



SONICS & ULTRASONICS GROUP

No. 30

Dr. John E. May, Editor
Bell Telephone Laboratories
Allentown, Pa.

September 1968

Plans for 1968 IEEE Ultrasonics Symposium Nearly Completed



With the selection and arrangement of the Technical Program, plans are nearly completed for the 1968 Ultrasonics Symposium to be held at the Statler-Hilton Hotel, New York City, September 25-27, 1968. The Chairmen for the 1968 Symposium are:

- Dr. F. M. Smits, General Chairman
- Dr. R. W. Damon, Technical Program Chairman
- Mr. W. F. Konig, Local Arrangements Chairman
- Dr. John E. May, Jr., Publicity Chairman

Hotel reservations should be made directly with the Statler-Hilton Hotel mentioning the Ultrasonics Symposium. In addition to the Technical Program a social hour is planned for Wednesday evening, September 25th at 6:00 p.m.

The Technical Program Committee has arranged a program of 14 sessions which includes 18 invited and 94 contributed papers as follows:

Wednesday Morning

- A. Surface Waves
- B. Resonators

Wednesday Afternoon

- C. Signal Processing and Surface Wave Devices
- D. Liquids and Gases

Thursday Morning

- E. Bragg Scattering, Deflectors, Measurement Techniques
- F. Metals

Thursday Afternoon

- G. Attenuation
- H. Holograms, Imaging and Visualization

Thursday Evening

- I. Transducer Evaluation
- J. Ultrasonics in Medicine

Friday Morning

- K. Material Testing and Processing
- L. Transducers and Delay Lines

Friday Afternoon

- M. Phase Transitions and Magnetic Materials
- N. Acoustoelectric Effects

The invited papers include the following:

- G. W. Farnell and T. C. Lim, "Properties of Elastic Surface Waves"

- B. A. Auld, J. H. Collins and H. J. Shaw, "Surface Wave Transducers"
- D. B. Armstrong, "Surface Wave Transducers for Delay Application in the Low Microwave Frequency Range"
- E. Stern, "Microsound Components, Circuits and Applications"
- T. A. Litovitz, "Laser and Ultrasonic Spectroscopy in Liquids"
- C. Elbaum, "Ultrasonic Attenuation in Solids-Intrinsic and Extrinsic Mechanisms"
- R. B. Smith and B. B. Brenden, "Refinements and Variations in Liquid Surface and Scanned Ultrasound Holography"
- M. Gottlieb, M. Garbuny and C. K. Jones, "Ultrasonic Propagation in Magnetically Induced Structures in Superconductors"
- K. Walther, "Anisotropy of Magneto-Acoustic Attenuation and Deformation Potential in Bismuth"
- W. D. Wallace, "A Resume of Recent Work on Direct Generation of Ultrasound in Metals"
- T. R. Meeker, "Methods of Evaluating Piezoelectric Transducers"
- A. J. Bahr, "Electrical Measurement Techniques for Obtaining the Electromechanical Coupling Factors of Thin-Film Piezoelectric Transducers"
- H. F. Tiersten, "The Relation of Electromechanical Coupling Factors to the Fundamental Material Constants for Thickness Vibrating Piezoelectric Plates"
- A. Sokollu, "Problems of Ultrasonic Energy Transmission in Ocular Tissue"
- C. W. Garland, "Ultrasonic Investigations of Phase Transitions"
- J. T. McElroy, "Characterization of Ultrasonic Transducers for Nondestructive Testing"
- H. L. Dunegan, "Ultrasonic Acoustic Emission from Materials"
- A. H. Meitzler and E. K. Sittig, "Characterization of Piezoelectric Transducers Used in Ultrasonic Devices Operating above 0.1 GHz"

Abstracts of the Symposium papers will be published in the January 1969 issue of G-SU Transactions.

IEEE Reorganizes Technical Activities

D. L. White, TAB Representative

The structure of the IEEE is being reorganized in an effort to give greater emphasis to technical activities. It is hoped that Technical Groups (such as the G-SU) will have a larger voice in IEEE affairs. In a reorganization plan currently under consideration, the 31 Technical Groups would be divided into 7 divisions. Each division will elect a director who will sit on the IEEE board of directors. The G-SU would be in the Electrosience division, along with Antennas & Propagation, Circuit Theory, Electron Devices, Microwave Theory and Techniques and Magnetics.

The new structure should offer further advantages to the individual Groups. Cooperation between Groups and with outside societies will be more flexible.

Since these changes emphasize the technical aspects of IEEE, the G-SU is expected to benefit.

Obituary Notice

Professor Egon A. Hiedemann

Members of the G-SU were saddened by the death early this year of Professor E. A. Hiedemann, professor of physics at the Michigan State University, East Lansing, Michigan. Professor Hiedemann's contributions to the teaching of physics and to the field of elasto-optic interactions are legend. He had served for many years on the G-SU Editorial Board as Associate Editor for Measuring Techniques.

AD COM

D. L. White Elected Chairman

New officers for 1968 elected at the Annual Meeting of the Ad Com held at Vancouver October 5, 1967, are:

Dr. D. L. White, Chairman
Dr. R. W. Damon, Vice-Chairman

New Members Elected to Ad Com

In the mail ballot held last fall, the membership elected to the Ad Com the following new members who will serve for three year terms ending in 1970:



Dr. Bertram A. Auld
Physics Dept.
Stanford University
Palo Alto, Calif.

BERTRAM A. AULD was born on November 4, 1922, in Wei-Hwei-Fu, China. He received the B.S. degree in electrical engineering from the University of British Columbia, Vancouver, B. C., Canada, in 1946.

From 1946 to 1948 he was employed by the National Research Council, Ottawa, Canada. In 1949 he received the M.S. degree, and in 1952, the Ph.D. degree in electrical engineering from Stanford University, Stanford, California. During the following year he worked at the Stanford Microwave Laboratory on VHF and UHF antennas. From 1953 to 1955 he was employed by Electrical and Musical Industries, Ltd., Hayes, Middlesex, England, where he worked on the staggering of multicavity klystrons. From 1955 to 1958 he taught applied electromagnetic theory and supervised graduate student research at the University of British Columbia. In 1958 he joined the Microwave Laboratory, W. W. Hansen Laboratories of Physics, Stanford Univ., where he is currently a research physicist. During the year 1963-64 he was a Visiting Fellow at Bell Telephone Laboratories, Murray Hill, New Jersey.

His research activities are concerned with the interaction of electromagnetic fields with matter. Upon joining the staff of the Microwave Laboratory he worked on the application of nonlinear analysis to microwave ferrite problems, primarily with regard to parametric instabilities, harmonic generation, nonlinear resonance and shock wave propagation. In more recent years he has become concerned with microwave acoustics and has worked extensively in the field of magnetoacoustic and electroacoustic interactions.

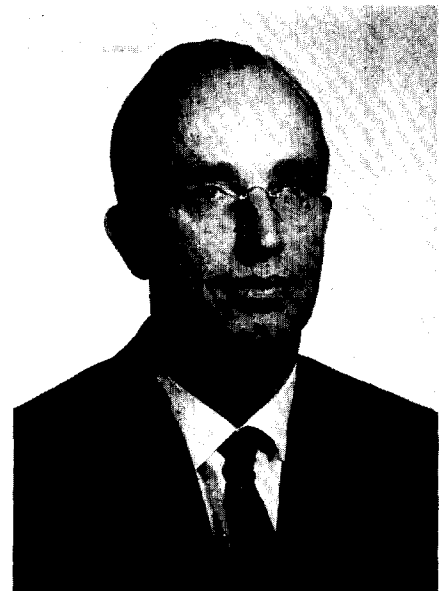
Dr. Robert W. Moss
Boeing Scientific Research
Laboratories
Seattle, Washington

ROBERT W. MOSS was born on February 1, 1928, at Spokane, Washington. Undergraduate work in physics was completed at the University of Washington. His Graduate work in math and physics was conducted at the University of Washington, San Jose State University, and Stanford University.

His employment has included sales and engineering at United Air Lines; member of staff performing research in ultrasonic blood flow measurement at University of Washington, Department of Physiology and Biophysics; research scientist performing research in magnetism at Lockheed Research Laboratory, Palo Alto; and member of research staff performing research in Acoustics and the Mossbauer Effect at Boeing Scientific Research Laboratories, Solid State Physics Laboratory.

Moss served in the U.S. Marine Corps during the Korean War. The academic year 1966-67 was spent on sabbatical leave as visiting professor at Imperial College of Science and Technology, London.

In addition to the PGSU, Moss is a member of the American Physical Society, Phi Beta Kappa, and the Acoustic Emission Working Group. He has twice served as a member of the Ultrasonic Symposium Program Committee, and was General Chairman of the 1967 Symposium.



Dr. Erhard K. Sittig
Bell Telephone Laboratories
Murray Hill, N. J.



ERHARD K. SITTING (M '62) was born in Königsberg, Germany, on June 3, 1928. He received the Diploma of the Imperial College, London, England, in electrical engineering in 1954; the Diploma in physics from the University of Tübingen, Germany, in 1955; and the degree of Doctor der Naturwissenschaften from the Technische Hochschule Stuttgart, Germany, in 1959.

From 1955 to 1959 he held a position as Instructor at the Physics Department of the Technische Hochschule Stuttgart. From 1959 to 1961 he was Assistant Research Physicist at the Physics Department of the University of California, Los Angeles. During these years he worked on various aspects of sound propagation in solids and fluids. Between 1961 and 1963 he was involved in the development of ultrasonic power transducers as Senior Physicist of the Durasonics Division of Durabond Bearing Company, Palo Alto, California. In 1963 he joined Bell Telephone Laboratories, Inc., at Murray Hill, New Jersey, where he is at present supervisor of a group developing ultrasonic devices and photodetectors.

Dr. Sittig is a member of the Acoustical Society of America, IEEE, and the German Physical Society.

The new members replace the following members whose terms of office expired December 31, 1967:

Dr. R. T. Beyer
Mr. J. H. Rowen
Dr. J. J. G. McCue

The remaining members of the Ad Com and terms of office are:

Dr. W. L. Nyborg '65-'68
Dr. P. L. Smith '65-'68
Dr. D. I. Bolef '66-'69
Dr. E. P. Papadakis '66-'69

1967 IEEE Ultrasonics Symposium Well Attended

General Chairman of the 1967 Ultrasonics Symposium, Dr. Robert M. Moss, reports that the meeting in Vancouver on October 4-6, 1967, drew a total attendance of 276. It is interesting to note that 94 of these were G-SU members whereas 182 of the attendees were non-members. Program Chairman Dr. B. A. Auld reported that of the 97 contributed abstracts submitted 87 were accepted. The program included 19 invited papers. The general opinion of those attending was that the meeting was very well organized, was held in extremely interesting and comfortable accommodations and that the technical content continued at the high level established in previous Ultrasonics Symposia. Abstracts of the papers given were included in the G-SU Transactions, Vol. 15, #1, January 1968.



September 3-6, 1968

Solid State Devices Conference, Manchester, England. Program Chairman, Dr. C. Hilsum, Royal Radar Establishment, St. Andrews Road, Malvern, Worcestershire, England.

September 12-13, 1968

Solid State Sensors and Transducers Conference, Leavington Hotel, Minneapolis, Minnesota. Program Chairman, Dr. M. M. Atalla, Hewlett-Packard, 1501 Page Mill Road, Palo Alto, California 94304.

September 25-27, 1968

1968 IEEE Ultrasonics Symposium, Statler Hilton Hotel, New York City. Program Chairman, Dr. Richard Damon, Sperry Rand Research Laboratory, Sudbury, Massachusetts.

April 8-11, 1969

Acoustical Society of America, Bellevue-Stratford Hotel, Philadelphia, Pa. Program Chairman, Dr. Mary L. Harbald, Temple University, Broad and Montgomery Streets, Philadelphia, Pa. 19122. Deadline January 7, 1969.

April 15-18, 1969

1969 International Magnetism Conference (Intermag), Amsterdam, Netherlands. Executive Secretary, Dr. Th. Holtwijk, Philips Research Laboratories, Eindhoven, The Netherlands.

April 30 - May 2, 1969

1969 Electronics Components Conference, Washington, D.C. Program Chairman, Dr. James A. O'Connell, Electronics ITT Headquarters, 320 Park Avenue, New York, N.Y. 10022. Deadline November 1, 1968.



October 23-25, 1968

1968 International Electron Devices Meeting, Sheraton-Park Hotel, Washington, D. C. Program Chairman, Dr. Donald A. Chisholm, Bellcomm, Inc., 1100 17th Street, N.W., Washington, D. C. 20036. Late News Deadline September 15, 1968.

May 5-8, 1969

1969 IEEE G-MTT International Microwave Symposium, Dallas, Texas. Program Chairman, Dr. J. E. Horton, Texas Instruments, Inc., MS-905, P. O. Box 5012, Dallas, Texas 75222. Deadline January 3, 1969.

November 19-22, 1968

Acoustical Society of America, Sheraton-Cleveland Hotel, Cleveland, Ohio. Chairman, Dr. Joseph L. Hunter. Deadline August 20, 1968.

May 26-28, 1969

IEEE Conference on Laser Engineering and Applications, Hilton Hotel, Washington, D. C. Program Chairman, Dr. William B. Bridges, Hughes Research Laboratories, 3011 Malibu Canyon Road, Malibu, California 90265. Deadline January 17, 1969.

February 19-21, 1969

IEEE International Solid State Circuits Conference, Philadelphia, Pa. Program Secretary, Dr. J. H. Wucrinen, Bell Telephone Labs., Murray Hill, N. J. 07971. Deadline October 18, 1968.

July 20-25, 1969

8th International Conference of Medical and Biological Engineering and 22nd Annual Conference on Engineering in Medicine and Biology, Palmer House, Chicago, Illinois. Program Chairman, Dr. Lawrence Stark, P. O. Box 1969, Evanston, Illinois 60204. Deadline for Request of Author Kit October 1, 1968.

March 24-27, 1969

IEEE International Convention, Coliseum and New York Hilton Hotel, New York City.

G-SU Has Technical Committee on Transducers & Resonators

During 1966, the Standards Committee ST-14 voted to attach itself to the Group on Instrumentation and Measurements (GIM). This decision was based principally on the recent work of the Committee on short term frequency stability and VHF measurements. Since much of the earlier work and some proposed future work on piezoelectric, piezomagnetic, and ferroelectric materials was closer associated with the charter of the Group on Sonics and Ultrasonics (G-SU), a new technical committee to be called the Technical Committee on Transducers and Resonators (TC-TR), was formed under the G-SU. Dr. Hans Jaffe served as the chairman and organizer at the 1967 Spring IEEE meeting in New York.

An ad hoc committee composed of H. Jaffe, A. R. Chi, J. H. Armstrong, D. L. Hammond, E. Hafner and W. J. Spencer met in Atlantic City in April and proposed the subcommittee structure for the TC-TR and also outlined the areas of mutual interest with the Technical Committee on Time and Frequency (TC-TF) which is sponsored by the GIM. This reorganization resulted in three subcommittees: Piezoelectric Crystals, Piezoelectric Ceramics, and Piezomagnetism; with chairmen and members as shown below. The Subcommittee on Piezoelectric Crystals serves jointly in the TC-TF and TC-TR. In July, Dr. Jaffe resigned as Chairmanship of the Committee and the G-SU Chairman, J. H. Rowen, appointed W. J. Spencer as the new Technical Committee Chairman.

The Committee is currently concerned with revising and expanding existing Standards in Piezoelectric Crystals and with nomenclature in Piezomagnetism. The current charter of the committee provides for wider interest than Standards work alone. This could include special sessions at the annual Sonics and Ultrasonics meetings, review articles in the journals, and other areas of technical interest in the field of transducers and resonators.

Anyone interested in current work in the areas covered by existing Subcommittees should contact the appropriate Subcommittee Chairman; or if interested in creating new areas that fall within the charter of the TC-TR, he should contact Chairman Spencer.

Members of Technical Committee on Transducers and Resonators (TC-TR)

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G-SU Transaction goes Quarterly - Doubles in Size

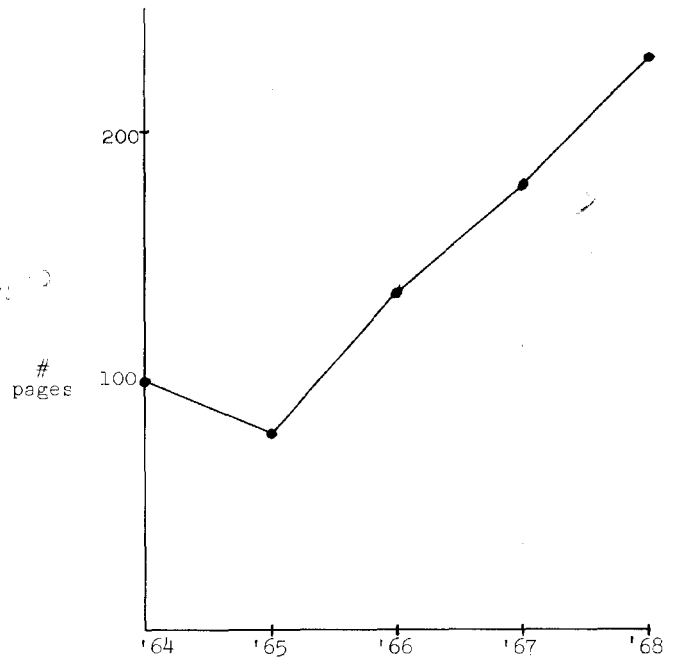


Session on High Power Ultrasonics at IEEE International Convention

A session highlighting the technology and applications of high power ultrasonics in industrial processing was organized for the G-SU sponsored session at the 1968 IEEE International Convention by S. E. Jacke. The program was as follows:

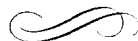
1. "Sonic Power's Future in Industry," Robert C. McMaster and Charles C. Libby, Ohio State University, Columbus, Ohio
2. "The Design of a High Power Ceramic Transducer Assembly," Nicholas Maropis, Aeroprojects, Inc., West Chester, Penna.
3. "The Design and Application of High Power Sonic Transducers," Mrs. Hildegard Minchenko and William White, Ohio State University, Columbus, Ohio
4. "A Calorimetric Apparatus and Method for Evaluating Transducer Assemblies," J. Byron Jones, Aeroprojects, Inc., West Chester, Penna.
5. "Recent New Applications for High Power Ultrasonic Systems," Robert S. Soloff, Branson Sonic Power Company, Danbury, Connecticut
6. "Ultrasonic Focusing Systems Applied to Power Ultrasonics," Matthew J. Golis, Ohio State University, Columbus, Ohio

Beginning in 1967, the G-SU Transactions have been published on a quarterly basis. Thanks to the efforts of our Editor in Chief, Dr. Oscar E. Mattiat and his staff of Associate Editors the time for processing papers has been greatly reduced and the prospective author can judge approximately when his article is to appear. Compared with an average of 100 pages in the 1964-1966 period, the total number of pages (230) in 1968 will have more than doubled, as can be seen in the graph below.



This distribution by field of the papers included in the 1964-1968 period is as follows:

Biological and Medical Applications	2
Delay Lines and Filters	8
Industrial Applications	12
Measuring Techniques	8
Transducers	23
Resonator Theory and Applications	10
Solid-State (Semiconductor) Phenomena and Devices	22
Underwater Sound	8
Acousto-optics	9



Obituary Notice

Dr. William J. Fry

Dr. William J. Fry, Biophysics Research Lab, University of Illinois, died suddenly and unexpectedly on July 21, 1968. Dr. Fry was one of the Charter Members of the G-SU Adcom, served as Chairman of the Papers Review Board for a number of years and has most recently been Associate Editor for Biological and Medical Applications.



IEE

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