

1959 PGMTT National Symposium

The 1959 PGMTT National Symposium sponsored by the IRE Professional Group on Microwave Theory and Techniques, in co-operation with the Division of Applied Physics, Harvard University, will be held at Paine Hall, Harvard University, Cambridge, Mass., June 1-3, 1959.

The Technical Program Committee Chairman is Henry Riblet. Other members of the Committee are: Carl Faflick, Irving Goldstein, Victor Jones, John Reed, Peter Rizzi, and Karl Willenbrock.

Advance registration is urged. Free parking stickers are reserved for advanced registrants. Registration fees are \$3.00 for IRE members and \$5.00 for nonmembers; there is no fee for students. The price of the banquet is \$6.00 and luncheons are \$0.95 per person. Parking stickers for large registrants will be available for \$1.00 if any are left. Advance registration should be addressed to W. H. From, Ewen-Knight Corporation, 206 A St., Needham, Mass., and checks should be payable to W. H. From, Treasurer. A ladies program will include a tour of historic Boston on June 1, a tea and tour of the Art Museum on June 2, and a luncheon on Wednesday, June 3.

PROGRAM

REGISTRATION

Mon. 8:00-8:45 A.M.

SESSION 1

Mon. 8:45 A.M.-NOON

FILTERS AND COMPONENTS

Chairman: R. W. P. KING, *Harvard University, Cambridge, Mass.*

Opening Addresses

W. L. PRITCHARD, *Symposium Chairman, Raytheon Mfg. Co., Wayland, Mass.*

T. S. SAAD, *Chairman, PGMTT, Sage Labs., Wellesley, Mass.*

MCGEORGE BUNDY, *Dean of the Faculty of Arts and Sciences, Harvard University, Cambridge, Mass.*

Directional Couplers—An Example of Microwave Developments

HAROLD A. WHEELER, *Wheeler Labs., Inc., Great Neck, N. Y.*

A Constant Resistance Microwave Filter

J. REED, J. CHILD, AND H. THOMAS, *Raytheon Mfg. Co., Wayland, Mass.*

The Design and Measurement of Two Broad-band Coaxial Phase Shifters

C. F. AUGUSTINE AND J. CHEAL, *Bendix Aviation Corp., Detroit, Mich.*

Microwave Phase Shifters

DAVID L. FYE, *Electromagnetic Rad. Lab., Air Res. and Dev. Command, Bedford, Mass.*

Dissipation Effects in Microwave Filters

SEYMOUR B. COHN, *Stanford Res. Inst., Menlo Park, Calif.*

Wide-Stop-Band Waveguide Filters

B. SCHIFFMAN, *Varian Associates, and S. B. COHN, Stanford Res. Inst., Menlo Park, Calif.*

Tunable Microwave Filters

E. TORGOW AND D. JACENKO, *Polytechnic Inst. of Brooklyn, Brooklyn, N. Y.*

A Transmission Line Backward Wave Filter

M. E. HINES AND E. T. HARKLESS, *Bell Telephone Labs., Murray Hill, N. J.*

SESSION 2

Mon. 2:00-5:00 P.M.

MICROWAVES I

Chairman: KIYO TOMIYASU, *G.E. Microwave Lab., Palo Alto, Calif.*

A Survey of the Microwave Research in Japan in 1958

ISAO SOMEYA, *Secretary, Tokyo Chapter, PGMTT*

Determination of Some Electrical Properties of a Gas Detonation by Microwave Techniques

BERNARD HAYES, *Los Alamos Sci. Lab.,*

University of California, Los Alamos, N. M.

Microphony in Waveguide

I. GOLDSTEIN AND S. SOORSOORIAN, *Raytheon Mfg. Co., Bedford, Mass.*

Tunable Spherical Cavity Resonators

E. RICHTER, *Ewen Knight Corp., Needham, Mass., and A. E. O'BRIEN, JR., Raytheon Mfg. Co., Bedford, Mass.*

Use of Partially-Filled Dielectric Coaxial Lines in Nonreciprocal Devices

G. S. HELLER AND J. S. COE, *M.I.T. Lincoln Lab., Lexington, Mass.*

Coupling of Multiple Cavity Systems

G. S. KINO AND M. A. ALLEN, *Stanford University, Stanford, Calif.*

Dielectric Loading and Tapered Field Effects in Ferrite Devices Using Perturbation Methods

R. F. SOOHOO, *M.I.T. Lincoln Lab., Lexington, Mass.*

Theoretical Limitations of Ferrite Amplifier Performance

R. W. DAMON AND J. R. ESHBACH, *G.E. Res. Lab., Schenectady, N. Y.*

TE₁₀ Shuttle Pulse Measurements in Multimode Circular Waveguide

W. D. WARTERS AND H. E. ROWE, *Bell Telephone Labs., Inc., Holmdel, N. J.*

Pulse Responses of Some TEM Transmission-line Components

W. J. GETSINGER, *Stanford Res. Inst., Menlo Park, Calif.*

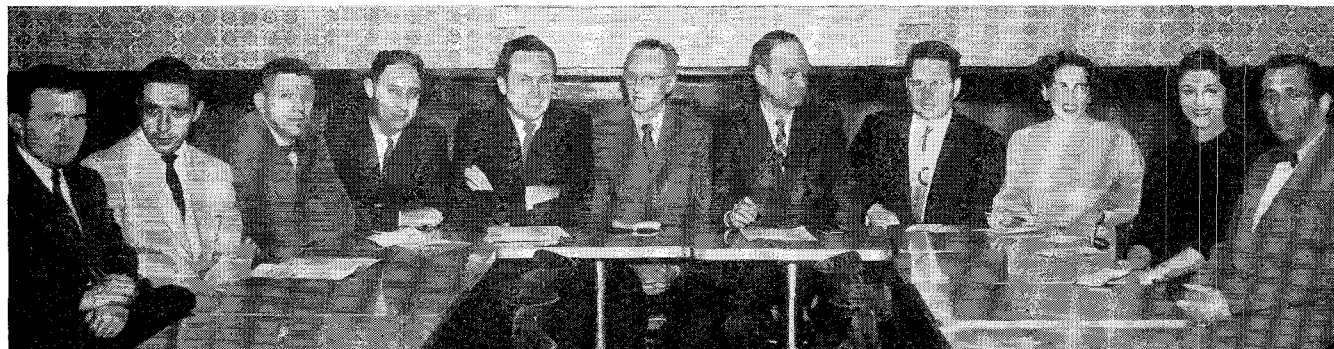
SESSION 3

Mon. 8:00-10:00 P.M.

CAMBRIDGE ELECTRON ACCELERATOR

Radio Frequency Systems of the Cambridge Electron Accelerator

K. W. ROBINSON, *C.E.A., Cambridge, Mass.*



1959 PGMTT National Symposium Committee: (left to right) P. Crandell, National Co.; P. Rizzi, Ewen Knight; W. From, Finance, Ewen Knight; I. Goldstein, Raytheon; K. Willenbrock, Harvard University; H. Riblet, Technical Program, Microwave Development Labs.; W. Pritchard, Symposium Committee Chairman, Raytheon; R. Rivers, Publicity, Aircom; Mrs. W. Pritchard, Ladies Program; Mrs. T. Saad; T. Saad, Local Arrangements, Sage Labs.

Model Studies of a Strongly Coupled Synchrotron RF System

J. DEKLAVA, A. E. BARRINGTON, AND J. R. REES, *C.E.A., Cambridge, Mass.*

Visit to the Cambridge Electron Accelerator

SESSION 4

Tues. 8:45 A.M.—NOON

MASER TECHNIQUES

Chairman: M. T. WEISS, *Bell Telephone Labs., Inc., Holmdel, N. J.*

Physical Principles of Solid-State Masers

N. BLOEMBERGEN, *Harvard University, Cambridge, Mass.*

Relaxation Effects in Maser Materials

S. SHAPIRO, *Harvard University, Cambridge, Mass.*

An L-Band and Y-Junction Circulator

L. DAVIS, JR., U. MILANO, AND J. SAUNDERS, *Raytheon Mfg. Co., Waltham, Mass.*

Low-Temperature Germanium Microwave Switch

R. H. KINGSTON AND S. H. AUTLER, *M.I.T. Lincoln Lab., Lexington, Mass.*

Quantum Mechanical Amplifiers: Present Performance Status

M. W. P. STRANDBERG, *M.I.T., Cambridge, Mass.*

The Design of Large Gain Bandwidth Product Masers

W. FROM, *Ewen Knight Corp., Needham, Mass.*

Packaged Tunable L-Band Maser System

F. R. ARAMS AND S. OKWIT, *Airborne Instrument Lab., Mineola, N. Y.*

SESSION 5

Tues. 2:00–5:00 P.M.

MICROWAVES II

Chairman: EUGENE FUBINI, *Airborne Instruments Lab., Mineola, N. Y.*

Survey of Noise Figure Problems

P. STRUM, *Granger Associates, Palo Alto, Calif.*

Analysis of Cascaded Microwave Network by Means of Signal Flow Graphs

K. HUNTON, *Hewlett-Packard Co., Palo Alto, Calif.*

Measurement of Bandwidth of Microwave Resonator by Phase Shift of Signal Modulation

D. S. LERNER AND H. A. WHEELER, *Wheeler Labs., Inc., Great Neck, N. Y.*

A Double-Sweep Comparator for Microwave Ferrite Device Measurements

J. A. WEISS AND R. W. JUDKINS, *Bell Telephone Labs., Inc., Murray Hill, N. J.*

Comparison of Deviations from Square Law for RF Crystal Diodes and Barretters

G. U. SORGER AND B. O. WEINSCHL, *Weinschel Engineering Co., Inc., Kensington, Md.*

The Accumulation of Small Errors in Extended Periodic Structures

M. C. PEASE, *Sylvania Electric Products, Inc., Mountain View, Calif.*

Theory of the Germanium Diode Microwave Switch

R. V. GARVER, J. A. ROSADO, AND E. F. TURNER, *Diamond Ordnance Fuze Labs., Washington 25, D. C.*

Single-Pole Double-Throw Wide-Band Microwave Switch

M. BLOOM, *Sylvania Electronic Systems, Waltham, Mass.*

Diodes in Multiple Switches and Time Varying Dielectrics

J. GALEJS, *Sylvania Electronic Systems, Waltham, Mass.*

SYMPOSIUM BANQUET

Place—Harkness Commons, Harvard University, Cambridge, Mass.

Time—Cocktail Hour: 6:00–7:00 P.M. Dinner: 7:00 P.M., June 2, 1959.

Toastmaster—W. L. Pritchard, Symposium Committee Chairman.

Opening Remarks—Prof. Harvey Brooks, Harvard University.

Microwave Prize—Awarded by T. Saad, Chairman, PGMTT Administrative Committee.

Banquet Address—Prof. E. M. Purcell, Harvard University.

SESSION 6

Wed. 8:45 A.M.—NOON

FERRITES

Chairman: E. STRUMWASSER, *Hughes Aircraft Co., Culver City, Calif.*

Recent Advances in Materials for Microwave Ferrite Devices

V. JONES, *Harvard University, Cambridge, Mass.*

L-Band Ferromagnetic Resonance Experiments at High Peak Power Levels

J. H. SAUNDERS, E. SCHLÖMANN, AND M. H. SIRVETZ, *Raytheon Mfg. Co., Waltham, Mass.*

High-Power Ferromagnetic Resonance at X-Band in Polycrystalline Garnets

J. J. GREEN, *Gordon McKay Lab., Harvard University, Cambridge, Mass.* and E. SCHLÖMANN, *Raytheon Mfg. Co., Waltham, Mass.*

Use of Demagnetizing Fields to Minimize Temperature Effects in Ferrite Devices

W. H. VONAULOCK, *Bell Telephone Labs., Inc., Whippany, N. J.*

Some New Ferrite Design Forms

HAROLD SEIDEL, *Bell Telephone Labs., Inc., Murray Hill, N. J.*

The Design and Operations of Two Types of Medium Power Microwave Ferrimagnetic Limiters

E. N. SKOMAL AND M. A. MEDINA, *Sylvania Electric Products, Inc., Mountain View, Calif.*

Ferrite Multimode High-Power Signal Suppressor

W. C. HEITHAUS, S. C. SLOAN, B. J. DUNCAN, and L. SWERN, *Sperry Microwave Electronics Co., Clearwater, Fla.*

A New Approach to the Design of Low-Frequency, Ferrite Phase Shifters

R. L. FOGEL, *Hughes Aircraft Co., Culver City, Calif.*

Broad-Band Ridge Waveguide Ferrite Devices

E. S. GRIMES, JR., D. D. BARTHOLOMEW, D. C. SCOTT, AND S. C. SLOAN, *Sperry Microwave Electronics Co., Clearwater, Fla.*

SESSION 7

Wed. 2:00–5:00 P.M.

VARIABLE REACTANCE DEVICES

Chairman: H. MAUS, *M.I.T., Cambridge, Mass.*

Progress Report on Variable Capacitance Diodes

A. UHLIR, *Microwave Associates, Burlington, Mass.*

RF Logic Circuits Using Subharmonic Oscillators

F. STERZER, *Radio Corp. of America, Princeton, N. J.*

A Variable Reactance Diode Phase Shifter

E. STERN, *G.E. Co., Syracuse, N. Y.*

Theory of Filter-Type Parametric Amplifiers

P. PARZEN, *Radio Corp. of America.*

Parametric Amplifiers: State of the Art

R. S. ENGELBRECHT, *Bell Telephone Labs., Inc., Whippany, N. J.*

Performance of Low-Noise Tunable- Cavity and Traveling-Wave Parametric Amplifiers

E. M. T. JONES, R. C. HONEY, AND J. S. HONDA, *Stanford Res. Inst., Menlo Park, Calif.*

Design and Field Test of Two Different Types of Reactance Amplifiers

J. POPPE AND H. J. PEPPIATT, *G.E. Co., Syracuse, N. Y.*

Some Considerations of Four-Frequency Parametric Circuits

DAVID ADAMS, *University of Michigan Res. Inst., Ann Arbor, Mich.*