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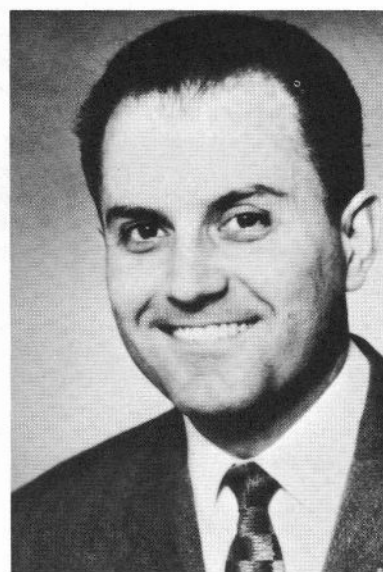
Boulder Site of 1973 International Microwave Symposium

The University of Colorado will be the site of the 1973 Microwave Symposium June 4 through 6. The technical program is expanded to three simultaneous sessions on two of the three days and workshops on Biological Effects of Microwave Radiation and on Phased Array Components are scheduled for the end of the Symposium.

The University's Williams Village will offer an American plan package at \$50 single and \$42 double for Sunday to Thursday. A number of nearby hotels and motels are available at reasonable rates, and furthermore, several campgrounds are located within ten miles of the University of Colorado. The timing in early June and the location at the edge of the Rocky Mountains should provide great incentive to combining this Symposium with a family vacation. A full Ladies Program is planned to parallel the Symposium. Notable among other social events of the Symposium will be a Tuesday night banquet with Ray Stannish as speaker and a Wednesday breakfast atop Flagstaff Mountain.

All Technical sessions will be held in the University Memorial Center (UMC) on the Boulder Campus with the exception of the keynote session scheduled in Chemistry 140, adjacent to the UMC.

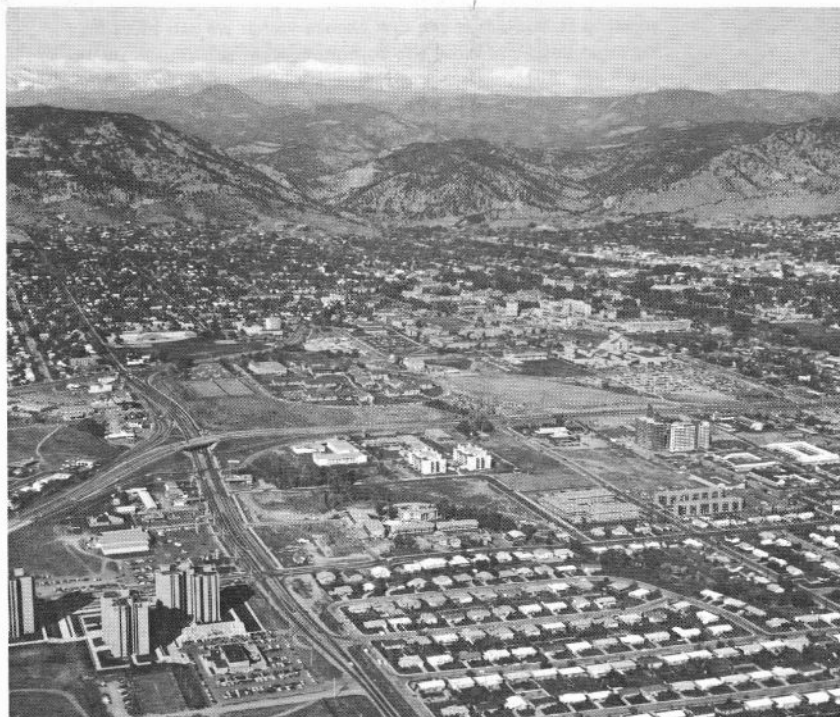
Details of technical program and other arrangements are contained herein. We hope to see many of you at Boulder this June.



Ray Stannish, Banquet Speaker

The annual banquet of the Microwave Symposium will feature an entertaining lecture on "Einstein, Relativity, and all that Jazz" by Ray Stannish whose humorous treatment of scientific subjects has delighted audiences all over the nation. The banquet will be held at the Harvest House Hotel and shuttle bus service will be provided from Williams Village.

Also featured at the banquet will be the presentation of the Microwave Prize jointly to Harrison Rowe and Dale Young of Bell Telephone Laboratories and the National Lecturer's Plaque to Ted Saad.



Boulder, Colorado with Univ. of Colorado in center, Williams Village, lower left, and Rocky Mountains in background.



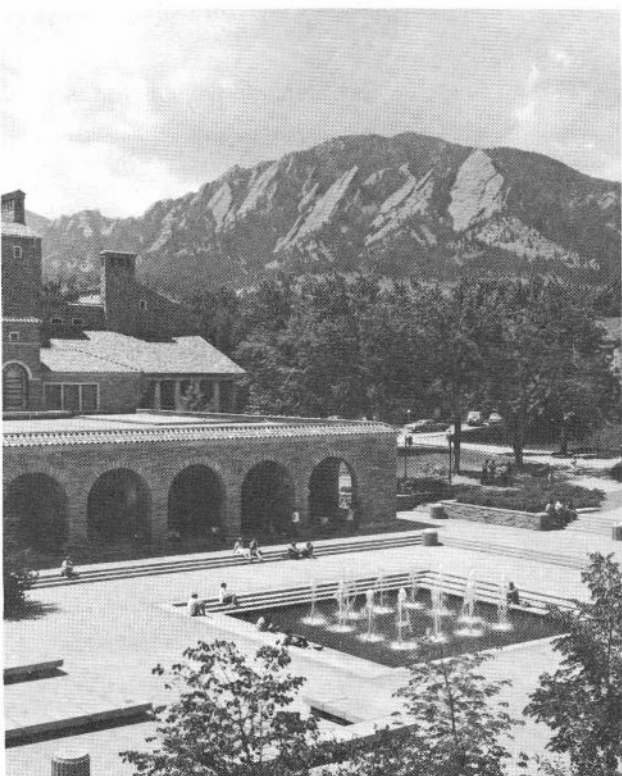
EDITORS NOTES

by Pete Rodrigue

We have all observed I'm sure that the average age of microwave group members is a monotonically increasing function of time. This is a natural enough phenomena in any new area as it matures. It is a bit bothersome, however, that so very few of our present students are contemplating careers in the field. This too is natural enough in view of the widely discussed surplus of the past two to three years. It is increasingly apparent that this surplus is a transient phenomena now giving way to a modest shortage. With so few students choosing this field we may have a real shortage four to five years hence. At that point in time the word of a shortage will probably induce an oversupply and we'll be off again!

This all simply is another illustration of the five year cycle observed in many occupations. Students reading the news releases react (or overreact) to word of current conditions and because of the time lag of their education emerge into the job market frequently out of phase with the basically oscillatory industrial job situation.

I have no cure for the condition. Perhaps educators can have some influence as a damping mechanism (students often think so, and for a wide variety of reasons!), but the profession could perhaps do a bit more in terms of forecasting. There's been a lot said about technical forecasting, but most of us have seen virtually no specifics. There should be something better that we could do — even weather forecasting has come a long way!



University Memorial Center — Technical Session site



PRESIDENT'S MESSAGE

by J. B. Horton

At this time of the year we are all looking forward to the annual G-MTT International Microwave Symposium. From the Advance Program, I believe we will not be disappointed. The technical program is one of the most comprehensive programs we have had so far, and covers some new and exciting areas. Millimeter waves, noticeably inactive since 1969, has emerged again with a large emphasis on solid state components. Biological research using microwaves has also emerged this year with two sessions and a workshop (planned for Wednesday evening). On the last day of the Symposium, another new topic, and potentially a sleeping giant in the microwave field, integrated optics, is featured in a seven paper session. And so it goes for the three days of the Symposium. All in all, this year's symposium promises to be exciting, and when you combine the always pleasant environment of Boulder and the University of Colorado, the Symposium is one event you can not afford to miss. I hope to see you there.

Meanwhile, group activities in other areas have been equally active. We have just completed final arrangements to hold a sub-millimeter conference in parallel with the 1974 G-MTT Symposium in Atlanta. This conference is being organized by J. J. Gallagher of Georgia Tech and K. J. Button of MIT. It is planned that G-MTT Symposium attendees will have access to the Sub-millimeter sessions and visa versa. As mentioned above, the sub-millimeter area appears to be an important emerging technology in the microwave field, and the Atlanta Sub-millimeter conference should highlight this activity.

Chapter activities continue to be a major concern of the ADCOM. One of our principal objectives continues to be a closer working arrangement between ADCOM and the chapters. The meeting at Boulder is the one chance which we can meet on a personal basis and close the communication gap caused by the IEEE formal reporting procedures. I look forward to meeting the chapter chairmen at our annual chapter chairmen's meeting.

The Group's technical activities are continuing in many areas, as shown by the broad coverage of symposium topics. For example, the MTT 13 Microwave Ferrites Committee will hold a one-day workshop following the Symposium (June 7). On a broader basis, the technical committees, in conjunction with the Transactions Editor, F. J. Rosenbaum, are planning five special issues of the Transactions. When combined with our annual Symposium issues we will have seven special issues during the next two years.

These are:

- April 1973 — Microwave Acoustic Signal Processing
- Nov. 1973 — Solid-State Microwave Power Amplifiers
- Dec. 1973 — Symposium Issue (Boulder)
- March 1974 — Computer Oriented Microwave Practices
- June 1974 — Microwave Control Devices for Array Antenna Systems
- Oct. 1974 — Microwave Communications
- Dec. 1974 — Symposium Issue (Atlanta)

These are just a few of the activities we are planning for the future. The scope of activities is much wider than implied here. Keep in mind that our major objective in the ADCOM is to serve the MTT members. If you have any suggestions or comments, or more important if you want to participate in these activities, please let us know. We welcome your support.

ADCOM HIGHLIGHTS

by R. A. Rivers

The first item of business, after the routine review of the Minutes by President John Horton, was to thank Ted Saad for his superlative job as 1972 National Lecturer.

Kiyo Tomiyasu reviewed the awards field, and moved for the establishment of a Microwave Medal. There was extensive discussion of other awards alternatives including a Microwave Applications Award and a "Hall of Fame". Since the awards structure is controlled by the by-laws, it is necessary to have advance notice of intended by-laws changes. Kiyo will prepare an advance notice by-law change for the next meeting. Several straw votes indicated strong support for a Hall of Fame and an Outstanding Microwave Applications Award. Support for a Microwave Medal separate from the Hall of Fame is not as clear. The next meeting should result in substantial action on a modified Awards program.

Bob Knox, as chairman of the newly formed Publicity and Public Relations Committee, reported on services available from Headquarters. There is a HQ News release service to 600 Editors. Bob's major plans are to make available a contact with the Trade Press for people oriented News Releases. Anyone with newsworthy people activities should take the initiative and use his services — he is going to chase you. A motion was passed to provide initial funding for a Microwave News Release Service.

Bob Garver reported briefly on page charges indicating that the page charge collection rate probably cannot be increased inasmuch as we are already above the IEEE average and have a high percentage of foreign authors that do not pay page charges.

Hal Shrank, who has previously been involved in developing a Computer Index, reported on a 20 year cumulative index for MTT publications. This activity requires staff support and money. AP has published a 15 year cumulative index and AES has published a 20 year index. It is estimated that 15K is required for a 20 year Transactions index and an additional 3K for indexing the Symposium papers published. A straw vote was taken indicating support for the 20 year cumulative index.

Larry Whicker discussed funding for Chapters, specifically the Chapter Communications Subsidy, where needed to support Chapter Meeting Activities. He reported on a Chapter Chairmans meeting scheduled for the Symposium on June 3.

George Oltman reported on the Barrow proposal to reorganize Chapter activities in the Metropolitan Areas. George Oltman recommended, as a result of subcommittee consideration, that added funding be channeled to Chapters through the Groups and Societies; that Chapters be allowed a Bank Account or, alternatively, an MTT escrow account; and that such arrangements be made on an optional basis.

Saul Rosenthal reported that a University Relations Committee meeting is planned for June.

Dick Sparks reported that Membership was down to slightly less than 5000 at the time non-renewals are removed March 1st. The loss of Membership is due to 700 IEEE members not rejoining the Group and of 700 more not renewing IEEE Membership. Some of the latter come back in during the year.

Frank Arams called upon Bob Beatty to report on the 1973 Symposium. Bob reported that it is the largest meeting on Microwave Biological Effects, and is heavy on Solid State. He reported that May 15 is due date for manuscripts for the Symposium Transactions Issue. Pete Rodrigue reported no problems for the 1974 Atlanta Symposium. Jim Gallagher reported on facilities available at Georgia Tech. He expects that the various meetings will complement and supplement each other. Carl Sletten, AP President, expressed the AP

and URSI continuing interest in this MTT/SubMM meeting with the hope that the combined meetings will be successful. There was further discussion of cooperating sponsors of the MM and SubMM meeting and of the financing of publication of the Sub-MM papers. George Haddad will be asked to report on publications problems.

Don Parker reported on the Wescon Technical Program indicating that Microwave sessions will be application oriented.

Frank Arams reminded the committee that Symposium proposals are due at the June AdCom Meeting. Proposals are expected from 3 Chapters at the present time. The lead time problem was again brought up with a straw vote indicating sentiment for a by-law change to permit 3 year in advance proposals.

Hal Sobol reported TC16 is organizing a meeting on Phased Array Radars. It was moved that MTT serve as a cooperating sponsor for the unclassified portion of the Phased Array Radars Symposium.

John Horton reported that the 5 year plan is about 95% complete and that the Petition for Society Status will be submitted by April 15th under the name Microwave Theory and Techniques Society.





DIRECTOR'S REPORT

Leo Young

Div. IV Director
Code 5200, Naval Res. Labs.
Washington, D.C. 20390

I have just returned from giving three talks in as many days, one at the International Circuits Theory Symposium in Toronto, and two at the University of Illinois, where one talk was on a technical subject and one about the IEEE. It was a pleasure to address a student audience. I believe today's students are more aware of their professional responsibilities than we were a generation ago. One question I was asked was to the effect: "How can we identify with IEEE when it is so big?" The answer I believe is to identify with a Group or Chapter (or Section or student branch) and through it with IEEE. We need the smaller units to identify and to profit from meetings and publications of immediate interest to us, and we need the umbrella of the large organization to cooperate and to be more effective. I believe IEEE should do more for its students and for its chapter members.

Chapters. It is generally agreed that chapters deserve more support by the Groups. They are the interface between Sections and Groups and thus form a vital link within IEEE. Group interest in their Chapters could be enhanced in a very practical way by increasing TAB support to Groups by so much per Chapter member. (This support is now proportional to the total membership. It is proposed, to add a small amount proportional to the number of Group members in Chapters.) For example, many Chapters feel that a direct postcard mailing before each meeting would be a valuable reminder to their local members. Assuming 5 meetings a year, the cost would be 40 cents per Chapter member, representing only a few percent of the TAB budget. Administered by the Groups, this should bring the Groups and their Chapters in closer communion, and promote Chapter membership and activities.

Congressional Fellow. It is planned to appoint an IEEE Congressional Fellow soon. (See announcement in *IEEE Spectrum*, January 1973, p. 8). There were several applications and numerous inquiries.

Consumer Reports. The April issue of CR carried an article in which the magazine recommended against all microwave ovens on the grounds that "we do not feel we could consider a microwave oven Acceptable unless there is *no* (C.R.'s italics) radiation leakage detectable, even under the most severe conditions, by generally accepted measuring procedures, and until there is sufficient assurance that there will not be any detectable leakage over the life of the oven."

Senator John V. Tunney recently held oversight hearings on the Radiation Control for Health and Safety Act of 1968, in which the Consumer Report article came up. Mark Grove, Chairman of COMAR (IEEE Committee on Man and Radiation), wrote an excellent and informative letter to Senator John Tunney commenting on the CR article and other testimony. It is unfortunately too long to reproduce here. Bob Rivers has suggested IEEE make it known that it is willing to help and advise wherever possible on engineering matters. This could help a magazine, for example, avoid publishing material that is scientifically indefensible.

If we followed the advice of the Consumer Reports article, we should not use fluorescent lights, and we would have to return to the pre-radar age. The article mentioned only one investigator, and his views seem generally to be opposed to the majority of scientific investigators in the field.

Should IEEE enter into the controversy? The arguments against boiled down to this: Consumer Reports has no financial stake in microwave oven manufacturing and may only wish to

CHAPTER ACTIVITIES

Chapter Chairmen's Meeting

At this time of year the major planning and news are associated with the upcoming Microwave Symposium. As in the past years, a Chapter Chairmen's meeting is being planned for Sunday, June 3, following the ADCOM meeting. This year, it is hoped that we have a larger Chapter representation than at last year's meeting.

A somewhat more formal agenda than used in the past will be used. Efforts will be made to attract as many Chapter representatives as possible. Areas to be discussed will be:

- Chapter Interaction with ADCOM
- Chapter Support
- Membership
- Political Action within the IEEE and Professionalism
- Mergers and Long Range Planning

National Lecturer

John Allen has begun his program as National Lecturer. First talks are scheduled for Atlanta, Georgia and Orlando, Florida. Arrangements for scheduling John's lecture are best made by contacting Mr. Paul Lester (202) 767-2371 who is arranging the speaking agenda.

Ted Saad is to be congratulated for the very excellent job he did as National Lecturer last year. A complete summary of Ted's tour is as follows:

LOCATION	DATE	ATTENDANCE
Orlando, Fla.	March 8	22
Dallas, Tex.	March 9	29
Fort Worth, Tex.	March 10	23
Phoenix, Ariz.	May 8	28
Huntsville, Ala.	May 9	9
Atlanta, Ga.	May 10	29
Columbus, Ohio	May 25	13
Boulder, Col.	June 6	55
Palo Alto, Cal.	June 7	60
Los Angeles, Cal.	June 8	38
San Diego, Cal.	June 9	18
Long Island, N.Y.	Sept. 20	18
Ann Arbor, Mich.	Sept. 21	30
Schenectady, N.Y.	Oct. 12	9
Ottawa, Canada	Oct. 13	35
Monmouth, N.J.	Oct. 19	27
Milwaukee, Wis.	Oct. 25	20
Chicago, Ill.	Oct. 26	31
Purdue, Ind.	Nov. 18	75
Boston, Mass.	Dec. 11	23
Washington, D.C.	Dec. 12	50
Baltimore, Md.	Dec. 13	9

protect the public; on the other hand, IEEE might not be entirely objective because some of its members earn a living making microwave ovens.

The argument in favor of taking a stand might be put this way: It is difficult to understand the motives of the CR article, which might lie anywhere between altruism and sensationalism (riding the anti-technology wave). The CR article is misleading and unfairly discredits a portion of the engineering community (who, design, manufacture and sell microwave ovens.) It is in the IEEE's best interests not to ignore misleading information related to engineering when it is served up to the public, to legislators and other non-engineers, but to correct it whenever practicable.

I believe no-one in IEEE wants to pick a fight with a generally good magazine, but we shouldn't be afraid of telling the public and Congress what we know if thereby we can be of help, not only to our industry, but to all concerned.

What do you think?

CHANGE IN DATE FOR SELECTING G-MTT SYMPOSIUM SITE CALL FOR PROPOSALS

by Frank Arams

Since commitments for hotel space and meeting rooms have to be made well in advance, the G-MTT Administrative Committee, at its September 11, 1972 meeting, approved a change moving ahead the date for selecting the Symposium site from its September meeting to its May/June meeting.

The purpose of this memorandum is to invite proposals for hosting the 1975 G-MTT Symposium.

While many organizations hold their meetings always at the same site, it has been the practice of the IEEE Group on Microwave Theory and Techniques to delegate the responsibility for its annual MTT International Symposium to a local MTT chapter under the aegis of the parent organization.

This procedure has worked out well over the years. It has the effect of increasing interest in microwaves in the particular geographical region, and strengthening the MTT local chapter involved and its bonds to the MTT national organization.

Any MTT chapter can apply to the G-MTT Administrative Committee for the privilege of hosting the MTT Symposium. The site of a future MTT Symposium is selected two years in advance. Thus, the site for the 1975 G-MTT Symposium will be selected at the AdCom meeting to be held in Boulder, Colorado in June 1973 in conjunction with the 1973 G-MTT Symposium. Unsuccessful chapters are encouraged to resubmit their proposal the following year. The location is normally rotated in such a manner as to give an opportunity to all major areas. Hence the interested chapter would do well to recall where past meetings were held.

The following guidelines are set down here to assist in preparing the proposal. The proposal should discuss:

1. Introduction and Summary

Site and proposed dates
Arguments favoring proposed site
Microwave activity and number of MTT members in the area
Special features of proposed technical program
Arguments for accepting this proposal

2. Arrangements

Hotel(s), distance from airport, available air and ground transportation.
The hotel, meeting rooms (number and capacity), number and rates of rooms set aside for Symposium, special rates if any for Government and university attendees, special local facilities and amenities.

3. Technical program

Technical content and orientation, advanced areas to be included, invited papers
Number of sessions, parallel sessions, keynote session, evening sessions, panel discussions, student papers, if any

4. Exhibits (if any)

5. Proposed Committee Appointments

The following committees should be considered: Steering, Technical Program, Digest, Publicity, Finance, Exhibits, Local Arrangements, Ladies Program

6. Finance

Detailed budget with conservative registration estimates.
Consider possibility of Exhibits.

7. Local Arrangements and Special Events

Tours, if any, of microwave facilities, cocktail party and banquet, ladies program

CALL FOR NOMINATIONS

Every year 6 members of G-MTT are elected to serve on its Administrative Committee (AdCom) for a 3-year term commencing in January. The election is held in September during the annual meeting of the G-MTT AdCom. Those elected will, together with the 12 hold-over members and ex-officio members as provided in the Bylaws, serve the Group by directing its activities, such as the publication of G-MTT Transactions and the planning of its annual symposia.

Every member of G-MTT should give serious consideration to the nomination of suitable candidates who can best serve his professional interests as well as those of the Group as a whole. Each candidate must meet the following qualifications:

1. Candidate must be of IEEE member grade or higher.
2. Candidate must be a member of G-MTT.
3. Candidate must be willing to serve a 3-year term and should be able to travel to AdCom meetings of which there normally are 4 per year.

A Nominating Committee is charged with the responsibility of selecting a slate of at least two candidates for each vacancy which is to be transmitted to the President of AdCom prior to the annual meeting. Also, nominations by petition signed by 25 members of G-MTT will be received by the AdCom on or before its annual meeting.

In accordance with the above, you, as a G-MTT member, have two avenues to express your choice:

- A. You can recommend your candidate for consideration by the Nominating Committee. Such recommendations should be sent prior to July 15 to:

Sy Okwit
LNR Communications, Inc.
35 Central Ave.
Farmingdale, N.Y. 11735

- B. You can file a petition signed by you and 24 of your fellow G-MTT members. Such petitions should be addressed to:

John B. Horton
TRW Systems Group
MS 1017
1 Space Park
Redondo Beach, Ca. 90278

Our Bylaws provide that the 12 hold-over members (those not eligible for re-election) will elect the new AdCom members from the slate presented by the Nominating Committee and the candidates nominated by direct petition.

8. Proposed Schedule and Publicity

9. Symposium Digest

10. Endorsements

From local IEEE Section, one or more G-MTT chapters in the area, etc.

Summarizing, the proposal should address itself as much to the technical program as to the other elements of the Symposium. A lot of useful information can be obtained from proposals submitted in previous years. The proposal should be submitted to MTT AdCom members at least 1 month ahead of the meeting. Distribution to AdCom members should be arranged through IEEE Headquarters. Any questions can be addressed to members of G-MTT AdCom, or to F. Arams, Chairman, MTT Meetings and Symposia Committee, LNR Communications, Inc., 35 Central Avenue, Farmingdale, New York 11735. A representative should plan to attend the AdCom meeting for a personal presentation.

1973 IEEE G-MTT International Microwave Symposium
"Microwave Applications in the 70's"
University of Colorado
Boulder, Colorado

Condensed Schedule of Events

Sunday, June 3, 1973			
1400	ADCOM Meeting (400 Darley Commons, Williams Village)		
1600-2000	Registration (Lobby Darley Commons, Williams Village)		
1900-2100	Social Hour and Buffet Dinner (Darley Commons, Williams Village)		
1930	Chapter Chairman's Meeting (402 Darley Commons, Williams Village)		
Monday, June 4, 1973			
0730-1600	Registration (Alumni Hall, University Memorial Center)		
0830-0900	Welcome and Keynote Address (140 Chemistry)		
0910-1200	1. Millimeter and Submillimeter Wavelength Techniques (East Ballroom, UMC)	2. Computer-Aided Microwave Practices (West Ballroom, UMC)	
1400-1700	3. Millimeter Wavelength Components (East Ballroom, UMC)	4. Passive Solid-State Devices (West Ballroom, UMC)	
2000-2200	Panel — Millimeter Wave Integrated Circuit Techniques (East Ballroom, UMC)	Panel — Nonlinearities in Microwave Devices and Systems (West Ballroom, UMC)	
Tuesday, June 5, 1973			
0900-1200	5. Microwave Delay Lines and Acoustic Devices (East Ballroom, UMC)	6. Microwave Measurements (West Ballroom, UMC)	7. Active Solid-State Devices (A) (Forum Room, UMC)
1340-1650	8. Civil Microwave Systems (East Ballroom, UMC)	9. Microwave Filters and Related Components (West Ballroom, UMC)	Panel — Microwave Noise Measurements and System (Forum Room, UMC)
1800-1900	Social Hour (Harvest House Hotel)		
1900-	Banquet (Harvest House Hotel)		
Wednesday, June 6, 1973			
0700-0900	Breakfast — Flagstaff Mountain		
0915-1215	10. Active Solid-State Devices (B) (East Ballroom, UMC)	11. Microwave Techniques in Biological Research (West Ballroom, UMC)	12. Waveguide Analytical Techniques (Forum Room, UMC)
1400-1700	13. Integrated Optics (East Ballroom, UMC)	14. MIC System Components (West Ballroom, UMC)	15. Biological Effects of Microwave Radiation (Forum Room, UMC)
2000-2200	Workshop — Biological Effects of Microwave Radiation (East Ballroom, UMC)		
Thursday, June 7, 1973			
Workshop — Components for Phased Array Systems (National Bureau of Standards) Separate Registration Required			

Ladies' Program

Morrison, Colorado
 Red Rocks Park
 Heritage Square
 Lunch

Progressive Lunch
 Denver and Denver
 Art Museum

Breakfast
 Flagstaff Mountain

1973 G-MTT INTERNATIONAL SYMPOSIUM

0830-0900 Monday, June 4

Welcoming Remarks

Keynote Address

I - MM and Sub MM Wavelength Techniques
0910-1200 Monday, June 4 (East Ballroom)
Chairman, P. P. Toullos

- I-1 Millimeter Integrated Circuits
 0910 (Invited) M. V. Schneider
- I-2 Circular TE_{0n} Mode Filters for a Guided Millimeter-Wave
 0940 Transmission - K.Hashimoto, S.Shimada & M.Koyama
- I-3 Modal and Coupling Characteristics of Surface-Wave Guided
 1000 by Inhomogeneous Dielectric Slabs - E.F.Kuester, D.C.Chang
 & S.W.Maley

----- 1020 Coffee Break -----

- I-4 Radiation Losses in Curved Dielectric Image Waveguides of
 1040 Rectangular Cross Section - R.M.Knox, P.P.Toullos &
 J.Q.Howell
- I-5 Semiconductor Dielectric Waveguides for Millimeter Wave
 1100 Functional Circuits - H.Jacobs & M.M.Chrepta
- I-6 The Tungsten-P Type Silicon Point Contact Diode -
 1120 A.J.Kerecman
- I-7 Reflection Beam Isolator for Submillimeter Wavelengths -
 1140 M.Kanda & W.G.May

----- 1200 LUNCH -----

III - Millimeter Wavelength Components
1400-1700 Monday, June 4 (East Ballroom)
Chairman, H. Jacobs

- III-1 Power Amplification of 55-65 GHz with 18 GHz Gain-Bandwidth
 1400 Product - J.E.Raue
- III-2 A Distributed Pin Diode Phaser for Millimeter Wavelengths -
 1420 B.J.Levin & G.G.Weidner
- III-3 Low Conversion Loss Millimeter Wave Mixers -
 1440 L.E.Dickens

----- 1500 Coffee Break -----

- III-4 Solid-State Devices at 50 GHz - M.Akaike, H.Kato,
 1520 T.Miyakawa, N.Tokoyo, H.Yatsuka & H.Hayashi
- III-5 20°K-cooled Parametric Amplifier for 46 GHz with Less than
 1540 60°K Noise Temperature - J.Edrich
- III-6 A Nondegenerate Millimeter Wave Parametric Amplifier With
 1600 a Solid-State Pump Source - J.Whelehan, E.Kraemer,
 H.Paczkowski, F.Bourne, J.Taub, E.J.Wendt & A.Larsen
- III-7 Low Noise, 94 GHz Parametric Amplifier Development -
 1620 H.C.Okeap, J.R.Asmus & L.J.Steffek
- III-8 Low Loss, 3MM Junction Circulator - H.C.Okean &
 1640 L.J.Steffek

Panel - Millimeter Wave Integrated Circuit Techniques
2000-2200 Monday, June 4 (East Ballroom)
Organizer and Moderator, H. Sobol, RCA Laboratories,
Princeton, New Jersey

- | | |
|-----------------|---|
| M. Cohn | Westinghouse Electric Corp.
Baltimore, Maryland |
| H. Jacobs | U.S. Army Electronics Command (ECOM)
Fort Monmouth, New Jersey |
| T. H. Oxley | General Electric Co., Ltd.
Middlesex HA 9 7 PP, England |
| C. P. Wen | RCA Labs
Princeton, New Jersey |
| P. Toullos | IIT Research Institute
Chicago, Illinois |
| M. V. Schneider | Bell Telephone Labs
Holmdel, New Jersey |

INTRODUCTORY SESSION (Chem. 140)

David F. Wait, Chairman Steering Committee

John B. Horton, President

G-MTT National Administrative Committee

II - Computer-Aided Microwave Practices
0910-1200 Monday, June 4 (West Ballroom)
Chairman, H.E.Stinehelfer

- II-1 A Microwave Network Optimization Program - J.W.Bandler,
 0910 J.R.Popovic, V.K.Jha & C.M.Kidsia
- II-2 Microwave Circuit Analysis by Sparse Matrix Techniques -
 0930 F.Bonfatti, V.A.Monaco & P.Tiberio
- II-3 New Algorithms for Network Optimization - C.Charalambous
 0950 & J.W.Bandler

----- 1010 Coffee Break -----

- II-4 Numerical Techniques for TRAPATT Circuit Analysis and
 1040 Design - R.D.Regier & K.L.Kotzebue
- II-5 Computer Simulation and Optimization of a Planar Phased
 1100 Array of Circular Waveguide Elements - J.E.Dudgeon &
 E.J.Finnell, III
- II-6 Computer-Aided Design of a Waveguide Multiplexer -
 1120 A.E.Atia
- II-7 Acceleration of Convergence of the Finite-Element Method -
 1140 E.Della Torre & W.Kinsner

----- 1200 LUNCH -----

IV - Passive Solid State Devices
1400-1700 Monday, June 4 (West Ballroom)
Chairman, A. Clavin

- IV-1 Octave Coverage-Lumped Element Circulator Development -
 1400 J.Wolczok & I.Rubinstein
- IV-2 On Stripline Four-Port Circulator - W.H.Ku & Y.S.Wu
 1415
- IV-3 High Power S-Band Junction Circulator
 1430 R.A.Stern
- IV-4 20°K - Coolable Pin Diode Switch With Very Low Loss in a
 1445 L-Band - J.Edrich & R.Turner
- IV-5 Wide Bandwidth Operation of Microstrip Circulators -
 1500 Y.S.Wu & F.J.Rosenbaum

----- 1510 Coffee Break -----

- IV-6 Review of Ferrite Phase Shifter Technology -
 1530 (Invited) L.R.Whicker
- IV-7 A Low Cost Lithium Ferrite Phase Shifter -
 1600 D.A.Charlton
- IV-8 The Twin-Ferrite-Toroid Circular Waveguide Phaser -
 1615 F.J.Bernues & D.M.Bolle
- IV-9 Ultra Broadband Phase Shifters -
 1630 G.D.Lynes
- IV-10 Driverless Phase Shifters -
 1645 R.W.Burns, R.L.Holden & R.Tang

Panel - Nonlinearities in Microwave Devices and Systems
2000-2200 Monday, June 4 (West Ballroom)
Organizer and Moderator, G.L. Heiter, Bell Telephone Labs,
North Andover, Massachusetts

- Relationships Between Nonlinearity Measurements and Performances
 in CATV Systems - K.Simmons, Jerrold Electronic Corp., Horsham,
 Pennsylvania
- Two-Tone Nonlinearity Testing - The Intercept Point, P₁ - F. Fulton,
 Avantek, Santa Clara, California
- Three-Tone Nonlinearity Testing - The Intermodulation Coefficient, M
 R. C. Heidt, Bell Telephone Labs, North Andover, Massachusetts
- Noise Loading of FM Systems - The Noise-Power-Ratio, NPR, and
 Customer Requirements - J.C.Gillespie, Farinon Electric, San Carlos,
 California

1973 G-MTT INTERNATIONAL SYMPOSIUM

TUESDAY, JUNE 5

V — Microwave Delay Lines and Acoustic Devices — 0900—1130 Tuesday, June 5 (East Ballroom) Chairman, N. Lipetz

V-1 Systems Applications of Acoustic Surface Waves (Invited) T.W.Bristol
0900

V-2 A Synthesis Procedure for Unapodized Nondispersive Surface Wave Filters — W.R.Smith
0925

V-3 The Microwave Realization of a Simple Surface Wave Filter Function — R.D.Weglein & E.D.Wolf
0940

V-4 Large Pulse Compression Ratio Obtained with Nonlinear Interaction of Bulk Acoustic Waves in LiNbO_3 — J.M.White, D.K.Winslow & H.J.Shaw
0955

----- 1010 Coffee Break -----

V-5 Development of an L-Band Pulse Compressor Using Surface Waves — D.T. Bell, Jr. & D.W.Mellon
1030

V-6 Device Performance Using Magnetic Waves at X Band — W.L.Bongianni
1045

V-7 Control of Surface Acoustic Waves With Distributed Varactors — G.Chao
1100

V-8 Electronically Controllable Time Delay — J.Burnsweig, W.T.Gosser & S.H. Arneson
1115

----- 1130 LUNCH -----

VIII — Civil Microwave Systems — 1340—1650 Tuesday, June 5 (East Ballroom) Chairman, G. E. Schafer

VIII-1 The Environmental Impact of Microwave Systems in the 70's — D.J.Jansky
1340

VIII-2 Solar Power Station — (Invited) P.Glaser
1400

VIII-3 Adapting Microwave Techniques to Help Solve Future Energy Problems — W.C.Brown
1430

VIII-4 Comparison of Microwave, Millimeter Wave and Optical Techniques for Communications — F.Arams
1450

----- 1510 Coffee Break -----

VIII-5 Millimeter Wave Space Communications with the ATS-F Satellite — L.J.Ippolito
1530

VIII-6 Three-Axis Attitude Sensing on ATS-F/G Spacecraft — A.Kaminsky
1550

VIII-7 2.6 GHz Satellite TV Broadcast Receiver — J.A.Hall, R.D.Pering & D.J.Mellor
1610

VIII-8 Avalanche Diode Source with Integrated AFC Circuit and Frequency Converter for Digital Communication Systems — S.F.Paik, R.E.Blight, J.E.Curtis, C.J.R.Pallemaerts & W.W.Rollins
1630

VI — Microwave Measurements — 0900—1210 Tuesday, June 5 (West Ballroom) Chairman, S. F. Adam

VI-1 A New Method for Measuring Dielectric Properties of Material Media Using a Microstrip Cavity — T.Itoah & R.Mittra
0900

VI-2 Metrological Applications of a Property of Stationarity in Rectangular Cavities Containing a Dielectric Slab — C.Eugene
0920

VI-3 Measurement of Transmission Cavity Quality Factors — F.M.Palka & J.R. Ashley
0940

----- 1000 Coffee Break -----

VI-4 A New Computer-Controlled Klinger Cavity Mode Conversion Test Set — B.S.Seip & L.W.Hinderks
1030

VI-5 A Reference Noise Standard for Millimeter Waves — W.C.Daywitt
1050

VI-6 A High Precision Swept RF Reflectometer System in Coaxial Line — P.Lacy & W.Oldfield
1110

VI-7 Swept Long Line Detector Network Analyser — R.Garver & F.Weinert
1130

VI-8 Large-Signal S Parameter Characterization of UHF Power Transistors — R.J.Chaffin & W.H.Leighton
1150

----- 1210 LUNCH -----

IX — Microwave Filters and Related Components — 1350—1650 Tuesday, June 5 (West Ballroom) Chairman, S. B. Cohn

IX-1 Temperature Stable Microwave Dielectric Resonators Utilizing Ferroelectrics — J.K.Plourde
1350

IX-2 Improved Hairpin-Line Filters — U.H.Gysel
1410

IX-3 The Waveguide Sandwich Harmonic Rejection Filter — J.D.Rhodes
1430

IX-4 Non-minimum Phase Optimum Amplitude Bandpass Waveguide Filters — A.E.Atia & A.E.Williams
1450

----- 1510 Coffee Break -----

IX-5 A Low-Loss, Wideband Transmitter Multiplexer — J.I.Smith & R.E.Fisher
1530

IX-6 Frequency Multiplexing with Active Networks — N.M.Swamy & V.P.Kodali
1550

IX-7 Basic Consideration of TEM-Modes Hybrid Power Divider — N.Nagai & A.Matsumoto
1610

IX-8 New Non-Uniform Waveguide Taper Design Yielding Low VSWR and High Rejection — H.J.Gould, A.E.Smolli & C.C.Han
1630

VII — Active Solid State Devices (A) 0900—1200 Tuesday, June 5 (Forum) Chairman, G. I. Haddad

VII-1 A Push-Pull IMPATT Diode Amplifier 0900 — W.C.Tsai & C.W.Lee

VII-2 A High-Power, C-Band Multiple IMPATT Diode Amplifier — R.E.Lee, D.Parker & U.Gysel
0920

VII-3 Characteristics of IMPATT Diode Reflection Amplifiers — R.W.Laton & G.I.Haddad
0940

VII-4 A Ku-Band IMPATT Amplifier with Improved Intermodulation Products — H.Komizo, Y.Daido, H.Ashida, Y.Ito & M.Honma
1000

----- 1020 Coffee Break -----

VII-5 Impedance Characteristics of TRAPATT Oscillator Circuits — J.D.Welch & P.T.Greiling
1040

VII-6 F-Band TRAPATT Diode Fundamental Mode Amplifier Circuits — V.A.Mikenas
1100

VII-7 The Design of Lumped-Element TRAPATT Circuits — K.L.Kotzebue & R.D.Regier
1120

VII-8 Transmission Cavity and Injection Stabilization of an X-Band Transferred Electron Oscillator — J.R.Ashley & F.M.Palka
1140

----- 1200 LUNCH -----

Panel — Microwave Noise Measurements and System Effects 1400—1630 Tuesday, June 5 (Forum) Organizer & Moderator, P. A. Goud

An Overview of the Role of Microwave Noise in Systems — S. Okwit

Measurement of Noise Performance Factors — M. G. Arthur

----- 1500—1530 Coffee -----

Pseudo-Random Noise Loading for System Evaluation — R. B. Swerdlow

Noise Comparisons in Low and Medium Power Devices — J. R. Ashley

Low Noise Receivers and Their Calibration — C. T. Stelzried

1973 G-MTT INTERNATIONAL SYMPOSIUM WEDNESDAY, JUNE 6

X — Active Solid State Devices (B) 0915–1205 Wednesday, June 6 (East Ballroom) — H. W. Cooper

X-1 Performance and Limitations of FET's
0915 as Microwave Power Amplifiers —
(Invited) L.Napoli & R.DeBrecht

X-2 Two Dimensional Distributed Theory
0945 for a Microwave Schottky Barrier
Field Effect Transistor — G.D.Alley,
H.E.Talley & G.L.Wright

X-3 A 4 GHz High Power Transistor -
1005 Design and Reliability — P.Wang,
J.Chen, P.Froess & S.Kakihana

----- 1025 Coffee Break -----

X-4 Power Transistor Amplifier Design
1045 Using Large-Signal S-Parameters —
J.G.Webb & R.J.Chaffin

X-5 Simple LSA Circuits — J.M.Rodgers
1105

X-6 A 0.75-6 GHz Varactor Up-Converter
1125 Broadbanded at All Three Ports —
R.L.Sicotte

X-7 Frequency Modulation of Cavity
1145 Stabilized Solid State Diode Oscil-
lators — W.R.Day

----- 1205 LUNCH -----

XI — Microwave Techniques in Biological Research — 0915–1215 Wednesday, June 6 (West Ballroom) Chairman, H. M. Altschuler

XI-1 Geoelectric Discontinuity Detector —
0915 H.Trzaska

XI-2 Environmentally Controlled Waveguide
0935 Irradiation Facility — H.S.Ho, E.I.Ginns
& C.L.Christman

XI-3 Power Deposition in a Spherical Model
0955 of Man Exposed to 1-20 MHz EM Fields
— J.C.Lin, C.C.Johnson & A.W.Guy

XI-4 Application of Nonthermal Effects in
1015 High Dielectric Materials to Microwave
Dosimetry — R.J.Vetter, D.R.Elle &
P.L.Ziemer

----- 1035 Coffee Break -----

XI-5 An RF Decoupled Electrode for Mea-
1105 surement of Brain Temperature During
Microwave Exposure — L.E.Larsen,
R.A.Moore & J.A.cevedo

XI-6 Theoretical and Experimental Studies
1130 of Microwave Induced Opacities in
Rabbits — P.Kramar, A.F.Emery,
A.W.Guy & J.C.Lin

XI-7 Bird Feathers as Dielectric Receptors
1155 of RF Fields — J.Bigu del Blanco,
C.Romero-Sierra & J.A.Tanner

----- 1215 LUNCH -----

XII — Waveguide Analytical Techniques 0915–1205 Wednesday, June 6 (Forum) Chairman, N. S. Nahman

XII-1 Minimum Phase Behavior of Random
0915 Media — H.E.Rowe & D.T.Young

XII-2 Comparison Between Rectangular and
0935 Annular Waveguide Modal Analyses
for Waveguide Bends — E.Bahar &
G.Govindarajan

XII-3 Further Extension of the Modified
1005 Residue Calculus Technique —
J.P.Montgomery & D.C.Chang

XII-4 Mutual Coupling Between Parallel
1025 Plate Waveguides — L.Shafai

----- 1045 Coffee Break -----

XII-5 A Coupled Integral Equation Solution
1105 for Microstrip Transmission Lines —
C.E.Smith

XII-6 A Numerical Method for the Solution
1125 of Junction of Cylindrical Waveguides
— H.Oraizi & J.Perini

XII-7 Analysis of Probe Fed Cavities of
1145 Arbitrary Shape — N.Wang & G.A.Thiele

----- 1205 LUNCH -----

XIII — Integrated Optics 1400–1700 Wednesday, June 6 (East Ballroom) Chairman, P. D. Coleman

XIII-1 Optical Guided Wave Theory and Tech-
niques — (Invited) H.Kogelnik

XIII-2 Progress of Integrated Optics in England
(Invited) J.Midwinter

XIII-3 Application of Integrated Optics to Com-
puters — (Invited) R.Pole

----- 1500–1520 Coffee Break -----

XIII-4 Review of Fiber Optics
(Invited) R.A.Andrews

XIII-5 10.6 μm CO₂ Waveguide Losses
(Invited) D.B.Anderson

XIII-6 Grating Couplers and Mode Conversion
at 10.6 μm — (Invited) W.S.C.Chang

XIII-7 Materials Study for Millimeter Sub-
carrier Optical Modulators — A.E.Popa

XIV — MIC Systems Components 1400–1620 Wednesday, June 6 (West Ballroom) Chairman, W. H. From

XIV-1 A Compact S-Band Diode Phase Shifter
1400 — R.W.Burns & R.L.Holden

XIV-2 A New MIC Doubly Balanced Mixer
1420 with Signal and IF Band Overlap —
R.H.Pflieder

XIV-3 Broadband Integrated Up and Down
1440 Converters — D.W.Maki, J.E.Degenford
& M.Cohn

----- 1500 Coffee Break -----

XIV-4 A Hybrid Integrated L-Band ALC
1520 Amplifier — W.Kruppa & R.F.Lee

XIV-5 A MIC Phased Locked Loop Avalanche
1540 Oscillator in X Band — J.A.Salmon

XIV-6 Three-Strip Coplanar Balun Circuits
1600 for High-Power Microwave Amplifiers
— R.E.DeBrecht

XV — Biological Effects of Microwave Radiation — 1400–1630 Wednesday, June 6 (Forum) Chairman, W. A. Mills

XV-1 Possible Mechanisms for the Bio-
1400 molecular Absorption of Microwave
Radiation with Functional Implica-
tions — J.R.Rabinowitz

XV-2 Microwave Effects on Central Nervous
1420 System Attributed to Thermal Factors
— E.M.Taylor, A.W.Guy, B.Ashleman
& J.C.Lin

XV-3 Effect of 2450 MHz Microwave Fields
1440 on Peripheral Nerves — C.K.Chou &
A.W.Guy

----- 1500 Coffee Break -----

XV-4 Microwave Interaction with the Audi-
1530 tory Systems of Humans and Cats —
A.W.Guy, E.M.Taylor, B.Ashleman &
J.C.Lin

XV-5 The Effect of Chronic, Low-Level Micro-
1550 wave Radiation on the Testicles of
Mice — S.J.Haidt & A.H.McTighe

XV-6 Microwave Irradiation Sacrifice: Appli-
1610 cation in Neurochemical Research —
D.E.Schmidt, M.J.Schmidt, G.A.
Robinson & L.K.Wilson

TWO WORKSHOPS PLANNED FOR MICROWAVE SYMPOSIUM

WORKSHOP ON BIOLOGICAL
EFFECTS OF MICROWAVE RADIATION

2000-2200 Wednesday, June 6 (East Ballroom)

Organizer, A. W. Guy, University of Washington,
Seattle, WashingtonModerator, S. W. Rosenthal, Polytechnic Institute of Brooklyn,
Farmingdale, Long Island, New York

- W-1 Comparative Aspects of Radiofrequency and Microwave
2000 Biomedical Research
S. M. Michaelson, University of Rochester, Rochester,
New York
H. P. Schwan, University of Pennsylvania, Philadelphia,
Pennsylvania
- W-2 Further Experiments Seeking Evidence of Nonthermal
2030 Biological Effects
L. M. Liu, G. W. Skewes and F. J. Rosenbaum,
Washington University, St. Louis, Missouri
G. A. Lindauer, Emerson Electric Co., St. Louis, Missouri
- W-3 Bradycardia in Isolated Hearts Induced by Microwave
2040 Irradiation
J. L. Lords, C. H. Durney, A. Borg and C. Tinney,
University of Utah, Salt Lake City, Utah
- W-4 Continuous Exposure of Chicks to Electromagnetic
2050 Fields
A. J. Giarola and W. F. Krueger, Texas A&M University,
College Station, Texas
- 2100 Discussion



1973 IEEE G-MTT International Microwave Symposium
Steering Committee. Left to right — Top Row: M. T. Decker,
H. W. Altschuler, I. K. Armstrong, S. W. Maley,
middle row: L. N. Christiansen, W. J. Anson, E. L. Komarek,
front row: R. L. Gallawa, D. F. Wait, D. D. Rees, J. R. Ashley,
R. W. Beatty. Other Steering Committee Members not in
the photo: H. Bass, J. H. Bryant, H. W. Cooper, J. L. Dalke,
R. L. Jesch and G. E. Schafer

IEEE MICROWAVE COMPONENTS FOR
PHASED ARRAY SYSTEMS
WORKSHOP

June 7, 1973

The MTT Ferrite Technical Committee is sponsoring a one-day Workshop on Thursday, June 7, 1973 at the National Bureau of Standards, Boulder, Colorado. The Workshop is scheduled to immediately follow the 1973 International Microwave Symposium. The Workshop will concern the component requirements of phased array systems and the state-of-the-art in ferrite and diode phasers. Emphasis will be placed on fabrication techniques and new materials for reducing phaser costs. Short organized talks will be presented to stimulate interaction with the attendees.

The agenda for the Workshop is as follows:

8:30 AM — 8:35 AM	Welcome: L.R. Whicker, Naval Research Laboratory Chairman, MTT Ferrite Technical Committee
8:35 AM — 10:30 AM	Systems Overview and Requirements M. Briana, Raytheon G. Klein, Westinghouse R. Long, Hughes T. Cheston, APL
10:30 AM — 11:45 AM	Ferrite Phase Shifters M. Mohr, Raytheon C.R. Boyd, MAG R. Tang, Hughes B. Hoard, Emerson
11:45 AM — 12:45 PM	LUNCH
12:45 PM — 2:00 PM	Diode Phase Shifters and Drivers J. White, MA J. McDade, G.E. R. Tang, Hughes G. Hanley, Sperry M. Mohr, Raytheon J. Brunner, RCA
2:00 PM — 4:00 PM	Ferrimagnetic Materials J. Greene, Raytheon R. West, Trans Tech P. Baba, Ampex J. Agrios, US-AMSEL

Registration fee to cover expenses: \$3.00

QUESTIONS CONCERNING WORKSHOP SHOULD BE
ADDRESSED TO DR. L. R. WHICKER, CHAIRMAN,
FERRITE TECH, COMMITTEE, CODE 5250, NAVAL
RESEARCH LABORATORY, WASH., D.C. 20375.

SHORT COURSES**MICROWAVE SEMICONDUCTOR DEVICES, CIRCUITS, AND APPLICATIONS**

Univ. of Michigan
July 23 — August 3

This course will provide practicing engineers with a basic understanding of the principles and design techniques for microwave circuits utilizing semiconductor devices. The solid-state elements which will be considered include Gunn-effect avalanche baritt devices, varactors, PIN diodes, tunnel diodes, microwave transistors and Schottky-barrier mixers. Lectures and discussion will emphasize the use of these devices for microwave generation, amplification, frequency conversion, multiplication and detection.

The fee is \$400 (\$250 for one week). All application requests for brochures, and general inquiries should be directed to:

Engineering Summer Conferences
Chrysler Center, The University of
Michigan
Ann Arbor, Michigan 48105
(Telephone: Area Code 313, 764-8490)

NUMERICAL TECHNIQUES FOR ANTENNAS AND ELECTROMAGNETICS

University of Southern California
Los Angeles, California
June 25-29, 1973

Applications of numerical techniques and digital computers to electromagnetic scattering and radiation problems will be the subject of this course. The aim of the lectures is to provide the practicing engineer and numerical analyst with the basic tools with which to formulate and solve his own problems. Ample opportunity will be available for informal discussions with each of the lecturers.

The fee is \$325. For further information please contact:

Professor W. V. T. Rusch
Department of Electrical Engineering
University of Southern California
University Park
Los Angeles, California 90007
Telephone: (213) 746-2578

MANAGEMENT OF RESEARCH AND DEVELOPMENT

August 20-22, 1973

The George Washington University
Washington, D. C.

This course is designed for those actively involved in supervision or management of research and development and for those who feel they need to know more about the special problems of research. The course will present a perspective of research and its place within industry, government and our national economy with a view of the past, present and future. Classes will be conducted as a combination of lecture, discussion and workshop.

The fee is \$225. For further information, write Director, Continuing Engineering Education Program, George Washington University, Washington, D. C. 20006 or call (202) 296-8924 (676-6106 after May 11).

MICROWAVE ANTENNA MEASUREMENTS

A Five-Day Short Course July 9-13, 1973
California State University, Northridge
Northridge, California 91324

This course is an intensive study of the measurement of microwave antenna radiation characteristics. 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 fifth in a series of yearly short courses which are being offered alternately between California State University Northridge and Georgia Tech. This year's offering will include a tour of the antenna laboratory of the Lockheed-California Company's Rye Canyon Research Laboratories.

The fee is \$325 which includes text and parking and classroom supplies. For further information contact Dr. Edmond S. Gillespie, School of Engineering, California State University, Northridge, Northridge, California 91324; (213) 885-2188.

CONFERENCE**1973 EUROPEAN MICROWAVE CONFERENCE**

The 1973 E.M.C. will be held at Brussels University from 4 to 7 September 1973. It is organized with the support of Fabrimetal, the Belgian Association of Metalworking, Mechanical and Electrical Industries, and the cooperation of the Institute of Electrical Engineers (Great Britain), the Institution of Electrical and Electronic Engineers (IEEE Region 8, Professional Groups M.T.T., A.P., E.C.), and the Belgian Committee of URSI. The Conference is the third in a series which already comprises London (1969) and Stockholm (1971). It incorporates the former Microwave—Optical Generation and Amplification Conference (MOGA), which has now joined forces with the E.M.C. There will be some 180 regular papers, arranged in three parallel sessions, and twelve invited papers.

Registration forms and preliminary program can be obtained by writing

Dr. G. Hoffman, Secretary General
1973 European Microwave Conference
St. Pietersnieuwstraat 41
B-9000 GENT Belgium



CALL FOR PAPERS

**Special PROCEEDINGS Issue on
Effects and Uses of
Energetic Radiation**

The PROCEEDINGS OF THE IEEE plans to devote a special issue to the Effects and Uses of Energetic Radiation in Electronic Materials. The issue, to be published in September 1974, will be primarily directed towards physical understanding of the interaction of energetic radiation with materials and the exploitation of energetic radiation in modification and study of material properties.

Those interested in submitting contributions for consideration should send detailed summaries of 200 - 300 words by September 1, 1973 to either of the guest editors, Mr. Bernard Reich, U. S. Army Electronics Command, AMSEL-TL-IR, Fort Monmouth, NJ 07703, or Dr. Daniel McCaughan, Bell Telephone Labs, Rm MH 213 201, Murray Hill, NJ 07974. Completed manuscripts will be required by January 1, 1974,

**P. I. B. INTERNATIONAL
SYMPOSIUM XXIII
"OPTICAL AND ACOUSTICAL
MICRO-ELECTRONICS"**

16-18 April 1974 New York, N.Y.

The Polytechnic Institute of Brooklyn announces that the twenty-third in its Microwave Research Institute series of international Symposia will be on the topic of Optical and Acoustical Micro-Electronics. This symposium will be held on 16-18 April 1974 in New York City.

This twenty-third symposium in a series which attempts to extend the frontiers of electronic science will explore the similarities and differences between optical micro-electronics and acoustical micro-electronics in order to determine in what ways these two fields can further exchange techniques and applications. The purpose of the symposium is therefore to chart the directions of growth in the burgeoning fields of optical and acoustical micro-electronics, and to evaluate their similarities and differences.

Professors L. Bergstein, H. L. Bertoni, and G. Gould, co-chairmen of the MRI Symposium Committee will welcome contributed papers up to the deadline of 1 December 1973. For consideration, a 500 word abstract should be submitted with sufficient detail to describe results and methods for proposed papers.

Polytechnic Institute of Brooklyn
MRI Symposium Committee
333 Jay Street, Brooklyn, N. Y.
11201

Attn: Jerome Fox, Executive
Secretary
Telephone: (212) 643-2393

**SPECIAL ISSUE ON MICROWAVE
CONTROL DEVICES FOR
ARRAY ANTENNA SYSTEMS**

Rapid progress is being made in the development of practical microwave ferrite and diode phase shifters for use in array antenna systems. There is need for wider exchange of information among microwave and antenna engineers in this important technical area. Papers are being sought for a special issue of the G-MTT TRANSACTIONS scheduled for publication in June, 1974, which will provide component requirements for array antenna systems, and engineering design principles for both ferrite and diode phaser elements.

Both theoretical and experimental papers are desired. It is expected that this special issue will cover a variety of topics including component requirements for array antennas, reciprocal and nonreciprocal ferrite phasers, diode phasers, and fabrication techniques. Papers considering low cost fabrication techniques are viewed as particularly relevant.

Papers should be submitted in triplicate to the Guest Editor before
September 1, 1973.

Dr. L. R. Whicker
Code 5250
Naval Research Laboratory
Washington, D. C. 20390

**G-MTT TRANSACTIONS PLANS
SPECIAL ISSUE ON
COMPUTER-ORIENTED
MICROWAVE PRACTICES**

The IEEE Transactions on Microwave Theory and Techniques is planning to devote a special issue to computer-oriented microwave practices (COMP) to be published in March 1974. This second special issue on COMP (the first appeared in August 1969) will, it is hoped, focus on modeling of active and passive devices for use in computer-aided design. This topic encompasses the solution of field problems as well as circuit-oriented work and measurements.

Papers and short papers reporting new and significant developments in COMP are solicited. Computer program descriptions are also solicited. Three copies of each complete manuscript should be submitted for review no later than July 2, 1973 to the Guest Editor, Dr. J. W. Bandler, Dept. of Electrical Engineering, McNaster University, Hamilton, Ontario, Canada. Further information can also be obtained from the Associate Guest Editor, Dr. D. Varon, Raytheon Company, 528 Boston Post Rd., Box 1R5, Sudbury, Massachusetts 01776.

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