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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
National Engineering Laboratory
Gaithersburg, MD 20899

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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 IEEE Societies in the following categories: editors, committee memberships and contribution to standards, conferences and workshops, and publications. Recent NIST recipients of IEEE honors and awards are also provided. 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:

Gail Ehrlich
National Engineering Laboratory
Room B119, Bldg. 225
National Institute of Standards and Technology
Gaithersburg, MD 20899
Telephone: (301) 975-2313
Fax: (301) 869-8972

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

Author's Note: This publication updates and supersedes NISTIR 89-4037 issued in February 1989. At the request of IEEE, the report has been reformatted to organize the NIST interactions by IEEE Society. The related NIST technical organization is shown in parenthesis after each specific interaction. The key to these abbreviations is provided in Appendix B. In addition to reformating the report, information has been included to reflect more recent activities.

1. INTRODUCTION

In this era of rapid technological change, the National Institute of Standards and Technology (NIST)[1] 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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[1] 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

These activities should serve as models to expand relationships in new areas of mutual interest. Details of these activities are contained in Appendix A of this report and are organized by the appropriate IEEE Society. The related NIST technical organization is shown in parenthesis after each specific interaction. The key to these abbreviations is provided in Appendix B. A summary of these activities follows.

Honors and Awards

There are currently 14 IEEE Fellows and 24 IEEE Senior Members employed at NIST. In addition, NIST researchers have been recipients of the 1990 Harry Diamond Award, the 1990 W.R.G. Baker Award, the 1986 IEEE Standards Medallion and the IEEE Centennial Medal. Several best paper awards have also been given to the NIST staff.

Editors

NIST researchers have served as editors, guest editors, associate editors, and reviewers, for nine 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 25 IEEE societies and participate in over 70 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 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.

- NIST staff played a major role in the development of the IEEE standard definitions of physical quantities for fundamental frequency and time metrology.

- 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.

- 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.

- 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.

- 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.

- 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.

- 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 110 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 115 technical papers authored by NIST staff were presented at these conferences and workshops. NIST scientists have been very active in such major conferences as the IEEE Instrumentation and Measurement Technology Conferences, the Joint Magnetism and Magnetic Materials/Intermag Conferences, the Third IEEE International Symposium on Intelligent Control, the Annual Symposiums on Frequency 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 Electronic Device Society/NIST Power Semiconductor Devices Workshops, 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 70 articles in about 20 IEEE transactions and journals since October, 1987.

APPENDIX A

EXAMPLES OF NIST/IEEE INTERACTIONS

IEEE FELLOWS

- L. Costrell (CRR)
- M. L. Crawford (CEEE)
- J. C. French (CEEE)
- G. G. Harman (CEEE)
- H. Hellwig (D.O.)
- D. Hill (CEEE)
- R. A. Kamper (CEEE)
- M. Kanda (CEEE)
- M. Ma (CEEE)
- F. Martzloff (CEEE)
- F. F. Oettinger (CEEE)
- O. Petersons (CEEE)
- J. Rabinow (OERI)
- R. S. Turgel (CEEE)

IEEE SENIOR MEMBERS

- J. W. Adams (CEEE)
- R. C. Baird (CEEE)
- N. B. Balecki (CEEE)
- B. C. Belanger (CEEE)
- B. A. Bell (CEEE)
- H. S. Bennett (CEEE)
- D. L. Blackburn (CEEE)
- A. F. Clark (CEEE)
- G. Day (CEEE)
- V. Dhadesugoor (NCSL)
- F. R. Fickett (CEEE)
- M. H. Francis (CEEE)
- W. L. Gans (CEEE)
- R. B. Goldfarb (CEEE)
- R. E. Hebner (CEEE)
- R. L. Jesch (CEEE)
- R. L. Lewis (CEEE)
- J. R. Lowney (CEEE)
- A. C. Newell (CEEE)
- A. G. Repjar (CEEE)
- M. R. Serbyn (CME)
- C. F. Stubenrach (CEEE)
- R. J. Van Brunt (CEEE)
- D. F. Wait (CEEE)

IEEE CENTENNIAL MEDAL

- G. G. Harman (CEEE)

1990 HARRY DIAMOND AWARD

- R. E. Hebner for "development of electrical measurements and standards for the nation's electric power system." (CEEE)

1990 W. R. G. BAKER AWARD

- A. C. Newell, "Error Analysis Techniques for Planar Near-Field Measurements." (CEEE)

ANTENNA AND PROPAGATION SOCIETY, BEST PAPER AWARD, 1989

- A. C. Newell, "Error Analysis Techniques for Planar Near-Field Measurements." (CEEE)

1989 RALPH H. LEE PRIZE PAPER AWARD (IEEE Industry Applications Society, Industrial and Commercial Power Systems Department)

- F. D. Martzloff (and co-author Thomas M. Gruzs, Liebert Corporation), "Power Quality Site Surveys: Facts, Fiction, and Fallacies" (CEEE)

1989 AWARD FOR DISTINGUISHED SERVICES (Surge-Protective Devices Committee)

- F. D. Martzloff (CEEE)

STANDARDS BOARD PLAQUES

- T. M. Souders, for chairing committee that developed IEEE 89-1057, "Trial Use Standard for Digitizing Waveform Recorders" (CEEE)

- R. S. Turgel, for contribution to development of ANSI C12.1-1988, American National Code for Electricity Metering (CEEE)

INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM OUTSTANDING PAPER AWARD

- H. A. Schafft, "Statistics for Electromigration Testing" (CEEE)

POWER SYSTEMS ENGINEERING COMMITTEE PAPER AWARD, MAY 1988

- F. Martzloff, "Power Quality Site Surveys: Facts, Fiction, and Fallacies." (CEEE)

1988 ELECTROMAGNETIC COMPATIBILITY TRANSACTIONS PRIZE PAPER AWARD

- M. Kanda and L. D. Driver, "An Optically Linked Electric and Magnetic Field Sensor for Poynting Vector Measurements in the Near Fields of Radiating Sources," Nov. 1988. (CEEE)

1987 ELECTROMAGNETIC COMPATIBILITY TRANSACTIONS PRIZE PAPER AWARD

- D. A. Hill and M. H. Francis, "Out-of-Band Response of Antenna Arrays," November 1987. (CEEE)

1986 IEEE STANDARDS MEDALLION

- F. Martzloff (CEEE)

AEROSPACE AND ELECTRONIC SYSTEMS

Conferences and Workshops:

Conference on Computer Assurance, NIST, June 26-29, 1990

- D. R. Benigni, Treasurer and Member of Board of Directors (NCSL)

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

- D. R. Benigni, Treasurer and Member of Board of Directors (NCSL)

ANTENNAS & PROPAGATION (AP)

IEEE Editors:

IEEE Transactions on Antennas and Propagation

- D. A. Hill, Associate Editor (CEEE)

IEEE Committee Memberships:

- Antennas and Wave Propagation Standards Subcommittee on Recommended Practices for Measuring Electromagnetic Field Strengths
  - M. Kanda, Chairman (CEEE)

- Antenna Standards Committee
  - A. C. Newell, Member (CEEE)

Workshops and Conferences:

IEEE International Antennas and Propagation Society Symposium, San Jose, CA, June 26-30, 1989

- A. G. Repjar, "Testing Phased Arrays and Diagnostics." (CEEE)

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

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

Other IEEE Publications:

- D. P. Kremer and A. C. Newell, "Millimeter Waveguide Alignment Fixture," Antennas and Propagation Newsletter, December 1989. (CEEE)

- M. Kanda, "A Microstrip Patch Antenna as a Standard Transmitting and Receiving Antenna," IEEE Trans. AP, pending. (CEEE)

- R. C. Wittmann, "Spherical Wave Operators and the Translation Formulas," IEEE Trans. AP, Vol. 36, No. 8, August 1988. (CEEE)

- 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, Vol. 36, No. 8, June 1988. (CEEE)

- A. C. Newell, "Improved Polarization Measurements Using a Modified Three-Antenna Technique," IEEE Trans. AP, Vol. 36, No. 6, June 1988. (CEEE)

- 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, Vol. 36, No. 6, June 1988. (CEEE)

- A. C. Newell, "Error Analysis Techniques for Planar Near-Field Techniques," IEEE Trans. AP, Vol. 36, No. 6, June 1988. (CEEE)

- A. C. Newell, R. Ward, and E. McFarlane, "Gain and Power Parameter Measurements Using Near-Field Techniques," IEEE Trans. AP, Vol. 36, No. 6, June 1988. (CEEE)

- A. C. Newell and C. F. Stubenrauch, "Effect of Random Errors in Planar Near-Field Measurements," IEEE Trans. AP, Vol. 36, No. 6, June 1988. (CEEE)

- 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, Vol. 36, No. 6, June 1988. (CEEE)

- L. A. Muth, "Displacement Errors in Antenna Near-Field Measurements and Their Effect on the Far Field," IEEE Trans. AP, Vol. 36, No. 5, pp. 581-591, May 1988. (CEEE)

- 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, Vol. 36, No. 3, pp. 438-441, March 1988. (CEEE)

- R. G. FitzGerrell, "Monopole Impedance and Gain Measurements on Finite Ground Planes," IEEE Trans. AP, Vol. 36, No. 3, pp. 431-

438, March 1988. (CEEE)

- R. L. Lewis and R. C. Wittmann, "Improved Spherical and Hemispherical Scanning Algorithms," IEEE Trans. AP, Vol. 35, No. 12, pp. 1381-1388, December 1987. (CEEE)
- R. L. Lewis, "Spherical-Wave Source-Scattering Matrix Analysis of Coupled Antennas," IEEE Trans. AP, Vol. 35, No. 12, pp. 1375-1380, December 1987. (CEEE)

CIRCUITS & SYSTEMS

Other IEEE Publications:

- M. Gaitan, I. D. Mayuergoyz, and C.E. Korman, "Investigation of the Threshold Voltage of MOSFETs with Position and Potential Dependent Interface Trap Distributions Using a Fixed Point Method." IEEE Trans. CAD of Integrated Circuits and Systems (pending). (CEEE)

COMMUNICATIONS

IEEE Committee Memberships:

- Communications Theory Committee
  - V. Dhadesugoor, Member (NCSL)
- Computer Communications Committee
  - V. Dhadesugoor, Member (NCSL)

Conferences and Workshops:

NIST Workshop for Implementors of OSI, March 13-19, 1989; June 12-16, 1989; Sept. 11-15, 1989; Dec. 11-15, 1989 (Jointly sponsored with Computer Society)

- T. Boland, Chairman (NCSL)

Phoenix Conference on Computers and Communications, March 16-18, 1988 (Jointly sponsored with Computer Society)

- M. Chernick, Participant in panel discussion on OSI Network Management. (CEEE)

Other IEEE Publications:

- D. Halford, "Transparent Metrology of Digital Signal to Noise Ratios: A Proposal," IEEE Trans. Communications, pending. (CEEE)
- R.J. Linn, "Conformance Evaluation Methodology and Protocol Testing," IEEE Journal on Selected Areas in Communications, pending. (NCSL)

COMPONENTS, HYBRIDS & MANUFACTURING TECHNOLOGY

IEEE Editors:

IEEE Trans. on Components, Hybrids & Manufacturing Technology, Dec. 1989

- D. L. Blackburn, Guest Editor of Special Section on Semiconductor Thermal Measurements. (CEEE)

Committee Memberships:

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

Conferences and Workshops:

Components, Hybrids, and Manufacturing Technology Society Electronics Components Conference

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

1990 IEEE/NIST VLSI & GaAs Packaging Workshop, Boston, MA, September 10-13, 1990

- G. G. Harman, Technical Program Committee (CEEE)

1990 IEEE Sixth Annual Semiconductor Thermal and Temperature Measurement Symposium (SEMI-THERM), Phoenix, AZ, February 6-8, 1990

- D. L. Blackburn, Program Chairman (CEEE)

1989 IEEE VLSI Packaging Workshop, Garmisch-Partenkirchen, Germany, September 18-20, 1989

- G. G. Harman, USA Committee (CEEE)

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

- D. L. Blackburn, Program Chairman (CEEE)

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

- G. G. Harman, Program Committee (CEEE)

- G. G. Harman, "The Silicon and GaAs Wire-Bond Cratering Problem." (CEEE)

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

- F. F. Oettinger, General Chairman (CEEE)

- D. L. Blackburn, "A Review of Thermal Characterization of Power Transistors." (CEEE)

Other IEEE Publications:

- B. Murray, K. D. Stephanoff and J. S. Perkins (Lehigh U.), "Mixing Enhancement in Flow Past Rectangular Cavities as a Result of Periodically Pulsed Fluid Motion", IEEE Trans. on Components, Hybrids and Manufacturing Technology, Vol. 12, No. 4, Dec. 1989. (CCAM)

- M. E. Zaghloul, D. Khera, L. W. Linholm, and C. P. Reeve, "A Machine-Learning Classification Approach for IC Manufacturing Control Based on Test Structure Measurements, "IEEE Trans. on Semiconductor Manufacturing, Vol. 2, No. 2, pp. 47-53, May 1989. (CCAM & CEEE)

COMPUTER

IEEE Editors:

IEEE Micro

- D. K. Kahaner, Editor (CCAM)

Software Maintenance, IEEE Software, November 1989

- W. Osborne, Guest Editor (NCSL)

Software Verification and Validation, IEEE Software, May 1989

- D. Wallace, Guest Editor (NCSL)

IEEE Committee Memberships:

- IEEE GEL Task Force
  - G. G. Harman, Member and Subchairman of Evaluation Committee (CEEE)
- Board of Governors
  - A. Hankinson, Member (NCSL)
- Constitution & Bylaws Committee
  - A. Hankinson, Member (NCSL)
- Technical Activities Board
  - A. Hankinson, Member (NCSL)
- Executive Committee on Computer Graphics
  - M. Skall, Member (NCSL)
- Washington Chapter
  - D. R. Benigni, Elected Sec./Treas., July 1, 1989-June 30, 1990 (NCSL)
- Washington Section Executive Committee
  - D. R. Benigni, Elected Vice Chair, July 1, 1989-June 30, 1990 (NCSL)
  - D. R. Benigni, Elected Chairman, July 1, 1990-June 30, 1991 (NCSL)

Computer Society Standard Committees:

- Integrated Voice and Data Local Area Networking Standard at the MAC and Physical Layer
  - V. Dhadesugoor, Secretary (CEEE)
- Local Area Networks
  - R. Rosenthal, Member (NCSL)

- Local Area Systems: Network Management
  - D. Stokesberry, Member (NCSL)

- Portable Operating Systems (POSIX)
  - S. Trus, Member, Networking Subcommittee (NCSL)

- Standards for Portable Operating Systems--POSIX
  - A. Cincotta, Member (NCSL)
  - R. Martin, Member (NCSL)
  - D. Kuhn, Member (NCSL)

- Standard for Security Interface--POSIX
  - D. Steinauer, Chair (NCSL)

- Standard for Shell and Utility Application Interface--POSIX
  - D. Kuhn, Member (NCSL)

- Revision: A Standard for Software Configuration Management Plans
  - W. Osborne, Member (NCSL)

- Guide for Software Verification and Validation
  - D. Wallace, Co-Chairman (NCSL)

- Recommended Practice for Software Certification
  - W. Wong, Member (NCSL)
  - D. Wallace, Member (NCSL)

- Standard for Software Quality Metrics
  - W. Osborne, Member (NCSL)

- Standard for Software Life Cycle Processes
  - D. Kuhn, Member (NCSL)

- Professional Tools Task Force, P1175
  - D. Wallace and W. Wong (NCSL)

- Standard for Test Method Specifications--POSIX
  - R. Martin, Chair (NCSL)
  - A. Cincotta, Editor (NCSL)
  - S. Frankel, Member (NCSL)

- TCOS Steering Committee on Conformance Testing
  - R. Martin, Chair (NCSL)

- Standards for Distributed Services
  - J. Barkley, Member (NCSL)

- Standard for POSIX System Administration
  - A. Cincotta, Member (NCSL)

- Standard for User Interface
  - D. Kuhn, Member (NCSL)

Conferences and Workshops:

International Symposium on Intelligent Control, Philadelphia, PA, 1990 (Jointly sponsored with Systems, Man, and Cybernetics Society)

- M. Herman, Program Committee (CME)

Computer Assurance Conference, COMPASS '90, June 26-29, 1990

- D. Wallace, General Chair (NCSL)

1989 Winter Simulation Conference, Washington, DC, Dec. 4-6 (Jointly sponsored with Systems, Man, and Cybernetics Society)

- R. Lundegard, Member of Board of Directors (CCAM)

Federal Case Conference 1989: Integrated Data Management for Software Engineering, Gaithersburg, MD, Oct. 31-Nov. 2, 1989. (This is a NIST conference in cooperation with IEEE and Association of Computing Machinery (ACM).)

- M. Law and W. Osborne, Program Co-Chairs (NCSL)

- B. Rosen, Publications Chairman (NCSL)

- M. Law, T. Kirkendall, J. Newton, B. Rosen and W. Osborne, Speakers (NCSL)

IEEE/SPIE Workshop on Intelligent Robotic Systems: Design and Applications, Philadelphia, PA, November 1989

- M. Herman, Program Committee (CME)

Second International Conference on Data and Knowledge Systems for Manufacturing and Engineering, Gaithersburg, MD, October 16-18, 1989

This conference was held at NIST to bring together leading researchers and engineers who are working on software and hardware systems to improve engineering design and manufacturing. It featured tutorials, practitioner presentations, research presentations and a tour of the NIST Automated Manufacturing Research Facility.

- C. Furlani, Local Arrangements Chairman (CME)

- S. Stewart, Registration Chairman (CME)

- J. Fowler, "A System for Creating and Manipulating Mechanical Part Models Using the Product Data Exchange Specification

(PDES)." (CME)

- C. Furlani, Presented tutorial, "PDES Introduction and Applications." (CME)

- S. Stewart, "Workstations in the Production Environment: Present and Future." (CME)

Conference on Software Maintenance-1989 (CSM-89), Miami, FL, Oct. 16-19, 1989

- W. Osborne, General Chairman (NCSL)

Fourth International Symposia of Intelligent Control, Albany, NY, Sept. 1989

- S. Osella, "Collective Learning Systems: A Model for Automatic Control." (CME)

Computer Assurance Conference, COMPASS '89, June 19-23, 1989

- D. Wallace, Local Arrangements (NCSL)

Spring 1989 Compcon, San Francisco, CA, March 1989

- J. Albus, "The Marr and Albus Theories of Cerebellum: Two Early Models of Associative Memory," (presented by J. Fiala). (CME)

NIST Workshop for Implementation of OSI, March 13-19, 1989; June 12-16, 1989; Sept. 11-15, 1989; Dec. 11-15, 1989 (Jointly sponsored with Communications Society)

- T. Boland, Chairman (NCSL)

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

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

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

- W. Osborne, Program Co-Chairman (NCSL)

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

- W. Osborne, Steering Committee Member and Mini-Tutorial Speaker (NCSL)

Computer Assurance Conference, Gaithersburg, MD, June 1988

- D. Wallace, Presented Standards Tutorials on Software Verification and Validation Plans (NCSL)

Computer Networking Symposium, April 11-13, 1988

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

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

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

Phoenix Conference on Computers and Communications, March 16-18, 1988 (Jointly sponsored with Communication Society)

- M. Chernick, Participant in panel discussion on OSI Network Management. (CEEE)

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

- 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). (NCSL)

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

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

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

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

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

- W. Osborne, Steering Committee Member and Session Chairman (NCSL)

Contribution to Published Standards:

- IEEE - 982.1-1988 "Standard Dictionary of Measures to Reduce Reliable Software"
  - R. Martin, Editor (NCSL)

- IEEE - 982.2-1988 "Guide for the Use of Standard Dictionary of Measures to Produce Reliable Software"
  - R. Martin, Editor (NCSL)

- IEEE - 1012-1987 "Standard for Software Verification and Validation Plans"
  - D. Wallace, Secretary (NCSL)

- IEEE - 1042-1987 "Guide to Software Configuration Management Plans"
  - W. Osborne, Secretary (NCSL)

- P1083.0 Guide to POSIX
  - A. Hankinson, Chairman (NCSL)

- P1003.3 Test Method Specifications for POSIX
  - R. Martin, Chairman (NCSL)
  - A. Cincotta, Editor (NCSL)

Other IEEE Publications:

- D. K. Kahaner, "Mathematical Software: PLOD for Interactive Solution of Ordinary Differential Equations," IEEE Micro, Vol. 8, 1988, pp. 56-61. (CCAM)

- D. P. O'Leary and G. W. Stewart, "From Determinary to Systolic Arrays," IEEE Trans. on Computers, Vol. 36, pp. 1355-1359, 1987. (CCAM)

Other Interactions:

ANSI Technical Advisory Group to ISO for POSIX

- R. Martin, IEEE Representative, ANSI (NCSL)

CONTROL SYSTEMS

Conferences and Workshops:

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

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

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

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

Other IEEE Interactions:

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

- W. W. Jones, Member (CFR)

DIELECTRICS & ELECTRICAL INSULATION

IEEE Committee Memberships:

- R. E. Hebner, Vice President of Society (CEEE)
- G. J. FitzPatrick, Secretary (IEEE)

Gaseous Dielectrics Technical Committee

- R. J. Van Brunt, Chairman (CEEE)

Committee on Dielectric Fluids

- R. G. Gann, Member (CFR)

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.

Fire Hazards Working Group

- V. Babrauskas, Member (CFR)

Conferences and Workshops:

IEEE International Symposium on Electrical Insulation, Toronto, Canada, June 4-6, 1990

- R. J. Van Brunt, Vice-Chairman (IEEE)

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

- R. J. Van Brunt, Program Committee Chairman (CEEE)

- R. E. Hebner, Session Organizer (CEEE)

- R. J. Van Brunt and S. V. Kulkarni, "New Method for Measuring the Stochastic Properties of Corona and Partial Discharge Pulses." (CEEE)

1989 Conference on Electrical Insulation and Dielectric Phenomena, Leesburg, VA, October 16-19, 1989

- G. J. FitzPatrick, Local Arrangements Chairman (IEEE)
- R. E. Hebner, Session Chairman (IEEE)

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

- E. F. Kelley, Local Arrangements Chairman and Program Committee Member (CEEE)

- 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." (CEEE)

- A. S. DeReggi, Conference Board Member (MSEL)

- F. I. Mopsik, Session Chairman (MSEL)

- M. G. Broadhurst, A. S. DeReggi, G. T. Davis, and F. I. Mopsik, "Changing Behavior of Polyethylene and Ionomers." (MSEL)

- A. S. DeReggi, M. G. Broadhurst, G. T. Davis, and F. I. Mopsik, "Measurement of Space Charge Fields in Polymers." (MSEL)

Other IEEE Publications:

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 Trans. on Electrical Insulation, Vol. 23, pp. 249-259, 1988. (CCAM)

ELECTROMAGNETIC COMPATIBILITY (EMC)

IEEE Editors:

IEEE Transactions on Electromagnetic Compatibility, September 1988

- M. Kanda, Editor (CEEE)

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

- M. T. Ma, Guest Editor (CEEE)

IEEE Committee Memberships:

- Electromagnetic Compatibility Technical Committee on Electromagnetic Environments (TC-3)
  - J. P. Randa, Member (CEEE)
- Subcommittee on Shielding Effectiveness
  - M. T. Ma, Member (CEEE)
- Electromagnetic Compatibility Standard Subcommittee for Recommended Practices for RF Absorber Evaluation in the Range 30-1000 MHz
  - M. Kanda, Member (CEEE)
- Electromagnetic Compatibility Standard Subcommittee for Near-Field Testing Procedures for Electric and Magnetic Fields
  - M. Kanda, Member (CEEE)

Conferences and Workshops:

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

- M. Kanda, Technical Session Chairman and Organizer, and Member of

Technical Program Committee. (CEEE)

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

- J. W. Adams, Chairman (CEEE)
- M. Kanda, Vice Chairman (CEEE)
- D. A. Hill, Chairman, Paper Committee (CEEE)
- J. P. Randa, "Thermo-Optic Designs for Microwave and Millimeter-Wave Electric-Field Probes." (CEEE)

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

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

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

- M. T. Ma, "Electromagnetic Fields Radiation by EDS." (CEEE)

Electromagnetic Compatibility Society, Dallas Chapter Meeting, March 1988

- A. Ondrejka, "Time-Domain Antennas and Time-Domain Measurements." (CEEE)

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

- M. L. Crawford, "Trends in EMC Measurements." (CEEE)

Other IEEE Publications:

- D. I. Wu and D. C. Chang, "The Effect of an Electrically Large Stirrer in a Mode-Stirred Chamber," IEEE Trans. EMC, pending. (CEEE)
- D. A. Hill, "A Circular Array for Plane-Wave Synthesis," IEEE Trans. EMC, pending. (CEEE)
- D. I. Wu and M. Kanda, "Comparison on Theoretical and Experimental Data for the Near-Field of an Open-Ended Rectangular Waveguide," IEEE Trans. EMC, November, 1989. (CEEE)

- 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. (CEEE)

- J. Adams and D. Friday, "Measurement Procedures for Electromagnetic Compatibility Assessment of Electroexplosive Devices," IEEE Trans. EMC, November 1988. (CEEE)

- M. Kanda, "Standard Probes for Electromagnetic Interference Measurements and Their Calibration Methods," IEEE Trans. EMC, September 20, 1988. (CEEE)

- R. L. Jesch, "Measurement of Shielding Effectiveness of Cables and Shielding Configurations by Mode-Stirred Techniques," IEEE Trans. EMC, Vol. 30, No. 3, August 1988. (CEEE)

- 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, Vol. 30, No. 3, August 1988. (CEEE)

- 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, Vol. 30, No. 3, August 1988. (CEEE)

- P. F. Wilson, "A Comparison Between Near-Field Shielding Effectiveness Measurements Based on Coaxial Diopoles and on Electrically Small Apertures," IEEE Trans. EMC, Vol. 30, No. 1, pp. 23-28, February 1988. (CEEE)

- D. A. Hill and M. H. Francis, "Out-of-Band Response of Antenna Arrays," IEEE Trans. EMC, Vol. 29, No. 4, pp. 282-288, November 1987. (CEEE)

- J. P. Randa and M. Kanda, "A New Approach to Volumes Irradiated by Unknown Sources," IEEE Trans. EMC, Vol. 29, No. 4, pp. 273-281, November 1987. (CEEE)

ELECTRON DEVICES

IEEE Committee Memberships:

- Washington/Northern Virginia Chapter
  - J. Comas, Secretary (CEEE)

Conferences and Workshops:

1990 IEEE SOS/SOI Technology Conference, October 1990

- P. Roitman, Paper Selection Committee (CEEE)

1990 International Reliability Physics Symposium, New Orleans, LA, March 26-29, 1990 (Jointly sponsored with Reliability Society)

- H. A. Schafft, Technical Program Chairman (CEEE)

1990 IEEE International Conference on Microelectronic Test Structures, San Diego, CA, March 5-7, 1990

- M. W. Cresswell, Technical Chairman (CEEE)
- L. W. Linholm, Technical Program Committee (CEEE)

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

- D. L. Blackburn, Chairman, Organizing Committee (CEEE)

1989 IEEE International Symposium on Physical and Failure Analysis of Integrated Circuits, Singapore, November 7-10, 1989

- G. G. Harman, Seminar on Reliability and Yield Problems in Microelectronics (CEEE)

1989 IEEE SOS/SOI Technology Conference, Lake Tahoe, NV, October 3-5, 1989

- P. Roitman, Chairman, Device Physics and Modeling Session (CEEE)
- P. Roitman, Chairman, Rump Session on Device Physics and Modeling (CEEE)
- M. Gaitan and P. Roitman, "Small Signal Modeling of the MOSOS Capacitor." (CEEE)
- S. J. Krause, S. Visitserngtrakul, B.F. Cordts, and P. Roitman, "Effect of Annealing Conditions on Precipitate and Defect Evolution in Oxygen Implanted SOI Material." (CEEE)

1989 IEEE International Reliability Physics Symposium, Phoenix, AZ, April 10, 1989 (Jointly sponsored with the Reliability Society)

- F. F. Oettinger, "Thermal Resistance Measurements," Tutorial Notes. (CEEE)
- H. A. Schafft, "Test Methodology for Electromigration Characterization," Tutorial Notes. (CEEE)

- J. S. Suehle and H. A. Schafft, "The Electromigration Damage Response Time and Implications for dc and Pulsed Characterizations." (CEEE)

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

- L. W. Linholm, U.S. Representative (CEEE)

- D. Khera, M. E. Zaghloul, L. W. Linholm, and C. L. Wilson, "A Neural Network Approach for Classifying Test Structure Data." (CEEE)

- H. A. Schafft, J. S. Suehle, and P. G. A. Mirel, "Thermal Conductivity Measurements of Thin-Film Silicon Dioxide." (CEEE)

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

- H. S. Bennett, Program Committee (CEEE)

1988 IEEE SOS/SOI Technology Workshop, October 3-5, 1988

- S. Mayo, J. R. Lowney, and P. Roitman, "SIMOX Characterization by Photoinduced Transient Spectroscopy." (CEEE)

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

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

26th Annual International Reliability Physics Symposium, Monterey, CA, April 12-14, 1988 (Jointly sponsored with Reliability Society)

- H. A. Schafft, Publicity Chairman, Management Committee (CEEE)

- H. A. Schafft, J. A. Lechner, B. Sabi, M. Mahaney, and R. C. Smith, "Statistics for Electromigration Testing." (CEEE)

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

- L. W. Linholm, General Chairman (CEEE)

- 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." (CEEE)

- 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." (CEEE)

- L. W. Linholm, D. Khera, C. P. Reeve, and M. W. Cresswell, "A Developmental Expert System for Test Structure Data Evaluation." (CEEE) and (CCAM)
- H. A. Schafft and J. Albers, "Thermal Interactions Between Electromigration Test Structures." (CEEE)
- J. S. Suehle and K. F. Galloway, "Test Circuit Structures for Characterizing the Effects of Localized Hot-Carrier-Induced Charge in VLSI Switching Circuits." (CEEE)

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

- D. L. Blackburn, Chairman, Organizing Committee (CEEE)

Other IEEE Publications:

- M. E. Zaghloul, D. Khera, L. W. Linholm, and C. P. Reeve, "A Machine-Learning Classification Approach for IC Manufacturing Control Based on Test Structure Measurements," IEEE Trans. on Semiconductor Manufacturing, Vol. 2, No. 2, pp. 47-53, May 1989. (CCAM & CEEE)
- D. J. Dumin, S. Dabral, M. Freytag, P. J. Robertson, G. P. Carver, and D. B. Novotny, "High-Mobility CMOS Transistors Fabricated on Very Thin SOS Films," IEEE Trans. Electron Devices, Vol. 36, No. 3, pp. 596-598, March 1989. (CEEE)
- D. Go, C. A. Hamilton, F. L. Lloyd, M. S. DiIorio, and R. S. Withers, "Superconducting Analog Track-and-Hold Circuit," IEEE Trans. Electron Devices, Vol. 35, No. 4, pp. 498-501, April 1988. (CEEE)
- 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. 8, No. 10, pp. 449-450, October 1987. (CEEE)
- J. S. Suehle and K. F. Galloway, "Switching Time Degradation in Synchronously Stressed Transmission Gates," IEEE Electron Device Letters, pending. (CEEE)
- 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, Vol. 35, No. 4, pp. 489-497, April 1988. (CEEE)
- C. L. Wilson, "Hydrodynamic Carrier Transport in Semiconductors

with Multiple Band Minimums," IEEE Trans. Electron Devices, Vol. 35, No. 2, pp. 180-187, February 1988. (CEEE)

GEOSCIENCE & REMOTE SENSING

IEEE Publications:

- D. A. Hill, "Electromagnetic Scattering by Buried Objects of Low Contrast," IEEE Trans. Geoscience and Remote Sensing, pending. (CEEE)
- D. A. Hill, "Magnetic Dipole Excitation of a Long Conductor in a Lossy Medium," IEEE Trans. Geoscience and Remote Sensing, November 1988. (CEEE)
- D. A. Hill, "Fields of Horizontal Currents Located Above the Earth," IEEE Trans. Geoscience and Remote Sensing, November 1988. (CEEE)
- D. A. Hill, "Near-Field Detection of Buried Dielectric Objects," IEEE Trans. Geoscience and Remote Sensing," May 26, 1988. (CEEE)

INDUSTRY APPLICATION

IEEE Committee Memberships:

Power Semiconductor Committee
- A. R. Hefner, Chairman, Technical Papers Selection (CEEE)

Grounding and Power for Computers Subcommittee of Power System Engineering Committee
- F. Martzloff, Chapter Editor - provide text and review of new standards. (CEEE)

Conferences and Workshops:

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

- A. R. Hefner, "Analytical Modeling of Device-Circuit

Interactions for the Insulated Gate Bipolar Transistor (IGBT)."
(CEEE)

INSTRUMENTATION AND MEASUREMENT (IM)

IEEE Editors:

IEEE Transactions on Instrumentation and Measurement

- B. A. Bell, Editorial Review Committee (CEEE)
- O. Petersons, Editorial Review Committee (CEEE)

IEEE **Committee Memberships:**

- Administrative Committee
  - R. S. Turgel, Member (CEEE)
  - R. S. Turgel, Member of IEEE I&M Advisory Committee
  - R. S. Turgel, Chairman of I&M Conferences & Meeting Subcommittee
  - R. S. Turgel, Member of I&M Bylaws Subcommittee

- Morris E. Leeds Award Committee
  - R. A. Kamper, Member (CEEE)

- Standards Coordinating Committee 27 (Joint with the Ultrasonics, Ferroelectrics, and Frequency Society and Microwave Theory and Techniques Society)
  - H. Hellwig, Chairman
  - NIST played a major role in the development of the newly released IEEE standard 1139-1988, definitions of physical quantities for fundamental frequency and time metrology.

- DC-Low Frequency Standards Instrumentation and Measurement Technical Committee
  - B. A. Bell, Chairman (CEEE)
  - N. B. Belecki, Member (CEEE)

- AC Measurement Subcommittee of DC-Low Frequency Standards Instrumentation and Measurement Technical Committee
  - N. M. Oldham, Secretary (CEEE)
  - N. B. Belecki, Member (CEEE)
  - J. R. Hastings, Member (CEEE)
  - J. Kinard, Member (CEEE)
  - T. E. Lipe, Member (CEEE)
  - T. Nelson, Member Electricity Metering Subcommittee (CEEE)

- Frequency and Time Instrumentation and Measurement Technical Committee-3
  - H. Hellwig, Chairman (D.O.)
  - D. W. Allan, Member (CAMOP)

- Washington/Northern Virginia Chapter
  - O. Laug, Chairman (CEEE)
  - B. A. Bell, Vice-Chairman (CEEE)
  - J. Stenbakken (Past Chairman) Secretary (CEEE)
  - T. Nelson, Treasurer (CEEE)

- Instrument/Computer Interface Subcommittee of Automated Instrumentation Technical Committee
  - T. F. Leedy, Member (CEEE)

- Standards Coordinating Committee 14, Quantities, Units and Letter Symbols
  - B. N. Taylor, Member (CAMOP)

Conferences and Workshops:

1990 Conference on Precision Electromagnetic Measurements, Ottawa, Canada, June 11-14, 1990

- H. Hellwig, Vice Chairman (D.O.)

Conferences on Precision Electromagnetic Measurements

- B. N. Taylor, NIST Representative to the Executive Committee and Comptroller (CAMOP)

IEEE Instrumentation and Measurement Technology Conference, San Jose, CA, Feb. 13-15, 1990

- H. Hellwig, Program Committee (D.O.)

- F. Fickett, Program Committee (CEEE)

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

- B. A. Bell, Vice Chairman (CEEE)

- W. A. Kissick, Session Chairman, Materials Characterization (CEEE)

- D. F. Wait, Session Chairman, Pressure and Flow Sensors (CEEE)

- T. Kramer, Session Chairman (CME)

- M. R. Serbyn, "Results on International Round-Robin Accelerometer Calibration." (CME)

- T. Kramer, "Automatic Generation of NC-Code for Hole-Cutting with In-process Metrology." (CME)

IEEE Instrumentation and Measurement Technology Conference, San Jose, CA, Feb. 13-15, 1989

- R. A. Kamper, Chairman of Session on Superconductivity (CEEE)

Measurement Science Conference, Anaheim, CA, January 1989

- M. C. Croarkin - Session organizer for "Statistical Process Control" and "Statistical Solutions to Calibration Problems." (CCAM)
- H. K. Iyer, "The Effect on Uncertainty of Random Measurement Error." (CCAM)
- D. F. Vecchia, "The Effect on Uncertainty of Ignoring Systematic Error Over a Calibration Regime." (CCAM)
- B. N. Taylor, "Changes in the Volt and Ohm." (CAMOP)
- B. N. Taylor, Report on the 18th Meeting of the Consultative Committee on Electricity." (CAMOP)

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

- O. Petersons, Chairman Executive Committee (1986-1990). (CEEE)
- R. F. Dziuba, Proceedings Editor (CEEE)
- M. Kanda, Chairman of two sessions: "Antennas and Field Measurements" and "EMC/EMI." (CEEE)
- D. H. Russell, Chairman of "Microwave Measurements 3." (CEEE)
- M. Kanda, "An Optically Linked Electric and Magnetic Field Sensor for Poynting Vector Measurements in the Near Field of Radiating Sources." (CEEE)
- R. Holt, "Determination of Scattering Parameters from Precision Coaxial Air Line Standards" (presented by D.H. Russell). (CEEE)
- C. Hoer, "Equivalent Circuit for Imperfect Transmission Line Connectors" (presented by D.H. Russell). (CEEE)
- D. F. Wait, "Intercomparison of NBS Noise Calibration." (CEEE)
- M. T. Ma, "Theory and Measurements of Unintentional Radiators." (CEEE)
- D. L. Franzen, "Measurement Standards for Single-Mode Fibers." (CEEE)
- F. L. Lloyd, C. A. Hamilton, and K. Chieh, "A 10-V Josephson

Voltage Standards." (CEEE)

- 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." (CEEE)
- B. Field and M. R. McCaleb, "An Improved Transportable DC Voltage Standard." (CEEE)
- 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." (CEEE)
- J. Shields and R. Dziuba, "New Realization of the Ohm and Farad Using the NBS Calculable Capacitor." (CEEE)
- R. Steiner and B. F. Field, "Josephson Array Voltage Calibration System: Operational Use and Verification." (CEEE)
- 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." (CEEE)
- B. N. Taylor, "Basic Standards and Fundamental Constants." (CAMOP)
- J. Faller, "Measurements of a 5th Force." (CAMOP)
- M. A. Weiss, "The Design of Kalman Smoothers for Global Position Data." (CAMOP)
- M. A. Weiss, D. W. Allan, and T. K. Peppler, "A Study of the NBS Time Scale Algorithm." (CAMOP)
- J. C. Bergquist, "Single Ion Optical Frequency Standard." (CAMOP)
- R. Drulling et al., "Characteristics of an Optically Pumped CS Frequency Standard." (CAMOP)
- D. W. Allan, M. A. Weiss, and T. K. Peppler, "In Search of the Best Clock." (CAMOP)

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

- 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." (CEEE) (CME) (CCAM)

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

- R. S. Turgel, Vice Chairman Technical Program Committee (CEEE)
- B. A. Bell, Session Chairman (CEEE)
- A. A. Sanders, Session Chairman, "Laser Measurement Technology. (CEEE)
- R. A. Kamper, Presented short course, "Superconductors in Instrumentation and Standards." (CEEE)
- R. A. Kamper, Session Chairman on Superconducting Instrumentation. (CEEE)
- M. Misakian, "Measurement of Electrical Parameters Near AC and DC Power Lines." (CEEE)
- T. M. Souders, "Workshop on Testing Waveform Recorders." (CEEE)
- M. Kanda, "Electromagnetic Field Standards for Bioelectromagnetic Applications." (CEEE)
- E. J. Vanzura, "Automated System for Electromagnetic Field Generation and Immunity Testing." (CEEE)
- R. A. Kamper, "Application of the Josephson Effect to Standards and Measurements." (CEEE)

Measurement Science Conference, Long Beach, CA, January 1988

- M. C. Croarkin - Session Chairman and organizer for "Statistics and Quality Measurement." (CCAM)

Other IEEE Publications:

- G. H. Koepke, M. T. Ma, and W. D. Bensema, "Theory and Measurements of Radiation Emissions Using a TEM Cell," IEEE Trans. IM, pending. (CEEE)
- C. A. Hamilton, F. L. Lloyd, K. Chieh, and W. Goeke, "A 10-V Josephson Voltage Standard," IEEE Trans. IM, pending. (CEEE)
- B. N. Taylor, "New International Representations of the Volt and Ohm, Effective January 1, 1990," IEEE IM-39. (CAMOP)
- G. W. Stewart, G. N. Stenbakken, and T. M. Souders, "Ambiguity

Groups and Testability", IEEE Trans. IM, Vol. 38, No. 6, October 1989. (CCAM) (CEEE)

- B. N. Taylor, "Basic Standards and Fundamental Constants.," IEEE Trans. IM, Vol. 38, 1989. (CAMOP)

- D. A. Howe, "High Accuracy Time Transfer Via Geostationary Satellites: Preliminary Results," IEEE Trans. IM, Vol. 37, 1988. (CAMOP)

- D. F. Vecchia and R. Turgel, "Precision Calibration of Phase Meters," IEEE Trans. IM, December 1987. (CCAM & CEEE)

- K. B. Jaeger and B. N. Taylor, "U.S. Perspective on Possible Changes in the Electrical Units," IEEE Trans. IM, Vol. 36, 1987. (CAMOP)

LASERS & ELECTRO-OPTICS

Conferences and Meetings:

1990 Conference on Optical Fiber Communication, San Francisco, CA

- D. L. Franzen, "Short Course on Single-Mode Fiber Measurements." (CEEE)

1989 Conference on Optical Fiber Communication, Houston, TX

- D. L. Franzen, "Short Course on Single-Mode Fiber Measurements." (CEEE)

4th International Laser Science Conference, Atlanta, GA, October, 1988

- J. C. Bergquist, "High Resolution Optical Spectroscopy of a Single Trapped Hg Ion." (CAMOP)

- S. R. Leone, "Laser Photofragmentation Dynamics with Time-Resolved FTIR." (CAMOP)

International Conference on Quantum Electronics, Tokyo, Japan, July, 1988.

- J. L. Hall, "Towards the Ultimate Laser Spectroscope Resolution." (CAMOP)

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

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

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

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

Other IEEE Publications:

- S. Z. Xing and J. C. Bergquist, "Thermal Shifts of Spectral Lines in Nd:YAG laser," IEEE Journal of Quantum Elec. 24, pp. 1829, 1989. (CAMOP)

- R. L. Peterson, "Numerical Study of Currents and Fields in a Photoconductive Detector," IEEE Journal of Quantum Elec., Vol. 23, pp. 1185, 1987. (CEEE)

LIGHTWAVE TECHNOLOGY

IEEE Publications:

- T. J. Drapela, D. L. Franzen, A. H. Cherin, and R. J. Smith, "A Comparison of Far-Field Methods for Determining Mode Field DIameter of Single-Mode Fibers Using Both Gaussian and Petermann Definitions," IEEE Journal of Lightwave Technology, August 7, 1989. (CEEE)

- 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. (CEEE)

- C. W. Oates, M. Young, "Profile Inhomogeneity in Multimode Graded-Index Fibers," IEEE Journal of Lightwave Technology, pending. (CEEE)

- 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, Vol. 7, No. 6, pp. 896-901, 1989. (CEEE)

MAGNETICS

IEEE Editors:

IEEE Transactions on Magnets

- R. B. Goldfarb, Conference Editor (CEEE)

IEEE Committee Memberships:

- Superconductivity Committee
    - R. B. Goldfarb, Member (CEEE)
    - A. F. Clark, Member (CEEE)

- Subcommittee on Superconductors of the Electrical Standards Committee
    - A. F. Clark, Chairman (CEEE)

Conferences and Workshops:

International Conference on Magnet Technology

- F. R. Fickett, Program Committee (CEEE)

International Magnetics Conference, Washington, D.C., March 1989

- R. B. Goldfarb, Program Committee Member and Session Chairman (CEEE)

Joint Magnetism and Magnetic Materials (MMM)/Intermag Conference, Washington, D.C., March 1989

- J. Unguris organized a workshop and tutorial on "SEMPA: Scanning Electron Microscopy with Polarization Analysis." (CAMOP)

- J. Unguris, "Scanning Electron Microscopy with Polarization Analysis Studies of Ni-Fe Magnetic Memory Elements." (CAMOP)

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

- F. R. Fickett, Program Committee (CEEE)

- F. R. Fickett, "Transverse Magnetoresistance of Oxygen-Free Copper." (CEEE)

Applied Superconductivity Conference, San Francisco, CA, August 1988

- R. B. Goldfarb, D. L. Ried, T. S. Kreilick, and E. Gregory, "Magnetic Evaluation of Cu-Mn Material for Fine-Filament Nb-Ti Superconductors." (CEEE)

- R. B. Goldfarb, D. B. Smathers, and M. M. Steeves, "Short-Range Variations in Magnetic Hysteresis Loss in Multifilamentary Nb_3Sn." (CEEE)

- 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." (CEEE)

- H. Qing, C. A. Mears, R. L. Richards, and F. L. Lloyd, "MM Wave Quasioptical SIS Mixers." (CEEE)

- C. A. Hamilton and F. L. Lloyd, "A Josephson Voltage Standard at 10 Volts Using a Series Array of 18 992 Junction." (CEEE)

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

- R. B. Goldfarb, "Magnetic Measurements on High Tc Superconductors" and "Oxygen Isotope Effect in BiSrCaCuO." (CEEE)

- D. Penny, "The Role of Inelastic Exchange Scattering in Spin Polarization Experiments." (CAMOP)

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

- R. B. Goldfarb, presented poster paper reviewing work on high-temperature superconductors. (CEEE)

Other IEEE Publications:

- R. L. Kautz, C. A. Hamilton, and F. L. Lloyd, "Series-Array Josephson Voltage Standards," IEEE Trans. Magnetics, Vol. 23, p. 883, 1987. (CEEE)

MEDICAL IMAGING

IEEE Publications:

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

MICROWAVE THEORY AND TECHNIQUES (MTT)

IEEE Committee Memberships:

- Standards Coordinating Committee 27 (Joint with Instrumentation and Measurement Society)
  - H. Hellwig, Chairman (D.O.)

- Standards Definition of Terms for Planar Microwave Transmission Line of the MTT Standards Committee
  - D. H. Russell, Member (CEEE)

- Precision Coaxial Connectors Subcommittee of the MTT Committee
  - R. L. Jesch, Member (CEEE)

Conferences and Workshops:

IEEE International Microwave Theory and Techniques Symposium, Long Beach, CA, June 12-16, 1989.

- E. J. Vanzura and W. A. Kissick, "Advances in NIST Dielectric Capability Using a Mode-filtered Cylindrical Cavity." (CEEE)

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

- D. F. Wait, "The Status of Precision Microwave Thermal Noise Measurements." (CEEE)

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

- C. Hoer - seminar leader. (CEEE)

Other IEEE Publications:

- D. A. Hill, "Reflection Coefficients of a Waveguide with Slightly Uneven Walls," IEEE Trans. MTT, pending. (CEEE)

- D. I. Wu and D. C. Chang, "A Hybrid Representation of the Green's Function in an Over-Moded Rectangular Cavity," IEEE Trans. MTT, Vol. 36, No. 9, September 1988. (CEEE)

- R. A. Lawton and W. T. Anderson, "Two Layer Dielectric Stripline Structure Modeling and Measurement," IEEE Trans. MTT, Vol. 36, No. 4, pp. 785-789, April 1988. (CEEE)

NUCLEAR & PLASMA SCIENCES (NS)

Committee Memberships:

- Administrative Committee
  - L. Costrell, Ex-Officio Member (CRR)

- Nominations Committee
  - L. Costrell, Chairman (CRR)

- Annual Meetings Committee
  - L. Costrell, Chairman (CRR)

- Nuclear Instrumentation and Detectors Committee
  - L. Costrell, Secretary (CRR)

  - 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.

- Computer Applications in Nuclear and Plasma Sciences Committee
  - L. Costrell, Member (CRR)

- Education Committee
  - L. Costrell, Member (CRR)

Conferences and Workshops:

Short Course on FASTBUS, San Francisco, CA, May 1990

- L. Costrell, Organizer (CRR)

Short Course on FASTBUS, Williamsburg, VA, May 1989

- L. Costrell, Organizer, CRR

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

- L. Costrell and S. Penner, Organizing Committee Members (CRR)

- P. Debenham and M. Wilson, Program Committee Members (CRR)

- P. Debenham, "The NIST-NRL Free Electron Laser." (CRR)

- R. Cutler and E. Lindstrom, "Design of a High-Current Injector for the NIST-NRL Free Electron Laser." (CRR)

1988 IEEE Nuclear Science Symposium, Orlando, FL, November 1988

- L. Costrell, Paper Referee (CRR)

Short Course on FASTBUS, Orlando, FL, November 1988

- L. Costrell, Member, Organizing Committee (CRR)

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

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

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

- L. Costrell, Program Committee Member (CRR)

Other IEEE Publications:

- M. Gaitan, E. Enlow, and T. J. Russell, "Accuracy of the Charge Pumping Technique for Small Geometry MOSFETs," IEEE Trans. NS (pending). (CEEE)
- M. A. Wilson, P. H. Debenham, S. Penner and S. S. Bruce, "Orbit-Reversing Magnets for the NBS-Los Alamos Racetrack Microtron," IEEE Trans. NS, Vol. 36, pp. 1306-1310, 1989. (CRR)
- P. H. Debenham, S. S. Bruce, S. Penner and M. A. D. Wilson, "The Injection Chicane of the NBS-Los Alamos Racetrack Microtron," IEEE Trans. NS, Vol. 36, pp. 1340-1343, 1989. (CRR)
- W. A. Cassatt, R. I., Cutler, P. H. Debenham, B. C. Johnson, R.G. Johnson, S. Penner, and M. A. Wilson, "A National User Facility for Free Electron Laser Research Applications," IEEE Journal of Quantum Electronics on Lasers in Medicine and Biology, accepted for publication. (CRR)
- 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. NS, Vol. 34, pp. 1359-1363, 1987. (CEEE)
- G. Singh, K. F. Galloway, and T. J. Russell, "Temperature Induced Rebound in Power MOSFETs," IEEE Trans. NS, Vol. 34, pp. 1366-1369, 1987. (CEEE)
- H. S. Bennett, "Numerical Simulations of Neutron Effects on Bipolar Transistors," IEEE Trans. NS, Vol. 34, pp. 1372-1375, 1987. (CEEE)

POWER ELECTRONICS

IEEE Committee Memberships:

- Administrative Committee
  - D. L. Blackburn, Member (CEEE)

- Standards Coordinating Committee 10, Definitions
  PSIM Dictionary Working Group
  - R. S. Turgel, Chairman (CEEE)

  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:

1990 Applied Power Electronics Conference, Los Angeles, CA

- D. L. Blackburn, Publicity Chairman (CEEE)

1989 IEEE Power Electronics Specialists Conference (PESC'89), Milwaukee, WI, June 26, 1989

- D. L. Blackburn, Power MOSFET and IGBT Characteristics Explained - Tutorial (CEEE)
- D. L. Blackburn, Member of Panel on Power Device Issues (CEEE)
- D. L. Blackburn, Chairman, Technical Session (CEEE)
- Hefner, A. R., "An Improved Understanding for the Transient Operation of the Power Insulated Gate Bipolar Transistor (IGBT)." (CEEE)

1989 Applied Power Electronics Conference, Baltimore, MD, March 13-17, 1989

- D. L. Blackburn, Publicity Chairman (CEEE)

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

- D. L. Blackburn, Program Committee (CEEE)
- D. L. Blackburn, "Power MOSFET Failure Revisited." (CEEE)

POWER ENGINEERING

IEEE **Committee Memberships:**

Power System Instrumentation and Measurement (PSIM) Committee

- O. Petersons, Chairman (CEEE)
- R. E. Hebner, Member (CEEE)

Digital Techniques in Electrical Measurements Subcommittee of PSIM Committee

- O. Petersons, Member (CEEE)
- G. N. Stenbakken, Member (CEEE)

Electricity Metering Subcommittee of PSIM Committee

- N. M. Oldham, Secretary (CEEE)
- R. S. Turgel, Member (CEEE)

High Voltage Testing Techniques Subcommittee of PSIM Committee

- R. E. Hebner, Member (CEEE)
- M. Misakian, Member (CEEE)

Monitoring Electrical Quality Working Group of PSIM Committee

- F. Martzloff, Past Chairman - provides technical inputs on metrology. (CEEE)

Surge Protective Devices (SPD) Committee

- F. Martzloff, Member - provide review of draft standards. (CEEE)

Electrostatic Discharge Working Group of SPD Committee

- M. T. Ma, Member (CEEE)

Surge Characterization Working Group of SPD Committee

- F. Martzloff, Chairman - organize development of new standards. (CEEE)

AC Fields Working Group of Transmission and Distribution Committee

- M. Misakian, Member - prepare manuscript of working group papers. (CEEE)

DC Fields and Ions Working Group of Transmission and Distribution Committee

- M. Misakian, Member - prepare draft standard. (CEEE)

RELIABILITY

Conferences and Workshops:

1990 International Reliability Physics Symposium, New Orleans, LA, March 26-29, 1990 (Jointly sponsored with Electron Devices Society)

- H. A. Schafft, Technical Program Chairman (CEEE)

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

- J. A. Lechner, "Estimators for Censored (Log) Normal Samples." (CCAM)

26th Annual International Reliability Physics Symposium, Monterey, CA, April 12-14, 1988 (Jointly sponsored with Electron Devices Society)

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

1989 IEEE International Reliability Physics Symposium, Phoenix, AZ, April 10, 1989 (Jointly sponsored with the Reliability Society)

- F. F. Oettinger, "Thermal Resistance Measurements," Tutorial Notes. (CEEE)
- H. A. Schafft, "Test Methodology for Electromigration Characterization," Tutorial Notes. (CEEE)
- J. S. Suehle and H. A. Schafft, "The Electromigration Damage Response Time and Implications for dc and Pulsed Characterizations." (CEEE)

Other IEEE Publications:

- M. E. Zaghloul, D. Khera, L. W. Linholm, and C. P. Reeve, "A Machine-Learning Classification Approach for IC Manufacturing Control Based on Test Structure Measurements," IEEE Trans. on Semiconductor Manufacturing, Vol. 2, pp. 47-53, May 1989. (CCAM & CEEE)

ROBOTICS & AUTOMATION

Conferences and Workshops:

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

- M. Herman and J. S. Albus, "Overview of the Multiple Autonomous Underwater Vehicles (MAUV) Project." (CME)
- N. J. Norcross, "A Control Structure for Multi-Tasking Workstations." (CME)
- J. Wang, "Location Estimation and Uncertainty Analysis for Mobile Robots." (CCAM)

Other IEEE Publications:

- R. Lumia, J. Michaloski, and T. Wheatley, "Exploiting Computational Parallelism with a Hierarchical Robot Control System," IEEE Journal of Robotics and Automation. (CME)

STANDARDS COMMITTEE ON ELECTRICITY METERING-C12-ACCREDITED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE

- R. S. Turgel, Chairman (CEEE)

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.

SYSTEMS, MAN & CYBERNETICS

IEEE Editors:

IEEE Transactions on Systems, Man, and Cybernetics

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

Conferences and Workshops:

1989 Winter Simulation Conference, Washington, DC, Dec. 4-6 (Jointly sponsored with Computer Society)

- R. Lundegard, Member of Board of Directors (CCAM)

IEEE Conference on Robotics and Automation, Scotsdale, AZ, May 1989

- R. Lumia, "Space Robotics: UTOMATA in Unstructured Environments." (CME)

Workshop on the Integration of AI and Robotic Systems, Scotsdale, AZ, May 1989

- R. Lumia, "NASREM as a Functional Architecture for the Design of Robot Control Systems." (CME)

IEEE/SPIE Workshop on Intelligent Robotic Systems: Design and Applications, Philadelphia, PA, November 1989 (Jointly sponsored with Computer Society)

- M. Herman, Program Committee (CME)

ULTRASONICS, FERROELECTRICS & FREQUENCY

IEEE Editors:

- Transactions on Ultrasonics, Ferroelectrics and Frequency
  - H. Hellwig, Associate Editor (D.O.)

IEEE **Committee Memberships:**

- Standards Coordinating Committee 27 (Joint with Instrumentation and Measurements Society and Microwave Theory and Techniques Society)
  - H. Hellwig, Chairman (D.O.)

- Sonics/Ultrasonics Working Group
  - G. V. Blessing, Vice Chairman (CME)

- Committee on Frequency and Time
    - D. W. Allan, Member (CAMOP)

Conferences and Workshops:

44th Annual Symposium on Frequency Control, Baltimore, MD, May 23-25, 1990

- H. Hellwig, Program Committee (D.O.)

43rd Annual Symposium on Frequency Control, Denver, CO, May 31-June 2, 1989

- H. Hellwig, Program Committee (D.O.)
- F. L. Walls, D. B. Percival, and W. R. Irelan, "Biases and Variances of Several FFT Spectral Estimators as a Function of Noise Type and Number of Samples." (CAMOP)
- J. Groslambert, J. J. Gagnepain, F. Vernotte, and F. Walls, "A New Filtered Allan Variance and its Application to the Identification of Phase and Frequency Noise Sources." (CAMOP)
- M. B. Bloch, J. C. Ho, C. S. Stone, A. Syed, and F. L. Walls, "Stability of High Quality Quartz Crystal Oscillators: An Update." (CAMOP)
- W. Lewandowski, R. J. Douglas, W. J. Klepczynski, W. Strange, J. Sueter, and M. A. Weiss, "The Positioning of GPS Antennas in Time-Keeping Laboratories of North America." (CAMOP)
- D. J. Windland, J. C. Bergquist, J. J. Bollinger, W. M. Itano, D. J. Heinzen, S. L. Gilbert, C. H. Manney, and C. S. Weimer, "Progress at NIST Towards Absolute Frequency Standards Using Stored Ions." (CAMOP)
- J. H. Shirley, "Velocity Distributions from the Fourier Transforms of Ramsey Line Shapes." (CAMOP)
- J. Jespersen, "Impact of Atmospheric Nonreciprocity on Satellite Two-Way Time Transfers." (CAMOP)
- D. A. Howe, D. W. Hanson, J. L. Jespersen, M. A. Lombardi, W. J. Klepczynski, P. J. Wheeler, M. Miranian, W. Powell, J. Jeffries, and A. Myers, "NIST-USNO Time Comparisons Using Two-Way Satellite Time Transfers." (CAMOP)
- D. W. Hanson, "Fundamentals of Two-Way Time Transfer by Satellite." (CAMOP)
- D. W. Hanson, "Two-Way Satellite Time Transfers Between and Within North American and Europe." (CAMOP)

1989 International Ultrasonics Symposium

- M. R. Serbyn, "High Frequency Vibration Measurements." (CME)

42nd Annual Symposium on Frequency Control

- H. Hellwig, Program Committee Member (D.O.)

1988 International Ultrasonics Symposium

- G. V. Blessing, Technical Vice Chairman (CME)

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

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

1987 International Ultrasonics Symposium

- G. V. Blessing, Publications Chairman and Session Chairman (CME)
- M. P. Jones and G. V. Blessing, "The Dynamic Poisson's Ratio of a Ceramic Power During Compaction." (CME)
- A. V. Clark, R. E. Schramm, H. Fukuoka, and D. V. Mitrakovic, "Ultrasonic Characterization of Residual Stress and Flaws in Cast Steel Railroad Wheels." (MSEL)

Other IEEE Publications:

- G. V. Blessing and D. G. Eitzen, "Ultrasonic Sensing of Surface Roughness," (Abstract) IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency, Vol. 34, No. 3, 1987. (CME)
- D. A. Howe, "Progress Toward One-Nano and Two-Way Transfer Accuracy Using K-Band Geostationary Satellites," IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency, Vol. 34, No. 3, 1987. (CME)

- F. L. Walls, "Errors in Determining the Center of a Resonance Line Using Sinusoidal Frequency (Phase) Modulation," IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency, Vol. 34, No. 3, 1987. (CME)
- D. W. Allan, "Time and Frequency Characterization, Estimation, and Prediction of Precision Clocks and Oscillators," IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency, Vol. 34, No. 3, 1987. (CAMOP)

APPENDIX B

LIST OF NIST ABBREVIATIONS

NIST Abbreviations

The following list of abbreviations refer to the NIST technical organizations in which the noted person is affiliated. These organizations provide the research support necessary for the significant contributions of the NIST staff to IEEE activities.

CCAM	Center for Computing and Applied Mathematics National Engineering Laboratory
CEEE	Center for Electronics and Electrical Engineering National Engineering Laboratory
CFR	Center for Fire Research National Engineering Laboratory
CME	Center for Manufacturing Engineering National Engineering Laboratory
CRR	Center for Radiation Research National Measurement Laboratory
D.O.	NIST Director's Office
MSEL	Materials Science and Engineering Laboratory
NCSL	National Computer Science Laboratory
OERI	Office of Energy Related Inventions

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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 IEEE Societies in the following categories: editors, committee memberships and contribution to standards, conferences and workshops, and publications. Recent NIST recipients of IEEE honors and awards are also provided. 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.

12. KEY WORDS (6 TO 12 ENTRIES; ALPHABETICAL ORDER; CAPITALIZE ONLY PROPER NAMES; AND SEPARATE KEY WORDS BY SEMICOLONS)
Computers; electrical engineering; electronics; high voltage technology; IEEE; reliability; robotics; standards; technology transfer; ultrasonics

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