



EDITOR: S. L. March

Compact Engineering Division, CGIS, 1106 Bobbie Lane, Garland, Texas 75042

Number 100, Spring 1981



**1981 IEEE/MTT-S
International
Microwave
Symposium
Bonaventure Hotel
Los Angeles
California**

JUNE 15, 16, 17, 1981

On behalf of the Symposium Steering Committee, I would like to invite you to attend the 1981 MTT-S International Symposium, exhibition and workshops. This year the symposium will be joint with the AP-S and URSI. Because of the anticipated large attendance due to the joint symposia the spacious Los Angeles Bonaventure Hotel was selected. It has the room capacity to hold nearly all attendees as well as the space for our exhibition. The hotel is really a city unto itself with many shops, restaurants, and boutiques, as well as athletic facilities and a 1/4 mile running track.

The theme of the symposium this year is "Around the World with Microwaves." The world-wide nature of the microwave activity is apparent from the papers received this year. Of the 160 papers to be presented, 60 have come from countries other than the USA. Additionally, there will be special technical sessions dedicated to microwave activity in Japan and South America.

A plenary session is planned for Wednesday morning (the overlap day with AP-S/URSI). This session will cover a variety of topics with outstanding scientists making the presentations. Subjects to be discussed are as follows:

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| • Very Large Array | Dr. Peter Napier |
| • Biological Effects of
Microwave Radiation | Prof. Om. P. Gandhi |
| • Origin of Noise in Systems | Mr. Sy Okwit |
| • Voyager Mission to Saturn | Dr. E. C. Stone |

The plenary session will be chaired by Dr. Seymour B. Cohn, recipient of the 1980 Microwave Career Award as well as the 1974 IEEE Lamme Medal. The regular program will have four parallel sessions, but there will be no competing sessions with the plenary session. In order not to reduce the total number of papers presented,



the Steering Committee decided to extend the symposium through Thursday morning.

For those who would like to reminisce about the "old days" of the microwave industry, please visit the MTT-S historical exhibit. Older hardware, photographs, articles, and memorabilia will be on display.

The Steering Committee has also planned a number of panel sessions for the evening. These sessions will cover the following subjects:

- Status and Trends in Fiber Communications (June 15)
- State-of-the Art in MM and Sub-MM Wave Receivers (June 17)
- System Use of GaAs Integrated Circuits (June 17)
- Technology Transfer from R&D to Manufacturing (June 15)
- Manpower Problems in Microwave and Antenna Engineering (June 17)

Following the symposium on Thursday and Friday, the Steering Committee has arranged for a number of workshops. The subjects to be discussed this year are as follows:

- Automatic RF Measurements
- Power GaAs FET's
- Advanced CAD Techniques for the 1980's

The workshops require a separate registration fee which does include lunch.

One of the highlights of our symposium is the Awards Banquet. This year we will honor the following people for their contributions:

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| • Microwave Career Award | - Dr. Kiyo Tomiyasu |
| • Microwave Applications Award | - Dr. Julius Lange |
| • Microwave Prize | - Dr. Hatsuaki Fukui |

(continued on page 6)



PRESIDENTS MESSAGE

by Fred J. Rosenbaum

Microwave engineers earn their keep by thinking and by doing. To do things efficiently, one often generates a plan or a program, in which are listed priorities, steps in the process, and milestones to measure progress. Doing tends to be a linear process, but what about thinking? It is surely non-linear, because things emerge that were not part of the input. Does it help to have a plan or a program to aid in the thinking process? Perhaps. One thing that helps for sure is to have enough inputs or information with which to deal and a "critical mass" to provide stimulation and rewards for "good thinking"

In my view, MTT-S provides much of the raw material for good thinking in the microwave industry and has had a tangible role in advancing the state of the art. What is MTT-S? It is a group of people with overlapping technical interests. It is a volunteer organization. People are not forced to join it. Authors are not forced to publish in its Transactions, nor to present their newest and best results at its annual Symposium. And nobody is obligated to participate in the carrying out of the work of the organization - the doing. Or are they? I'll return to this question in a moment.

How does MTT-S contribute to the microwave engineer's creativity? It establishes standards of good work by what has been published and presented in the past. It provides a wealth of detailed technical information, which is all part of the "input". It maintains an archive of knowledge. It provides visibility to good work by sharing it with colleagues. It rewards good thinking with recognition, publications, The Microwave Prize, The Microwave Career Award, The Microwave Applications Award, etc. And it provides the "critical mass" so necessary to the creative process. There is a body of co-technologists out there, ready to support and encourage advances. Really, can you honestly imagine the microwave business without MTT-S? If it did not already exist, someone would invent it!

However, such a robust and powerful organization is in actuality as fragile as the commitment of each of its members. MTT-S is what its members are. Is it a technical elite? Sure, say the elitists. Are the Transactions too theoretical? Sure, say those wishing for easy answers. The fact is, if people in the industry want more applications information in the Transactions, all they have to do is submit their applications papers to the Transactions, receive the glory, and stimulate others to do the same. Tired of "elitist" leadership? Then step forward, join your local chapter, get involved and become one of the elite. It is easy to criticize a faceless organization like MTT-S. But the faces are yours. It really is a volunteer effort.

The personal rewards of active participation in MTT-S activities are great. You meet and mingle with people in your locale and on the national level. Meet the National Lecturer, you've probably read his papers. A strong local chapter may even have an influence on your career. Does your management view engineering as a professional enterprise? Perhaps a strong local professional presence would improve the status of engineers in general.

So whose obligation is it? And who benefits, anyway?



MESSAGE FROM THE TPC CHAIRMAN

By Don Parker

The Technical Program Committee for this year's symposium has organized an outstanding program. The latest advances in the broad spectrum of technologies comprising the microwave and millimeter wave fields will be covered during the three and a half days of the symposium. Further technical exchange will occur during the workshops on the two days following the symposium. A preponderance of papers were received in areas of solid state circuits and devices and in microwave and millimeter wave integrated circuits. The technical program reflects this response with two and a half sessions on microwave solid state circuits and devices, two sessions on millimeter wave integrated circuits, and a session each on millimeter wave solid state devices and microwave integrated circuits.

Other long standing and important technical areas to MTT-S, such as passive components, ferrite applications, field and network theory, low noise techniques, and microwave acoustics, are covered in a session each. New emerging areas of vital importance such as GaAs monolithic analog circuits, integrated optics, biological effects, and high power techniques are well represented. Special panel discussions on Fiber Communications and GaAs Monolithic Circuits are scheduled for Monday and Wednesday evenings, respectively.

A plenary session, joint with AP-S and URSI, has been arranged for Wednesday morning. Four authorities in their respective fields will present invited papers on topics of common interest to all three societies. Dr. Peter Napier will report on the Very Large Array at the National Radio Astronomy observatory in Socorro, New Mexico. Professor O. P. Gandhi will review the present knowledge of biological effects of microwave radiation with an emphasis on medical applications. Mr. Sy Okwit will discuss the origin of noise in receivers and its effect on system performance. Dr. E. C. Stone will describe the recent Voyager mission to Saturn.

The Wednesday afternoon sessions of contributed papers will also be joint with AP-S and URSI. Anyone registered for the Microwave Symposium can attend the AP-S and URSI organized sessions and vice versa. MTT-S has scheduled two sessions for Wednesday afternoon; one is on microwave and millimeter wave systems and the other on phased and active array techniques. AP-S has also organized two Wednesday sessions; one on printed circuit antennas and one on adaptive antennas. In addition, a memorial session on open guided wave structures has been planned for Wednesday afternoon in honor of George Goobau, a pioneer in this area.

Three workshops will be held in conjunction with the symposium. The topics include:

- ARFTG, Automatic Radio Frequency Techniques (June 18-19) sponsored by MTT-II and ARFTG
- Gallium Arsenide Power FETs (June 19) sponsored by MTT-7 and ED-S
- Advanced Computer-Aided Design Techniques (June 19) sponsored by MTT-1

(continued on page 6)



ADCOM HIGHLIGHTS

by R. A. Sparks

The MTT-S ADCOM began its 1981 business meeting on the evening of January 28 at the very impressive Los Angeles Bonaventure Hotel, site of the 1981 International Microwave Symposium. Many ADCOM members had participated in the Technical Program Committee meeting that had taken place earlier in the day at the Hotel. The ADCOM meeting was chaired by President Fred Rosenbaum, who introduced newly elected members Ed Niehenke and Ganesh Basawapatna and re-elected members John Kuno, George Oltman, Reinhard Knerr and Barry Spielman. Also introduced were newly elected Vice President Dick Sparks and Secretary/Treasurer Jim Roe. After adoption of the agenda with additions and revisions, the minutes from the previous October meeting were read, corrected and accepted. Subsequent ADCOM meetings for 1981 were set for Sunday, June 14 in Los Angeles preceding the Symposium and early in October, tentatively in Baltimore.

Action Items and Reports

Ted Saad presented his plans for assembling a permanent collection of microwave historical artifacts and documents with John Horton assisting him. An historical display is scheduled again at this year's Symposium with West Coast firms, particularly, encouraged to make exhibits available. A budget request of \$1,000 was approved to provide for posters, displays, and shipping costs. All collected items will be considered for inclusion in the Faraday/Maxwell exhibit planned for the 1984 I.E.E.E. Centennial Year.

Past President Steve Adam addressed the previously recognized problem of MTT-S officers attending the thrice yearly I.E.E.E. Technical Activities Board (TAB) meetings. A motion to provide \$3,000 travel expenses to TAB meetings for both the Society's Vice President and President in 1981 was approved. This action should insure adequate MTT-S representation and continuity on issues which affect the Society. This subject and the allocated amount will be reviewed annually.

Hal Sobol presented the Awards Committee report and noted that 4 of 19 MTT Fellow nominations submitted to the I.E.E.E. Fellow Committee were selected including S. F. Adam, R. V. Garver, N. Kumagai and L. Lewin. Letters will be sent by President Rosenbaum to each inviting them to receive their Fellow Awards at the Symposium banquet. An MTT-S nominee has been submitted for the Edison Medal.

Bylaws changes were approved to increase the Microwave Applications Award from \$100 to \$300 and the Career Award From \$500 to \$1,000. The updated Constitution and Bylaws will be published in a future issue of the Newsletter.

Due to several omissions and errors in the publication of the 27 Year Transactions Index, the I.E.E.E. will reprint it free. An additional \$2,000 was voted and approved by ADCOM to include 1980, thus producing a 28 Year Index for the MTT Transactions.

Hal Shrank presented copies of recently issued Waveguide Standards. He requested that anyone interested in serving on the Planar Transmission Line Standards Committee should contact him directly (301-765-2973.) This is an excellent opportunity for persons active in stripline, microstrip, or monolithic circuit design to participate in the standardization of definitions, terms, and measurements that characterize these transmission media.

President Rosenbaum gave his report on a number of organizational changes and committee assignments within the Society. These were all published in the MTT-S Directory which was attached to the Winter 1981 MTT-S Newsletter. Some discussion was given to the latest proposal of the Computer Society to change the name of I.E.E.E. to the *Institute for Electrical and Computer Engineers*. A lead article in the February issue of The Institute reviewed the proposal that was submitted at the recent Board of Directors meeting. The sympathy of ADCOM members was strongly against a name change. At that point the meeting was recessed until the following morning.

Steve Adam gave his report on the Technical Activities Board meeting held in December. This appears elsewhere in the Newsletter. Perhaps most noteworthy is the proposal to reorganize the present 7 Division structure of the I.E.E.E. into 10 Divisions. This plan would provide equal Technical and Regional representation on the I.E.E.E. Board of Directors. Of major concern to MTT-S at this time are the specifics as to the name of the Division into which we would be placed and the particular Groups/Societies which would be co-located with us. Further study on this matter is being handled by an Ad Hoc committee created by TAB for possible action by the end of the year.

Planning for future MTT-S Symposia is one of the major ADCOM responsibilities that is delegated to the local Steering Committees that host these annual events. Sites for 1985 (St. Louis) and 1986 (tentatively Baltimore) are being firmed up now because of the long lead times which are needed to secure a convention facility that can accommodate the 1,000 plus attendees and 150 exhibitors. Chapters willing to organize future symposia should plan to attend the next ADCOM meeting in Los Angeles.



REPORT OF THE DIRECTOR, DIVISION IV

Number 11, January 1981

by Alan C. Schell

The seven Groups and Societies of Division IV currently have excellent publications, a schedule of successful meetings and symposia, and financial strength. Membership growth of the Division is at about ten percent per annum. At three Adcom meetings I have attended so far this year, I have seen the kind of responsive leadership that will lead to further improvement of our technical activities.

At the February meeting of the Technical Activities Board (TAB) there was a discussion of the formation and funding of Chapters. The concern is that Chapters should receive the support necessary for effective functioning and growth from the Sections and Societies. If you have any comments or suggestions on this topic, please send them to me at RADC/EE, Hanscom Air Force Base, MA. 01731.

Good financial practices are important to the success of any operation, and one problem area has been the late reporting of the finances of some conferences and meetings. TAB passed a bylaw change requiring an interim financial report within 90 days, and a final report within one year of the conclusion of a conference.

Among the items waiting in the wings is the allocation of general and administrative (G&A) costs to the segments of the Institute. The TAB Finance Committee has been wrestling with this topic. There is not too much dispute over what these costs are; on the list are corporate expenses, accounting charges, and similar costs which have not been assigned either as direct charges or as overhead. The

controversial issue is how to allocate these charges, and a commonly accepted practice (although it brought selective howls of protest) is to make them proportional to the expenses of the various entities. There will be much more debate on this topic before any formula will meet with general acceptance.

Another issue of concern to TAB is the representation of the Groups, Societies, and Councils on the Board of Directors. A plan has evolved to increase the number of Divisional Directors to ten and to restructure the Divisions accordingly. The Society Presidents have been involved in this activity, and at their meeting in February, set the following goals:

1) The assignment of Societies to Divisions should be based on a commonality of technical areas of interest, and not arbitrarily to accommodate goals such as equal numbers of members per Division.

2) Alternate possibilities of either having Directors-at-large or increasing the number of Directors in accordance with memberships should be considered.

3) The composition of the Divisions should recognize and accommodate the large range of membership numbers of the Groups, Societies and Councils, and any plan should attempt to match to forecasts of the future IEEE composition.

This topic has been referred to the IEEE Long Range Planning Committee. Any comments you send to me will be relayed to that committee.

The year 1831 saw the discovery of electromagnetic induction by Michael Faraday and the birth of James Clerk Maxwell. This year the IEEE has prepared an exhibit to celebrate the accomplishments of these two pioneers of electromagnetism. The exhibit will make its first appearance at Electro 81 in New York City, and is being considered for the MTT-S Symposium in Los Angeles. The display, which is available for scheduling at other meetings, is the work of the new IEEE Center for the History of Electrical Engineering and is a precursor to the activities planned for the IEEE Centennial in 1984.



NEW IEEE FELLOWS

Earlier this year, the IEEE elected 129 members to the grade of Fellow. Nineteen nominations were submitted to the IEEE Fellows Committee by MTT-S. The MTT-S sponsored nominees who were selected for the Fellows award are:

Stephen F. Adam – For contributions to and technical leadership in the theory and application of automatic network analyzers.

Robert V. Garver – For contributions to the development and understanding of the limitations of broadband, solid-state microwave switches.

Nobuaki Kumagai – For contributions to the study of wave propagation in electromagnetics, optics, and acoustics.

Leonard Lewin – For contributions to the theory of waveguides, antennas, and microstrip transmission lines.

Eleven additional new Fellows, not sponsored by MTT-S, whose contributions are germane to the microwave industry, include:

Arthur D. Ballato – For contributions to the theory of piezoelectric crystals and frequency control.

Alfred Y. Cho – For pioneering work in the development of molecular beam epitaxy and its application to microwave and optoelectronic devices.

James W. Duncan – For contributions to and technical leadership in the development of communications satellite antennas.

Nobil H. Farhat – For work in advancement and understanding of microwave holographs and associated contributions to electrical engineering education.

Elsa M. Garmire – For contributions in nonlinear and guided wave optics.

Jay H. Harris – For pioneering contributions to the understanding and application of wave effects in integrated and thin-film optical devices.

Yoshihiro Konishi – For contributions to microwave component technology of particular significance to satellite broadcasting.

John J. Kovaly – For contributions to synthetic aperture radar.

Leon Peters, Jr. – For contribution to the theory of microwave radiation and scattering.

Douglas O. Reudnik – For contributions to satellite communications and microwave mobile radio systems.

Peter N. Robson – For contributions to the understanding of microwave solid-state devices.

CONGRATULATIONS TO ALL NEW IEEE FELLOWS



28 YEAR INDEX

The 27-Year Index which formed Part II of the November 1980 MTT-S Transactions (Vol. MTT-28, Number 11) was incomplete. It contained random omissions, probably due to computer data transmission errors. The Index is being corrected and will be republished later this year as a 28-Year Index, updated to include papers published in the MTT Transactions during 1980.

1981 INT'L MICROWAVE SYMPOSIUM (cont.)

Additionally, we will be honoring the new MTT-S IEEE Fellows.

We have arranged for amost interesting banquet speaker, Dr. Irving Bengelsdorf, Member of the Technical Staff, Aerospace Corporation, El Segundo and contributing science columnist, Los Angeles Herald Examiner. Dr. Bengelsdorf will discuss recent advances on "How the Brain Works."

Prior to the banquet you are invited to attend the Exhibitors' cocktail party, which will be held at poolside.

The ladies' program this year contains a diversity of activities.

Trips are being planned which will include:

- J. Paul Getty Museum
- City Lights Tour
- Universal Studios Tour
- Buccaneer Party Cruise
- City Tour
- Pasadena and Norton Simon Museum

A free continental breakfast will be available to participants.

Being Chairman of the Steering Committee has been a great personal pleasure to me. However, this Symposium has been put together by many people. Their names appear elsewhere in this issue. I want to thank them all for their help and dedication. Their continuing support will make this Symposium truly memorable.

Please plan to attend.

A. Clavin
Chairman
Steering Committee



MESSAGE FROM TPC CHAIRMAN (cont.)

The technical program truly reflects the symposium theme, "Around the World with Microwaves." Over sixty of the approximately 160 papers are from authors outside the United States. In addition to the Japanese invited session, there is, for the first time, a Latin American invited session. We are attempting to arrange for the People's Republic of China to present a half session on microwave research and development in mainland China.

I have enjoyed working with the Technical Program Committee in arranging this year's technical program. We think you will find it interesting and informative. Come and enjoy it with us.



CHAPTER ACTIVITIES

By H. J. Kuno

The MTT-S membership at the end of 1980 reached a 10 year high of 6429, representing an 8.4% growth over the previous year. The growth rate is more than that of the IEEE membership (from 201,673 as of December 1979 to 213,812 as of December 1980, representing a 5.1% increase)

Chapters are becoming more active; they have held more meetings, lecture series, workshops, and symposia. However, there are many activities which have not been reported. Since it is important to exchange reports on activities among chapters, I hope that Chapter Chairmen and secretaries will send in their chapter activity reports. An updated list of Chapter Chairmen was included in the MTT-S Directory which was distributed with the last issue of the Newsletter. Please keep me informed of any changes in Chapter Officers as well as chapter activities. There will be a Chapter Chairmen's meeting to be held at the 1981 Microwave Symposium in Los Angeles.

Meanwhile, the current National Lecturer has been very busy. Through the end of May, Bob Pucel delivered 26 lectures, shown in the attached schedule.

We have new members of the Membership Services Committee as shown below. We all hope to keep up the high standard set by the previous committee headed by Dick Sparks. We are looking forward to seeing all of you in Los Angeles in June.

(continued on page 9)





History of MTT

by Ted Saad

ADCOM XII

JULY 1, 1963 THROUGH JUNE 30, 1964

ADMINISTRATIVE COMMITTEE:	D. D. King, Chairman
	H. M. Altschuler, Vice Chairman
	R. A. Rivers, Secretary-Treasurer
B. D. Aaron	A. A. Oliner
R. W. Beatty	J. E. Pippin
A. C. Beck	S. W. Rosenthal
S. B. Cohn	T. S. Saad
R. C. Hansen	G. Shapiro
G. L. Matthaei	K. Tomiyasu
T. Moreno	E. N. Torgow
W. W. Mumford	R. D. Wengenroth
HONORARY LIFE MEMBERS	G. C. Southworth
	A. G. Clavier
EX OFFICIO MEMBER	Frank Klawnsnik

The Chairman of the twelfth Adcom was Don King, the Vice Chairman was Hal Altschuler and the Secretary-Treasurer was Bob Rivers. The Editor of the Transactions was Bob Beatty. Gus Shapiro continued as Newsletter Editor.

By the early 60's Adcom meeting dates and sites were falling into a pattern. There were usually 5 all-day meetings, the first two at IEEE Headquarters in New York, and the third in the general area of the upcoming Symposium. The fourth meeting was held during the IEEE convention either at Headquarters or in a hotel near the Coliseum. The last meeting of the year took place during the Symposium.

As a consequence of the IRE-AIEE merger into the IEEE, plus the change of name from PGMTT (Professional Group on Microwave Theory and Techniques) to PTGMTT (Professional Technical Group on Microwaves Theory and Techniques), there were a number of housekeeping chores required, particularly with regard to the Constitution and Bylaws. During the year, a good deal of time was spent under the chairmanship of Gene Torgow in revising and updating both documents. In addition to making the numerous name changes, a number of other Bylaw matters which had been tabled for some months, even years, were discussed in great detail throughout the Adcom year.

Since there was a great deal of interest and growing activity in laser technology, the Adcom felt that the definition of the MTT field of interest had to be re-examined. As a consequence, a committee was appointed "to recommend whether or not the PTGMTT should interpret its area of interest to include Quantum Electronics, Lasers, and Fiber Optics." Along with the change in scope was a concern for the new initials of the group. A unanimous vote was taken at one of the Adcom meetings to consider removing either P, T or both P and T from the initialled title.

Other Bylaw matters that were discussed concerned the true function of the Secretary-Treasurer and the titles for Chapter Chairman. There was the matter of rights and privileges of Honorary Life Members. Many other changes, some of significance, others of minor detail, were made in the Bylaws and on March 23, 1964, the Bylaws, as amended, were accepted unanimously. Interestingly, but not surprisingly, immediately after the unanimous vote, additional motions were made to amend the new Bylaws.

In view of budget restrictions discussed in the 11th Adcom, the publication of the Transactions was maintained at approximately the same level as the year before. The rejection rate for papers submitted to the Transactions was approximately 50% for the year. The possibility of having abstracts of foreign articles included in the Transactions was discussed. The problem, however, was that it was difficult to find anyone who would be willing to prepare the abstracts. Another issue that received a great deal of attention was the question of laser papers. In view of the fact that the laser field was moving so rapidly, there was great concern that the Adcom would forfeit some of its scope of responsibility with regard to the publication of laser papers. One of the problems stemmed from the fact that the papers required a shorter lead time than MTT was able to supply. As a matter of fact, the Electron Devices Group began publishing on a monthly basis to help serve the new field of interest. One suggestion that was made was to form a joint sub-group with Electron Devices to aid in handling the laser publication problem.

Because of the concern of the Adcom for the problem, Bill Mumford was appointed chairman of an Ad-Hoc committee on Lasers. He urged that we include Quantum Electronics, Lasers and Fiber-Optics in our scope and that the field of interest be spelled out in our constitution. He also recommended that a sub-group be formed on lasers. After a telephone conference with his committee, Bill Mumford reported that they had unanimously agreed to reaffirm the actions of the Adcom of May 14, 1961 in which it stated that it is the intent of the PGMTT Constitution to include in its field of interest major technology in all frequency ranges, including the optical range, and that a statement to that effect should be included in each issue of the Transactions. They further agreed that a special laser issue of the Transactions would be desirable, but that they would defer the formation of a sub-group on laser techniques until such time as it was obvious that to form such a group would be helpful to the interested people. Finally, they stated that MTT was willing to serve Quantum Electronics people's interests where appropriate. A motion to reaffirm the action of the May 14, 1961 Adcom was made and carried with only one vote in opposition. The Adcom continued the discussion and a proposed statement of scope of the MTT for publication in the Transactions was proposed, but no action was taken.

An area of interest was the matter of translations. There was some discussion on the possibility of earning additional revenue for the MTT by providing translation services for articles in our field of interest. The concept was good, but it lacked translators with enough time.

On the matter of publication of abstracts, at the March 23, 1964 meeting of Adcom a motion to "create the feature of abstracts and to create the post of associated editor for abstracts" was passed by a vote of 8-6.

In the meantime, with all the concern for masers and lasers, an application for the formation of a PTG on Quantum Electronics was voted down at the PTG meeting (of all IEEE PTG's). As a result of the vote, Electron Devices decided to form a sub-group. In view of the mutual interest in Quantum Electronics, there was some discussion of a merger between MTT and ED. However, the opposition was fairly substantial at the time. There was also some consideration given to the merging of the Transactions of the two groups, but no final conclusions were drawn during the term of this Adcom.

The new IEEE convention received much attention during the year. Because of the new alignment of the professional technical groups, the technical sessions at the convention were divided into ten areas of interest. The net result was that microwave papers, appeared in different sessions, although one session was devoted to microwave technology exclusively. It was also reported that the reviewing process was quite diffuse.

Two interesting items came out of the PTG meeting (of all the IEEE PTG's) that year. The first had to do with the matter of a substitution for the PTG initials and name. There were several fancy proposals, including the possibility of renaming them Institutes. Although nothing was decided, it was expected that something would be done eventually. Another item that came out of that meeting was a new policy on the use of the word international. The policy reads as follows: "Use of the adjective 'international' in the name of IEEE sponsored conferences will not be permitted, unless the IEEE Executive Committee is satisfied that both the papers to be given and the attendance expected will reflect to a significant degree an international character. A group desiring to sponsor an international conference must therefore provide special evidence of international planning when requesting IEEE approval.

The membership campaign started last year by Bob Rivers, the membership chairman at that time, showed modest results. On the basis of 5,000 pamphlets distributed, 110 members joined either the IEEE or the MTT at a cost of approximately \$2.40 per member. Ted Saad, the new chairman, continued the program with only minor revisions. However, there was a problem of membership which was discussed at some length. According to figures that were provided by Headquarters, it appeared that the membership during the year was 500 less than the previous year. It turned out that there were problems at Headquarters which resulted partly because of the merger and partly because of the use of a new computer. A motion was made and passed that the Adcom Chairman was to write a letter to Headquarters indicating the consternation of the Adcom over the difficulties in processing, recording, and keeping track of our members.

In an effort to identify the problem, a review of the roster which appeared in the 1963 Transactions was made, as compared with the most recent MTT strip list provided by Headquarters. Out of a membership of 5,467 fully paid members and 404 students, there were 1,600 names on the roster that were not listed on the strip list as members. As a result, a questionnaire was prepared and it was mailed to the "lost members," in an effort to determine their reasons for discontinuing their membership in MTT.

The 1964 Symposium was held at the International Hotel at the JFK Airport on Long Island. Saul Rosenthal was the Chairman of the Steering Committee. Attendance was 657 and one of the highlights of the meeting was a banquet speech by Dr. Eugene Fubini, who was the Assistant Secretary of Defense at the time. His message covered the government's planned cut of approximately 5% from the R & D budget for the fiscal year 1965, as compared to 1964. He pointed out that although it was necessary to decrease the budget, it was still the third largest peace-time budget in our history.

Another interesting sidelight was the fact that at the time the New York World's Fair was taking place not too far from the Symposium site and many attendees took advantage of the opportunity to attend.

The Symposium was not only a technical success, it was also a financial success, resulting in a surplus of somewhat more than \$1,300. It was at the banquet, Wednesday night, that Morris Ettenberg immortalized the name Henry Bachman to the tune of Frere Jacques.

The winner of the 1963 Microwave Prize, which was presented at the banquet in 1964, was Dr. Leo Young for his paper entitled "Direct Coupled Cavity Filters for Wide and Narrow Bandwidths", published in the Transactions of May, 1963.

At the September 25, 1963 meeting of the Adcom, proposals for the 1965 Symposium were presented by John Oliver of the Florida West Coast Chapter, by W. Shepard of the Philadelphia Chapter, and by letter from Leo Young for the San Francisco Chapter. The discussion was long and deep. It was clear that there appeared to be a growing demand for having the Symposium in different areas around the country. Despite the merits of both the Philadelphia and San Francisco presentations, the Adcom at that meeting voted to have the Symposium in Florida under the chairmanship of Rudy Henning.

In the meantime, the Tokyo Symposium, which had been planned for September 1964 in Tokyo, was moving along.

During the year, two new chapters were formed, one in Kansas City and one in Huntsville, Ala. it was also reported that there was interest in forming chapters in Milwaukee and Dallas.

The Newsletter continued to provide useful information. Most of the news items were being supplied to Gus Shapiro from the chapters, with very little coming from the Adcom members.

The Adcom was approached by George Shafer of NBS about the possibility of sponsoring or co-sponsoring a national meeting on millimeter waves in August, 1965 at Boulder, Co. This was a delicate question, in view of the Orlando meeting of the previous year. After much discussion, a motion was made and unanimously voted upon to become one of the co-sponsors of the Boulder Millimeter Wave Symposium.

In view of the increased time and effort required for the Adcom meetings, Bob Rivers proposed that the treasurer's reports and committee reports be completed in summary form for inclusion in the meeting notice and agenda. Although the matter was dropped at the time, it was an idea whose time was coming very rapidly.

The financial conditions of the Adcom continued to be respectable. The operating budget for the year was in the range of \$30-35,000 a year, and as of March 31, 1964, the uncommitted balance of the group was approximately \$21,000.

The election of officers for the 13th Adcom resulted in the election of Hal Altschuler as the incoming Chairman and Gene Torgow as the incoming Vice Chairman. Seymour Cohn, as chairman of the nominating committee, did a detailed and thorough job of analyzing the members of the Adcom versus the regional representation versus chapter population. After due deliberation, the Adcom elected six members to a three year term each. They included W. W. Mumford, R. A. Rivers, G. Shapiro, I. Kaufman, F. G. R. Warren and H. E. M. Barlow. G. E. Shafer was elected to a one year term.

Perhaps the highlight of the Adcom year was the election on May 18, 1964 of Bill Mumford as an Honorary Life Member to join Dr. Clavier and Dr. Southworth.



CHAPTER ACTIVITIES (cont.)

1981 MTT-S MEMBERSHIP SERVICES COMMITTEE

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| • Chairman | H. J. Kuno |
| • Newsletter Editor | S. L. March |
| • Chapter Records | F. J. Bernues |
| • Membership | E. Niehenke |
| • One Day Symposia | G. Basawapatna |
| • National Lecturer | |
| 1980/1981 | R. A. Pucel |
| 1981/1982 | F. Ivanek |

1980/1981 NATIONAL LECTURE SCHEDULE

DATE	CHAPTER	ATTENDANCE
October 7	Atlanta	45
October 8	New Jersey Coast (Holmdel)	50
October 23	San Francisco	125
October 28	San Diego	26
October 30	Los Angeles	101
October 24	Santa Rosa (HP)	80
November 18	Philadelphia	25
November 19	NY/LI	32
December 1	Minneapolis (Honeywell)	40
January 6	West Florida Coast (Clearwater)	14
January 7	Cape Canaveral - Melbourne	24
January 8	Orlando	14
January 20	Phoenix	38
January 21	Dallas	54
January 22	St. Louis	35
March 19	Boston	
March 31	Ottawa	
April 1	Syracuse	
April 2	Schenectady	
April 14	Washington, DC	
April 16	Princeton	
April 22	North Jersey Coast	
May 12	Columbus	
May 13	Chicago	
May 14	Champaign-Urbana (subject to change)	
May 24-28	Tel Aviv (Melcon)	

IEEE POSITION PAPER ON ENGINEERING TECHNOLOGY EDUCATION

Although the IEEE recognizes that a broad spectrum of technically qualified individuals perform important functions for society and are given the title of engineer, the title of engineer should be reserved for those people engaged in the development and design of products, processes, systems and services. A modifier such as electrical, electronic, computer or biomedical is appropriate before the word engineer or engineering. Engineers may also be engaged in research on basic principles and basic techniques facilitating design and development.

In areas of fabrication, operation, maintenance, sales and related pursuits where the individual is engaged in the application of well-established techniques, the appropriate term for the person is technologist. Although the term handbook engineer has been used in this context, this use should be discontinued and the title technologist used. Modifiers such as electrical, electronic or computer are appropriate.

The individual engaged in fabrication or operations using comparatively routine techniques under the direction of an engineer or a technologist should be called a technician. In the computer software area the appropriate term is programmer rather than technician. Computer technician is reserved for work that includes computer hardware.

Engineers, technologists, and technicians have somewhat different mental attitudes about the type of work they do. One mental attitude is not better than the other; they are just different. The education of engineers, technicians and technologists should recognize this difference in attitude as well as the difference in skills needed for the various functions.

Education for technicians and technologists in engineering-related disciplines is different from that for engineers. The basic technician education provides the ability to read instructions and use modern fabrication techniques. Elementary mathematics and a phenomenological understanding of basic science is essential for the technician. The education of the technologist is normally an extension of technician training; more science and mathematics and considerably greater understanding of modern engineering practice and techniques must be included. Technicians and technologists must have experience with modern technical equipment including computers.

Every country that has adequate resources should recognize that separate educational programs should be established for technicians

(continued on page 10)

IEEE STANDARDS

The Waveguide Standards Committee has released *IEEE Standard Definitions of Fundamental Waveguide Terms*. The 10 page document has a release date of 29 August 1980. It can be ordered from IEEE Headquarters by requesting IEEE Standard 146-1980 (SH07822) and submitting \$5.

The companion document, *IEEE Standard Definitions of Terms for Waveguide Components*, IEEE Standard 147-1979 (SH07294) was published 31 May 1979 and is also available through IEEE Headquarters.

The IEEE has also released a supplement to *IEEE Standard Digital Interface for Programmable Instrumentation*. The three page document, released August 8, 1980, is numbered IEEE Standard 488A-1980 (Supplement to ANSI/IEEE Standard 488-1978). One copy will be sent free to customers who purchase either IEEE Standard 488-1978 (SH07260) or the corrected edition of 22 June 1979. The supplement has been incorporated into the third printing of the standard, publication number SH07948 (July 25, 1980).



IEEE POSITION PAPER (cont.)

and technologists in addition to the education program for engineers. Although an apprentice program is good training for specific areas, a broader based program in an academic institution is required for the technicians and technologists need in a modern, high-technology society. Faculty for technician and technology education must be well informed about current practice in the high-technology industries employing their graduates.

The IEEE seeks to discourage young people from undertaking programs of education in institutions that do not provide a good education. In the United States the IEEE will continue the efforts in the accreditation of technology programs at both the two-year and four-year level. Those programs that meet established standards will be accredited; those which do not, should not be accredited.



CALL FOR NOMINATIONS TO ADMINISTRATIVE COMMITTEE

by V. G. Gelnovatch

ALL MTT-S members should note that they may assist the Nominations Subcommittee in obtaining nominees for the 1982 ADCOM election. MTT members may enter an MTT Society member's name as a nominee by mailing a petition for that nominee with 25 Society members' signatures to me or the ADCOM President prior to our annual meeting in October 1981.

The bylaws of MTT-S state that the Nominations Subcommittee should select a slate of at least two members of the Society for each vacancy which occurs on the Administrative Committee on January 1 of the next year. Each nominee is contacted to assure his willingness to serve and his ability to attend ADCOM meetings. Nominees by the Nominations Subcommittee are selected by the principles of efficiency, geographical, and organization distribution. Elections of the nominees are made by members of the ADCOM not eligible for re-election at that time.

This year we will elect six (6) members for a term of three years. The holdover members will be geographically divided as follows: East (5), Central (0), South (2), and West (5).

Incumbents who may stand for re-election are geographically located as follows: East (2), West (1), and Central (3).

It may also be of interest to consider that the present ADCOM is composed of thirteen (13) members from industry, three (3) members from universities and non-profit organizations and two (2) from government agencies. Members whose terms expire are distributed as follows: industry (5), universities and non-profit organizations (1) and government agencies (0)



MACHINES DON'T FAIL - PEOPLE DO

by Edwin F. Shelley

On the evening of April 24, 1980, the United States launched a dramatic military operation to rescue the 50 American hostages held in Teheran. In the early hours of the following morning the rescue mission was aborted because of the mechanical failure of three out of eight helicopters assigned to the mission. Eight American servicemen died during the withdrawal operation.

More recently, on June 3rd and then again on June 6th a computer failure in our air defense system triggered an erroneous warning that Russian missiles were launched and speeding toward targets in the United States. Nuclear countermeasures were initiated, and retaliatory strikes were finally called off after several minutes of frantic checking to determine the validity of the computer signals.

The avalanche of political comment on the tragic failure of the rescue mission and on the close brush with nuclear Armageddon has obscured a crucial lesson for all Americans: if we wish to preserve our independence as a nation and our freedom as a people we must overhaul our attitude toward personal responsibility to our work.

Machines do not fail - the people who design, build, operate or maintain them fail. There was a time when trains rarely derailed, when cranes rarely buckled, when roofs rarely collapsed and when standard military gear functioned even in a storm. A failure rate of three out of eight (almost 40%!) would have destroyed the U.S. space program long before we landed on the moon. It would have paralyzed the invasion forces on D day and lost World War II for the Allies. An airline failure rate of three planes out of eight would stop all air travel. An unresolved failure in the air defense computer system could launch World War III.

Yet a high failure rate, routinely blamed on machines, is becoming typical of much of American society today. When your department store keeps dunning you for a bill that you have already paid, the so-called "computer error" was caused by an ordinary clerk pressing a wrong key or an ordinary programmer who didn't allow for contingencies. When you buy a new automobile and spend the next six months in and out of the shop getting it to run properly, it is not machine failure,

it is a failure by a careless designer, assembler, inspector or manager responsible for the car's production or delivery. When you get your wedding invitations back from the printer and the middle initial is wrong, it was not the automatic press which substituted initials. Of course, the printer does the job over at no charge, but obviously the cost of such errors must be built into the price of the wedding announcements - and the price of the automobile, and the department store merchandise.

Thus, in the commercial sphere, our growing carelessness and lack of personal responsibility is reflected in lower productivity and higher costs for goods and services. We compete less effectively with other countries, and our national standard of living declines. "Nobody's perfect" and "I'm only human" and "Work isn't everything, you know" translates into "I can't make ends meet," "I can't afford a vacation this year" and "I need a raise."

Increasingly frequent examples of "machine failure" simply represent the failure of people to take reasonable care in performing their jobs. They are not the failures of some inanimate devil called a machine - machines do precisely what their designers, builders, operators and maintainers tell them to do. Although some machines are more complicated than others, they all obey the same laws. Assuming that the basic knowledge exists for designing, building, operating and maintaining a particular machine, its reliability is determined by the care taken by the people engaged in each of these tasks. The railroad locomotive built in the last century under an earlier standard of care, and now retired to a museum after 50 years of operation, could roar out of the museum tomorrow to resume the task for which it was designed.

The military effects of this alarming syndrome of personal irresponsibility and carelessness can be catastrophic. The failure of a dramatic rescue mission with the loss of eight lives, the resulting scorn of our enemies and the shaken confidence of our friends - these are just curtain raisers. The crucial drama comes when we must defend our allies, and ultimately ourselves, against the escalating advances of practitioners of realpolitik. Our military power - real or perceived - is an important stabilizer in today's world. Any advantage which we may possess in sophisticated weaponry becomes a terrible disadvantage if the weapons fail to work. And they will fail to work if the people - from top to bottom - responsible for their design, construction, maintenance and operation are not imbued with a strong and continuing sense of responsibility for their respective jobs. Competent leadership is obviously important, but in the end it may be the degree to which we practice individual responsibility that determines whether we survive as a free nation.

Reprinted from IEEE TECHNOLOGY AND SOCIETY, September 1980. To get a free copy of the latest issue of TECHNOLOGY AND SOCIETY, write or phone Frank Kotasek, Jr., 73 Hedges Ave., E. Patchogue, NY 11772, (516) 475-1330. Edwin F. Shelley (Senior Member, IEEE) is Director of the Center for Energy Policy and Research at New York Institute of Technology. He was a flight test engineer during World War II.

1981 INTERNATIONAL MICROWAVE SYMPOSIUM

MONDAY MORNING, JUNE 15, 1981

San Francisco Room

WELCOME

Chairman: A. Clavin

- 0830 WELCOME FROM GENERAL CHAIRMAN
A. Clavin, Hughes Aircraft Co.
Comments from TPC Chairman
D. Parker, Hughes Aircraft Co.

Sacramento Room

MILLIMETER WAVE INTEGRATED CIRCUITS -
DIELECTRIC AND IMAGE GUIDE

Chairman: H. J. Kuno

- 0915 OPEN GUIDED WAVE STRUCTURES FOR MILLIMETER -
A-1 WAVE STRUCTURES (INVITED)
T. Itoh, University of Texas at Austin.
- 0945 DIRECTIVE PLANAR EXCITATION OF AN IMAGE GUIDE
A-2 Y. Shih, J. Rivera, T. Itoh, Univ. of Texas at Austin
- 1010 SLOTS AS NEW CIRCUIT ELEMENTS IN DIELECTRIC
A-3 IMAGE LINE
K. Solbach, I. Wolff, University of Duisburg, Duisburg, W. Germany
- 1035 COUPLER DESIGN IN OPEN DIELECTRIC WAVEGUIDE
A-4 WITH WEB REGISTRATION
G. M. Lindgren, Hughes Aircraft Co.
- 1100 BREAK
- 1115 MODE CONVERSION EFFECTS IN BRAGG REFLECTION
A-5 FROM PERIODIC GROOVES IN RECTANGULAR DIELECTRIC
IMAGE GUIDE
M. J. Shiao, H. Shigesawa, St. Peng, A. A. Oliner, Microwave
Research Institute
- 1140 FIELD PROFILE IN A SINGLE MODE CURVED DIELECTRIC
A-6 WAVEGUIDE
R. Mittra and T. N. Trinh, University of Illinois
- 1205 HORN IMAGE GUIDE LEAKY-WAVE ANTENNA
A-7 T. N. Trinh, R. Mittra, R. Paleta, Univ. of Illinois

San Francisco Room

MICROWAVE FET DEVICES

Chairman: R. L. Camisa

- 0915 SUB-HALF-MICRON GaAs FETS FOR APPLICATIONS
B-1 THROUGH K-BAND
C. Huang, A. Herbig, R. Anderson, Avantek
- 0945 K-BAND POWER GaAs FETS
B-2 L. S. Rosenheck, D. Herstein, I. Drukier
Microwave Semiconductor Corp.
- 1010 2-18 GHz, HIGH-EFFICIENCY, MEDIUM-POWER GaAs
B-3 FET AMPLIFIERS
H. Q. Tserng, S. R. Nelson, H. M. Macksey, T. I.
- 1030 BREAK
- 1045 PLATED SOURCE BRIDGED (PSB) GaAs POWER FET
B-4 WITH IMPROVED RELIABILITY
T. Suzuki, M. Kobiki, M. Wataze, K. Segawa, M. Irie
Mitsubishi Electric Corp., Hyogo, Japan
- 1105 SILICON-ON-SAPPHIRE (SOS) MONOLITHIC TRANSCEIVER
B-5 MODULE COMPONENTS FOR L- AND S-BAND
D. Lughton, J. Sasonoff, J. Selin, Raytheon Co.
- 1120 OPTICAL TUNING IN GaAs ANESFET OSCILLATORS
B-6 H. J. Sun, R. J. Gutmann, J. M. Borrego,
Rensselaer Polytechnic Institute
- 1135 MICROWAVE MODEL FOR THE DUAL-GATE GaAs MESFET
B-7 G. S. F. Mau
- 1150 ION IMPLANTED K-BANK GaAs POWER FET
B-8 G. C. Taylor, S. G. Liu, D. Bechtel, RCA Laboratories

San Jose Room

COMPUTER-AIDED DESIGN AND MEASUREMENTS

Chairman: W. H. Ku

- 0915 COMPUTER-AIDED DESIGN FOR THE 1980's (INVITED)
C-1 L. Besser, C. Holmes, M. Ball, M. Medley, S. March,
Compact Engineering Div., CGIS
- 0945 COMPUTER-AIDED DESIGN OF MICROSTRIP COUPLERS
C-2 WITH ACCURATE DISCONTINUITY MODELS
Erik Hammerstad, Univ. of Trondheim, Norway
- 1005 MICROWAVE FILTER DESIGN IN THE TIME DOMAIN
C-3 E. A. Hasney, Military Technical College, Cairo Egypt and
M. I. Sobhy, Univ. of Kent at Canterbury, Kent, England
- 1025 MICROWAVE ANALYSIS USING TIME-DOMAIN PLOTS
C-4 CREATED FROM FREQUENCY-DOMAIN REFLECTIONS
H. E. Stinehelfer Jr. and H. E. Stinehelfer, Sr., Made-It Associates
- 1045 BREAK
- 1115 AN INTERACTIVE OPTIMAL POSTPRODUCTION TUNING
C-5 TECHNIQUE UTILIZING SIMULATED SENSITIVITIES AND
RESPONSE MEASUREMENTS
J. W. Bandler, M. R. M. Rizk, A. E. Salama, McMaster Univ.,
Hamilton, Canada
- 1135 A NOVEL HARMONIC BALANCING BRIDGE FOR
C-6 CHARACTERIZING MICROWAVE MODULES FOR
PHASED ARRAY ANTENNA SERVICE
D. W. Griffin, Univ. of Adelaide
- 1155 A DUAL FOUR-PORT FOR AUTOMATIC ANALYSIS
C-7 H. G. Oltman and H. A. Leach, Hughes Aircraft Co.

San Diego Room

LATIN AMERICAN SESSION (INVITED)

Chairman: A. J. Giarola

- 0915 FINITE-DIFFERENCE METHOD FOR THE ARBITRARY
D-1 CROSS-SECTION WAVEGUIDE USING THE BEST-FIT
BOUNDARY APPROXIMATION
P. Rosenfeld, L. A. Campos Mello, A. B. Filho, INPE, Sao Jose
dos Campos, Brazil
- 0935 A MODEL OF THE COUPLING BETWEEN POSTS IN
D-2 WAVEGUIDE USING EQUIVALENT TRANSMISSION LINES
E. Acosta, C. H. O. Nava, CIEA-IPN, Mexico
- 0955 SLOTLIN-MICROSTRIP TRANSITION ON
D-3 ISO/ANISOTROPIC
SUBSTRATE
A. Podcameni, M. Lima Coimbra, CETUS, Rio De Janeiro, Brazil
- 1015 ANALYSIS OF SINGLE AND COUPLED STRIPLINES WITH
D-4 ANISOTROPIC SUBSTRATES
A. G. D'Assuncao, UFRN, Natal, Brazil; A. J. Giarola, UNICAMP,
Campinas, Brazil; D. A. Rogers, N. Dakota State University
- 1035 BREAK
- 1055 A NEW METHOD OF PULSE DISPERSION ANALYSIS FOR
D-5 SINGLE-MODE OPTICAL FIBERS
P. S. M. Pires, UFRN, Natal, Brazil; D. A. Rogers, North Dakota
State University; E. J. Bochove and R. F. Souza,
UNICAMP, Campinas, Brazil
- 1115 A RESONATOR METHOD FOR PERMITIVITY MEASUREMENTS
D-6 A. O. M. Andrade and J. J. Senise, Escola de Engenharia Maua
São Caetano do Sul, Brazil; S. S. Stuchly, Univ. of Ottawa
- 1135 MICROWAVE MODELLING OF H.F. ANTENNAS OVER
D-7 LOSSY EARTH
B. Jacard and G. Gomez, Univ. de Chile, Santiago, Chile
- THE DEVELOPMENT OF MICROWAVE COMPONENTS FOR EARTH
STATION RECEIVER
J. K. C. Pinto, E. Camargo, M. A. Luqueze, F. S. Correa, C. A. Finardi,
E. I. Ynoue, Escola Politécnica da Universidade de São Paulo,
C. Universitaria, Brazil

MONDAY AFTERNOON, JUNE 15, 1981

Sacramento Room

MILLIMETER-WAVE INTEGRATED CIRCUITS - PRINTED CIRCUITS

- Chairman: R. T. Kihm
- 1400 SHIELDED MICROSTRIP: TRANSMISSION MEDIA FOR
E-1 MILLIMETER INTEGRATED CIRCUITS
M. Dydyk, Motorola
- 1420 EMPIRICAL ANALYTICAL EXPRESSIONS FOR
E-2 FIN-LINE DESIGN
A. K. Sharma and W. J. R. Hoefer, Univ. of Ottawa, Canada
- 1440 EXPERIMENTAL ASSESSMENT OF BILATERAL FIN-LINE
E-3 IMPEDANCE FOR DEVICE MATCHING
H. A. Willing and B. E. Spielman, Naval Research Laboratory
- 1500 EXPERIMENTAL CHARACTERIZATION OF FIN-LINE
E-4 DISCONTINUITIES USING RESONANT TECHNIQUES
E. Pic, Institute National Polytechnique, Grenoble, France
and W. J. R. Hoefer, University of Ottawa, Canada
- 1520 BREAK
- 1540 A BROAD-BAND, LOW-NOISE RECEIVER AT W-BAND
E-5 C. P. Hu and A. Denning, Honeywell
- 1600 MILLIMETER WAVE PLANAR SLOT ANTENNAS WITH
E-6 DIELECTRIC FEEDS
P. Yen and J. A. Paul, Hughes Aircraft Co. and T. Itoh, University of Texas at Austin
- 1620 94 GHz SUBHARMONIC MIXER USING BEAM LEAD DIODES
E-7 J. A. Paul and P. Yen, Hughes Aircraft Co.

San Francisco Room
FET APPLICATIONS

- Chairman: R. T. Kemerley
- 1400 4-8 GHz HIGH POWER CASCADABLE PACKAGED GaAs
F-1 FET AMPLIFIER
S. Yamamura, M. Shigaki, N. Hidaka, H. Ishikawa,
Fujitsu Laboratories, Kawasaki, Japan
- 1420 BROADBAND LUMPED-ELEMENT GaAs FET POWER AMPLIFIERS
F-2 R. L. Camisa, J. B. Klatskin, A. Mikelsons, RCA Laboratories
- 1440 A 4.5 W, 26 DB GAIN FET POWER AMPLIFIER AT KU-BAND
F-3 V. Sokolov and R. C. Bennett, Texas Instruments
- 1500 COMPACT MULTI-STAGE SINGLE-ENDED AMPLIFIERS
F-4 FOR S-C BAND OPERATION
K. B. Niclas, Watkins-Johnson Co.
- 1520 BREAK
- 1540 A POWER FET OCTAVE BANDWIDTH TRAVELING WAVE
F-5 COMBINER AMPLIFIER
D. Kaminsky, A. G. Bert, A. Dottin, Thompson-CSF, France
- 1600 WIDEBAND CAVITY-TUNED GaAs FET OSCILLATOR
F-6 R. Joly, W. W. Heinz, E. G. Cristal, Hewlett-Packard Co.
- 1620 DECADE BANDWIDTH FET FUNCTIONS
F-7 J. Obregon, Y. Leron, R. Funck, S. Barvet,
Thompson-CSF, Orsay France
- 1640 BALANCED DUAL GATE GaAs FET FREQUENCY DOUBLERS
F-8 R. Standliff, Hewlett-Packard Co.

San Jose Room

THE SIX-PORT AND ITS APPLICATIONS

- Chairman: S. F. Adam
- 1400 SINGULARITIES IN CALIBRATION OF SIX-PORT
GI-1 NETWORK ANALYZERS
H. F. Ebbeson, Aalborg University Center, Aalborg, Denmark
and G. F. Engen, National Bureau of Standards
- 1420 THE USE OF MATCHED SYMMETRICAL FIVE-PORT
GI-2 JUNCTIONS TO MAKE SIX-PORT MEASUREMENTS
G. P. Riblet and E. R. B. Hansson, Microwave Development Labs.
- 1440 A BROAD BAND STRIPLINE OR COAXIAL 'RESOLVER' FOR
GI-3 THE ACCURATE MEASUREMENT OF COMPLEX REFLECTION
COEFFICIENTS USING THE SIX-PORT
MEASUREMENT CONCEPT
G. P. Riblet, Microwave Development Laboratories
- 1500 A HIGH-POWER DUAL SIX-PORT ANA FOR DETERMINING
GI-4 BIOLOGICAL EFFECTS OF MICROWAVE RADIATION
C. A. Hoer, U.S. Department of Commerce

1520 COFFEE BREAK

DIELECTRIC RESONATORS

Chairman: H. Howe

- 1545 TMO₁, TUBULAR AND CYLINDRICAL DIELECTRIC
GII-1 RESONATOR MODE
P. Guillon, J. P. Balagaud, Y. Garault, Laboratoire d' Electronique des Microondes, France
- 1605 COUPLING OF CYLINDRICAL DIELECTRIC RESONATORS TO
GII-2 MICROSTRIP LINES
Comsat Laboratories
- A DIELECTRIC RESONATOR BANDSTOP FILTER
P. Guillon, S. Mekerta, Y. Garault, Laboratoire d' Electronique des Microondes, France

San Diego Room

JAPANESE SESSION (INVITED)

Chairman: Y. Konishi

- 1400 PROGRESS OF MICROWAVE SEMICONDUCTOR DEVICES
H-1 IN JAPAN
K. Sekodo, Nippon Electric Co.
- 1425 MILLIMETER WAVE INTEGRATED CIRCUITS
H-2 H. Komizo, Fujitsu
- 1450 ADVANCED RF CIRCUIT MINIATURIZATION FOR 800 MHz
H-3 LAND MOBILE RADIO UNIT
S. Seki, N. Kanmuri, S. Yuki, N.T.T.
- 1510 MINIATURIZED DIPLEXER FOR LAND MOBILE COMMUNICATION
H-4 USING DIELECTRIC CERAMICS
K. Wakino, Murata
- 1530 BREAK
- 1600 VERY LOW POWER GIGABIT LOGIC CIRCUITS WITH
H-5 ENHANCEMENT MODE GaAs MESFET
M. Omori, T. Mizutani, K. Kato
- 1620 CH₃F SUBMILLIMETER LASER USING NEW TYPE
H-6 OF RESONATOR
M. Kawamura
- 1640 RECENT DEVELOPMENTS OF FIBER OPTIC DEVICES
H-7 K. Shirahata, Mitsubishi
- 1705 OPTICAL FIBER COMMUNICATION SYSTEMS IN JAPAN
*H-8 S. Shimada and M. Koyama, N.T.T.

TUESDAY MORNING, JUNE 16, 1981

Sacramento Room

PASSIVE COMPONENTS AND NETWORKS

Chairman: H. C. Bell

- 0830 PROBLEMS IN MICROSTRIP FILTER DESIGN (INVITED)
I-1 R. J. Wenzel and W. G. Erlinger, Wenzel/Erlinger Assoc.
- 0900 DESIGN OF FILTERS WITH IDEAL AMPLITUDE AND ANY
I-2 PRESCRIBED PHASE
S. A. Mohammed, British Telecommunications Research Labs
- 0920 MINIATURIZED MICROWAVE FILTER CONSTRUCTION WITH
I-3 DIELECTRIC LOADED RESONATOR AND SPACE COUPLING
A. Fukasawa, T. Sato, K. Hosoda, OKI Electric Industry Co., Tokyo, Japan
- 0940 A NEW DIPLEXER REALIZED IN STRIPLINE
I-4 I. Galin, Aerojet Electrosystems Co.
- 1000 BREAK
- 1030 CONTIGUOUS BROADBAND MATCHING OF MULTIPLE
I-5 RESONANT LOADS
J. D. Rhodes and M. J. Thornton, Filtronic Components Ltd., Leeds, England
- 1050 INHOMOGENEOUS BROADSIDE - COUPLED STRIPLINES
I-6 A. G. D'Assuncao, Federal Univer. of Rio Grande do Norte, Brazil; A. J. Giarola, State Univ. of Campinas, Brazil; D. A. Rogers, North Dakota State University
- 1110 RECTANGULAR COAXIAL LINE SPLIT T POWER DEVICES
I-7 L. H. Yorkins, R.C.A.
- 1130 NEW DIFFERENTIAL PHASE-SHIFT NETWORKS
I-8 COMBINING ALL-PASS AND BAND-PASS ELEMENTS
J. K. Hunton, GTE Products Corp.

San Francisco Room

SOLID STATE CIRCUITS AND DEVICES

Chairman: C. T. Rucker

- 0830
JL-1 COMPUTER-AIDED DESIGN OF MICROWAVE PARAMETRIC
FREQUENCY DIVIDERS
A. Lipparini and V. Rizzoli, University of Bologna,
Bologna, Italy and E. Marazzi, Milano, Italy
- 0850
JL-2 ANALYSIS OF WAVEGUIDE IMPATT OSCILLATOR CIRCUITS
B. D. Bates and P. J. Khan, University of Queensland,
Queensland, Australia
- 0910
JL-3 COAXIALLY-COUPLED RIDGE WAVEGUIDE
TUNABLE OSCILLATOR
R. S. Robertson and R. L. Eisenhart, Hughes Aircraft Co.
- 0930
JL-4 HIGH EFFICIENCY MODE ON A 20GHz MBE IMPATT
DIODE OBSERVED BY A COMPUTER-AIDED
CHARACTERIZATION SYSTEM
H. Kondoh, G. C. Dalman, C. A. Lee, Cornell University
- 0950 BREAK
- 1020 CHINESE SESSION (TO BE ANNOUNCED)

San Jose Room

HIGH POWER CIRCUITS AND SYSTEMS

Chairman: K. Tomiyasu

- 0830
K-1 A 100 KW SOLID-STATE COAXIAL LIMITER FOR L-BAND
S. Patel and H. Goldie, Westinghouse Defense and Electronic
Systems Center
- 0850
K-2 A 2 KW, CW, MIC 20-500 MHz, SPOT PIN DIODE
SWITCH MODULE
R. Tenenholtz, Microwave Associates
- 0910
K-3 DEVELOPMENT OF HIGH POWER, LOW FREQUENCY
PIN DIODES
M. Caulton, A. Rosen, P. Stabile, A. Gombard, RCA Laboratories
- 0930
K-4 A STUDY OF THE HIGH POWER PULSED CHARACTERISTICS
OF LOW NOISE GaAs MESFETS
D. S. James and L. Dormer, Ferranti Electronics Ltd.,
Cheshire, England
- 0950 BREAK
- 1010
K-5 DESIGN OF A SINGLE-ANODE, MIG-TYPE GYROTRON
GUN FOR A 35 GHz GYRO-TWT
J. M. Baird and A. C. Attard, B-K Dynamics
- 1030
K-6 DESIGN OF A HIGH POWER, EARTH STATION TRANSMITTER
FOR THE BAND 7.9 to 8.4 GHz
R. A. Gough, Filtronics Components Ltd., Leeds, England
- 1050
K-7 DESIGN AND OPERATION OF AN OROTRON - A TUNABLE
SOURCE OF COHERENT MM-WAVE RADIATION
H. Dropkin, R. P. Leavitt, D. E. Wortman, Harry Diamond Labs.
- 1110
K-8 STATUS OF THE MICROWAVE POWER TRANSMISSION
COMPONENTS FOR THE SOLAR POWER SATELLITE
W. C. Brown, Raytheon Corp.
- 1130
K-9 A HIGH POWER GYROTRON OPERATING IN THE TE₀₄₁ MODE
B. Arfin and M. Read, Naval Research Laboratories

San Diego Room

FERRITE APPLICATIONS

Chairman: C. R. Boyd, Jr.

- 0830
L-1 COUPLED-MODE THEORY ANALYSIS OF DISTRIBUTED
NONRECIPROCAL DEVICES
I. Arai and T. Itoh, University of Texas at Austin
- 0850
L-2 ANALYSIS OF WIDEBAND MICROSTRIP CIRCULATORS BY
POINT-MATCHING TECHNIQUE
A. M. Khilla, University of Duisburg, Duisburg, W. Germany
- 0910
L-3 PERFORMANCE CHARACTERISTICS OF MAGNETOPLASMA -
BASED SUBMILLIMETER WAVE NONRECIPROCAL DEVICES
S. H. Talisa and D. M. Bolle, Lehigh University
- 0930 BREAK
- 1000
L-4 A FERRIMAGNETIC RESONANCE THERMOMETER FOR
MICROWAVE POWER ENVIRONMENT
J. A. Weiss and D. A. Hawks, Worcester Polytechnic
Institute; G. F. Dionne, M.I.T. Lincoln Laboratory
- 1020
L-5 A K-BAND HIGH POWER, LOW LOSS LATCHING SWITCH
M. J. Mlinar, W. S. Piotrowski, J. E. Raue, TRW

1040
L-6

FIN-LINE FERRITE ISOLATOR FOR INTEGRATED
MILLIMETER WAVE CIRCUITS

A. Beyer and K. Solbach, University of Duisburg,
Duisburg, West Germany

TUESDAY AFTERNOON, JUNE 16, 1981

Sacramento Room

MICROWAVE INTEGRATED CIRCUITS

Chairman: W. E. Schroeder

- 1400
M-1 ASYMMETRIC MICROSTRIP DC BLOCKS WITH RIPPLED
RESPONSE
D. Kafjez, S. Bokka, C. E. Smith, University of Mississippi
- 1420
M-2 SIMPLE BALUN-COUPLED MIXERS
B. R. Halford, Rockwell International
- 1440
M-3 COMPUTER-AIDED DESIGN OF SEMICONDUCTOR MOUNTS IN
FIN-LINE TECHNOLOGY
H. El Hennawy and K. Schuenemann, Institut für
Hochfrequenztechnik, Braunschweig, W. Germany
- 1500
M-4 A MEASUREMENT METHOD FOR ACCURATE
CHARACTERIZATION AND MODELLING OF MESFET CHIPS
D. E. Peck, Watkins-Johnson Co. and D. F. Peterson,
University of Michigan
- 1520 BREAK
- 1540
M-5 A FREQUENCY-STABILIZED MIC OSCILLATOR USING A
NEWLY DEVELOPED DIELECTRIC RESONATOR
Y. Komatsu, Y. Murakami, T. Yamaguchi, T. Otobe,
M. Hirabayashi, Sony Corp., Yokohama, Japan
- 1600
M-6 A 1.75-6 GHz MINIATURIZED GaAs FET AMPLIFIER USING
QUASI-LUMPED ELEMENT IMPEDANCE MATCHING NETWORKS
S. Moghe, R. Gray, W. Tsai, Raytheon Corp.
- 1620
M-7 A 10.5GHz MIC DIRECTION-SENSITIVE DOPPLER
MODULE USING A GaAs FET AND AN
Ag-Pd THICK FILM
T. Mori, H. Sawano, K. Kusunaki, O. Ishihara,
Mitsubishi Electric Corp, Hyogo, Japan

San Francisco Room

MILLIMETER-WAVE SOLID-STATE CIRCUITS

Chairman: T. T. Fong

- 1400
B-1 A 30 GHz, 100 MW GaAs FET
Y. Kadowaki, O. Ishihara, M. Nakatani,
Mitsubishi Electric Corp., Hyogo Japan
- 1420
N-2 A 69 GHz FET OSCILLATOR
J. M. Schellenberg, H. Yamasaki, D. W. Maki, Hughes Aircraft Co.
- 1440
N-3 BEAM-LEAD SCHOTTKY-BARRIER PLANAR MIXER
DIODES FOR MILLIMETER WAVE APPLICATIONS
S. Jamison, A. Contolatis, P. Bauhahn, M. Helix,
J. Abrokwa, Honeywell Corp.
- 1500
N-4 A WIDEBAND, BACKSHORT TUNABLE, SECOND HARMONIC
W-BAND GUNN OSCILLATOR
H. Garth, AEG Telefunken, Ulm, W. Germany
- 1520 BREAK
- 1540
N-5 METAL-BARRIER-METAL JUNCTIONS FOR ROOM
TEMPERATURE MILLIMETER-WAVE MIXING
AND DETECTION
C. W. Slayman and T. K. Gustafson,
University of California at Berkeley
- 1600
N-6 A 63W W-BAND, INJECTION-LOCKED, PULSED,
SOLID-STATE TRANSMITTER
H. C. Yen and K. Chang, Hughes Aircraft Co.
- 1620
N-7 MILLIMETER WAVE SOLID-STATE DEVICES
K. Chang, F. Thrower, G. M. Hayashibara, Hughes Aircraft Co.
- 1640
N-8 CHIP LEVEL IMPATT COMBINING AT 40 GHz
C. T. Rucker, J. W. Amoss, G. N. Hill, Georgia Institute
of Technology

San Jose Room

GaAs MONOLITHIC CIRCUITS

Chairman: G. Chao

- 1400
O-1 A STUDY OF OPTIMAL MATCHING CIRCUIT TOPOLOGIES FOR
BROADBAND MONOLITHIC POWER AMPLIFIERS
J. E. Degenford, D. C. Boire, R. G. Freitag, M. Cohn,
Westinghouse Electric Corp.

- 1420 A MONOLITHIC GaAs 0.1 to 10 GHz AMPLIFIER
O-2 W. C. Peterson, D. R. Decker, A. K. Gupta, J. Dully, D. R. Chen, Rockwell International
- 1440 A 2-12 GHz FEEDBACK AMPLIFIER ON GaAs
O-3 K. B. Niclas and W. T. Wilson, Watkins-Johnson Co.
- 1500 A PLANAR-TYPE, LOW-NOISE, GaAs MONOLITHIC
O-4 MICROWAVE AMPLIFIER
D. Xian-can and Z. Guo-liang, Semiconductor Research Institute, China
- 1520 BREAK
- 1540 A HIGH SPEED MONOLITHIC GaAs 10/11 COUNTER
O-5 R. E. Lundgren and D. E. Snyder, Hughes Research Laboratory
- 1600 AN 8 GHz MMIC PREAMPLIFIER
O-6 D. R. Decker, A. K. Gupta, W. C. Peterson, D. R. Chen, Rockwell International
- 1620 A COMPARISON BETWEEN ACTIVELY AND PASSIVELY
O-7 MATCHED S-BAND GaAs MONOLITHIC FET AMPLIFIERS
J. R. Suffolk, R. S. Pergely, Jr., R. Cockrill, J. A. Turner Plessey Research, England
- 1640 USE OF SWITCHING IN THE DESIGN OF DET
O-8 MICROWAVE SWITCHES
H. A. Atwater and R. W. Sudburg, M.I.T.

San Diego Room

MICROWAVE ACOUSTICS

Chairman: T. Lukazek

- 1400 SAW BASED DIRECT FREQUENCY SYNTHESIZER
P-1 A. Budreau, R.A.D.C. Hanscom A.F.B.
- 1430 SAW STABILIZED RADIOSONDE
P-2 D. J. Dodson and K. F. Lau, and M. Y. Haung, TRW; T. J. Lukazek, ERADCOM
- 1450 SAW OSCILLATORS FOR UHF
P-3 B. Y. Lao, N. J. Schneier, D. A. Rowe, R. E. Dietterle, Magnavox and J. S. Schoenwald, E. J. Staples, J. Wise, Rockwell International
- 1510 TUNABLE MAGNETOSTATIC SURFACE WAVE OSCILLATOR
P-4 AT 4 GHz
R. L. Carter, J. M. Owens, W. R. Brinlee, Y. W. Sam, C. V. Smith, Jr., University of Texas at Arlington
- 1530 BREAK
- 1550 IC COMPATIBLE SAW DEVICE ON GaAs (INVITED)
P-5 T. Grudkowski, United Technology Research Center
- 1620 SAW BANDPASS FILTER COMPONENTS FOR
P-6 MICROWAVE SYSTEMS
D. E. Allen & F. S. Hinkernell Motorola
- 1640 A SAW INTERFEROMETER DIRECTION-FINDING AND
P-7 FREQUENCY IDENTIFICATION METHOD
D. Kluse and W. Skudera, ERADCOM
- 1700 MAGNETOSTATIC WAVE COMPRESSIVE RECEIVER
P-8 C. E. Nothnick, J. F. Billing, M. R. Daniel, T. D. Adams, Westinghouse Electric Co.

WEDNESDAY MORNING, JUNE 17, 1981

San Francisco Room

PLENARY SESSION

Chairman: S. B. Cohn

- 0830 OPENING CEREMONIES
S. B. Cohn
- 0845 THE VERY LARGE ARRAY RADIO TELESCOPE
Dr. Peter Napier, N.R.A.O., Socorro, NM
- 0925 NOISE IN ANALOG AND DIGITAL MICROWAVE COMMUNICATIONS
Sy Okwit, LNR Communications, Hauppauge, NY
- 1005 BREAK
- 1025 BIOLOGICAL EFFECTS AND MEDICAL APPLICATIONS
OF ELECTROMAGNETIC FIELDS
Dr. Om P. Gandhi, University of Utah, Salt Lake City, UT
- 1105 VOYAGER ENCOUNTER WITH SATURN
Dr. E. C. Stone, Jet Propulsion Laboratory

WEDNESDAY AFTERNOON, JUNE 17, 1981

Sacramento Room

MICROWAVE AND MILLIMETER WAVE SYSTEMS

Chairmen: H. Sobol and J. B. Horton

- 1405 A PHASE ALIGNMENT NETWORK FOR SPACE
Q-1 DIVERSITY COMBINING
G. L. Heiter and H. Miedema, Bell Telephone Laboratories
- 1425 DIRECT GENERATION OF MSK MODULATION AT
Q-2 MICROWAVE FREQUENCIES
S. Kumar, W. J. Chudobiak, J. W. Wight, Carleton University, Ottawa, Canada
- 1445 A DIELECTRIC RESONATOR FILTER AS A LOW-LOSS DELAY
Q-3 ELEMENT FOR 14 GHz ON-BOARD 4-PHASE PSK MODULATION
L. Accatino and A. Angelucci, CSELT, Torino, Italy
- 1505 BREAK
- 1535 14 GHz DIFFERENTIAL Q PSK DEMODULATOR FOR
Q-4 REGENERATIVE SATELLITE REPEATER
G. Ohm, M. Alberty, D. Rosowsky, AEG Telefunken, West Germany
- 1555 CHANNELIZED RECEIVER COVERING 26 to 60 GHz
Q-5 WITH PLANAR INTEGRATED CIRCUIT COMPONENTS
P. J. Meier, K. D. Breuer, L. D. Cohen, N. Worontzoff, J. Leopre, J. Gunther, Eaton Corp, AIL Div.
- 1615 A W-BAND COHERENT PULSE-COMPRESSION RADAR
Q-6 TRANSCEIVER USING LINEAR FREQUENCY MODULATION
C. Brenneise, M. Beebe, T. Kihm, R. D. Weglein, Hughes Aircraft Co.

San Francisco Room

PHASED AND ACTIVE ARRAY TECHNIQUES

Chairman: R. Van Wagoner

- 1400 A SCANNING SWITCH MATRIX FOR A CYLINDRICAL ARRAY
R-1 K. J. Keeping, D. S. Rogers, J. C. Sureau, M.I.T. Lincoln Laboratory
- 1420 BEAM STEERING ANTENNA CONTROL TECHNIQUES
R-2 A. R. Skatvold, Naval Weapons Center
- 1440 35 GHz ACTIVE APERTURE
R-3 M. F. Durkin, R. J. Eckstein, M.D. Mills, M. S. Stringfellow, R. A. Neidhart, Motorola
- 1500 THE USE OF IMPATTIS IN ACTIVE ARRAYS
R-4 S. Hamilton and G. Stern, Hughes Aircraft Co.
- 1520 BREAK
- 1540 BROADBAND DUAL-GATE GaAs FET CONTINUOUSLY
R-5 VARIABLE PHASE-SHIFTER
M. Kumar, H.C. Huang, R. J. Menna, RCA Laboratories
- 1600 ACTIVE MICROWAVE POWER COMBINER/DIVIDER USING
R-6 DUAL GATE MESFET
J. J. Pan, Harris Corp.
- 1620 A CONTINUOUSLY VARIABLE KU-BAND
R-7 PHASE/AMPLITUDE CONTROL MODULE
Y. Gazit and H. C. Johnson, R.C.A. Laboratories

THURSDAY MORNING, JUNE 18, 1981

Sacramento Room

LOW NOISE TECHNIQUES

Chairman: S. Okwit

- 0800 A LOW NOISE SOLID-STATE AMPLIFIER FOR REPLACEMENT
S-1 OF A KA-BAND TWTA
P. H. Wolfert, J. D. Crowley, F. B. Fank, Varian Associates
- 0820 COOLED LOW NOISE GaAs MONOLITHIC MIXERS AT 110 GHz
S-2 B. J. Clifton, G. D. Alley, R. A. Murphy, W. J. Piacentini, I. H. Mroczkowski, W. Maropoulos, M.I.T. Lincoln Laboratory
- 0840 A 4 GHz LOW NOISE GaAs FET AMPLIFIER
S-3 L. H. Mo, Semiconductor Research Institute, China
- 0900 BREAK
- 0930 IMPACT OF LOW NOISE TECHNOLOGY ON PRESENT AND
S-4 FUTURE SATCOM SYSTEMS (INVITED)
H. C. Okean, LNR Communications
- 1000 HIGHLY RELIABLE LOW NOISE MM-WAVE MIXERS WITH
S-5 WHISKER-CONTACTED HONEYCOMB DIODES
J. Schroth, AEG Telefunken, Ulm, W. Germany
- 1020 A SUBHARMONICALLY-PUMPED FIN-LINE MIXER FOR
S-6 SATELLITE TV RECEIVER APPLICATIONS
G. Begemann, Institut für Hochfrequenztechnik, Braunschweig, W. Germany

- 1040 ANALYSIS OF BALANCED SUBHARMONICALLY PUMPED
S-7 MIXERS WITH UNSYMMETRICAL DIODES
R. G. Hicks and P. J. Khan, University of Queensland,
Brisbane, Australia

San Francisco Room

BIOLOGICAL EFFECTS AND MEDICAL APPLICATION

Chairman: W. R. Adey

- 0800 27 MHz WAVEGUIDE APPLICATIONS FOR LOCALIZED
T-1 HYPERTHERMIA TREATMENT OF CANCER
R. W. Paglione and F. Sterzer, RCA Laboratories and
J. Mendecki, E. Friedenthal, C. Botstein, Montifore
Hospital and Medical Center.
- 0820 MICROSTRIP LOOP RADIATORS FOR LOCAL HYPERTHERMIA
T-2 I. J. Bahl and S. S. Stuchly, University of Ottawa, Canada;
J. W. Lagendijk, Holland; M. A. Stuchly, Radiation
Protection Bureau, Ottawa, Canada
- 0840 A NEW OPTICAL TECHNIQUE FOR THE MEASUREMENT OF
T-3 TEMPERATURE IN RF AND MICROWAVE FIELDS
K. A. Wickersheim and R. V. Alves, Luxtron Corp.
- 0900 NON-PERTURBING TEMPERATURE PROBE AND
T-4 THERMOGRAPHY MEASUREMENTS IN MICROWAVE DIATHERMY
G. Kantor and C. Hochuli, Bureau of Radiological Health
- 0920 CLINICAL RF HYPERTHERMIA (INVITED)
T-5 F. K. Storm, UCLA School of Medicine

0950 BREAK

- 1010 THE EFFECTS OF HIGH POWER MICROWAVE PULSES ON
T-6 RED BLOOD CELLS AND THE RELATION TO TRANS-MEMBRANE
THERMAL GRADIENTS
S. L. Gartner and A. W. Friend, Naval Medical Research
Institute; K. R. Foster, University of Pennsylvania;
H. Howe, Microwave Associates

- 1030 MICROWAVE THAWING OF FROZEN PACKED RED
T-7 BLOOD CELLS
N. L. Campbell, Naval Ocean Systems Center and
J. Drewe, San Diego State University

- 1050 APPLICATION OF MOMENT-METHODS TO ELECTROMAGNETIC
T-8 BIOLOGICAL IMAGING
M. J. Hagmann, O. P. Gandhi, D. K. Ghodgaonkar,
University of Utah

- 1110 MICROWAVE IMAGING: NUMERICAL SIMULATION
T-9 AND RESULTS
M. F. Iskander, R. Maini, C. H. Durney, University of Utah

San Jose Room

MICROWAVE FIELD AND NETWORK THEORY

Chairman: S. L. March

- 0800 PROPAGATION PARAMETERS OF COUPLED
U-1 MICROSTRIP-LIKE TRANSMISSION
S. K. Koul and B. Bhat, India Institute of Technology,
New Delhi, India

- 0820 HYBRID MODE ANALYSIS OF MICROSTRIP LINES ON
U-2 ANISOTROPIC SUBSTRATES
A. M. El-Sherbiny, Ain Shams University, Cairo, Egypt

- 0840 ANALYSIS OF MICROSTRIP LINES ON
U-3 SEMICONDUCTOR SUBSTRATE
M. Anbourg, J. P. Villotte, F. Godon, Y. Garault, Laboratoire
d'Electronique des Microondes, France

- 0900 WAVE PROPAGATION IN INHOMOGENEOUS ANISOTROPIC
U-4 RECTANGULAR WAVEGUIDES BY THE EFFECTIVE
INDEX METHOD

- M. N. Armenise and M. De Sarin, Universita Degli Studi di
Bari, Bari, Italy

0920 BREAK

- 0940 IMPROVED TECHNIQUE FOR THE EVALUATION OF SLOT
U-5 DISCONTINUITIES IN RECTANGULAR WAVEGUIDE
P. K. Park and G. J. Stern, Hughes Aircraft Co.

- 1000 DESEGMENTATION OF TWO DIMENSIONAL MICROWAVE
U-6 CIRCUITS AND ITS APPLICATION TO STRIPLINE
POWER DIVIDERS
K. C. Gupta, P. C. Sharma, R. Chadha, Indian Institute of
Technology Kanpur, Kanpur, India

- 1020 A GENERALIZED N-PORT CASCADE CONNECTION
U-7 G. R. Simpson, Goodyear Aerospace Corp.

- 1040 PROJECTIVE MATRIX TRANSFORMATIONS IN MICROWAVE
U-8 NETWORK THEORY
R. A. Speciale, TRW

San Diego Room

GUIDED WAVE OPTICS AND SIGNAL PROCESSING

Chairman: J. K. Butler

- 0830 THE INTEGRATED OPTIC SPECTRUM ANALYZER-A
V-1 FIRST DEMONSTRATION
T. R. Raganath, J. Lee, T. Josephf, Hughes Aircraft Co.

- 0900 GUIDED WAVE OPTICAL RF SPECTRUM
V-2 ANALYZER (INVITED)
D. Mergeriau, E. C. Malarky, R. P. Pantemis, J. C. Bardley,
A. L. Kellner, Westinghouse Electric Corp.

0930 BREAK

- 1000 A GENERALIZED TWO-DIMENSIONAL COUPLED-MODE
V-3 ANALYSIS OF CURVED AND CHIRPED PERIODIC STRUCTURES
IN OPEN DIELECTRIC WAVEGUIDES

- 1020 NON-RECIPROCAL PROPAGATION CHARACTERISTICS OF
V-4 YIG THIN FILM
T. Mizumoto and Y. Natio, Tokyo Institute of Technology, Japan

- 1040 EXPERIMENT ON LIGHT INTENSITY MODULATION BASED ON
V-5 GUIDED TO RADIATION MODE COUPLING IN
HETERO-STRUCTURE THIN-FILM WAVEGUIDE
H. Onodera, I. Awa, M. Nakajima, J. Ikenoue, Kyoto University,
Kyoto, Japan

- 1100 POLARIZATION-ROTATED RADIATION CONVERSION IN
V-6 ELECTRO-OPTIC WAVEGUIDES
S. Yamamoto, Osaka University, Osaka, Japan



SCHEDULE OF EVENTS

MONDAY, JUNE 15, 1981

CALIFORNIA BALLROOM	SACRAMENTO ROOM	SAN FRANCISCO ROOM	SAN JOSE ROOM	SAN DIEGO ROOM	PALOS VERDES ROOM
0730-2100 SYMPOSIUM REGISTRATION		0830-0900 OPENING SESSION			0900-1700 HISTORICAL EXHIBIT
	A 0915-1230 MILLIMETER WAVE INTEGRATED CIRCUITS - DIELECTRIC AND IMAGE GUIDE	B 0915-1230 MICROWAVE FET DEVICES	C 0915-1230 COMPUTER-AIDED DESIGN AND MEASUREMENTS	D 0915-1230 LATIN-AMERICAN SESSION	
	E 1400-1700 MILLIMETER WAVE INTEGRATED CIRCUITS- PRINTED CIRCUITS	F 1400-1700 FET APPLICATIONS	G1 1400-1700 6-PORT MEASUREMENTS G2 DIELECTRIC RESONATORS	H 1400-1700 JAPANESE SESSION	
	2000-2200 PANEL SESSION ON STATUS AND TRENDS IN FIBER COMMUNICATIONS		2000-2200 PANEL SESSION ON TECHNOLOGY TRANSFER FROM R&D TO MANUFACTURING		

TUESDAY, JUNE 16, 1981

CALIFORNIA BALLROOM	SACRAMENTO ROOM	SAN FRANCISCO ROOM	SAN JOSE ROOM	SAN DIEGO ROOM	PALOS VERDES ROOM
0730-1600 SYMPOSIUM REGISTRATION	I 0830-1200 PASSIVE COMPONENTS AND NETWORKS	J1 0830-1200 SOLID STATE CIRCUITS AND DEVICES J2 CHINESE SESSION	K 0830-1200 HIGH-POWER CIRCUITS AND SYSTEMS	L 0830-1200 FERRITE APPLICATIONS	0900-1700 HISTORICAL EXHIBIT
	M 1400-1700 MICROWAVE INTEGRATED CIRCUITS	N 1400-1700 MILLIMETER WAVE SOLID STATE DEVICES	O 1400-1700 GaAs MONOLITHIC CIRCUITS	P 1400-1700 MICROWAVE ACOUSTICS	
1730-1900 EXHIBITORS POOLSIDE COCKTAIL RECEPTION					
1930-2130 1981 IEEE MTT-S ANNUAL AWARDS BANQUET					

WEDNESDAY, JUNE 17, 1981

CALIFORNIA BALLROOM	SACRAMENTO ROOM	SAN FRANCISCO ROOM	SAN JOSE ROOM	SAN DIEGO ROOM	PALOS VERDES ROOM
0730-1600 SYMPOSIUM REGISTRATION	0900-1200 JOINT MTT-S/AP-S/ URSI PLENARY SESSION				0900-1700 HISTORICAL EXHIBIT
	Q 1400-1700 MICROWAVE AND MILLIMETER WAVE SYSTEMS	R 1400-1700 PHASED AND ACTIVE ARRAY TECHNIQUES			
	2000-2200 PANEL SESSION ON MAN- POWER PROBLEMS IN MICROWAVE ANTENNA ENGINEERING	2000-2200 PANEL SESSION ON STATE OF THE ART OF MM AND SUB-MM WAVE RECEIVERS	2000-2200 PANEL SESSION ON SYSTEM USE OF GaAs INTEGRATED CIRCUITS		

THURSDAY, JUNE 18, 1981

CALIFORNIA BALLROOM	SACRAMENTO ROOM	SAN FRANCISCO ROOM	SAN JOSE ROOM	SAN DIEGO ROOM	SANTA ANITA A
0730-1600 SYMPOSIUM REGISTRATION	S 0830-1130 LOW NOISE TECHNIQUES	T 0830-1130 BIOLOGICAL EFFECTS AND MEDICAL APPLICATIONS	U 0830-1130 MICROWAVE FIELD AND NETWORK THEORY	V 0830-1130 GUIDED WAVE OPTICS AND SIGNAL PROCESSING	0830-1700 ARFTG WORKSHOP

FRIDAY, JUNE 19, 1981

CALIFORNIA BALLROOM	SANTA ANITA C	SANTA ANITA B	SANTA ANITA A
0730-1200 WORKSHOP REGISTRATION	0830-1700 WORKSHOP ON ADVANCED COMPUTER-AIDED DESIGN TECHNIQUES FOR THE 1980s	0830-1700 WORKSHOP ON POWER GALLIUM ARSENIDE FIELD EFFECT TRANSISTORS	0830-1700 AUTOMATIC RADIO FREQUENCY TECHNIQUES GROUP WORKSHOP

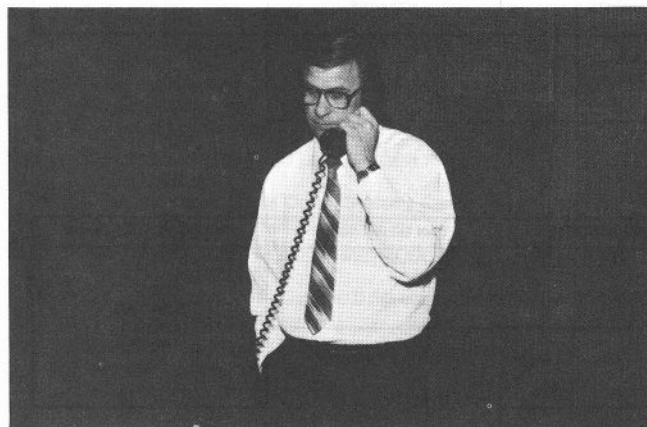
SCENES FROM THE T.P.C. MEETING



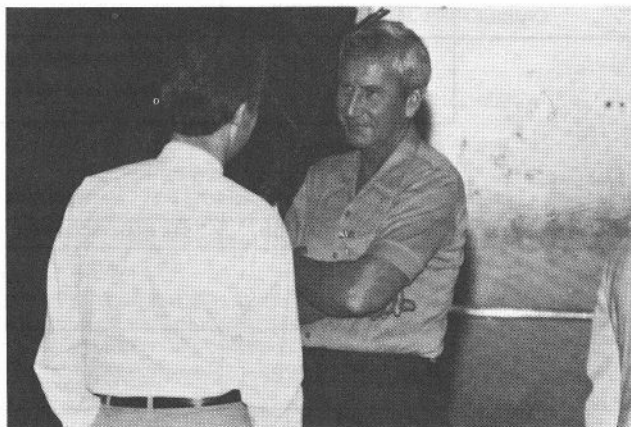
Reviewing the finer points.



Room for just one more paper!



A pensive TPC Chairman.



Steering Committee Chairman in conference.

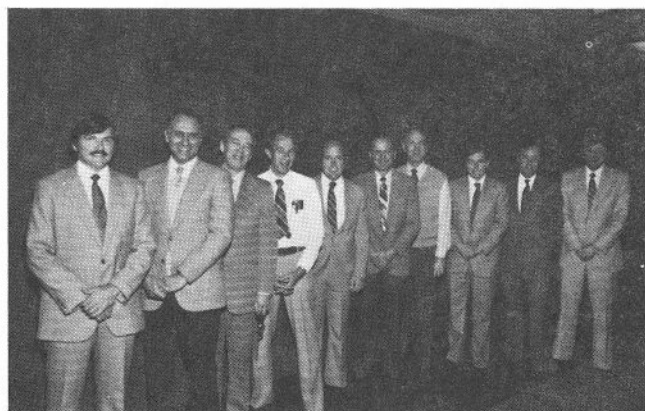


Manuscript evaluations.

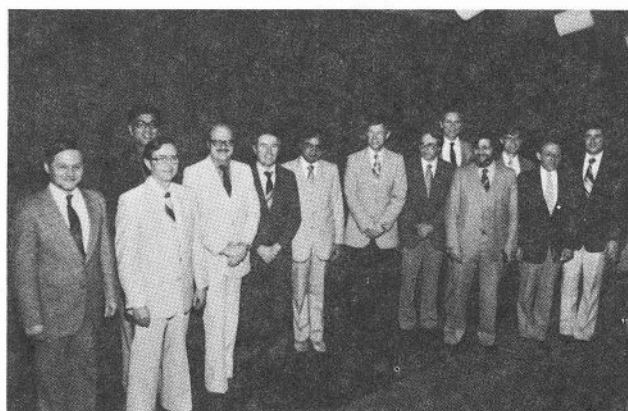


Careful deliberations!

TECHNICAL PROGRAM COMMITTEE



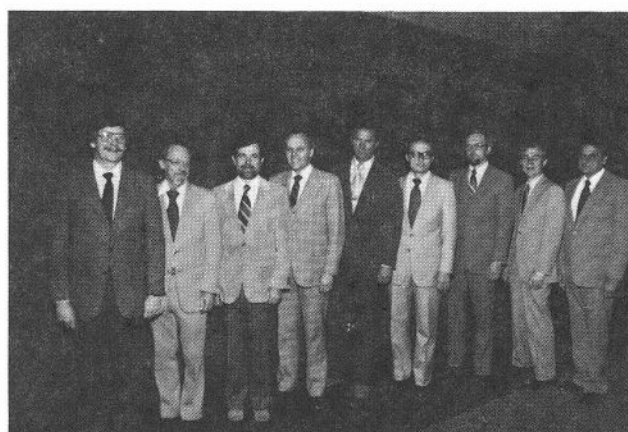
1981 Technical Program Committee (left to right): R. L. Eisenhart, R. L. Camisa, H. Goldie, R. D. Weglein, J. Grant, C. T. Rucker, E. G. Cristal, V. G. Gelnovatch, H. Howe, T. Kemerley



1981 Technical Program Committee (left to right): J. E. Degenford, C. Sun, J. C. Wiltse, A. Rosen, K. Carr, O. P. Gandhi, W. Cox, J. Raue, R. A. Sparks, F. Bernues, A. D. Waller, S. Okean, D. W. Maki.



1981 Technical Program Committee (left to right): C. Chao, P. T. Greiling, D. B. Anderson, J. K. Butler, W. Chang, G. Chao, G. Lindgren, J. B. Horton, F. J. Rosenbaum, T.L. Lane, M. Caulton.



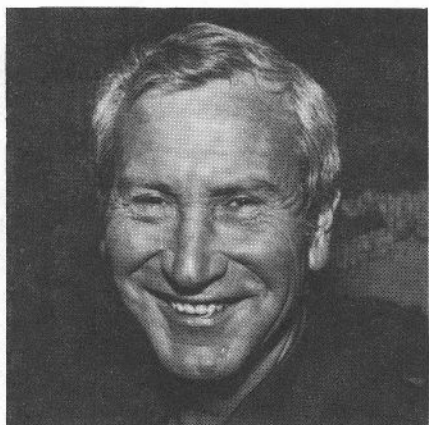
1981 Technical Program Committee (left to right): R. C. Voges, K. J. Button, R. C. van Wagoner, M. N. Yoder, E. F. Belohoubek, T. C. Cisco, W. E. Schroeder, B. Berson, L. R. Whicker.



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MISSING: J. L. Allen, D. M. Bolle, T. Bristol, A. Budreau, D. Claxton, E. Cohen, M. Cohn, A. Dabrowa, T. Fong, J. J. Gallagher, R. J. Gutmann, G. Harrison, D. T. Hodges, F. Ivanek, G. W. Judd, R. T. Kihm, H. J. Kuno, T. J. Lukazek, W. Matthews, S. Okwit, H. G. Oltman, G. P. Rodrigue, M. V. Schneider, P. Silvester, B. E. Spielman, W. Steenaart, K. Tomiyasu, D. Webb, J. J. Whelehan, Jr., J. White, A. E. Williams.

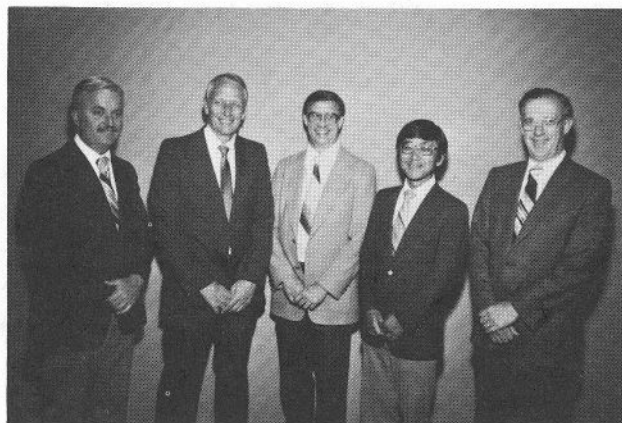
STEERING COMMITTEE



Steering Committee Chairman
Al Clavin



Technical Program Committee Chairman
Don Parker



Steering Committee (left to right): T. Bristol, H. G. Oltman, D. Parker, H. J. Kuno, J. Aukland.



Steering Committee (left to right): R. Weglein, L. A. Mallette, A. Clavin, H. Pomeranz, S. Sensiper.



Steering Committee (left to right): B. Gunshinan, S. B. Cohn, C. Swift, D. Swift, D. Anderson. Missing: J. Raue.

1981 MTT-S ADCOM



MTT Adcom (left to right): R. B. Hicks, T. S. Saad, H. J. Kuno, S. F. Adam, H. Howe, V. G. Gelnovatch, O. P. Gandhi, D. Parker, P. T. Greiling, F. J. Rosenbaum.



MTT Adcom (left to right): R. A. Sparks, G. Basawapatna, H. Sobol, C. T. Rucker, J. Aukland, J. E. Degenford, E. C. Niehenke, B. Berson, S. L. March.



EDITOR'S NOTES

by S. L. March

Last November I asked MTT-S Adcom President-elect Rosenbaum for an Adcom responsibility which would present a challenge. Well, he found one - Editor of the MTT Newsletter. I never realized how much effort is required to organize, edit, proof-read, compose, and gather all the copy necessary to publish one issue of the MTT Newsletter. Fred, I thought you were my friend!

This year's International Microwave Symposium is only weeks away. I am sure that once you have examined the technical program, panel sessions, workshops, spouse's program, and all the other activities planned for this year's annual event, you will agree that the Steering Committee has performed flawlessly.

As co-chairman of the Technical Program Committee for the 1982 International Microwave Symposium, I recognize and appreciate the amount of effort spent by each member of the Steering Committee to insure a superb program for all of us. Thank you for a job well done.

Next year, the Symposium will be hosted by the Dallas Chapter of MTT-S. The conference will be held at the Hyatt Regency Hotel from June 15-17. Friday, June 18, has been reserved for workshops. I hope our efforts will continue the long tradition of excellent Microwave Symposia.

SEE Y' ALL IN DALLAS IN '82

DIRECTORY ERRATA

The following corrections to the 1981 MTT-S Committee Directory, which formed a part of the Winter 1981 MTT-S Newsletter, should be noted:

- page 4: The address and telephone number for Eliot Cohen should be Naval Electronics Systems Command, Code 61V, Washington, D.C. 20360 (202) 692-6663.
- page 5: Bert Berson's new affiliation is Consulting in Technology, 1011 Suffolk Way, Los Altos, CA 94022 (415) 961-7711
- page 9: The Chairman of the Ottawa Chapter should be James S. Wight, Carleton University, MacKenzie Building, Room 417, Ottawa K1A 5B6, Canada (613) 231-2637.
- page 10: 29. SCHENECTADY should be inserted prior to the listing for Rudolph A. Denn.
- page 12: Jerry Aukland's new address is Rockwell International Satellite Electronics Division, 3370 Miraloma Avenue, D/743, 031-DC17, Building 202, Anaheim, CA 92803 (714) 632-1028

Bert Berson's address should be changed as noted above.

- page 13: The telephone number for W. C. Brown, Jr. is (617) 274-7100

The telephone number for Ken Button should be added. His number is (617) 253-5561

Seymour Cohn's address should read 300 South Glenroy Avenue, Los Angeles, CA 90049 (213) 472-5206.

No telephone number was provided for R. J. Gutmann. It is (518) 270-6486

The telephone number for Bob Hicks should be (214) 996-6003

- page 14: Dave McQuiddy's telephone number was not given. The correct number is (214) 995-2808.

The proper phone number for Steven March is (214) 276-8103.

- page 16: Hal Sobol's correct phone number is (214) 996-5881. Russ West's telephone number was omitted. It is (301) 948-3800.

MEETINGS OF INTEREST

The third Annual Meeting of the Bioelectromagnetics Society will be held August 10-12 in Washington D.C. Further information is available from the Society at 1 Bank Street, Suite 307, Gaithersburg, MD 20760, (301) 948-5530.

The open series on the Interaction of Electromagnetic Waves with Biological Systems is scheduled for August 13-14 in Washington D.C. For more details, contact Richard Y. Dow, National Academy of Sciences, 2101 Constitution Ave., N.W., Washington, D.C. 20418.

Boulder, Colorado is the site for the 1981 International Symposium on Electromagnetic Compatibility. Contact Bud Taggart, National Bureau of Standards, Division 723.03, Boulder, CO 80303, (303) 497-3482 for further details of this August 18-20 conference.

The 11th European Microwave Conference will be held September 7-11 in Amsterdam, The Netherlands. Additional information can be obtained from Prof. T. G. van de Roer, Eindhoven Technical University, P.O. Box 513, 5600 MB Eindhoven, The Netherlands.

September 8-11 are the dates for the Seventh European Conference on Optical Communication, which will be held in Copenhagen, Denmark. Additional details are available from Carsten Hede, Technical University of Denmark, Electromagnetics Institute, Building 348, DK-2800 Lyngby, Denmark.

The Third Compumag Conference on Electromagnetic Field Computation will take place in Chicago, Illinois, September 14-17, at the Pick-Congress Hotel. Contact the conference secretary, R. P. Smith, Argonne National Laboratory, Building 362, 9700 South Cass Avenue, Argonne, IL. 60439 for more information.

The 1981 International Symposium on Gallium Arsenide and Related Compounds is scheduled for September 20-23 in Oiso, Kanagawa, Japan. Details are available from Prof. T. Ikoma, Institute of Industrial Science, University of Tokyo, Roppongi 7-22-1, Minato-Ku, Tokyo 106, Japan.

(continued on page 23)

CALL FOR PAPERS

Sixth International Conference on
Infrared and Millimeter Waves

Place: Miami Beach Florida
Date: December 7-12, 1981
Deadline: June 30, 1981

Further information may be obtained from:
K. J. Button
Massachusetts Institute of Technology
National Magnet Laboratory
Building NW,
Cambridge, MA 02139
(617) 253-5561

1981 Gallium Arsenide
Integrated Circuit Symposium

Place: San Diego, California
Date: October 27-29, 1981
Deadline: June 30, 1981
For more information, contact
Dr. James G. Oakes, Symposium Chairman
Westinghouse R & D Center
1310 Beulah Road
Pittsburgh, PA 15235
(412) 256-7665

International Quantum Electronics Conference

Place: Munich, W. Germany
Date: June 21-25, 1982

Please mail abstracts and summaries to:
Dr. Paul F. Liao, TPC Co-chairman
Bell Telephone Laboratories
Crawfords Corner Road
Holmdel, NJ 07733

MEETINGS OF INTEREST (cont.)

October 27-29 are the dates for the 1981 Gallium Arsenide Integrated Circuit Symposium, which will be held in San Diego, California. For more information, contact Dr. James G. Oakes, Westinghouse R & D Center, 1310 Beulah Road, Pittsburgh, PA 15235, (412) 256-7665.

Eastcon '81 has incorporated exhibits at this year's conference. Washington, D.C. will be the site for the November 16-19 meeting. Dr. Delbert D. Smith, EASCON General Chairman at Comsat Corp., 950 L'Enfant Plaza S.W., Washington, D.C. 20024 can provide further information.

The 1981 National Telecommunications Conference will be held November 29-December 3 in New Orleans, Louisiana. Information can be obtained from G. Allen Ledbetter, Technical Program Chairman, Room 1360, 365 Canal Street, New Orleans, LA 70140.

The Sixth International Conference on Infrared and Millimeter waves will convene December 7-12 in Miami Beach, Florida. Additional details are available from K. J. Button, Massachusetts Institute of Technology, National Magnet Laboratory, Building NW, Cambridge, MA 02139, (617) 253-5561

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and Energy Policy;
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To get a free copy of the March issue, write or phone Frank Kotasek, Jr., 73 Hedges Ave., E. Patchogue, NY 11772, (516) 475-1330.

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