

NISTIR 89-4037



# **Report on Interactions Between the National Institute of Standards and Technology and the Institute of Electrical and Electronic Engineers**

Gail K. Ehrlich

U.S. DEPARTMENT OF COMMERCE  
National Institute of Standards and Technology  
(Formerly National Bureau of Standards)  
National Engineering Laboratory  
Gaithersburg, MD 20899

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National Bureau of Standards became the National Institute of Standards and Technology on August 23, 1988, when the Omnibus Trade and Competitiveness Act was signed. NIST retains all NBS functions. Its new programs will encourage improved use of technology by U.S. industry.

**U.S. DEPARTMENT OF COMMERCE**  
**Robert A. Mosbacher, Secretary**  
Ernest Ambler, Acting Under Secretary  
for Technology

**NATIONAL INSTITUTE OF STANDARDS  
AND TECHNOLOGY**  
Raymond G. Kammer, Acting Director



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REPORT ON INTERACTIONS BETWEEN THE  
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY  
AND THE  
INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

Abstract

This report highlights examples of interactions between the National Institute of Standards and Technology (NIST) and the Institute of Electrical and Electronic Engineers (IEEE) generally since October 1, 1987. It is meant to be representative, not all-inclusive. The interactions are organized by discipline in the following categories: IEEE honors and awards, editors, committee memberships and contribution to standards, conferences and workshops, publications, and other interactions. The report illustrates many activities which are designed to disseminate NIST's most recent technical advances and to learn of the technical challenges facing engineers in industry.

Requests for information, comments, as well as additions and revisions, are welcome. Please contact:

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Key Words: computers; electrical engineering; electronics; high voltage technology; IEEE; reliability; robotics; standards; technology transfer; ultrasonics

## 1. INTRODUCTION

In this era of rapid technological change, the National Institute of Standards and Technology (NIST)<sup>1</sup> and the Institute of Electrical and Electronic Engineers (IEEE) maintain a synergistic relationship that benefits the electrical engineering profession and the Nation. NIST is the Nation's central reference laboratory for physical, chemical, and engineering measurements. In addition, the Omnibus Trade and Competitiveness Act of 1988 expanded NIST's mission to assist industry in the development of technology and procedures needed to improve quality, modernize manufacturing processes, ensure product reliability, manufacturability, functionality, and cost-effectiveness, and to facilitate the more rapid commercialization of products based on new scientific discoveries. NIST is the only major Federal laboratory with a direct mission to support American industry.

IEEE is the largest technical professional society in the world, with over 240,000 members who are engaged in advancing the frontiers of knowledge and supporting the public with a broad and growing range of electrotechnologies. The IEEE plays an important role in NIST's efforts to fulfill its mission. Technical conferences and publications sponsored by the IEEE provide a forum for NIST staff to disseminate their most recent technical advances and in turn to learn of the technical challenges facing engineers in industry. NIST staff contribute to the development of IEEE standards as these standards are an effective means of assuring that technical advances are incorporated in industrial practice.

At the same time, IEEE benefits from the active role that NIST staff members play in the organization. Staff members working in such areas as electronics, computers, robotics, nuclear science, high voltage technology, ultrasonics and reliability serve on IEEE committees, subcommittees, and working groups as well as in various positions in the member societies. In addition, substantive technical contributions to IEEE standards have been made by NIST staff.

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<sup>1</sup> The National Bureau of Standards (NBS) became the National Institute of Standards and Technology (NIST) on August 23, 1988, when the President signed the Omnibus Trade and Competitiveness Act. NIST retains all of the NBS functions in addition to new programs that will further encourage improved use of technology by U.S. industry.

The abbreviations NBS and NIST are both used in this report depending on the time of the activity being reported.



## 2. SUMMARY OF ACTIVITIES

This report highlights examples of interactions between NIST and IEEE generally since October 1, 1987. This report is meant to be representative, not all-inclusive. It excludes general Society membership.

The NIST/IEEE activities are summarized in the following categories:

- Honors and Awards
- IEEE Editors
- Committee Memberships and Contributions to Standards
- Conferences and Workshops
- Publications
- Other Interactions

These activities should serve as models to expand relationships in new areas of mutual interest. Details of these activities are contained in the Appendix of this report and are organized by the appropriate NIST working unit. A summary of these activities follows.

### Honors and Awards

There are currently ten IEEE Fellows and 23 IEEE Senior Members employed at NIST. In addition, two NIST researchers were recipients of the 1986 IEEE Standards Medallion and the IEEE Centennial Medal. All of these individuals continue to make valuable contributions to IEEE committees and conferences.

### Editors

NIST researchers have served as editors, guest editors, associate editors, reviewers, and journal referees for seven different IEEE publications. These publications include the IEEE Transactions on Instrumentation and Measurement, IEEE Transactions on Antennas and Propagation, IEEE Micro, and IEEE Software.

### Committee Memberships and Contributions to Standards

At the present time, NIST scientists and engineers are members of 17 IEEE societies and participate in over 40 committees, subcommittees, and working groups. They hold such positions as Vice President of the Dielectrics and Electrical Insulation Society and member of the Computer Society's Board of Governors. In addition, they chair several of the committees and subcommittees.

As a result of NIST research and coordination with IEEE committee, subcommittee, and working group members, several significant standards and measurement practices have been adopted. Examples of such standards are discussed below.

- o In the computer area, NIST scientists chaired the standards committee work that led to the Guide to Portable Operating Systems (POSIX) and the Test Method Specifications for POSIX.

- o With a NIST staff member serving as project manager, numerous standards on nuclear instrumentation and detectors were processed. These include the standard on FASTBUS Modular High-Speed Data Acquisition and Control Systems and seven standards on the CAMAC Computer Automated Measurement and Control System.
- o The Standards Committee on Electricity Metering, chaired by a NIST researcher, defines the characteristics of electricity meters and measurement techniques for electric energy and power so that the appropriate units used for customer billing purposes can be made traceable to NIST with the required accuracy.
- o The Surge Characterization Working Group of the Surge Protective Devices Committee is also chaired by a NIST scientist who organizes the development of new standards in this field.
- o A draft report on recommended practices for measuring electromagnetic field strengths was presented by an NIST staff member who chairs the Antennas and Wave Propagation Standards Committee.
- o The Committee on Dielectric Fluids has only one fire expert. He is from NIST. His expertise is crucial since this committee is concerned with the development of standards for measuring the flammability of dielectric fluids and guidance for their use.

#### Conferences and Workshops

Since October 1, 1987, NIST researchers have been, or plan to be, active in over 60 IEEE conferences, symposiums, workshops, and meetings. Their participation ranges from session and program chairmen and vice-chairmen to members of the program or organizing committees as well as tutorial leaders. Over 70 technical papers authored by NIST staff were presented at these conferences and workshops. NIST was very active in such major conferences as the 1988 IEEE Instrumentation and Measurement Technology Conference, the 1988 and 1987 Joint Magnetism and Magnetic Materials/Intermag Conferences, the Third IEEE International Symposium on Intelligent Control, and the 1988 Computer Standards Conference, COMPSTAN. The U.S. Representative to the 1989 IEEE International Conference on Microelectronic Test Structures is from NIST. He also served as last year's General Chairman of this Conference held in California.

NIST is proud to have sponsored several successful joint workshops and conferences with IEEE. These include the 1987 and the upcoming 1989 Electronic Device Society/NIST Power Semiconductor Devices Workshop, the IEEE/NBS VLSI and Gallium Arsenide Chip Packaging Workshop, and the 1988 IEEE/NBS/URSI Conference on Precision Electromagnetic Measurements held in Tsukuba, Japan.

## Publications

In addition to the numerous papers published in IEEE conference proceedings, the NIST technical staff has contributed more than 60 articles in about 20 IEEE transactions and journals since October, 1987.

APPENDIX A

EXAMPLES OF  
NIST/IEEE INTERACTIONS

NATIONAL ENGINEERING LABORATORY

CENTER FOR ELECTRONICS AND ELECTRICAL ENGINEERING

IEEE Honors and Awards:

Center for Electronics and Electrical Engineering Director's Office

IEEE Fellow

- o J. C. French

Electrosystems Division

IEEE Fellows

- o F. Martzloff
- o O. Petersons

IEEE Senior Members

- o N. B. Balecki
- o B. A. Bell
- o R. E. Hebner
- o R. S. Turgel
- o R. J. Van Brunt

1986 IEEE Standards Medallion

- o F. Martzloff

Power Systems Engineering Committee Paper Award, May 1988

- o F. Martzloff, "Power Quality Site Surveys: Fact, Fiction, and Fallacies."

IEEE Editors:

IEEE Transactions on Instrumentation and Measurement

- o B. A. Bell, Editorial Review Committee
- o O. Petersons, Editorial Review Committee

IEEE Committee Memberships:

Dielectrics and Electrical Insulation Society

- R. E. Hebner, Vice President
- o Gaseous Dielectrics Technical Committee
  - R. J. Van Brunt, Chairman

## Power Engineering Society

- o Power System Instrumentation and Measurement (PSIM) Committee
  - O. Petersons, Chairman
  - R. E. Hebner, Member
- o Monitoring Electrical Quality Working Group of PSIM Committee
  - F. Martzloff, Past Chairman - provides technical inputs on metrology.
- o Digital Techniques in Electrical Measurements Subcommittee of PSIM Committee
  - O. Petersons, Member
  - G. N. Stenbakken, Member
- o Electricity Metering Subcommittee of PSIM Committee
  - N. M. Oldham, Secretary
  - R. S. Turgel, Member
- o High Voltage Testing Techniques Subcommittee of PSIM Committee
  - R. E. Hebner, Member
  - M. Misakian, Member
- o Surge Protective Devices (SPD) Committee
  - F. Martzloff, Member - provide review of draft standards.
- o Surge Characterization Working Group of SPD Committee
  - F. Martzloff, Chairman - organize development of new standards.
- o AC Fields Working Group of Transmission and Distribution Committee
  - M. Misakian, Member - prepare manuscript of working group papers.
- o DC Fields and Ions Working Group of Transmission and Distribution Committee
  - M. Misakian, Member - prepare draft standard.

## Industry Application Society

- o Grounding and Power for Computers Subcommittee of Power System Engineering Committee

- F. Martzloff, Chapter Editor - provide text and review of new standards.

#### Instrumentation and Measurement Society

- o Administrative Committee
  - R. S. Turgel, Member
- o Instrument/Computer Interface Subcommittee of Automated Instrumentation Technical Committee
  - T. F. Leedy, Member
- o DC-Low Frequency Standards Instrumentation and Measurement Technical Committee
  - B. A. Bell, Chairman
  - N. B. Belecki, Member
- o AC Measurement Subcommittee of DC-Low Frequency Standards Instrumentation and Measurement Technical Committee
  - N. M. Oldham, Secretary
  - N. B. Belecki, Member
  - J. R. Hastings, Member
  - J. Kinard, Member
  - T. E. Lipe, Member
- o Washington/Northern Virginia Chapter
  - G. N. Stenbakken, Chairman
  - J. R. Kinard, Vice-Chairman
  - B. A. Bell (Past Chairman) Secretary
  - O. B. Laug, Treasurer

#### Standards Committee on Electricity Metering-C12-Accredited by the American National Standards Institute

- R. S. Turgel, Chairman

This committee defines the characteristics of electricity meters and measurement techniques for electric energy and power so that the appropriate units used for customer billing purposes can be made traceable to the National Institute of Standards and Technology with the required accuracy.

## Standards Coordinating Committee 10, Definitions

- o PSIM Dictionary Working Group
  - R. S. Turgel, Chairman

This committee reviews and revises terms in the IEEE Dictionary, ANSI/IEEE Standards 100, to promote uniform terminology throughout the engineering and standards community.

### Conferences and Workshops:

IEEE Instrumentation and Measurement Technology Conference, Washington, DC, April 25-27, 1989

- o B. A. Bell, Vice Chairman

IEEE/NBS/URSI Conference on Precision Electromagnetic Measurements, Tsukuba, Japan, June 7-10, 1988

- o O. Petersons, Chairman Executive Committee (1986-1990).
- o R. F. Dziuba, Proceedings Editor
- o M. E. Cage, R. F. Dziuba, R. E. Elmquist, B. F. Field, P. T. Olsen, W. D. Phillips, J. Q. Shields, R. L. Steiner, B. N. Taylor, and E. R. Williams, "NBS Determination of the Fine-Structure Constant, and of the Quantized Hall Resistance and Josephson Frequency to Voltage Quotient in SI Units."
- o B. Field and M. R. McCaleb, "An Improved Transportable DC Voltage Standard."
- o P. T. Olsen, R. E. Elmquist, W. D. Phillips, E. R. Williams, G. R. Jones, Jr., and V. E. Bower, "A Measurement of the NBS Electrical Watt in SI Units."
- o J. Shields and R. Dzibua, "New Realization of the Ohm and Farad Using the NBS Calculable Capacitor."
- o R. Steiner and B. F. Field, "Josephson Array Voltage Calibration System: Operational Use and Verification."
- o E. Williams, G. R. Jones, Jr., Y. Sheng, L. Ruimin, H. Sasaki, P. T. Olsen, W. D. Phillips, and H. P. Layer, "A Low Field Determination of the Proton Gyromagnetic Ratio in Water."

IEEE International Symposium on Electrical Insulation, Boston, MA, June 5-7, 1988

- o R. J. Van Brunt, Program Committee Chairman



- o R. E. Hebner, Session Organizer
- o R. J. Van Brunt and S. V. Kulkarni, "New Method for Measuring the Stochastic Properties of Corona and Partial Discharge Pulses."

Washington/Northern Virginia Chapter of the IEEE Instrumentation and Measurement Society, Gaithersburg, MD, May 17, 1988

- o G. N. Stenbakken, B. A. Bell, D. R. Flynn, D. J. Evans, et al., "Evaluation of a Copy Prevention Method for Digital Audio Tape Systems."

IEEE Instrumentation and Measurement Technology Conference, San Diego, CA, April 20-21, 1988

- o R. S. Turgel, Vice Chairman Technical Program Committee
- o B. A. Bell, Session Chairman
- o M. Misakian, "Measurement of Electrical Parameters Near AC and DC Power Lines."
- o T. M. Souders, "Workshop on Testing Waveform Recorders."

1987 Conference on Electrical Insulation and Dielectric Phenomena, Gaithersburg, MD, October 19-22, 1987

- o E. F. Kelley, Local Arrangements Chairman and Program Committee Member
- o E. F. Kelley, N. Nemadi, R. E. Hebner, P. J. McKenny, and O. Forster, "Simultaneous Measurement of Light Emission, Current Pulses and Growth of Prebreakdown Streamers in Hexane."

NATIONAL ENGINEERING LABORATORY

CENTER FOR ELECTRONICS AND ELECTRICAL ENGINEERING

Electromagnetic Fields Division

IEEE Honors and Awards:

IEEE Fellows

- o D. Hill
- o M. Kanda
- o M. Ma

IEEE Senior Members

- o J. W. Adams
- o R. C. Baird
- o M. L. Crawford
- o W. L. Gans
- o R. L. Jesch
- o R. L. Lewis
- o A. C. Newell
- o A. G. Repjar
- o C. F. Stubenrach
- o D. F. Wait

Electromagnetic Compatibility Best Paper Award

- o D. A. Hill and M. H. Francis, "Out-of-Band Response of Antenna Arrays," IEEE Trans. EMC-29, November 1987. The award was presented at the 1988 International Electromagnetic Compatibility Symposium.

IEEE Editors:

IEEE Transactions on Electromagnetic Compatibility, September 1988

- o M. Kanda, Editor

Special Issue on Electromagnetic Shielding, IEEE Transactions EMC-30, No. 3, August 1988

- o M. T. Ma, Guest Editor

IEEE Transactions on Antennas and Propagation

- o D. A. Hill, Associate Editor

## IEEE Committee Memberships:

### Power Engineering Society

- o Electrostatic Discharge Working Group of Surge Protective Devices Committee
  - M. T. Ma, Member

### Electromagnetic Compatibility (EMC) Society

- o Subcommittee on Shielding Effectiveness
  - M. T. Ma, Member
- o EMC Standards Subcommittee
  - M. Kanda, Member and presented a draft on "Near-Field E and H Measurements."

### Antennas and Propagation Society

- o Antennas and Wave Propagation Standards Committee
  - M. Kanda, Chairman, participated in meeting held in Boulder, CO, January, 1988, and presented a draft report on "Recommended Practices for Measuring Electromagnetic Field Strengths."
- o Antenna Standards Committee
  - A. C. Newell, Member

### Microwave Theory and Technique (MTT) Society

- o Standards Definition of Terms for Planar Microwave Transmission Line of the MTT Standards Committee
  - D. H. Russell, Member
- o Precision Coaxial Connectors Subcommittee of the MTT Committee
  - R. L. Jesch, Member

## Conferences and Workshops:

IEEE International Electromagnetic Compatibility Symposium, Nagoya, Japan, September 1989

- o M. Kanda, Organizer of a Technical Session.

IEEE National Electromagnetic Compatibility Symposium, Denver, CO, May 1989

- o J. W. Adams, Chairman
- o M. Kanda, Vice Chairman
- o D. A. Hill, Chairman, Paper Committee

IEEE International Electromagnetic Compatibility Symposium, Seattle, WA, August 2-4, 1988

- o M. T. Ma, "ESD Radiated Electromagnetic Fields: Theory and Experiment."
- o M. L. Crawford and J. Ladbury, "Shielding Effectiveness Measurements of Cables and Connectors Using a Mode-Stirred Chamber."

IEEE International Antennas and Propagation Society Symposium, Syracuse, NY, June 6-10, 1988

- o A. G. Repjar, "Antenna Comparison Standards Using CW and Pulsed-CW Measurements and the Planar Near-Field Method."

IEEE/NBS/URSI Conference on Precision Electromagnetic Measurements, Tsukuba, Japan, June 7-10, 1988

- o M. Kanda, Chairman of two sessions: "Antennas and Field Measurements" and "EMC/EMI."
- o M. Kanda, "An Optically Linked Electric and Magnetic Field Sensor for Poynting Vector Measurements in the Near Field of Radiating Sources."
- o D. H. Russell, "Determination of Scattering Parameters from Precision Coaxial Air Line Standards" (authored by D. R. Holt).
- o D. H. Russell, "Equivalent Circuit for Imperfect Transmission Line Connectors" (authored by C. Hoer).
- o D. F. Wait, "Intercomparison of NBS Noise Calibration."
- o M. T. Ma, "Theory and Measurements of Unintentional Radiators."

IEEE International Microwave Theory and Techniques Symposium, New York, NY, May 23-27, 1988

- o D. F. Wait, "The Status of Precision Microwave Thermal Noise Measurements."

IEEE Surge Protection Devices Spring Meeting, Mesa, AZ, April 25-26, 1988

- o M. T. Ma, "Electromagnetic Fields Radiation by EDS."

IEEE Instrumentation and Measurement Technical Conference, San Diego, CA, April 19-22, 1988

- o M. Kanda, "Electromagnetic Field Standards for Bioelectromagnetic Applications."
- o E. J. Vanzura, "Automated System for Electromagnetic Field Generation and Immunity Testing."

Electromagnetic Compatibility Society, Dallas Chapter Meeting, March 1988

- o A. Ondrejka, "Time-Domain Antennas and Time-Domain Measurements."

Microwave Theory and Techniques Society Valley Regional Meeting, Burbank, CA, January 1988

- o C. Hoer - gave a seminar.

Electromagnetic Compatibility Society, Dallas/Fort Worth, Chapter Meeting, November 1987

- o M. L. Crawford, "Trends in EMC Measurements."

Other IEEE Publications:

- o G. H. Koepke, M. T. Ma, and W. D. Bensema, "Theory and Measurements of Radiation Emissions Using a TEM Cell," IEEE Trans. IM, pending.
- o D. I. Wu and D. C. Chang, "The Effect of an Electrically Large Stirrer in a Mode-Stirred Chamber," IEEE Trans. EMC, pending.
- o M. Kanda, "A Microstrip Patch Antenna as a Standard Transmitting and Receiving Antenna," IEEE Trans. AP, pending.
- o D. Halford, "Transparent Metrology of Digital Signal to Noise Ratios: A Proposal," IEEE Trans. Communications, pending.
- o D. A. Hill, "Reflection Coefficients of a Waveguide with Slightly Uneven Walls," IEEE Trans. MTT, pending.
- o D. A. Hill, "A Circular Array for Plane-Wave Synthesis," IEEE Trans. EMC, pending.
- o D. A. Hill, "Electromagnetic Scattering by Buried Objects of Low Contrast," IEEE Trans. Geoscience and Remote Sensing, pending.
- o L. D. Driver and M. Kanda, "An Optically Linked Electric and Magnetic Field Sensor for Poynting Vector Measurements in the Near Fields of Radiating Sources," IEEE Trans. EMC, November 1988.

- o J. Adams and D. Friday, "Measurement Procedures for Electromagnetic Compatibility Assessment of Electroexplosive Devices," IEEE Trans. on EMC, November 1988.
- o D. A. Hill, "Magnetic Dipole Excitation of a Long Conductor in a Lossy Medium," IEEE Trans. Geoscience and Remote Sensing, November 1988.
- o D. A. Hill, "Fields of Horizontal Currents Located Above the Earth," IEEE Trans. Geoscience and Remote Sensing, November 1988.
- o D. I. Wu and D. C. Chang, "A Hybrid Representation of the Green's Function in an Over-Moded Rectangular Cavity," IEEE Trans. MTT-36, No. 9, September 1988.
- o M. Kanda, "Standard Probes for Electromagnetic Interference Measurements and Their Calibration Methods," IEEE Trans. on EMC, September 20, 1988.
- o R. L. Jesch, "Measurement of Shielding Effectiveness of Cables and Shielding Configurations by Mode-Stirred Techniques," IEEE Trans. EMC-30, No. 3, August 1988.
- o P. F. Wilson and M. T. Ma, "Techniques for Measuring the Electromagnetic Shielding Effectiveness of Materials, Part II: Near-Field Source Simulation," IEEE Trans. EMC-30, No. 3, August 1988.
- o P. F. Wilson, M. T. Ma, and J. W. Adams, "Techniques for Measuring the Electromagnetic Shielding Effectiveness of Materials, Part I: Far-Field Source Simulation," IEEE Trans. EMC-30, No. 3, August 1988.
- o R. C. Wittmann, "Spherical Wave Operators and the Translation Formulas," IEEE Trans. AP-36, No. 8, August 1988.
- o R. C. Baird, A. C. Newell, and C. F. Stubenrauch, "A Brief History of Near-Field Measurements of Antennas at the National Bureau of Standards," IEEE Trans. AP-36, No. 8, June 1988.
- o A. C. Newell, "Improved Polarization Measurements Using a Modified Three-Antenna Technique," IEEE Trans. AP-36, No. 6, June 1988.
- o R. L. Lewis and A. C. Newell, "An Efficient and Accurate Method for Calculating and Representing Power Density in the Near Zone of Microwave Antennas," IEEE Trans. AP-36, No. 6, June 1988.
- o A. C. Newell, "Error Analysis Techniques for Planar Near-Field Techniques," IEEE Trans. AP-36, No. 6, June 1988.

- o A. C. Newell, R. Ward, and E. McFarlane, "Gain and Power Parameter Measurements Using Near-Field Techniques," IEEE Trans. AP-36, No. 6, June 1988.
- o A. C. Newell and C. F. Stubenrauch, "Effect of Random Errors in Planar Near-Field Measurements," IEEE Trans. AP-36, No. 6, June 1988.
- o A. G. Repjar, A. C. Newell, and M. H. Francis, "Accurate Determination of Planar Near-Field Correction Parameters for Linearly Polarized Probes," IEEE Trans. AP-36, No. 6, June 1988.
- o L. A. Muth, "Displacement Errors in Antenna Near-Field Measurements and Their Effect on the Far Field," IEEE Trans. AP-36, No. 5, pp. 581-591, May 1988.
- o D. Hill, "Near-Field Detection of Buried Dielectric Objects," IEEE Trans. on Geoscience and Remote Sensing," May 26, 1988.
- o R. A. Lawton and W. T. Anderson, "Two Layer Dielectric Stripline Structure Modeling and Measurement," IEEE Trans. MTT-36, No. 4, pp. 785-789, April 1988.
- o M. H. Francis and C. F. Stubenrauch, "Comparison of Measured and Calculated Antenna Side Lobe Coupling Loss in the Near Field Using Approximate Far-Field Data," IEEE Trans. AP-36, No. 3, pp. 438-441, March 1988.
- o R. G. FitzGerrell, "Monopole Impedance and Gain Measurements on Finite Ground Planes," IEEE Trans. AP-36, No. 3, pp. 431-438, March 1988.
- o P. F. Wilson, "A Comparison Between Near-Field Shielding Effectiveness Measurements Based on Coaxial Dipoles and on Electrically Small Apertures," IEEE Trans. EMC-30, No. 1, pp. 23-28, February 1988.
- o R. L. Lewis and R. C. Wittmann, "Improved Spherical and Hemispherical Scanning Algorithms," IEEE Trans. AP-35, No. 12, pp. 1381-1388, December 1987.
- o R. L. Lewis, "Spherical-Wave Source-Scattering Matrix Analysis of Coupled Antennas," IEEE Trans. AP-35, No. 12, pp. 1375-1380, December 1987.
- o D. A. Hill and M. H. Francis, "Out-of-Band Response of Antenna Arrays," IEEE Trans. EMC-29, No. 4, pp. 282-288, November 1987.
- o J. P. Randa and M. Kanda, "A New Approach to Volumes Irradiated by Unknown Sources," IEEE Trans. EMC-29, No. 4, pp. 273-281, November 1987.

NATIONAL ENGINEERING LABORATORY

CENTER FOR ELECTRONICS AND ELECTRICAL ENGINEERING

Electromagnetic Technology Division

IEEE Honors and Awards:

IEEE Fellow

- o R. A. Kamper

IEEE Senior Members

- o A. F. Clark
- o G. Day
- o F. R. Fickett

IEEE Committee Memberships:

Instrumentation and Measurement Society

- o Administrative Committee
  - R. A. Kamper, Member
- o Technical and Standards Activities Committee
  - R. A. Kamper, Chairman
- o Morris E. Leeds Award Committee
  - R. A. Kamper, Member

Magnetics Society

- o Subcommittee on Superconductors of the Electrical Standards Committee
  - A. F. Clark, Chairman

Conferences and Workshops:

10th International Conference on Magnet Technology, Boston, MA,  
September 1988

- o F. R. Fickett, Member, Program Committee
- o F. R. Fickett, Member, Program Committee "Transverse  
Magnetoresistance of Oxygen-Free Copper."

IEEE Lasers and Electro-Optics Society Annual Meeting, Santa Clara, CA,  
1988

- o T. Dingding and G. W. Day, "Progress in the Development of  
Miniature Optical Fiber Current Sensors."



Applied Superconductivity Conference, San Francisco, CA, August 1988

- o C. A. Mears, H. Qing, P. L. Richards, and F. L. Lloyd, "Numerical Simulation of Experimental Data from Planar SIS Mixers with Integrated Tuning Elements."
- o H. Qing, C. A. Mears, R. L. Richards, and F. L. Lloyd, "MM Wave Quasioptical SIS Mixers."
- o C. A. Hamilton and F. L. Lloyd, "A Josephson Voltage Standard at 10 Volts Using a Series Array of 18 992 Junction."

Joint Magnetism and Magnetic Materials (MMM)/Intermag Conference, Vancouver, BC, July 1988

- o R. Goldfarb, "Magnetic Measurements on High Tc Superconductors" and "Oxygen Isotope Effect in BiSrCaCuO."

IEEE/NBS/URSI Conference on Precision Electromagnetic Measurements, Tsukuba, Japan, June 7-10, 1988

- o D. L. Franzen, "Measurement Standards for Single-Mode Fibers."
- o F. L. Lloyd, C. A. Hamilton, and K. Chieh, "A 10-V Josephson Voltage Standards."

Conference on Lasers and Electro-Optics, Anaheim, CA, April 25-29, 1988

- o B. L. Danielson and C. D. Whittenberg, "Interferometric Dispersion Measurements on Small Guided-Wave Structures."

IEEE Instrumentation and Measurement Technology Conference, San Diego, CA, April 19-22, 1988

- o R. A. Kamper, Presented short course, "Superconductors in Instrumentation and Standards."
- o R. A. Kamper, Session Chairman on Superconducting Instrumentation.
- o R. A. Kamper, "Application of the Josephson Effect to Standards and Measurements."
- o A. A. Sanders, Session Chairman, "Laser Measurement Technology."

Joint Magnetism and Magnetic Materials (MMM)/Intermag Conference, Chicago, IL, November 1987

- o R. Goldfarb, presented poster reviewing work on high temperature superconductors.

Other IEEE Publications:

- o C. A. Hamilton, F. L. Lloyd, K. Chieh, and W. Goeke, "A 10-V Josephson Voltage Standard," IEEE Transactions on Instrumentation and Measurement, pending.
- o K. S. Lee, "Electromagnetic Wave Propagation through Anisotropic Crystals Possessing Multiple Birefringences, and Compensation Techniques for Bulk-Type Optical Sensors with Multiple Birefringences," IEEE Journal of Lightwave Technology, pending.
- o C. W. Oates, M. Young, "Profile Inhomogeneity in Multimode Graded-Index Fibers," IEEE Journal of Lightwave Technology, pending.
- o D. L. Franzen, M. Young, A. Cherin, A. Head, E. Hackert, M. Raine, and J. Baines, "Numerical Aperture of Multimode Fibers by Several Methods: Resolving Differences," IEEE Journal of Lightwave Technology, pending.
- o R. B. Goldfarb, D. L. Ried, T. S. Kreilick, and E. Gregory (Supercon, Inc.), "Magnetic Evaluation of Cu-Mn Material for Fine-Filament Nb-Ti Superconductors," IEEE Trans. Magazine.
- o D. Go, C. A. Hamilton, F. L. Lloyd, M. S. DiIorio, and R. S. Withers, "Superconducting Analog Track-and-Hold Circuit," IEEE Trans. on Electron Devices, Vol. 35, No. 4, pp. 498-501, April 1988.
- o R. L. Kautz, C. A. Hamilton, and F. L. Lloyd, "Series-Array Josephson Voltage Standards," IEEE Trans. Magazine, MAG-23, p. 883, 1987.
- o R. L. Peterson, "Numerical Study of Currents and Fields in a Photoconductive Detector," IEEE Journal of Quantum Elec., QE-23, p. 1185, 1987.
- o F. L. Lloyd, C. A. Hamilton, J. A. Beall, D. Go, R. H. Ono, and R. E. Harris, "A Josephson Array Voltage Standards at 10 Volts," Electron Devices Letters, Vol. EDL-8, No. 10, pp. 449-450, October 1987.

NATIONAL ENGINEERING LABORATORY

CENTER FOR ELECTRONICS AND ELECTRICAL ENGINEERING

Semiconductor Electronics Division

IEEE Honors and Awards:

IEEE Fellow

- o G. G. Harman

IEEE Senior Members

- o H. S. Bennett
- o D. L. Blackburn
- o J. R. Lowney
- o F. F. Oettinger

IEEE Centennial Medal

- o G. G. Harman

IEEE Committee Memberships:

IEEE GEL Task Force

- G. G. Harman, Member and Subchairman of Evaluation Committee

Components, Hybrids and Manufacturing Technology Society

- o Administrative Committee
  - G. G. Harman, Member
- o Awards and Fellow Committee
  - G. G. Harman, Chairman
- o Nominations Committee
  - G. G. Harman, Chairman (1981-1988)

Power Electronics Society

- o Administrative Committee
  - D. L. Blackburn, Member

Electron Devices Society

- o Washington/Northern Virginia Chapter
  - J. Comas, Secretary

Conferences and Workshops:

Components, Hybrids, and Manufacturing Technology Society (CHMT)  
Electronics Components Conference

- o G. G. Harman, Chairman, Reliability Subcommittee of the  
Technical Program Committee (since 1978)

1989 IEEE Electronic Device Society/NBS Power Semiconductor Devices  
Workshop, Gaithersburg, MD, December 1989

- o D. L. Blackburn, Chairman, Organizing Committee

1989 IEEE International Conference on Microelectronic Test Structures,  
Edinburgh, Scotland, March 13-14, 1989

- o L. W. Linholm, U.S. Representative

1989 Applied Power Electronics Conference

- o D. L. Blackburn, Publicity Chairman

1989 IEEE Fifth Annual Semiconductor Thermal and Temperature  
Measurement Symposium (SEMI-THERM), San Diego, CA, February 7-9, 1989

- o D. L. Blackburn, Program Chairman

1988 International Electron Devices Meeting, San Francisco, CA,  
December 1988

- o H. S. Bennett, Program Committee

23rd Annual IEEE Industry Applications Society Meeting, Pittsburgh, PA,  
October 2-7, 1988

- o A. R. Hefner, "Analytical Modeling of Device-Circuit  
Interactions for the Insulated Gate Bipolar Transistor (IGBT)."

IEEE/NIST VLSI & GaAs Chip Packaging Workshop, Santa Clara, CA,  
September 12-14, 1988

- o G. G. Harman, Program Committee
- o G. G. Harman, "The Silicon and GaAs Wire-Bond Cratering  
Problem."

IEEE Bipolar Circuits and Technology Meeting, Minneapolis, MN,  
September 12-13, 1988

- o J. R. Lowney, "The Effect of High Injection on the Density of  
States of Silicon."

26th Annual International Reliability Physics Symposium, Monterey, CA,  
April 12-14, 1988

- o H. A. Schafft, Publicity Chairman, Management Committee
- o H. A. Schafft, J. A. Lechner, B. Sabi, M. Mahaney, and R. C. Smith, "Statistics for Electromigration Testing."

1988 IEEE Power Electronics Specialists Conference (PESC'88), Kyoto,  
Japan, April 11-14, 1988

- o D. L. Blackburn, Program Committee
- o D. L. Blackburn, "Power MOSFET Failure Revisited."

1988 IEEE International Conference on Microelectronic Test Structures,  
Long Beach, CA, February 22-23, 1988

- o L. W. Linholm, General Chairman
- o M. G. Buehler, L. W. Linholm, V. C. Tyree, R. A. Allen, B. R. Blaes, K. A. Hicks, and G. A. Jennings, "CMOS Process Monitor."
- o J. S. Kim, L. W. Linholm, B. L. Barley, M. H. Hanes, and M. W. Cresswell, "A Microelectronic Test Structure for Thickness Determination of Homogeneous Conducting Thin Films in VLSI Processing."
- o L. W. Linholm, D. Khera, C. P. Reeve, and M. W. Cresswell, "A Developmental Expert System for Test Structure Data Evaluation."
- o H. A. Schafft and J. Albers, "Thermal Interactions Between Electromigration Test Structures."
- o J. S. Suehle and K. F. Galloway, "Test Circuit Structures for Characterizing the Effects of Localized Hot-Carrier-Induced Charge in VLSI Switching Circuits."

1988 IEEE Fourth Annual Semiconductor Thermal and Temperature  
Measurement Symposium (SEMI-THERM), San Diego, CA, February 10-12, 1988

- o F. F. Oettinger, General Chairman
- o D. L. Blackburn, "A Review of Thermal Characterization of Power Transistors."

1987 IEEE Electron Devices Society/NBS Power Semiconductor Devices  
Workshop, Gaithersburg, MD, December 1987

- o D. L. Blackburn, Chairman, Organizing Committee

Other IEEE Publications:

- o J. S. Suehle and K. F. Galloway, "Switching Time Degradation in Synchronously Stressed Transmission Gates," IEEE Electron Device Letters, pending.
- o G. P. Carver, J. J. Kopanski, D. B. Novotny, and R. A. Forman, "Specific Contact Resistivity of Metal-Semiconductor Contacts -- A New, Accurate Method Linked to Spreading Resistance," IEEE Trans. Electron Devices 35 (4), pp. 489-497, April 1988.
- o C. L. Wilson, "Hydrodynamic Carrier Transport in Semiconductors with Multiple Band Minimums," IEEE Trans. Electron Devices 35 (2), pp. 180-187, February 1988.
- o J. S. Suehle, T. J. Russell, and K. F. Galloway, "Interface Trap Effects on the Hot-Carrier Induced Degradation of MOSFETs During Dynamic Stress," IEEE Trans. Nuclear Science NS-34, pp. 1359-1363, 1987.
- o G. Singh, K. F. Galloway, and T. J. Russell, "Temperature Induced Rebound in Power MOSFETs," IEEE Trans. Nuclear Science NS-34, pp. 1366-1369, 1987.
- o H. S. Bennett, "Numerical Simulations of Neutron Effects on Bipolar Transistors," IEEE Trans. Nuclear Science NS-34, pp. 1372-1375, 1987.

NATIONAL ENGINEERING LABORATORY

CENTER FOR MANUFACTURING ENGINEERING

IEEE Honors and Awards:

IEEE Senior Member

- o M. R. Serbyn

IEEE Editors:

IEEE Transactions on Systems, Man, and Cybernetics

- o M. Herman, Guest Associate Editor for a special issue on unmanned systems and vehicles.

IEEE Committee Memberships:

Ultrasonics, Ferroelectrics, and Frequency Control Society

- o Sonics/Ultrasonics Working Group  
- G. V. Blessing, Vice Chairman

Conferences and Workshops:

1989 International Ultrasonics Symposium

- o M. R. Serbyn, "High Frequency Vibration Measurements."

1989 Instrumentation and Measurement Technology Conference

- o M. R. Serbyn, "Results on International Round-Robin Accelerometer Calibration."

1988 International Ultrasonics Symposium

- o G. V. Blessing, Technical Vice Chairman

Third IEEE International Symposium on Intelligent Control, Arlington, VA, August 1988

- o B. A. Catron and B. H. Thomas, "Generic Manufacturing Controllers."
- o M. Herman, K. Chaconas, M. Nashman, and T-H. Hong, "Low Data Rate Remote Vehicle Driving."
- o M. Herman, T-H. Hong, S. Swetz, M. Rosol, and D. Oskard, "Planning and World Modeling for Autonomous Undersea Vehicles."

1988 IEEE International Conference on Robotics and Automation, Philadelphia, PA, April 1988

- o M. Herman and J. S. Albus, "Overview of the Multiple Autonomous Underwater Vehicles (MAUV) Project."
- o N. J. Norcross, "A Control Structure for Multi-Tasking Workstations."

Spring 1988 COMPCON, 33rd IEEE Computer Society International Conference, San Francisco, CA, February 29 - March 4, 1988

- o C. M. Furlani, D. Libes, E. J. Barkmeyer, and J. J. Mitchell, "The Distributed Data System of the Automated Manufacturing Research Facility of the National Bureau of Standards," (presented by K. Mohammad).

1987 American Control Conference, Minneapolis, MN (sponsored by IEEE and others)

- o J. Jun and C. R. McLean, "Control of an Automated Machining Workstation."

IEEE Conference on Systems, Man, and Cybernetics, Alexandria, VA, October 1987

- o J. Albus, Panel Member, FD Intelligent Machines, Plenary Panel Discussion.
- o R. Lumia, "An Architecture to Support Teleoperation and Autonomy."
- o R. Lumia, "An Architecture to Support Autonomy, Teleoperation, and Shared Control."

1987 International Ultrasonics Symposium

- o G. V. Blessing, Publications Chairman and Session Chairman
- o M. P. Jones and G. V. Blessing, "The Dynamic Poisson's Ratio of a Ceramic Power During Compaction."

Other IEEE Publications:

- o J. Jun and C. R. McLean, "Control of an Automated Machining Workstation," IEEE Control Systems Magazine, Special Issue on Robotics and Automation, Vol. 8, No. 1, February 1988.



- o R. Lumia, J. Michaloski, and T. Wheatley, "Exploiting Computational Parallelism with a Hierarchical Robot Control System," IEEE Journal of Robotics and Automation.
- o G. V. Blessing and D. G. Eitzen, "Ultrasonic Sensing of Surface Roughness," (Abstract) IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency, UFFC-34, No. 3, 1987.

NATIONAL ENGINEERING LABORATORY

CENTER FOR COMPUTING AND APPLIED MATHEMATICS

IEEE Editors:

IEEE Micro

- o D. K. Kahaner, Editor

Conferences and Workshops:

Measurement Science Conference, Anaheim, CA, January 1989

- o M. C. Croarkin - Session organizer for "Statistical Process Control" and "Statistical Solutions to Calibration Problems."

Annual Reliability and Maintainability Symposium, Atlanta, GA, January 1989

- o J. A. Lechner, "Estimators for Censored (log) Normal Samples."

Reliability Physics Symposium, Monterey, CA, April 1988

- o J. A. Lechner, et. al., "Statistics for Electromigration Testing."

1988 IEEE International Conference on Robotics and Automation, Philadelphia, PA, March 1988

- o J. Wang, "Location Estimation and Uncertainty Analysis for Mobile Robots."

1988 IEEE International Conference on Microelectronics Test Structures, Long Beach, CA, February 1988

- o C. Reeve, et. al., "A Developmental Expert System for Test Structure Data Evaluation."

Measurement Science Conference, Long Beach, CA, January 1988

- o M. C. Croarkin - Session Chairman and organizer for "Statistics and Quality Measurement."

Other IEEE Publications:

- o J. L. Blue, et. al., "The Effect of an Oil-Paper Interface Parallel to an Electric Field on the Breakdown Voltage at Elevated Temperatures," IEEE Transactions on Electrical Insulation, 23 (1988), pp. 249-259.

- o D. K. Kahaner, "Mathematical Software: PLOD for Interactive Solution of Ordinary Differential Equations," IEEE Micro, 8 (1988), pp. 56-61.
- o D. P. O'Leary and G. W. Stewart, "From Determinary to Systolic Arrays," IEEE Transactions on Computers, C-36 (1987), pp. 1355-1359.
- o D. F. Vecchia and R. Turgel, "Precision Calibration of Phase Meters," IEEE Transactions on Instrumentation and Measurement, December 1987.

Other IEEE Interactions:

NIST Conference on Uncertainty in Engineering Design, May 11, 1988

- o Prof. Andrzej J. Stronwas, Editor of IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, and Professor in the Dept. of Electrical Engineering and Computer Engineering at Carnegie Mellon University, gave a lecture on "Statistical Approaches to Integrated Circuit Design and Fabrication Process Controls."

IEEE User Group on Operating System for Micro Processors

- o R. C. Raybold, Member

NATIONAL ENGINEERING LABORATORY

CENTER FOR FIRE RESEARCH

IEEE Committee Memberships:

Dielectrics and Electrical Insulation Society

- o Fire Hazards Working Group
  - V. Babrauskas, Member
  
- o Committee on Dielectric Fluids
  - R. G. Gann, Member
  
  - This committee is concerned with the development of standards for measuring the flammability of dielectric fluids and guidance for their use. Gann is the only fire expert on the committee.

Other IEEE Interactions:

Ada Special Interest Group (Joint with Association for Computing Machinery)

- o W. W. Jones, Member

NATIONAL ENGINEERING LABORATORY

OFFICE OF ENERGY RELATED INVENTIONS

IEEE Honors and Awards:

IEEE Fellow

- o J. Rabinow

## NATIONAL COMPUTER SYSTEMS LABORATORY

### IEEE Honors and Awards:

IEEE Senior Member

- o V. Dhadesugoor

### IEEE Editors:

Software Maintenance, IEEE Software, November 1989

- o W. Osborne, Guest Editor

Software Verification and Validation, IEEE Software, May 1989

- o D. Wallace, Guest Editor

### Contribution to Published Standards:

- o IEEE - 982.1-1988 "Standard Dictionary of Measures to Reduce Reliable Software"  
- R. Martin, Editor
- o IEEE - 982.2-1988 "Guide for the Use of Standard Dictionary of Measures to Produce Reliable Software"  
- R. Martin, Editor
- o IEEE - 1012-1987 "Standard for Software Verification and Validation Plans"  
- D. Wallace, Secretary
- o IEEE - 1042-1987 "Guide to Software Configuration Management Plans"  
- W. Osborne, Secretary
- o P1083.0 Guide to POSIX  
- A. Hankinson, Chairman
- o P1003.3 Test Method Specifications for POSIX  
- R. Martin, Chairman  
- A. Cincotta, Editor

### IEEE Committee Memberships:

Computer Society

- o Board of Govenors  
- A. Hankinson, Member
- o Constitution & Bylaws Committee  
- A. Hankinson, Member

- o Technical Activities Board
  - A. Hankinson, Member
- o Executive Committee on Computer Graphics
  - M. Skall, Member
- o Washington Section Executive Committee
  - D. R. Benigni, Elected Treasurer

#### Computer Society Standard Committees

- o Integrated Voice and Data Local Area Networking Standard at the MAC and Physical Layer
  - V. Dhadesugoor, Secretary
- o Local Area Systems: Network Management
  - D. Stokesberry, Member
- o Portable Operating Systems (POSIX)
  - S. Trus, Member, Networking Subcommittee
- o Standards for Portable Operating Systems--POSIX
  - A. Cincotta, Member
  - R. Martin, Member
  - R. Kuhn, Member
- o Standard for Shell and Utility Application Interface--POSIX
  - R. Kuhn, Member
- o Revision: A Standard for Software Configuration Management Plans
  - W. Osborne, Member
- o Guide for Software Verification and Validation
  - D. Wallace, Co-Chairman
- o Recommended Practice for Software Certification
  - W. Wong, Member
  - D. Wallace, Member
- o Standard for Software Quality Metrics
  - W. Osborne, Member
- o Standard for Software Life Cycle Processes
  - R. Kuhn, Member

#### Communications Society

- o Communications Theory Committee
  - V. Dhadesugoor, Member
- o Computer Communications Committee
  - V. Dhadesugoor, Member

Conferences and Workshops:

Conference on Computer Assurance, NIST, June 19-23, 1989

- o D.R. Benigni, Treasurer and Member of Board of Directors.

22nd International Conference on System Sciences, IEEE and ACM, Hawaii, January 3-6, 1989

- o A. Mink and G. Nacht, "Performance Measurement of A Shared-Memory Multiprocessor Using Hardware Instrumentation."

Conference on Software Management, Phoenix, AZ, October 23-27, 1988

- o W. Osborne, Program Co-Chairman

Computer Software and Applications Conference, COMPSAC 88, Chicago, IL, October 4-6, 1988

- o W. Osborne, Steering Committee Member and Mini-Tutorial Speaker

Computer Assurance Conference, Gaithersburg, MD, June 1988

- o D. Wallace, Presented Standards Tutorials on Software Verification and Validation Plans

Computer Networking Symposium, April 11-13, 1988

- o S. Heatley and D. Stokesberry, "Measurements of a Transport Implementation Running over an IEEE 802.3 Local Area Network."

Computer Standards Conference, COMPSTAN, Washington, DC, March 21-23, 1988

- o R. Martin, Chairman
- o J. Hall, Program Co-Chairman
- o W. Osborne, Steering Chairman
- o D. Wallace, W. Osborne, and R. Martin, Speakers

Phoenix Conference on Computers and Communications, March 16-18, 1988

- o M. Chernick, Participant in panel discussion on OSI Network Management.



International Symposium on High Performance Computing EUCOPE and French Chapter of IEEE Computer Society, Paris, December 1987

- o R. Carpenter, "Performance Measurement Instrumentation for Multiprocessor Computers." (Presented by G. Lyon.)
- o G. Lyon, "Design Factors for Parallel Processing Benchmarks."
- o C. Smith, "On the Notion of Granularity."

Workshop on Fault Tolerance in Parallel and Distributed Computing, IEEE Computer Society, San Diego, CA, December 1987

- o R. Carpenter, A. Mink, and J. Roberts, "On the Measurement of Fault-Tolerant Parallel Processors."

Computer Software and Applications Conference, COMPSAC 87, Tokyo, Japan, October 7-9, 1987

- o W. Osborne, Steering Committee Member and Session Chairman

Other IEEE Publications:

- o R.J. Linn, "Conformance Evaluation Methodology and Protocol Testing," IEEE Journal on Selected Areas in Communications, pending.
- o M.E. Smid and D.K. Branstad, "The Data Encryption Standard: Past and Future," Proceedings of the IEEE, May 1988.

Other Interactions:

ANSI Technical Advisory Group to ISO for POSIX

- o R. Martin, IEEE Representative, ANSI

NATIONAL MEASUREMENT LABORATORY

CENTER FOR RADIATION RESEARCH

IEEE Awards and Honors:

IEEE Fellow

- o L. Costrell

IEEE Committee Memberships:

Nuclear and Plasma Sciences Society

- o Administrative Committee  
- L. Costrell, Ex-Officio Member
- o Nominations Committee  
- L. Costrell, Chairman
- o Annual Meetings Committee  
- L. Costrell, Chairman
- o Nuclear Instrumentation and Detectors Committee  
- L. Costrell, Secretary

- Numerous standards on nuclear instrumentation and detectors were and are processed through this Committee as IEEE Standards, with L. Costrell serving as project manager. These include the standard on FASTBUS Modular High-Speed Data Acquisition and Control Systems, seven standards on the CAMAC Computer Automated Measurement and Control System, and many others.

Conferences and Workshops:

1989 IEEE Particle Accelerator Conference, Chicago, IL, March 20-23, 1989

- o L. Costrell and S. Penner, Organizing Committee Members
- o P. Debenham and M. Wilson, Program Committee Members

1988 Conference on Nuclear and Space Radiation Effects, July 11-15, 1988

- o J. C. Humphreys, Referee for 12 technical papers on radiation dosimetry and energy-dependent effects on electronic devices submitted for the Conference.

1987 IEEE Nuclear Science Symposium, October 21-23, 1987, San Francisco, CA

- o L. Costrell, Program Committee Member

INSTITUTE FOR MATERIALS SCIENCE AND ENGINEERING

Conferences and Workshops:

Conference on Electrical Insulation and Dielectric Phenomena,  
Gaithersburg, MD, October 18-22, 1987

- o A. S. DeReggi, Conference Board Member
- o F. I. Mopsik, Session Chairman
- o M. G. Broadhurst, A. S. DeReggi, G. T. Davis, and F. I. Mopsik,  
"Changing Behavior of Polyethylene and Ionomers."
- o A. S. DeReggi, M. G. Broadhurst, G. T. Davis, and F. I. Mopsik,  
"Measurement of Space Charge Fields in Polymers."

IEEE 1987 Ultrasonics Symposium

- o A. V. Clark, R. E. Schramm, H. Fukuoka, and D. V. Mitrakovic,  
"Ultrasonic Characterization of Residual Stress and Flaws in  
Cast Steel Railroad Wheels."

Other IEEE Publications:

- o S. J. Norton, "Fast Magnetic Resonance Imaging with  
Simultaneously Oscillating and Rotating Field Gradients," IEEE  
Trans. on Medical Imaging, Vol. 6, 1987.

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11. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here) This report highlights examples of interactions between the National Institute of Standards and Technology (NIST) and the Institute of Electrical and Electronic Engineers (IEEE) since October 1, 1987. It is meant to be representative, not all-inclusive. The interactions are organized by discipline in the following categories: IEEE honors and awards, editors, committee memberships and contribution to standards, conferences and workshops, publications, and other interactions. The report illustrates many activities which are designed to disseminate NIST's most recent technical advances and to learn of the technical challenges facing engineers in industry.				
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