



The Microwave Theory and Techniques Society is an organization, within the framework of the IEEE, of members with principal professional interests in the field of microwave theory and techniques. All members of the IEEE are eligible for membership in the Society and will receive the LETTERS upon payment of the annual Society membership fee of \$8.00, plus an annual subscription fee of \$8.00. Affiliate membership is available upon payment of the annual affiliate fee of \$35.00, plus an annual subscription fee of \$8.00. For information on joining, write to the IEEE at the address below. *Member copies of Transactions/Journals are for personal use only.*

ADMINISTRATIVE COMMITTEER. D. POLLARD, *President*E. A. REZEK, *Vice President*S. WETENKAMP, *Secretary*J. T. BARR IV, *Treasurer*

J. T. BARR
S. J. FIEDZIUSZKO
K. C. GUPTA

K. HONJO
C. M. JACKSON

R. T. KEMERLEY
J. S. KENNEY
J. K. MCKINNEY

R. D. POLLARD
J. W. RA

E. A. REZEK
M. J. SCHINDLER
R. SORRENTINO

M. B. STEER
R. W. SUDBURY

G. R. THOREN
R. J. TREW
K. VARIAN

Honorary Life Members

A. C. BECK
S. B. COHN
T. ITOH

A. A. OLINER
T. S. SAAD

K. TOMIYASU
L. YOUNG

Distinguished Lecturers

R. DIXIT
P. HERCZFELD
W. MENZEL

C. RAUSCHER
A. ROSEN
J. WAKINO

Past Presidents

R. E. BRYAN (1997)
J. W. WASSEL (1996)
E. D. COHEN (1995)

S-MTT Chapter Chairmen

Albuquerque: D. P. MCLEMORE
Atlanta: G. D. HOPKINS
Baltimore: J. MOELLERS, B. SEQUEIRA
Beijing: W. G. LIN, W. X. ZHANG
Benelux: K. VAN'T KLOOSTER, B. NAUWELAERS
Buffalo: M. R. GILLETTE, H. MORRISON
Bulgaria: H. D. HRISTOV, P. I. PHILIPOV
Central Iowa/Cedar Rapids: J. C. COZZIE, S. BURNS
Central New England/Boston: S. D. MITTLEMAN
Central & South Italy: P. BERNARDI
Chicago: E. G. BOGUS, J. P. PHILLIPS
Cleveland: K. B. BHASIN, M. TABIB-AZAR
College Station: R. NEVELS, C. NGUYEN
Columbus: R. LEE, H. SHAMANSKY
Czechoslovakia: P. PECHAC
Dallas: C. LEE, S. PIERCE
Dayton: G. SIMPSON, R. LAYDEN
Denver-Boulder: R. G. GEYER
Egypt: O. L. EL-SAYED
Finland: A. H. SIHVOLA, J. E. AURINSALO
Florida West Coast: M. SMITH, H. HILL
Foothills: S. M. SAAD, K. SCHOEDER
France: R. F. ADDE, H. BAUDRAND
Germany: N. KEEN, J. D. BUCHS
Greece: G. KIRIAKIDIS
Hong Kong: K. K. MEI
Houston: J. T. WILLIAMS, S. A. LONG
Hungary: I. FRIGYES, T. BERCELI
Huntsville: H. L. BENNETT, C. PLANT
India: K. S. CHARI, M. H. KORI
Indonesia: D. SIRAT
Israel: A. MADJAR, S. AUSTER

Ithaca: R. C. COMPTON, N. KOLIAS
Kitchener-Waterloo: Y. L. CHOW
Korea: D. C. PARK
Los Angeles: R. STURDIVANT, E. W. RAY
Milwaukee: J. RICHIE, D. MISRA
Minsk Belarus: S. A. MALYSHEV
Montreal: G. L. YIP, C. C. HUANG
Moscow: V. E. LYUBCHENKO
Nanjing: W. X. ZHANG
New Hampshire: D. L. BACON
New Jersey Coast: A. PAOLELLA, M. MIZAN
New South Wales: T. S. BIRD, C. WILSON
New York/Long Island: M. HANCZOR
Nizhny Novgorod: Y. I. BELOV
North Italy: C. N. NALDI
North Jersey: C. GUPTA, W. SCHMIDT
Novosibirsk: B. KAPILEVICH
Orlando: T. IVANOV
Ottawa: D. H. REEKIE
Philadelphia: W. D. JEMISON, E. HOLZMAN
Phoenix: A. C. REYES
Poland: W. GWAREK, B. LEVITAS, S. A. MALYSHEV
Portland: V. K. TRIPATHI, E. GODSHALK
Princeton/Central Jersey: W. R. CURTICE, A. KATZ
Rio de Janeiro/Brazil: J. R. BERGMANN,
F. J. HASSELMANN
Russia: V. LIOUBTCHENKO
San Diego: P. YU, S. HARTS
San Fernando Valley: J. WEILER, JR., H. C. BELL
Santa Clara Valley/San Francisco: L. M. BURNS
Sao Paulo: A. O. M. ANDRADE, E. D. LAGRIMAS,
D. CONSONI

Saratov/Penza: M. V. DAVIDOVICH
Schenectady: R. J. GUTMANN
Seattle: W. CHARCZENKA, M. CHEN
Singapore: M. S. LEONG-SENG, S. P. YEO
South Africa: D. B. DAVIDSON, J. CLOETE
South Australia: B. D. BATES, A. J. PARFITT
South Brevard Indian River: T. E. DURHAM, M. THURSBY
Southeastern Michigan: J. W. BURNS, T. GROTHORN
Spain: M. SALAZAR-PALMA, L. DE-HARO
Springfield: K. M. LAU
St. Louis:
St. Petersburg: S. TRETYAKOV
Sweden: J. JOHANSSON, S. HAGELIN
Switzerland: L. PROST, W. BACHTOLD
Syracuse: T. SARKAR, W. SONG
Taiwan: S. H. HSU, J. L. LIUANG
Tbilisi: D. KARKASHADZE
Thailand: N. YOTHANOM
Tokyo: T. NISHIKAWA
Toronto: T. E. VAN DEVENTER
Tucson: H. C. KOHLBACHER, R. J. FINGER
Turkey: A. BUYULKALSOY
Twin Cities: M. J. GAWRONSKI, J. LARSON
Ukraine East: A. I. NOSICH
Ukraine Kiev: Y. M. POPLAVKO
Ukraine West: N. N. VOITOVICH
United Kingdom/Ireland: N. WILLIAMS, A. A. REZAZADEH
Venezuela: A. N. BIANCHI, R. SANCHES
Virginia Mountain: H. P. SINGH
Washington DC/Northern Virginia: S. F. DALA, S. N. BAJPAI
Winnipeg: L. SHAFAI
Yugoslavia: B. S. JOCANOVIC, O. BORIC

IEEE MICROWAVE AND GUIDED WAVE LETTERS**Editor-in-Chief**

M. S. GUPTA

M. KOSHIBA (*Asia-Pacific Abstracts*)**Sub-Associate Editor**

S. XU

Associate EditorsW. H. MEISE (*Patent Abstracts*)**THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.****Officers**

JOSEPH BORDOGNA, *President*
KENNETH R. LAKER, *President-Elect*
ANTONIO C. BASTOS, *Secretary*
BRUCE A. EISENSTEIN, *Treasurer*
ARTHUR WINSTON, *Vice President, Educational Activities*

FRIEDOLF M. SMITS, *Vice President, Publication Activities*
DANIEL R. BENIGNI, *Vice President, Regional Activities*
L. JOHN RANKINE, *Vice President, Standards Association*
LLOYD A. MORLEY, *Vice President, Technical Activities*
JOHN R. REINERT, *President, IEEE USA*

WILLIAM G. DUFF, *Director, Division IV—Electromagnetics and Radiation***Executive Staff**DANIEL J. SENESE, *Executive Director*

DONALD CURTIS, *Human Resources*
ANTHONY DURNIAK, *Publications*
JUDITH GORMAN, *Standards Activities*
CECELIA JANKOWSKI, *Regional Activities*
PETER A LEWIS, *Educational Activities*

RICHARD D. SCHWARTZ, *Business Administration*
W. THOMAS SUTTLE, *Professional Activities*
MARY WARD-CALLAN, *Technical Activities*
JOHN WITSKEN, *Information Technology*

IEEE Periodicals**Transactions/Journals Department**

Staff Director: FRAN ZAPPULLA
Editorial Director: VALERIE CAMMARATA
Production Director: ROBERT SMREK
Transactions Manager: GAIL S. FERENC
Electronic Publishing Manager: STEPHEN COHEN
Managing Editor: ROBERT W. DAVIDSON