

1330-1630 Space Science Building, Room 5
Chairman: E.D. Maynard, Jr.

- 20-1 1330 BANDPASS MICROWAVE ELECTRON BOMBARDED SEMI-CONDUCTOR AMPLIFIERS
P.S. Carter, Jr., J.A. Long and L.A. Roberts
- 20-2 1350 APPLICATION OF DUAL-GATE GaAs FET TO MICROWAVE VARIABLE-GAIN AMPLIFIER
M. Maeda and Y. Minai
- 20-3 1410 HIGH EFFICIENCY BROADBAND POWER TRANSISTORS FOR S-BAND APPLICATIONS
J.E. Chapman, Jr.
- 20-4 1430 NEW RESULTS ON THE DESIGN OF BROADBAND MICROWAVE BIPOLAR AND FET AMPLIFIERS
W.H. Ku and W.C. Peterson, and A.F. Podell
- 1450 COFFEE BREAK -----
- 20-5 1510 CIRCUIT OPTIMIZATION OF S-BAND TRAPATT OSCILLATORS
R.J. Trew, N.A. Masnari, and G.I. Haddad
- 20-6 1530 HIGH PULSE ENERGY F-BAND TRAPATT DIODE AMPLIFIER
V.A. Mikenas, A. Schwarzmann, J.H. Bowen, M.E. Breese, M. Weiss, S.C. Lin and H. Sobol
- 20-7 1550 COMPLEMENTARY X-BAND TRAPATT DIODES
T.T. Fond and R.S. Ying
- 20-8 1610 X-BAND TRAPATT AMPLIFIER
N.W. Cox, C.T. Rucker, and K.E. Gsteiger



CHAPTER ACTIVITIES

by L. R. Whicker

Chapter Chairmen's Meeting

As I reported last fall, we had one of our most productive Chapter Chairmen's Meetings at last year's symposium. Using the inputs from that meeting, a Chapter Activity Check List has been prepared and distributed to Chapter Officers. It is hoped that this year's meeting will be equally productive. This year's meeting is scheduled for the Carolina Room in the Sheraton-Biltmore Hotel on Tuesday, June 11, 1974 at 8:00 P.M. As was the case last year, members from MTT-S ADCOM will attend and describe services which MTT provides to its chapters and members.

One-Day Symposiums

In the past, large chapters, including Washington, Boston, San Francisco, and others have had very successful lecture series or one-day symposiums. Many smaller chapters have been reluctant to try such an undertaking. George Oltman is chairing an ad hoc committee which is looking into the concept of a "traveling road show - one-day symposium" which might be utilized by the smaller chapters. A report from this committee will be presented at our Atlanta Chapter Chairmen's meeting.

Last Year's National Lecture Film

As an experiment, last year's National Lecture "Solid State Reliability (?)" by John L. Allen has been reproduced on 16-mm movie film and prints of this film are available for 30-day loan to IEEE group or Society chapters, universities, or industrial organizations. This lecture is both timely and controversial and should be of interest if you missed John's lecture. The film may be obtained by contacting:

Dr. G. T. O'Reilly
Code 5258
Naval Research Laboratory
Washington, D.C. 20375
Telephone (AC 202) 767-2862

MICROWAVE SAFETY

An evening session devoted to Microwave Safety has been added to the June 12 program of the 1974 Microwave Symposium. A panel discussion and open forum will focus on both consumer and industrial uses of microwave energy. This special session is being organized by COMAR, the IEEE Committee on Man and Radiation.

National Lecturer for 1974

Sy Okwit's lecture on "Low Noise Receiver Techniques" is in large demand and Sy's schedule is rapidly filling. If your chapter desires the 1974 National Lecture, you need contact:

Mr. S. Okwit
LNR Communications, Inc.
35 Central Avenue
Farmingdale, N.Y. 11735
Telephone (AC 516) 293-1010

Membership Drive

Membership posters and IEEE benefit booklets have been mailed to chapter chairmen. These will be on exhibit at your chapter meetings. Please take a benefit booklet and pass it on to a friend or co-worker. Help the MTT Society grow.

BOOK REVIEW

Stripline Circuit Design — Harlan Howe, Jr. — Artech House, Dedham, Mass., 343pp, \$19.95.

This book does an outstanding job of presenting stripline circuit design in a readable, comprehensive form. It is a worthy successor to the Sander's Triplate Manual.

Mr. Howe starts with a discussion of the choices between various stripline materials and tradeoffs with respect to power handling, loss, thermal properties, cost, etc. He moves on into the basic design parameters of characteristic impedance, DC returns and blocks, bends and corners, and launching structures. The body of the text treats hybrids, power dividers, directional couplers, filters of all kinds, mixers, switches and a variety of circuit components. He concludes with a discussion of the practical problems of packaging and subassembly techniques.

The author has done an excellent job of putting together a practical design handbook. A wealth of design equations, curves and tables is contained in this book, and the referencing to equations of earlier chapters is well done. This book is not intended as a classroom text and is not suitable in that role. There are no derivations or justifications of equations used. However, extensive references to the original sources is provided so that the reader with sufficient motivation could seek out such material.

One potentially helpful item omitted from this book is a listing of commercial suppliers of stripline boards, connectors, tapes, etc. While this steps on the thin ice of commercialism, it has been done with no ill effects in a number of other books of the same variety.

The printing of the book has a fairly large number of typographical errors (e.g. symbols called out in the text or in graphs are occasionally different from those in the equations), but these are surprisingly easy to catch and, while bothersome, do not impede the flow of information. One regrettable quality control item is the black facing used on the cover to highlight the title. The black rubs off on hands, papers, clothes, etc. When I pay nearly \$20 a copy for a book, I don't expect the cover to rub off on me. In spite of the drawback I strongly recommend this volume to anyone interested in stripline design; the information also comes off very easily.

— G. P. Rodrigue, Georgia Tech

CHANGES TO THE BYLAWS OF THE IEEE SOCIETY ON MICROWAVE THEORY AND TECHNIQUES

Previous

Newly Adopted

Section VI.

B. THE MICROWAVE PRIZE

The Society shall present an award known as "The Microwave Prize" annually. The prize shall be awarded to the author of that paper, published in the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, PROCEEDINGS OF THE IEEE, or other official IEEE publication, which is judged to be the most significant contribution in the field of interest of the Society. The paper must have been published during the year ending June 30th preceding the award: The selection of the recipient of "The Microwave Prize" will be the responsibility of the Operations Committee, who will make their recommendation to the Administrative Committee at the annual meeting of the Administrative Committee. The Chairman of the Administrative Committee shall inform the recipient of "The Microwave Prize" as soon as possible after the Administrative Committee has approved the award.

The award will consist of a suitable certificate, a cash sum of \$100.00 and a feature publication in the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. If the paper as published has more than one author, a certificate will be presented to each author and the cash sum will be divided equally among the authors.

No Change.

The award will consist of a suitable certificate, a cash sum of \$300.00 and a feature publication in the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. If the paper as published has more than one author, a certificate will be presented to each author and the cash sum will be divided equally among the authors, except in the case there are four or more authors each shall receive a cash sum of \$100.00.

WANT ADS

WEINSCHEL ENGINEERING COMPANY, INC.,

A manufacturer of precision microwave test equipment and microwave components is offering outstanding opportunities and challenges for qualified circuit design junior and senior engineers. The company offers opportunities for professional advancement, educational assistance and liberal benefits. If you would like to be challenged with state-of-the-art design, like to grow with new and innovative technologies and have a background in RF analog or digital circuit design, please call or send your resume' in confidence to the Personnel Manager. Salaries commensurate with ability and background.

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MICROWAVE RADIATION MANAGEMENT

4 CRAYDON STREET
PH. (201) 538-7392 MORRIS PLAINS, N.J. 07950

PERSONALITIES

John B. Horton has joined the General Electric Company, Valley Forge Space Center, as a Consulting Engineer in Communication Engineering. John was formerly with TRW Systems, Redondo Beach, California. His new address is:

General Electric Company
Room U2450, Valley Forge Space Center
Box 8555
Philadelphia, Pennsylvania 19101

Telephone: 215-962-2440

George Haddad and John Horton will attend the 1974 Popov Society Congress in Moscow, USSR, in May as members of the IEEE exchange delegation to USSR. Their schedule will include the Popov Congress meeting in Moscow and industry tours at Leningrad, Novosibirsk, and Kiev. The Russian exchange delegation attended the 1974 INTERCON in March of this year.

SHORT COURSES

LASER TECHNOLOGY

June 24-27, 1974

The George Washington University,
Washington, D.C.
Naval Research Laboratory

Emphasis will be on current applications of lasers to show what is being done, what can be done, future trends, and limitations. There will be time for discussion of special problems and a tour of laser labs at NRL.

W.S. Watt, Manager, High Power Laser Program, Laser Physics Branch, Naval Research Laboratory. \$330

For further information, write to the Director, Continuing Engineering Education, The George Washington University, Washington, D.C. 20006, or call (202) 676-6106.

MICROWAVE ANTENNA MEASUREMENTS

July 22-26, 1974

The Georgia Institute of Technology

This course is an intensive study of the measurement of microwave antenna radiation characteristics including directivity, gain, pattern, boresight, polarization, and phase. Radome and reflectivity measurements will also be treated.

The course covers the theoretical basis of the measurements as well as current techniques including the analysis of error. An important segment deals with the design and evaluation of antenna measurements facilities.

This will be the sixth in a series of yearly short courses which are offered alternately at Georgia Tech and San Fernando Valley State College. A text written for the series will be used in the course.

The course fee of \$275.00 includes a text and all classroom materials. For further information concerning the Microwave Antenna Measurements short course, contact:

Director
Department of Continuing Education
Georgia Institute of Technology
Atlanta, Georgia 30332
Telephone: (404) 894-2400

MEETINGS

URSI SPECIALIST MEETING ON
MICROWAVE SCATTERING AND
EMISSION FROM THE EARTH

An URSI Special Meeting on Microwave Scattering and Emission from and below the surface of the earth, scheduled for Berne, Switzerland, during 23-26 September 1974, invites papers relating to theoretical and experimental activities in this field.

Suggested areas of interest are as follows: electromagnetic scatter and microwave emission from random interfaces, air-water interfaces, soil, vegetation, snow and ice, buildings, roads, and other man-made or natural earth-surface scatterers. Scattering from aircraft, rockets, and precipitation are not included.

Papers should be suitable for a 40-minute presentation, which includes 15 minutes for discussion. Sessions will be unclassified. Presentations may be in either French or English. Authors will have until 1 May 1974 to submit a 200-500 word summary to the program committee secretary, Dr. Albert W. Biggs, 2291 Irving Hill Road, University of Kansas, Lawrence, Kansas 66045, USA. Notification of acceptance will be made by 1 June 1974.

Dr. Richard K. Moore, University of Kansas, is the program chairman. The local organizing chairman, is Dr. E. Schanda, Institute of Applied Physics, University of Berne, Sidlerstrasse 5, 3012 Berne, Switzerland.

TWENTIETH ANNUAL CONFERENCE ON
MAGNETISM AND MAGNETIC MATERIALS

3-6 December 1974
San Francisco, California

This topical conference is sponsored jointly by the American Institute of Physics and the Magnetic Society of the IEEE in cooperation with the American Physical Society, the Office of Naval Research, the Metallurgical Society of the AIME and the American Society of Testing and Materials. The meeting will be open to all persons subject to a registration fee of about \$35 (marked reduction for students). Registration will be possible at the Jack Tar Hotel starting in the evening of 2 December.

A satellite conference for specialists in magnetic bubbles is being organized by J. C. Slonczewski (IBM Research Center, P.O. Box 218, Yorktown Heights, N.Y. 10598). It will take place at San Jose, Calif. on 9-11 December 1974.

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