President's Message—The Microwave Spectrum, Our Resource for the Future

ROBERT A. RIVERS

MANY areas of technical activity are involved with the more effective utilization of scarce resources. New products are continually being introduced to make more efficient use of resources. Many times resources are human time and work. In the case of microwave engineering we use a resource (the electromagnetic spectrum) to acquire or transmit information. We use this resource to make more efficient use of human time and energy. In other cases we use this resource to transmit energy itself. When used, these energy transmission techniques are evaluated and used competitively with other means of energy transmission. In both cases, we must use our resource to do the job. From the point of view of the microwave engineer he is involved with a relatively inexpensive resource. It is only in certain limited communication bands that the spectrum is scarce. Generally speaking, the spectrum is crammed full up to 500 MHz. Between 500 and 1000 MHz there is little activity. From 2 to 12 GHz, only the communication bands are significantly utilized. Overall, and considering the near term usable spectrum of 300 GHz, we have not scratched the surface of our basic resource. While we should see that this basic resource is not wasted, our problem is one of finding new uses for this resource. Perhaps a major role for the MTT is in promoting the use of microwave techniques. This could be a service to our Microwave Industry, ourselves as Engineers, and to the public.

R. A. Rivers is the 1974 President of S-MTT. He is with Aircom, Inc., Union, N. H. 03887.

The 1974 International Microwave Symposium

G. P. RODRIGUE AND GORDON R. HARRISON

THE 1974 IEEE S-MTT International Microwave Symposium was hosted by the Atlanta Joint Chapter of MTT and AP and held on the campus of the Georgia Institute of Technology and at the Sheraton-Biltmore Hotel, Atlanta, Ga., June 12–14, 1974.

The period of June 5–June 14 saw an unprecedented concentration of technical symposia at Georgia Tech. In addition to the Microwave Symposium, four other technical meetings were held in that period. These others were: International Conference on Submillimeter Waves and Their Applications, June 5–7; 1974 International IEEE AP-S Symposium, June 10–12; USNC/URSI Meeting, June 11–13; Twelfth Symposium on Electromagnetic Windows, June 12–14. The theme of the meetings, "Together in '74," was obvious. Attendees had the unparalleled opportunity to "sample the merchandise" in many related technical areas. The large number of joint registrations (roughly one-third of the total) proved the validity of holding contiguous conferences.

The Microwave Symposium accented "Man—Microwave Applications Now—," in one complete session and in several papers interspersed throughout the program. The technical program also contained joint sessions with the Antennas and Propagation Symposium dealing with phased arrays and with technology assessment and forecasting.

The Symposium was attended by 610 registrants from the United States and around the world. Technical Sessions were dispersed on the Georgia Tech campus in the Electrical Engineering, Space Science, Textiles, and Physics Buildings and on Wednesday evening at the Sheraton-Biltmore Hotel. To our knowledge no one was lost on the shuttle buses.

Sixteen industrial concerns supported the conference by exhibit booth purchases and eighteen more through digest listings or coffee break sponsorship. The Georgia Institute of Technology and other local firms cited below generously provided time for many committee members as well as secretarial assistance.

TECHNICAL PROGRAM

The technical program, as prepared and planned by the Technical Program Committee, consisted of 20 technical sessions and 6 special sessions. A list of these technical sessions with the approximate attendance to each session is listed as follows:

Session	Approximate attendance
Wednesday Morning, June 12	
Introductory Session	300
Special Sessions: Technology Assessment and Forecasting—"What is hot—What is not" (Joint AP-S and S-MTT)	200
Special Session: TRAPATT and LSA—Optimum Impedance and Starting Conditions (Panel Discussion)	50
Session 1: Phased Arrays I (Joint AP-S and S-MTT)	200
Session 2: Analysis and Application of Microwaves in Biology and Medicine	70
Wednesday Afternoon, June 12	
Session 3: Phased Arrays II (Joint AP-S and S-MTT)	190
Session 4: Microwave Theory	70
Session 5: Biological Effects of Microwaves	65
Session 6: Millimeter Astronomy and Related Topics	70
Special Session: Electromagnetic Education (Joint S-MTT/AP-S/URSI)	35
Wednesday Evening, June 12	
Session 7: Microwave Technology for Phased Arrays	85
Session 8: (Panel) Recent Advancements in GaAs Devices	120
Session 9: Millimeter Waves	80
Panel Discussion: Microwave Safety	65
Thursday Morning, June 13	
Session 10: Planar Microwave Active and Passive Components	120
Session 11: Applications of Acoustic Devices in Microwave Systems	70
Session 12: Millimeter Integrated Circuits and Components	90
Thursday Afternoon, June 13	
Session 13: Parametric Amplifiers and Upconverters	100
Session 14: Microwave Acoustic Devices	60
Session 15: Microwave Automated Measurements and Computer Optimization Techniques	100
Thursday Evening, June 13	
Cocktail Party, Sheraton Hall, Sheraton-Biltmore Hotel	Full
Banquet, Georgian Ballroom, Sheraton-Biltmore Hotel	225
Friday Morning, June 14	
Session 16: Ferrite Control Components	75
Session 17: Active Solid State Devices I	130
Session 18: (Panel Discussions) The Real World of MIC Packaging	90
Film, National Lecturer 1973, "Solid State Reliability"	18
Friday Afternoon, June 14	
Session 19: Microwaves in Communication and Industrial Systems	70
Session 20: Active Solid State Devices II	90

The technical program consisted of 27 invited papers and 112 contributed papers. In addition, the program contained five panel discussions and four sessions planned and sponsored jointly by the Antennas and Propagation Society.

The Technical Program Committee received 168 contributed papers from which it selected 112 to be presented at the Symposium. The program contained 22 papers from outside the United States. Countries represented were Germany, France, United Kingdom, Canada, Poland, Denmark, and Japan.

The specific plans for the Symposium included one day of overlap with the International Antennas and Propagation Society Symposium. It is interesting to note that the joint sessions scheduled on Wednesday with this Symposium were well attended, and therefore, it is concluded that the plans in this direction were quite successful.

The Technical Program Committee worked as a very harmonious group and did their work rapidly and well. We are most appreciative of the support given by this group, a list of which follows later in this report.

Since late papers were not listed in the program and could not be reported in the *Digest,* they are listed here by title and author as follows.

"Practical Design Approach to Microstrip Combline Type Filters," A. D. Vincze (Philco Ford Co., Palo Alto, Calif.).

"Broadband Directional Couplers Using Microstrip with Dielectric Overlays," B. Sheleg and B. E. Spielman (Naval Res. Lab., Washington, D.C.).

"External Electrode Glow Discharge Detection of Millimeter Waves," N. S. Kopeika (Univ. Negev, Beer-Sheva, Israel).

"Extremely Wideband Isolators for Millimeter Waves," J. Edrich and J. D. Martinko (Univ. Denver, Denver, Colo.).

"Broadband Frequency Selective, Ferrite Limiter in Ku-Band," S. T. K. Nieh, S. S. Elliott, and R. A. Craig (Physical Electron. Lab., Menlo Park, Calif.).

"A Low Noise C-Band GaAs FET Amplifier," D. R. Ch'en and A. N. Woo (Avantek, Inc. Santa Clara, Calif.).

SPECIAL SESSIONS (NOT LISTED IN DIGEST)

Wednesday Afternoon, 12 June 1974

S-MTT/AP-S/URSI SPECIAL SESSION—Electromagnetic Education

Organizer: A. Ishimaru, Univ. Washington

Theme: "Interdisciplinary and Real World Electromagnetic Education"

Wednesday Evening, 12 June 1974

Panel Discussion: Microwave Safety

Organizer: H. Mark Grove, Chairman, TAB Committee on Man and Radiation

Panel Members:

J. Osepchuk (Raytheon Co., Waltham, Mass).

R. Elder (U.S. Bureau of Radiological Health).

H. Janet Healer (U.S. Office of Telecommunication Policy).

P. Czerski (National Institute of Mother and Child, Warsaw, Poland).

Curt Johnson (Univ. Utah).

Friday Morning and Afternoon, 14 June 1974

Film: National Lecturer 1973, "Solid State Reliability"—Dr. John L. Allen, Associate Director of Research for Electronics (Naval Research Laboratory, Washington, D.C.).

SOCIAL FUNCTIONS

On the extracurricular side, there was an unusually festive banquet preceded by a Scientific-Atlanta sponsored cocktail party. The awards banquet was attended by 225 people and the cocktail party by untold hundreds. G. P. Rodrigue served as Master of Ceremonies at the banquet where W. W. Mumford was honored with the first Microwave Career Award and E. G. Cristal received the first Microwave Applications Award. R. A. Rivers, '74 AdCom President, presented John Horton with the Past President's Award. He was joined by IEEE President, John J. Guarrera, in presenting Fellow Citations to Marvin Cohn and Amarjet Singh. The Microwave Prize was presented to W. R. Smith, W. R. Jones, and H. M. Gerard of Hughes Aircraft Co. for their paper "Analysis and Design of Dispersive Interdigital Surface-Wave Transducers." Banquet speaker for the evening was Dr. C. L. Hogan, President of Fairchild Camera and Instrument Co. and a leading microwave pioneer, who spoke on "The World of Technology, Opportunities and Responsibilities for Us All."

An active and very popular Ladies' Program was organized by Emily Hoover with daily visits to local attractions including Stone Mountain, the Swann House, and historic Roswell, Ga.

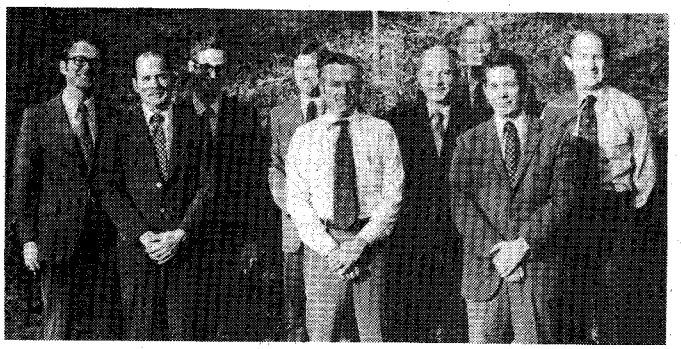
DIGEST

A 381 page *Digest*, ably edited, coordinated, and planned by Dr. Tom K. Gaylord, may be obtained by sending $20.00 for IEEE Catalog No. 74CH0838-3MTT, 1974 IEEE S-MTT International Microwave Symposium, Library of Congress No. 72-75863 to: IEEE, 345 East 47th Street, New York, N.Y. 10017.

A WORD OF THANKS

This is the first time our Symposium has met in Atlanta, and one of the few times it has met in the South. Your response and attendance have indicated that it was a successful venture. Our secret of success was dedicated people and organizations who contributed so generously of their time in helping bring about this Symposium. A special expression of appreciation goes to the many local organizations and to the Georgia Institute of Technology who contributed heavily to the success of the Symposium. The concentration of meetings posed some monumental problems of coordination handled expertly by members of the Steering Committee. For the many tasks conducted by our secretaries, Beverly Maksin, Beverly Pritchard, and Betty Jaffe, we owe much gratitude—our success is really yours.

To the following and their supporting organizations, we give special thanks.



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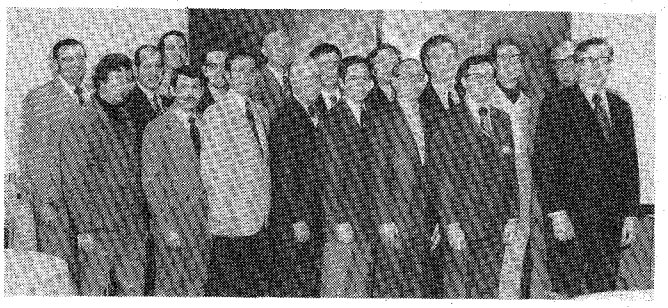

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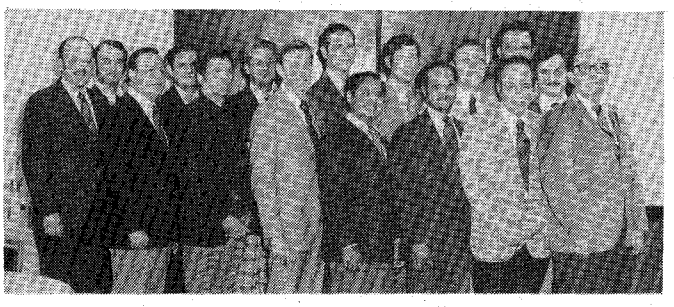

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