



IEEE publications bulletin

This Bulletin is the official announcement vehicle for IEEE publications, and information and educational services. Its purpose is to list as they become available all conference records, standards, special issues of Transactions and Journals, and other nonperiodic publications that may be purchased from IEEE Service Center.

Conference Publications

The publications listed below have become available since the last issue of this bulletin and, except as noted, were sent automatically to present subscribers to the appropriate option and suboption of the IEEE Open Order Plan (OOP). All conference publications are identified by appropriate OOP suboption codes. For completeness, the listing includes special issues or sections of IEEE periodicals that are devoted to IEEE conferences, as well as Conference Publications in the strict sense. Out-of-Stock items may be found in the Engineering Societies Library in New York City and in all libraries that subscribe to OOP.

For your convenience, the LC catalog card number is printed inside IEEE publications. Commencing with the July 1979 issue all pre-assigned LC numbers are announced in the entries. The standard availability of LC cards for pre-assigned numbers is approximately six months after publication date.

Automatic Control Conference, 1979 Joint (JACC), held Jun 17-21, 1979 in Denver, CO; sponsored by AICHE, ASME, IEEE CS, et al. *Proceedings*. 923 p. LC 79-52918 (preassigned). \$70.00. 79CH1483-7 JACC. OOP 1A.

Coverage and Sessions: Topics deal with the application of control theory to the real world. The JACC program consists of three parts: (1) Theme Sessions, (2) Sponsored or Invited Sessions, and (3) Contributed Papers. The theme sessions have been selected because of their timeliness in the field of control. The theme topics: control of large space structures; nonlinear systems; microprocessors in control; measurements and components; biomedical applications; large scale systems; automation in manufacturing. Other session topics: microprocessor and distributed system control software concepts; control: inferential, adaptive, feedback, linear multivariable, manufacturing and process; transportation; plant control and optimization; digital signal processing; identification and model reduction; micro-controller applications; system simulation; instrumentation and control in energy and environmental systems; partitioning estimation algorithms; systems—distributed and hierarchical process control, man-machine, dynamic, satellite; digital simulation of stochastic processes; biofeedback; new fossil energy and electric power plants; asymptotic techniques in flight dynamics and control; estimation; modeling of physiological systems and parameter estimation; digital control in human rehabilitation; water resources system analysis—risk and uncertainty; process control and automation; guidance and control.

AUTOTESTCON '79 International Automatic Testing Conference, held Sep 19-21, 1979 in Minneapolis, MN; sponsored by IEEE AES, IEEE IM, and IEEE Minneapolis Section. *Conf. Record*. 380 p. \$25.00. 79CH1488-6 AUTO. OOP 1 B, C, H. **Scope and Sessions:** AUTOTESTCON '79 examines how new technologies will contribute to lower program costs. The professions involved in the ATE industry are challenged to examine their social responsibilities in combating inflationary trends as we stand on the threshold of the 1980's. The past is also examined in a contribution by Fred Liguori, Sr.

Member, Naval Air Engineering Center titled "A History of AUTOTESTCON—The First 15 Years." Sessions cover industry/DOD ATE status report; ATE—design applications, control and support software, standards, special purpose systems, calibration; commercial test program set; military test program set; built-in-test/system integrated test; automated test system cost drivers; international systems; test generation techniques; approaches to testing new technology; new test techniques; automatic test system selection techniques; automatic test program generation; testability; military systems; software verification and validation; large system maintenance.

CATV Reliability, 4th Conference on, held Feb 27-28, 1979 in Denver, CO; sponsored by IEEE BCCE and SCTE. *Conf. Record*. 74 p. \$18.00. 79CH1475-3 BCCE. OOP 1 C.

Coverage: The Conf. Record contains "program and abstracts" and nine conference papers. This 1979 Conference is a departure in some ways from the three prior meetings. Since the cable television/broad band communication industry has entered the age of satellite communications, is exploring fiber optics as a viable medium, and making more use of two-way and data communications than ever before, contributions on these "blue sky" technologies are included. The real-world and reliability in CATV system design are represented in the abstracts and papers on computers and engineering. Manpower, personnel, management and training talk of current programs used by operating companies, cooperative efforts with university systems and plans for the future. The steps of good engineering practice in new builds, extensions and rebuilds are dealt with in system construction.

Circuits and Systems, [12th] International Symposium on, held Jul 17-18, 1979 in Tokyo, Japan; sponsored by IECE CAS and IEEE CAS. *Proceedings*. 1091 p. LC 79-87921 (preassigned). \$50.00. 79CH1421-7 CAS. OOP 1A.

Coverage: This is the 12th annual IEEE International Symposium on Circuits and Systems, and the 2nd IECE (Institute of Electronics and Communication Engineers of Japan) International Symposium on Circuits and Systems. The explanation for this is that the 1st international conference on circuit and system theory was held in Kyoto in 1970 under the sponsorship of the IECE and this is the first follow-up conference held in Japan. The Symposium is devoted to all aspects of theory, design and applications of circuits and systems in the widening field of engineering and science. Emphasis is placed on new concepts and approaches for the analysis and design of circuits and systems, computer aided techniques, new devices and circuits, and other topics of interest. The program is balanced on both theory and practice and features special sessions to discuss current practices and future trends in circuit and system design. Sessions: digital filters—FIR, IIR, multidimensional; filters—active, active RC, CCD, switched capacitor; electromechanical filters—surface wave and body wave; computational complexity; network analysis; control systems; integrated-circuit design aids; graph theory; CAD applications and programs; system, stability, nonlinear system, and nonlinear circuit theories; computerized layout; networks—distributed, multivariable, switched capacitor, large-scale, and nonlinear; communication; circuits; passive network synthesis; problems—multi-

decision maker optimization and layout; matroids; optical communication systems; network approach to biological systems; analog fault diagnosis; high speed signal processing.

Computer Application in Medical Care, 3rd Symposium on, held Oct 14–17, 1979 in Washington, DC; sponsored by IEEE C, National Center for Health Statistics, IEEE EMB, et al., edited by Rosalie A. Dunn. *Proceedings*. 896 p. LC 79-641114 (serials no.; accidentally not printed in vol.). \$36.00. 79CH1480-3C. OOP 1 E and F.

Coverage and Session Themes: The rapid rate of computer development has not diminished since preparation started on the First Annual Symposium on Computer Application in Medical Care more than three years ago. Recently, computer systems have been developed which are low in cost and small in size but high in computer power, reliability, and ease of handling. These are usable in a broad range of medical applications. Therefore, instead of exhausting the computer applications in the medical field in the first symposium, the new applications in this field are sharply increasing. Those who have been following this Symposium series may notice additional emphasis on data gathering and usage in this year's program. It is believed that this provides focus on the necessary symbiotic relationship which physicians and engineers should have with information specialists and statisticians in the application of computers in medical care. Topic areas that have been unattended in the past, such as data base construction, utilization, and cost effectiveness, are addressed. Increased attention is also given to the types of computers which seem to be best suited for broad application in medical computing. Three sessions are designed for microcomputer topics—engineering aspects and specific medical applications. The sharply increasing use of computers in the medical field greatly increases the need for trained personnel. It is hoped that this symposium can partly fill this training need. Major session themes: medical decision-making; medical education; medical information systems; medical data base construction and use; cost-benefit analysis and evaluation; microcomputers in medicine; clinical laboratory computer systems; electrophysiological signal analysis; computer support for physicians' office practice; medical information systems development and dissemination policy; multihospital health care systems.

Computer Hardware Description Languages, 4th International Symposium on, held Oct 8–9, 1979 in Palo Alto, CA; sponsored by IEEE C and ACM. *Proceedings*. 190 p. LC 79-87963. \$18.00. 79CH1436-5C. OOP 1 E.

Coverage: CHDL's can be defined as languages for describing, documenting, simulating, and synthesizing digital systems with the aid of a computer. This symposium brings together those interested in using CHDL's in various applications at the system and/or logic level. Sample of the contributions: ISPS—a retrospective view; use of DDL in an automatic LSI design and test system; ADLIB—a modular, strongly-typed computer design language; SLIDE—an I/O hardware descriptive language; CASL—a language for automating the implementation of computer architectures; performance prediction from a computer hardware description; MODAL—a system for digital hardware description and simulation; KARL—a hardware description language as part of a CAD tool for LSI.

Computer Networking, see Local Computer Networking

Computer Science, 20th Symposium on Foundations of, held Oct 29–31, 1979 in San Juan, Puerto Rico; sponsored by IEEE C. *Conf. Record*. 431 p. \$22.00. 79CH1471-2C. OOP 1 E.

Scope: Program topics include analysis of algorithms, computational complexity, formal languages, mathematical theory of computation, switching and automata theory, and theory of programming, compiling, and formal semantics. Papers cover some of the following subjects: algebraic complexity, arithmetic vs. logical operations, axiom semantics and systems, Boolean circuit complexity, computational complexity, computational geometry, cryptography, databases, decomposable searching problems, distributed process-

ing, dynamic data structures, inequalities, locking, matrix multiplication, nondeterministic programs, number theory, parallel processing, polynomial space and time, probability, randomness, security of cryptosystems, simplification systems and ordering, synchronization, turing machine, and verification.

Computer Society International Conference, 19th IEEE (COMPCON FALL '79); held Sep 4–7, 1979 in Washington, D.C.; sponsored by IEEE C. *Proceedings—Using Microprocessors: Extending Our Reach*. 484 p. LC 79-88187 (preassigned). \$25.00. 79CH1465-4C. OOP 1 E.

Scope: This is the first IEEE Computer Society Conference (COMPCON) devoted to microprocessors. The international character of the Conference is reflected in contributions representative of not only the United States but countries such as Japan, France, Germany, and Israel. This, in turn, reflects the international adoption of the microprocessor as a principal tool of industrial and computer science research and development; especially in industrial nations. Microprocessors in developing nations are also discussed. Conference presentations are organized by grouping areas of development according to interest areas of the attendees. The first session "Novel Microprocessor Architecture" is intended to present the work of those engaged in the design of microprocessors or microcomputer systems. Additional presentations address: software design, support, and methodology; personal computing and its potential; innovative applications such as handheld translators; traditionally difficult and expensive applications being transformed by low cost, high capability microprocessors and high density storage. The papers impress, not only with the processing power per cm², but also with the sense of element abundance, that encourages element-intensive developments such as the VLSI-LISP-based processor experiments at MIT.

Computer Software & Applications Conference (COMPSAC 79), IEEE Computer Society's 3rd International, held Nov 6–8, 1979 in Chicago, IL; sponsored by IEEE C. *Proceedings*. 887 p. LC 79-90968 (preassigned). \$36.00. 79CH1515-6C. OOP 1 E.

Coverage: Software development continues to be a key to the successful application of computers. This conference continues the COMPSAC tradition of examining ways to improve software development, applying a special emphasis on software requirements, data base management, and distributed processing. Also highlighted is the application of computers to the needs of consumers, particularly in areas such as biomedicine, telecommunications, and automation. As the technology of computer hardware advances, the use of the computer in people's daily lives becomes more economically feasible. There is a critical need to produce software to support these opportunities. Software engineering and database management are two focal points of COMPSAC 79 technical program along with two selected application areas: advanced automation and biomedical computing. Other applications areas also represented include distributed processing systems, office automation, and computer-aided design. In the general area of software engineering, sessions include development methodology, requirements and specifications, testing, management, quality, telecommunication and microcomputer softwares. In the area of database management, sessions include schema and view design, design tools, query description and processing, functional data dependencies, and picture database systems. Robot systems, computer vision, automatic visual inspection, pattern recognition and image processing are the sessions under advanced automation. Computer-based diagnostic and therapeutic systems, biomedical image processing (including computerized tomography), radiology, nuclear medicine, and microscopy constitute the sessions in biomedical computing.

Cybernetics and Society, [9th] International Conference on, held Oct 8–10, 1979 in Denver, CO; sponsored by IEEE SMC. *Proceedings*. 949 p. LC 74-170870. \$48.00. 79CH1424-1 SMC. OOP 1 F.

Coverage: The main theme of the 1979 Conference is on

modeling and applications of World Systems in areas relating to six symposia topics: systems science; pattern recognition and artificial intelligence; economics, energy, and environmental systems; societal systems; man-machine systems; biomedical systems and biocybernetics. These symposia house 34 technical sessions. Workshops cover such topics as collective inquiry for the design of learning systems for environmental education, value oriented social decision analysis, and war and peace as a systems problem—how technology can help.

Distributed Computing Systems, 1st International Conference on, held Oct 1–5, 1979 in Huntsville, AL; sponsored by US Army BMDATC and IEEE C. *Proceedings*. 782 p. LC 79-87924 (preassigned). \$25.00. 79CH1445-6C. OOP 1 E.

Scope and Contents: This is the first major international conference on the technology of distributed computing systems. The single motivating factor for organizing this conference is to provide a forum for the various disciplines that make up this new technology from which an integrated prospective might be gained. It is hoped that insight will be gained by the distributed computing community into the accomplishments that have been made in the field and into the problems that remain to be solved. Researchers must concentrate on reducing ideas to practice if distributed computing is to gain wide acceptance. Sessions: communications protocols and programming languages for distributed computing systems; design and requirements specification methodology; testing and evaluation; network design for distributed systems; distributed architectures; systems: simulation and modeling, operating systems; network language and system software; communications systems—specification and design, schemes for implementing interprocess systems; distributed computing—reliability and fault tolerance, applications to radar systems, application to modular missile-borne computers; data base computers; decentralized control; distributed data bases—applications and techniques, processing and control.

Education Conference see Frontiers in Education Conference

Excimer Lasers, Topical Meeting on, held Sep 11–13, 1979 in Charleston, SC; sponsored by IEEE QEA and the Optical Society of America. *Digest of Technical Papers*. Approx. 200 p. LC 79-90211 (preassigned). \$25.00. 79CH1470-4 QEA. OOP 1 D.

Coverage: This meeting is primarily devoted to excimer laser systems. Specific areas of topical interest are: rare gas monohalide systems, rare gas dimer systems, linewidth and frequency control of excimer systems, multiphoton processes in the ultraviolet including X-ray generation, Raman scattering with excimer systems, pulse compression, photochemistry conducted with excimer systems, materials processing, molecular biology, excimer excited solid-state laser systems, laser-produced plasmas, and the spectroscopy and structure of excimer systems.

Frontiers in Education Conference, 9th, held Oct 15–17, 1979 in Niagara Falls, Canada; sponsored by IEEE E and ASEE; edited by Lawrence P. Grayson and Joseph M. Biedenbach. *Proceedings*. 444 p. LC 79-640910 (serials entry). \$25.00. 79CH1501-6E. OOP 1 F.

Scope and Sessions: Conferences treating educational practice are not common. Frontiers in Education is unique in being devoted solely to this purpose. This year the conference topics range from curriculum to teaching techniques to laboratory experience to societal questions. Sessions: microprocessors; technology appreciation; innovation and entrepreneurship; education—computer-based, international, engineering, graduate, continuing; design of engineering curricula; engineering in technical communication; instructional methods; electrical engineering frontiers; laboratory instruction; teaching; computer simulation; evaluation of educational programs; instructional use of hand-held calculators; engineering—enrollment, technology, design.

Frontiers of Engineering in Health Care, IEEE/Engineering in Medicine and Biology Society First Annual Conference, held Oct 6–7, 1979 in Denver, CO; sponsored by IEEE EMB. *Conf. Proceedings*. 376 p. LC 79-83926 (preassigned). \$40.00. 79CH1440-7 EMB. OOP 1 F. Preview abstracts in *IEEE Transactions on Biomedical Engineering*. Vol. BME-26. No. 9. Sep 1979. \$10.00. JH49957. (Not distributed under OOP). **Coverage:** This conference is intended to serve as an annual technical focal point for the IEEE/Engineering in Medicine and Biology Society. The primary purpose in organizing the Frontiers of Engineering in Health Care Conference is to better serve the changing needs of the Society. This annual conference offers participants the opportunity to engage actively in a common forum advancing the frontiers of engineering in health care. The opportunity is provided for all groups involved to present the state-of-the-art in biomedical engineering technology and to discuss the safe and effective use and management of medical devices. This interaction will allow all specialty groups and professionals in the health care community to communicate more effectively to advance biomedical research and to improve patient care. Sessions: signal processing and imaging; computers in medicine; biopotential and biochemical instrumentation; clinical engineering; non-invasive diagnostic technology; standards; biomechanical instrumentation; computerized control of therapy; general principles of biomedical engineering; devices for the disabled; education; bio-electric signals; telemetry; totally implantable telemetry systems. Conference also featured tutorials and workshops.

Instrumentation in Aerospace Simulation Facilities (ICIASF), 8th International Congress on, held Sep 24–26, 1979 in Monterey, CA; sponsored by IEEE AES. *Record*. 327 p. \$28.00. 79CH1500-8 AES. OOP 1 C.

Coverage: This 8th Congress brings together those concerned with instrumentation in different types of simulation facilities. The Congress is held at a time when the first Space Shuttle is readied. Appropriately, a session dealing with "Testing for Space Applications" is held for the first time. A second innovation is the introduction of a session in "Propulsion Testing." This is included because the technological development of propulsion systems requires extensive simulation of internal flow fields, as well as wind tunnel simulation of the flight environment, and unusual instrumentation developments have resulted from these particular testing activities. The traditional concentration of the Congress on "Aerodynamic Testing," General Diagnostic Techniques" and "Microprocessor and Computer Applications" remains. A single session in "Ballistics" completes the program.

Local Computer Networking, 4th Conference on, held Oct 22–23, 1979 in Minneapolis, MN; sponsored by IEEE C, University of Minnesota, and IEEE Twin Cities Chapter. *Proceedings*. 136 p. LC 79-87983 (preassigned). \$16.00. 79CH1446-4C. OOP 1 E.

Coverage: This conference provides a technical forum for world-wide participation in local computer networks. The program includes papers on both the principles and pragmatics of local computer networking and distributed processing, including all aspects of related hardware and software technology; systems models and protocols at all levels; performance analysis; interconnection mechanisms; design philosophy; protection and security; case studies; management issues; integrated hardware/software design; introduction of local networks into existing installations.

Mining Industry Technical Conference, 1st, held Jun 7–8, 1979 in Pittsburgh, PA; sponsored by IEEE IA. *Conf. Record*. 158 p. LC 79-87997 (preassigned). \$32.00. 79CH1466-2 IA. OOP 1 B.

Sessions on: Mine power system analysis—minimum arcing fault levels on DC trailing cables; load-flow analyses applied to underground and surface mine power systems; balanced fault analysis of coal-mine electrical power systems; optimal maintenance scheduling of molded-case circuit breakers in underground coal mines. System protection—present U.S.

practice of AC and DC ground-fault protection for underground coal-mine face equipment; ground-fault short-circuit protection in underground coal mines—U.K. practice; use of cable surface temperature to detect high-resistance splices; detection of failure on direct-current coal-mine power systems. New technology—application of computers to mining control; new technology in electric power distribution; solid-state relaying applied to high-voltage distribution in mining; introducing new electronic technology to mining.

Oceans '79, 5th Combined Conference, held Sep 17–19, 1979 in San Diego, CA; sponsored by IEEE, Council on Oceanic Engineering, MTS, and IEEE San Diego Section. *Record*. 789 p. \$45.00. **79CH1478-7 OEC**. OOP 1 C.

Coverage: The theme of this conference, "The Technical Challenge of Inner Space", is purposely very broad in scope to accommodate the numerous and various technologies, sciences and participants involved in current ocean activities. The program is designed to give several different perspectives into the current research, development and the technology being utilized in learning about the ocean environment and in the tapping of ocean resources. The sessions highlight the recent research, development and technological applications in areas such as ocean energy, acoustics, space shuttle support, naval architecture, buoy systems, undersea vehicles, navigation, ice and Arctic engineering, instrumentation, diving technology, off-shore resources and signal and digital processor applications. A sample of session topics: Acoustics—transducers and sonar systems; computer applications; ice and Arctic engineering; ocean—energy; ocean—profile and bottom instrumentation; security of offshore resources; Space Shuttle support; water pollution and marine ecology.

Petroleum and Chemical Industry Conference, 26th, held Sep 10–12, 1979 in San Diego, CA; sponsored by IEEE IA. *Record of Conf. Papers*. 278 p. **LC73-641120** (open entry). \$32.00. **79CH1423-3 IA**. OOP 1 B.

Scope: The scope of PCIC is the treatment of all matters within the scope of the Industry Applications Society in which the emphasis or dominant factor specifically relates to production, manufacturing, and transportation of petroleum and chemical products. General Technical sessions cover topics which range from transient surges and motor protection to harmonic pollution on power systems—a change in philosophy. Sessions on petroleum manufacturing feature contributions in transient phenomena in the motor control electrical distribution system and multi-frequency UPS system for large computer facilities for example. Chemical and electro-chemical areas have papers like developments in liquid metal switches for electrolytic cell shorting and high efficiency light sources and systems. Field testing of submersible cable and total isolation from lightning influences are part of the production sessions. In the transportation sessions, contributions on pipelining dominate.

Semiconductor Laser Conference, 6th IEEE International, held Oct 30–Nov 1, 1978 in San Francisco, CA; sponsored by IEEE QEA. Conf. Record in *IEEE Journal of Quantum Electronics*. Vol. QE-15. No. 8. Aug 1979. ISSN 0018-9197. \$10.00. **JH49148**. (Not available under OOP).

Coverage: This issue of the *IEEE Journal of Quantum Electronics* marks the sixth special issue devoted to semiconductor lasers. The papers are grouped into categories so that readers can find a particular topic more easily: reliability, GaInAsP, guiding/modes/linearity, VPE-organometallic, laser structures, external cavity, modulation/noise, thermal, interfacial recombination. As is evident from examining these categories, there are active efforts to develop GaInAsP materials. One quarter of this JOURNAL is devoted to this new and swiftly moving area of research. Since the last special issue, a new vapor phase epitaxial growth technique has emerged based on organometallic pyrolysis. Two papers discuss this new and promising area of research. The problems of how electromagnetic waves are guided to produce lasers with mode control and linearity are still under active investigation and the seven papers illustrate the increased understanding in a number of areas.

Semiconductor Test Conference, see Test Conference

Software Engineering, 4th International Conference on, held Sep 17–19, 1979 in Munich, Germany; sponsored by ACM, IEEE C, ERO, et al. *Proceedings*. 456 p. \$22.00. **79CH1479-5C**. OOP 1 E.

Scope and Sessions: The field of software engineering is still in its infancy having only begun some ten years ago. Its impact has grown astronomically in this period. Software engineering is the collection of methods, procedures, techniques and tools which assist the process of specifying, developing and maintaining large programs and software systems. This fourth Conference brings together researchers and practitioners to discuss the state of software engineering and its further progress including the meeting of challenges such as substantially improving analyst and programmer productivity and improving quality assessment and control. The tone and emphasis of the present Conference has been set by the fact that interest and emphasis is currently focused on the tooling and tool support of the programming and software maintenance process; the use of computers to produce and maintain higher quality, timely, cost-effective and long-life software. Software engineering as it was, is, should be, and will be, are explored. Sessions include the impact of language on the software engineering process; pragmatic and constructive techniques in software engineering; tooling; case studies in software engineering; computer aided environments; systematic programming as a tool for the software engineer; towards reliable software; software engineering and microprocessors; measuring, modeling, and interpretation; life cycle management; issues in data processing; panels on aspects of software engineering.

Solid-State Circuits Conference (ESSCIRC), 4th European, held [Sep 18–21, 1978 in Amsterdam, Netherlands]; sponsored by IEEE SSC. Special papers in *IEEE Journal of Solid-State Circuits*. Vol. SC-14. No. 3. Jun 1979. ISSN 0018-9200. \$10.00. **JH49262**. (Not distributed under OOP).

Coverage: The presentations at this year's Conference confirms that analog circuit design tends to shift from bipolar circuitry towards MOS circuitry due to the low dissipation of power and simplicity of combination that LSI digital circuitry allows. Topics of the special papers: IC implementations of signal-processing systems; CCD programmable transversal filter prototype; simulation of large on-chip capacitors and inductors; an A/D converter with parallel structure based on a Gray-code multiple folding circuit, monolithic 14-bit D/A converter; single-chip A/D converter for digital voltmeter applications; 5 V NMOS LSI circuit for data acquisition and front-end digital control; one-chip I²L controller for appliances; CMOS bandgap voltage reference; Schottky-base I²L; ISL—a fast and dense low-power logic; noise margins of logic circuits; charge-pumping-loop concept for static MOS/RAM cells; charge-injection device with CCD readout; testing microprocessors; computer-aided design for integrated circuits.

Test Conference, 10th (formerly Semiconductor Test Conference), held Oct 23–25, 1979 in Cherry Hill, NJ; sponsored by IEEE C and IEEE Philadelphia Section. *Digest of Papers—LSI & Boards*. 382 p. \$20.00. **79CH1509-9C**. OOP 1 E.

Coverage: This Conference addresses the testing problems of LSI components and boards as seen by the user, component designer, and test equipment manufacturer. It is through both the formal and informal exchange of information that this Conference encourages the discussion of test-related problems and addresses potential solutions to these problems. The explosive growth of integrated circuits into "systems on a chip" and the corresponding complexity increase at the board level has mandated the inclusion of testing and testability within the actual design process. Increased hardware and software test costs, development of test strategies, and device and test equipment repeatability and correlation are just a few of the myriad of test related problems. From a program content viewpoint, the 1979 Conference includes bubble memory test as a formal session and reflects the increased emphasis on the subject of analog testing. Sessions:

design for testability; testing: bubble memory, memory, complex analog LSI, component microprocessor, production board, board microprocessor, high speed; test equipment correlation; digital and analog test problems; self-test at board and system; computer aided—analogue test design and test pattern generation; test economics; design for testability at component level.

U.S. Technological Policy, [3rd] 1979 Conference on, held May 1–3, 1979 in Washington, DC; sponsored by IEEE Technical Activities Board and IEEE United States Activities Board. *Proceedings—Parts I and II*. 131 p.; 44 p. **LC79-88611** (preassigned). \$15.00, complimentary copies to all OOP 1 customers. **79CH1472-0 USAB/TAB**.

Focus: Conference papers focus on R & D funding in the U.S., technological policy, antitrust involvement, radiation, high technology exports, and technology transfer. Specific paper topics: improving productivity and innovation; technology in modern society; IEEE involvement with government; the 96th Congress—members and committees fundamental to IEEE interests; impacting Congressional decisions on technical issues; NASA perspective; small innovative business; regulatory incentives vs. impediments to industrial innovation; economic, tax, and trade policy; Federal government and R & D; IEEE Policy and Position Papers on Congressional interaction; stimulating innovation through U.S. policy. Part I contains the Conference Record. Part II contains only reproductions of graphic illustrations utilized during the Conference, along with the appropriate accompanying text.

Very Large Data Bases, 5th International Conference on, held Oct. 3–5, 1979 in Rio de Janeiro, Brazil; sponsored by ACM, IEEE C, IFIP, et al. *Proceedings*. 450 p. **LC79-87908** (preassigned). \$28.00. **79CH1406-8C**. OOP 1 E.

Scope and Contents: This fifth conference in the series is intended to identify and encourage research, development, and applications of data base systems. Its objectives are the promotion of an understanding of current research, the furthering of exchanges of information and experience gained in the design, construction and use of databases, and the provision of a forum for the discussion of future research and development. In addition, a special focus this year is aimed at applications of data bases in in developing countries and on mini- and micro-computer data base management systems. The proceedings reflect traditional areas in VLDB and new research disciplines such as system distribution, very high level hardwares, design methodologies, and human interfaces. Both technical and survey papers are represented. Examples of some areas of concentration are performance and modeling; data base security, consistency and conversion; and query handling strategies.

Special Issues

The special issues listed below have become available since the last issue of this Bulletin. Special issues devoted entirely to conferences are listed in the Conference Publications section.

Automatic Analog Fault Diagnosis; IEEE Transactions on Circuits and Systems. Vol. CAS-26. No. 7. Jul 1979. ISSN0098-4094. \$10.00. **JH47753**.

Coverage: This Special Issue highlights automatic test equipment (ATE) for analog systems. This area has maintained a low profile for nearly two decades due to limited funding and an emphasis on the use of digital circuits. The analog problem has resurfaced with an increased sense of urgency. This issue includes contributions from industry as well as academia. It is simply divided into theoretical foundations and procedures for systems applications. The first paper is a comprehensive tutorial with an extensive reference list titled "Automatic Test Generation Techniques for Analog Circuits and Systems: A Review." The remaining papers fall under the subdivisions: deterministic; nondeterministic; fault dictionary; software-simulations; special designs.

Broadcasting Research in Japan; IEEE Transactions on Broadcasting. Vol. BC-25. No. 4. Dec 1979. ISSN0018-9316. \$10.00. **JH47381**.

Contents: Japanese broadcasting satellite for experimental purposes—present situation and propagation measurements and TV-reception tests; INSAT-I—a multipurpose domestic satellite system for India; present status of multichannel-sound television broadcasting in Japan; experimental studies of transmission bit-rate for teletext signal in the 525-line television system; ghost signal reduction by use of magnetic absorbing material on walls; SHF terrestrial broadcasting in Japan.

Circuits and Systems Concepts in Energy Research; IEEE Circuits and Systems Magazine. Vol. 1. No. 3. Sep 1979. ISSN0163-6812. \$6.00. **JH50054**.

Coverage: This special issue on "Circuits and Systems Concepts in Energy Research" deals with three aspects of the U.S. Department of Energy's research program. Although this is not even a representative sample of the D.O.E. program, much less energy research in general, the three papers do give some representative examples of how CAS concepts are being applied to energy research. Feature Articles: The Evolution of a Large Laser Control System—From Shiva to Nova; High Temperature Electronics for Geothermal Energy; Master Control and Data Acquisition System for a Solar Central Receiver Electric Power Plant.

Computational Methods; IEEE Transactions on Circuits and Systems. Vol. CAS-26. No. 9. Sep 1979. ISSN0098-4094. \$10.00. **JH47779**.

Coverage: This Special Issue on Computational Methods brings together a number of diverse papers spanning a wide variety of applications in circuits and systems. Many of these papers describe work motivated by advances in IC technology. These advances have allowed the fabrication of ever larger and more complex circuits on a single chip. Other papers describe new or improved numerical techniques. General areas of emphasis: papers which address the problem of large scale simulation; the problems of layout and testing; statistical circuit design. Rounding out the issue are papers covering the simulation of switched capacitor networks, a new transient integration scheme and its use for solving circuit equations, and a short survey of an improved method for solving Toeplitz systems. In this issue we see practical applications as well as new techniques. These new techniques, however, are motivated by strong requirements for solving practical problems. Important future advances will depend on the continued interaction between the developers of algorithms and the users of computer aids.

Curriculum Development in an Era of Rapid Change; IEEE Transactions on Education. Vol. E-22. No. 2. May 1979. \$10.00. **JH48124**.

Coverage: Change has characterized electrical engineering for decades, especially since World War II, but it seems that the rate of change now is greater than ever. In the last five years, we have experienced the emergence of VLSI circuit technologies with dramatic economies, digital communications by satellite, communications by fiber optics—to name only three from a long list. How can students be prepared for entry into this dynamic profession? The curriculum must be constantly redesigned, eliminating some topics as others are added. Modern topics must be included along with fundamentals. This issue contains papers that relate to the above-discussed problems. Papers are of three kinds: those that deal with curriculum design and components of the curriculum; those that deal with the organization and implementation of laboratories; and position papers that address specific issues. Another related feature is a collection of discussion papers relating to a report prepared by the IEEE ad hoc Model Curriculum Committee under the heading "Issues and Opinions."

Displays and LED's (light-emitting diodes); IEEE Transactions on Electron Devices. Vol. ED-26. No. 8. Aug 1979. ISSN0018-9383. \$10.00. **JH48223**.

Coverage: The papers in this Special Issue on displays and LED's sponsored jointly by the IEEE Electron Devices Society and the Society for Information Display all relate to the technology of electronic displays or, for some of the LED papers, to optical communications. Ten of them are based on earlier presentations at the 1978 Biennial Display Research Conference, held at Cherry Hill, NJ, in October 1978 (see April 1979 issue of Bulletin p.2 for Conf. Record, 78CH1323-5ED, under "Display Research Conference, 5th"). Thirteen of the papers were originally presented at the IEEE Specialists Conference on the Technology of Electroluminescent Diodes held at San Francisco, CA, in November 1978. The remaining papers were submitted directly. Displays is divided into three categories: liquid crystals, other nonemissive displays, and plasma displays. The LED papers in this Special Issue reflect several areas of emphasis. For visual LED's, several papers deal with III-V devices and applications. Other papers seem to indicate renewed interest in the more difficult area of LED's in II-VI alloys. A relatively new area of major activity, the use of quaternary III-V alloys, is also reflected in the papers. The application of infrared LED's to optical communications has stimulated much of the exciting research now being conducted in LED technology.

Health Care *see* Technology and Health Care

Microwave Tubes *see* Pulse Power Modulators/Microwave Tubes

Nuclear Power, Future of and Three Mile Island *see* Three Mile Island and the Future of Nuclear Power

Programmable Logic Arrays; (Special Section, p. 593-636) *IEEE Transactions on Computers*. Vol. C-28. No. 9. Sep 1979. ISSN0018-9340. \$10.00. JH47530.

Coverage: There is a strong motivation for using programmed logic arrays (PLA) for implementation of computer functions. These factors include extended use of a single chip design, the necessity to design for function, effective fault analysis and testing, and minimal design errors and changes. The approach to LSI exemplified by PLA's will continue to be useful in VLSI, since the factors cited will be even more prominent in the very large-scale integration environment with its demand for more on-chip function. The five papers presented in this Special Section on PLA's provide a broad view that covers topology, design, testing, and a technology alternative to semiconductor implementations. While no attempt is made to address VLSI directly, it will be apparent that there are concerns by the authors with the problems of large-scale and very large-scale integration. These papers represent, in part, their response to these concerns.

Project Management; *IEEE Transactions on Engineering Management*. Vol. EM-26. No. 3. Aug 1979. ISSN0018-9391. \$10.00. JH48355.

Coverage: This Special Issue on Project Management brings together some of the latest research and practices in project management in Europe, South America, and the United States. The papers in this issue deal with organizational structures for project management, the role and authority of the project manager, the use of matrix structures, project control methods, and managing large-scale project risks. To provide a proper context for these papers, a summary is provided to examine the origins of project management, types of project management, potential problems, and the future of project management.

Pulse Power Modulators/Microwave Tubes; *IEEE Transactions on Electron Devices*. Vol. ED-26. No. 10. Oct 1979. ISSN0018-9383. \$10.00. JH48249.

Coverage: This Special Issue is devoted to pulse power modulators and microwave tubes. Some of the papers on pulse power modulators were first presented at the Pulse Power Modulator Symposium held at Buffalo, NY, in June 1978 (see Jan 1979 Bulletin p. 2 for Conf. Record, 78CH1371-4ED). The papers selected for this issue were chosen for their content and timeliness. Current interest in directed

energy devices, accelerators, microwave transmitters, electron-beams, and isotope separation applications has resulted in renewed R & D emphasis in pulse power technology. Papers concerned with advances in switches, power conditioning, auxiliary devices, and modulators are presented. A small percent of the remaining papers, on microwave tubes, have been presented at either the International Electron Devices Meeting or the Power Tube Specialist Conference. The microwave tube papers reflect the growing use of computer-aided design tools in the modeling of electron-beam formation, focusing, RF interaction, and collection. The models stress either greater accuracy, faster computation time, or a unique solution to a difficult problem. The papers also include experimental validation of computer predictions as well as experimental studies of electron-emission phenomena. A continuing interest in crossed-field electron guns is also reflected in some of the papers.

Software Reliability; *IEEE Transactions on Reliability*. Vol. R-28. No. 3. Aug 1979. ISSN0018-9529. \$10.00. JH49213.

Coverage: The occurrence of a system failure due to software failure is just as real to the user of the system as when due to hardware failure. Resources in the form of manpower and computing time must be applied in troubleshooting, redesign, coding, verification testing, and documentation. The first paper presents a comprehensive methodology for dealing with software error performance and resources estimation. Using the model of a computer program as a directed graph in the test effort is next. Another model is presented for predicting the cumulative number of errors detected by time, number of remaining errors, and reliability after a given number of errors has been detected and corrected. Other paper topics: an empirical validation of three software error prediction models; reliability as only one of many desired quality factors of computer software, e.g., maintainability, portability, and reusability; model of the software maintenance process; fault-tolerant software; improved software reliability through requirements verification; software reliability model for modular program structure; a methodology for computer software which identifies and eliminates or compensates for failure modes for reliability improvement; a model which is used to estimate residual error content of a software package at the end of the test program.

Technology and Health Care; *Proceedings of the IEEE*. Vol. 67. No. 9. Sep 1979. ISSN0018-9219. \$10.00. JH47076.

Coverage: The last issue of *Proceedings* to deal broadly with technology and the health care system appeared in November, 1969. In this issue an attempt is made to provide a balanced view of the latest in technology and the latest in the concerns created by such technology. Topic selections are confined narrowly to the acquisition, storage, and processing of medical information, with examples of therapeutic applications of technology. The issue opens with a paper from staff members of the Office of Technology Assessment of the U.S. Congress dealing with the central controversy surrounding modern technology, which is also the theme for this issue: What are we buying with modern medical technology and what are we paying? The next group of papers deals broadly with the acquisition, manipulation, storage, and retrieval of medical information. The third group of papers deals with diagnostic imaging and instrumentation—computed tomography, ultrasound, acoustic imaging, and instrumentation for environmental measurements. The final group of four papers deals with clinical care and therapy. They range from automated identification and treatment of acute problems to prosthetic devices for chronic diseases or problems.

Three Mile Island and the Future of Nuclear Power; *IEEE Spectrum*. Vol. 16. No. 11. Nov 1979. \$8.00. JH46979.

Coverage: What happened at Three Mile Island? What is the significance of those events in the context of nuclear power plant safety? What might the bearing of those events be on the future use of nuclear power? Who will determine nuclear power's future? In this issue of *Spectrum*, these questions are tackled one by one. Because the accident at Three Mile

Island triggered a national and international review of nuclear power safety, *Spectrum* begins its special issue with two accounts of the accident. One is narrative while the other is a moment-by-moment account that provides more technical detail. Nuclear power in the U.S. as a whole is dealt with in a contribution that locates every operating and planned nuclear site in the United States, complete with information on population, density, seismic hazards, type of reactor, manufacturer and operator, electric generation capacity, and Nuclear Regulatory Commission safety ratings as of 1976. A map of these sites is provided as is a table which summarizes 23 serious incidents occurring in the last four years in U.S. nuclear power plants. Based on conversations with the world's leading nuclear experts, the public risk is assessed. The question of nuclear power's decision makers reveals the competing influence groups battling over the future of nuclear power. Western Europe, Eastern Europe, and Japan are explored for a view of the international scene. Finally, a summary is presented of the insights gained from the preceding investigations.

IEEE Standards

ANSI C63.12 Draft American National Standard Recommended Practice on Procedures for Control of System Electromagnetic Compatibility; Jul 20, 1979. 24p. \$6.00. SH07534. OOP 5. (NOTE: Distribution of this draft standard for comment shall not continue beyond 12 months from the date of publication.)

ANSI N320-1979 American National Standard Performance Specifications for Reactor Emergency Radiological Monitoring Instrumentation; Jul 20, 1979. 15p. \$5.00. SH07567. OOP 5.

ANSI/IEEE C37.34a-1978 (Supplement to ANSI/IEEE C37.34-1971) American National Standard-IEEE Standard Corona Tests; Supplement to ANSI/IEEE C37.34-1971 Test Code for High-Voltage Air Switches; Nov 17, 1978. 8p. \$3.00. SH06577. OOP 5.

ANSI/IEEE C57.13-1978 (Revision of ANSI C57.13-1968) American National Standard-IEEE Standard Requirements for Instrument Transformers; Dec 29, 1978. 62p. \$7.50. SH06700. OOP 5.

ANSI/IEEE Std 260-1978 (Revision of IEEE Std 260-1977, ANSI Y10.19-1968) American National Standard-IEEE Standard Letter Symbols for Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units); Dec 29, 1978. 22p. \$5.00. SH07310. OOP 5.

ANSI/IEEE Std 675-1979 American National Standard-IEEE Standard Multiple Controllers in a CAMAC Crate; Feb 28, 1979. 32p. \$5.00. SH07427. OOP 5.

ANSI/IEEE Std 680-1978 American National Standard-IEEE Standard Techniques for Determination of Germanium Semiconductor Detector Gamma-Ray Efficiency Using a Standard Marinelli (Reentrant) Beaker Geometry; Dec 29, 1978. 13p. \$5.50. SH07435. OOP 5.

IEEE Std 62-1978 (Revision of IEEE Std 62-1958) IEEE Guide for Field Testing Power Apparatus Insulation; Dec 14, 1978. 32p. \$6.00. SH07203. OOP 5.

IEEE Std 147-1979 IEEE Standard Definitions of Terms for Waveguide Components; May 31, 1979. 7p. \$4.00. SH07294. OOP 5.

IEEE Std 389-1979 IEEE Recommended Practice for Testing Electronic Transformers and Inductors; May 4, 1979. 60p. \$8.50. SH07336. OOP 5.

IEEE Std 421B-1979 IEEE Standard for High-Potential-Test Requirements for Excitation Systems for Synchronous Machines; Jun 1, 1979. 12p. \$4.00. SH07344. OOP 5.

IEEE Std 535-1979 IEEE Standard for Qualification of Class 1E Lead Storage Batteries for Nuclear Power Generating Stations; Sep 21, 1979. 11p. \$5.00. SH07542. OOP 5.

IEEE Std 625-1979 IEEE Recommended Practices to Improve Electrical Maintenance and Safety in the Cement Industry; Aug 3, 1979. 24p. \$6.00. SH07401. OOP 5.

IEEE Std 726-1979 IEEE Standard Real-Time BASIC for CAMAC (Computer Automated Measurement and Control); Sep 21, 1979. 20p. \$5.00. SH07468. OOP 5.

IEEE Std 748-1979 IEEE Standard for Spectrum Analyzers; Sep 24, 1979. 20p. \$5.00. SH07476. OOP 5.

Miscellaneous Publications

Computer Graphics, Tutorial; Initially presented at COMPCON Spring 79, Feb 26-Mar 1, 1979 in San Francisco, CA; edited by Kellogg S. Booth. *Tutorial*. 433p. LC 78-78324 (preassigned). \$25.00. EH0147-9. OOP 8. See Jul 1979 Bulletin for Digest of Papers.

Scope and Contents: Readers with a basic knowledge of computing, but not necessarily an extensive background, will find this collection of papers on computer graphics helpful and informative. The volume contains some overview papers along with those concerned with important subfields. The material is divided into seven parts. The first part contains an introduction to computer graphics, some historical background to the subject, a survey of its current state of the art, and an extensive list of references to the technical literature. Other parts are devoted to these topics: hardware, software, interactivity and human engineering, visible-surface rendering, animation, and applications.

IEEE 1979 U.S. Membership Salary and Fringe Benefit Survey; prepared by Abbott, Langer & Associates for the IEEE United States Activities Board (USAB). ©1979. 138p. \$54.00. UH0134-7. OOP 3.

Coverage: The purpose of this survey, as stated in the letter that was mailed to members with the survey, is to provide data to aid in developing the basic information for long term salary trends. This will aid in determining appropriate salary levels for engineers. The volume is divided into six sections with two appendices: Section I—Introduction; Section II—Highlights; Section III—Methodology and Validity of the Survey; Section IV—Definitions; Section V—Compensation (Income, IEEE Membership Grade, Level of Professional Responsibility, et al.); Section VI—Fringe Benefits (Pensions, Basic Health and Accident Insurance, Vacation, et al.); Appendix A—Survey Questionnaire; Appendix B—Income Statistics.

National Grid: A Solution or a Problem?; Special Publication Number 16 of the IEEE PES presented at the 1979 Winter Power Meeting held on Feb 6, 1979 in New York, NY. 22p. \$4.00. 79TH0063-8 PWR. See Oct 1979 Bulletin for conf. publication.

Coverage: The national grid, as discussed in this publication, is generally thought of as a large all-inclusive power network combining existing networks and establishing networks where none exist. This would allow for a free flow of electric energy from one part of the nation to another without regard to such possible conditions as fuel shortages, emergencies, or the like. The existing national grid in the United Kingdom and the national networks of France, Italy, Sweden, and Germany can help us visualize how such a system would operate here but the geographical differences do not allow for imitation of these operations. This volume contains contributions dealing with the national grid—issues and problems, its development, misconceptions, and its place in industry structure. The discussion of these contributions is also provided.

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