EDITOR'S PROFILE of this issue

from a historical perspective …

with Paul Wesling, SF Bay Area Council GRID editor (2004-2014)

November, 1974:

Cover: The pattern for four 90-degree domain walls is shown, as in bubble memory analysis. This logo looks rather like a model of the Golden Gate Bridge; it is for the Conference on Magnetism and Magnetic Materials that is being held in San Francisco. More on page 2.

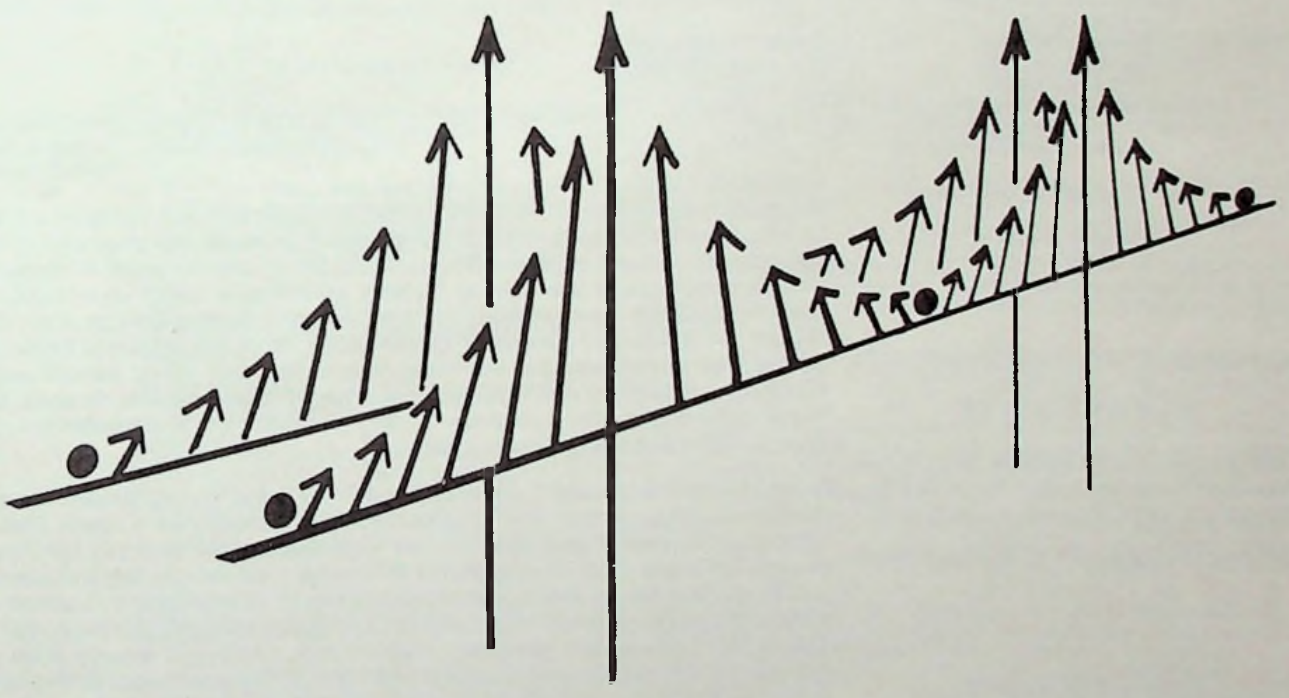
Archive of available SF Bay Area GRID Magazines is at this location:
https://ethw.org/IEEE_San_Francisco_Bay_Area_Council_History

At time of scanning, the bound volumes are held by Paul Wesling. April, 2025 Contact p.wesling@ieee.org

SAN FRANCISCO SECTION THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

Grid

NOVEMBER 1974



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EDITOR

E.W. Morris
4050 Valente Court
Lafayette, California 94549
(415) 283-8260
Address all mail except address change to San Francisco Section Office, IEEE
Suite 2210, 701 Welch Road
Palo Alto, California 94304
Telephone: (415) 327-6622
Jean Helmke, Office Manager

Members send address change promptly to IEEE, 345 East 47th St., New York, N.Y. 10017
Telephone: (212) 752-6800

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PLEASE NOTE

The Section Office Will Be Closed For Vacation From December 24, 1974 Thru January 1, 1974. Open January 2,1975.

THE COVER STORY

The cover symbol is a three dimensional representation of the magnetic spin structure of four 90 degree magnetic domain walls. The resemblance to the Golden Gate Bridge led to its use as the Logo for the 1974 Conference on Magnetism and Magnetic Materials to be held in San Francisco in December (see story on page 6). Many of the magnetic phenomena of interest, e.g. in the magnetic bubble technology, are based on the behavior of spin configurations similar to the one of the logo. The conference was last held in San Francisco in 1965.

PROFESSIONAL ACTIVITIES COMMITTEE

State Legislative Activity

One objective of your Section's PAC is to keep IEEE members informed about State legislative activities pertinent to the Electrical Engineering profession. The table below summarizes the status of some of the legislation introduced during the 1973-74 session. — by Sid Tetenbaum

LEGISLATIVE BOXSCORE

LEGISLATION	ASSEMBLY	SENATE	COMMENT
Manpower Development			
AB 1740	Passed (1973)	Died in Finance Committee (1974)	To be reintroduced by As'b'yman Bill Greene in Dec. 1974. Passage appears favorable.
AB 45B	Died in Revenue and Taxation Comm. (1973)	---	Major opposition from Aerospace industry
Energy Conservation and Development			
SB 283	Passed (1973)	Passed (1973)	Vetoed By Gov. (1973)
AB 1575	Passed (1974	Passed (1974)	Enacted into Law (1974) Effective Jan. 7, 1975
Citizens Advisory Committee on Demography			
AB 1250	Passed (1973)	Died in Gov. Organization Comm.(1974)	Has failed in last two sessions. Future action uncertain.

Manpower Development: AB 1740 by Ass. Bill Greene (D-L.A.) creates a Manpower Development Commission. It will analyze federal research and engineering activities and make projections of job availability. It will identify priority areas of domestic R&D likely to contribute to the solution of state problems in health care, public safety, pollution, housing, transportation, nutrition, communications, energy, etc. The commission will initiate and support programs which utilize the technical skills of unemployed and underemployed scientists, engineers, and other trained personnel. Funding is primarily by state appropriations. AB 458, also by Ass. Greene, is similar to AB 1740 except that it provides funding by placing a 1% allowable tax on some federal contracts coming into the state.

Energy Conservation and Development: AB 1575, the Warren-Alquist State Energy Resources Conservation and Development Act, establishes a State Energy Resources Conservation and Development Commission with authority for "one stop" power plant siting. It will be responsible for energy need forecasting and planning and is authorized to set up energy contingency plans in an emergency. It will be responsible for developing conservation measures to curtail wasteful and inefficient uses of energy and will sponsor necessary R&D on new sources of energy such as geothermal. SB 283 is almost identical to AB 1575. The enactment of the latter was helped by the changed political climate resulting from the energy crisis of the winter of 1973-1974.

Demography: AB 1250 by Ass. Ken Meade (D-Oakland) creates a Citizens Advisory Committee on Demography. It is responsible for evaluating and recommending methods for determining population levels and growth. It is required to recommend population goals and policies to guide California's future growth and development. This bill incorporates the recommendations of the Panel on Population Growth and Distribution of the Assembly Science and Technology Advisory Council. The present president of the IEEE is a member of this Council

Voting Records: There are 19 Assemblymen and 10 Senators representing the area covered by the San Francisco Section of the IEEE, or about 25% of the entire California State Legislature. Below are their voting records on the legislation discussed above:

(continued on page 4)

MEETING CALENDAR

AEROSPACE & ELECTRONIC SYSTEMS/ELECTROMAGNETIC COMPATIBILITY/ENGINEERING MANAGEMENT
NOV. 20

Story on Page 7

JOINT MEETING: HOW CAN ELECTRICAL ENGINEERING BECOME A WORTHWHILE PROFESSION? William W. Raukko, Chairman, SF Section Professional Activities Committee.

NOV. 20, Wednesday, 8:00 PM, Philco Ford Auditorium, 3939 Fabian Way, Palo Alto. No dinner. For information call Jim Welch (415) 326-4350 x 4769.

ANTENNAS & PROPAGATION SOCIETY
NOV. 14

Story on Page 6

MEANDER LINE POLARIZERS FOR BROADBAND APPLICATIONS. James J. Epis, Senior Engineering Specialist, GTE Sylvania, Mt. View.

NOV. 14, Thursday, 8:00 PM, LMSC Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto. Cocktails at 5:30 and dinner at 6:15 PM at Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. No reservations required.

COMMUNICATIONS SOCIETY
NOV. 12

Story on Page 8

ADDING AUDIO RESPONSE TO AN EXISTING CPU. C. Michael Melas, Manager, Audio Systems Group, IBM Los Gatos Lab.

NOV. 12, Tuesday, 8:00 PM, Rickey's Hyatt House, 4219 El Camino Real, Palo Alto in the University Room. Cocktails at 6:00 and dinner at 6:30 PM. Reservations: Ruth Collins, (415) 591-8461 x 461.

COMPUTER SOCIETY
NOV. 20

Story on Page 4

THE SIGNETICS 2650 MICROPROCESSOR. Bruce Threewitt, MOS Application Manager, Signetics Corp.

NOV. 20, Wednesday, 8:00 PM, University of Santa Clara Daly Science Hall, Room 207. Dinner: 6:15 PM - place to be announced. Reservations: (408) 984-4482 by 12 noon, Nov. 18.

EAST BAY SUBSECTION
NOV. 20

Story on Page 5

"BACK TO SCHOOL NIGHT"

NOV. 20, Wednesday, 7:30 PM, Dept. of Electrical Engineering and Computer Sciences, University of California, Berkeley, Cory Hall, Room 421, Hearst Ave. and Gayley Road, Berkeley. No dinner. No reservations required.

ENGINEERING IN MEDICINE & BIOLOGY
NOV. 14

Story on Page 7

FINAL MEETING OF THE SERIES ON ARRYTHMIA DETECTION OF THE ELECTROCARDIOGRAM. William Sanders, Programmer with Cardiovascular Div. at Stanford Hospital.

NOV. 14, Thursday, 8:00 PM, Stickney's Restaurant, El Camino at Embarcadero, Town & Country Village. Dinner at 6:00 PM. Call Melanie Messman at (415) 321-9200 x 49 for information and reservations.

GOLDEN GATE SUBSECTION
NOV. 19

Story on Page 7

FIELD TRIP TO PG&E EMBARCADERO SUBSTATION.

NOV. 19, Tuesday, 6:00 PM. Meet at PG&E Substation, First Street & Folsom, S.F. No dinner. Reservations: Leon Glahn (415) 764-7757 by noon Nov. 18th.

INDUSTRIAL ELECTRONICS & CONTROL INSTRUMENTATION/ INSTRUMENTATION MEASUREMENT
NOV. 20

Story on Page 8

NON-CONTACT MEASUREMENT TECHNIQUES. Howard Pollard, Reticon Corp.

NOV. 20, Wednesday, 8:00 PM, Rickey's Hyatt House, 4219 El Camino Real, Palo Alto in the University Room. Cocktails at 6:30 and dinner at 7:00 PM. Reservations: Marge Booth, (408) 289-3342 by Nov. 19th.

INDUSTRY APPLICATIONS SOCIETY
NOV. 26

Story on Page 6

THE 1975 NATIONAL ELECTRICAL CODE. Creighton Schwan, Senior Field Engineer, NEMA, Hayward.

NOV. 26, Tuesday, 7:00 PM, PG&E, 77 Beale St., SF. Dinner 6:00 PM, 3rd Floor PG&E Dining Room, 77 Beale St. Reservations: Moon Yuen (415) 764-4067 by Nov. 25th.

INDUSTRY APPLICATIONS SOCIETY/GGSS
DEC. 18

Story on Page 6

KINETIC ENERGY TROLLY COACH. L.J. Lawson, Project Manager, Kinetic Energy Systems, Lockheed Missile and Space Co., Sunnyvale.

DEC. 18, Wednesday, 8:00 PM, Engineers Club of San Francisco, 160 Sansome St. Cocktails 6 PM, Dinner 7:00 PM. Ladies are invited. Reservations: Leon Glahn, (415) 764-4067 by Dec. 16.

INFORMATION THEORY
NOV. 20

Story on Page 6

COMPUTATIONAL COMPLEXITY AND INFORMATION THEORY. Dr. Gill, Professor at Stanford University.

NOV. 20, Wednesday, 4:30 PM, Systems Control, Inc., 1801 Page Mill Road, Palo Alto. Dinner at Ming's, 1700 Embarcadero Road, East Palo Alto. Reservations: Miss Di Maria, (415) 497-4539 by Nov. 19th.

MAGNETICS SOCIETY
NOV. 21

Story on Page 5

MAGNETOCAVDIOGRAPHY. John P. Wikswo, Jr., Dept. of Physics, Stanford University.

NOV. 21, Thursday, 8:00 PM, Hewlett-Packard Auditorium, 5301 Stevens Creek Blvd., Santa Clara. No dinner.

MICROWAVE THEORY & TECHNIQUES/ELECTRON DEVICES
NOV. 21

Story on Page 6

JOINT MEETING. ELECTRON-BOMBARDED SEMICONDUCTOR MICROWAVE AMPLIFIERS. Dr. Philip S. Carter, Consultant.

NOV. 21, Thursday, 8:00 PM, Building 44 (Laurel Street) SRI, Menlo Park. No dinner.

MICROWAVE THEORY & TECHNIQUES
DEC. 7

ONE DAY SHORT COURSE: TELECOMMUNICATIONS SYSTEMS ENGINEERING. Organizer: J.C. Gillespie, Farinon Electric.

DEC. 7, Saturday, 9 AM to 5 PM, SLAC Auditorium, 2575 Sand Hill Road, Menlo Park. Lunch included in registration fee: $15 for IEEE members, $25 for non-members. Registration required by Dec. 2 - late charge of $5 after that date. See GRID for further information or call Mr. Gillespie at Farinon Electric, San Carlos (415) 593-8491.

NUCLEAR & PLASMA SCIENCES SOCIETY
NOV. 22

Story on Page 4

JOINT MEETING WITH FRENCH ENGINEERS. "STRATEGIC ARMS LIMITATION TALKS". Dr. W.K.H. Panofsky, Director, SLAC.

NOV. 22, Friday, 9:30 PM, International Inn, 326 South Airport Blvd., So. SF. (Take Airport Blvd. turn-off). Social Hour at 7:30, dinner at 8:30 PM. Price of dinner $7.75 incl. tax & tip payable at door. Reservations required: Mrs. Cynthia Whiteside, (415) 843-2740 x 6341.

PARTS HYBRIDS & PACKAGING
OCT. 8 thru NOV. 12

SIX-SESSION COURSE ON SEMICONDUCTOR RELIABILITY. See story for speakers.

OCT. 8 thru NOV. 12, Tuesdays, HP Auditorium, 5301 Stevens Creek Blvd., Santa Clara. Fee: $15 for IEEE members; $25 for non-members. To register contact Jim Ostendorf at (408) 739-8001 or Joe Aichroft at (408) 968-9211.

POWER ENGINEERING SOCIETY
NOV. 12

Story on Page 5

CIGRE AND THE ELECTRICAL POWER ENGINEER. W.R. Johnson, Chief Electric Generation Engineer, PG&E Co., SF.

NOV. 12, Tuesday, 7:00 PM, PG&E Co., 77 Beale St., Room 1706, S.F. Dinner: 6:00 PM, PG&E Cafeteria, 77 Beale St., 3rd Floor. Reservations: Contact Mr. Ram K. Gupta, (415) 781-4211 x 3728 or Miss Carol Franke, (415) 781-4211 x 1442 by Nov. 11th.

POWER ENGINEERING SOCIETY
OCT. 9 thru DEC. 11

Story on Page 5

TEN-SESSION COURSE ON MOTORS. Motor and Generator Application. Protection and Control.

OCT. 9 thru DEC. 11, Wednesdays, 6 to 8:00 PM at PG&E Bldg., 245 Market St., first floor, Conference Room B, SF. See story for application. Fee: IEEE members $7.50; non-members $15. Mail applications to Emery Fabri, Bechtel Corp., 50 Beale St., SF 94119 or Richard Webster, PG&E Co.

RELIABILITY
NOV. 20

Story on Page 5

FAULT THREE ANALYSIS USING COMPUTER GRAPHICS. Hans Wynhold, Lockheed Missiles & Space Co.

NOV. 20, Wednesday, 8:00 PM, Physics Bldg., Room 101, Stanford University. Cocktails and dinner 6:00 PM at Stickney's Town & Country Village, El Camino at Embarcadero, Palo Alto. Reservations: Section Office (415) 327-6622.

SANTA CLARA VALLEY SUBSECTION
NOV. 13

Story on Page 5

TECHNICAL MEETING AND TOURS OF PACIFIC TELEPHONE'S NEW TOLL SWITCHING FACILITY IN SANTA CLARA.

NOV. 13, Wednesday, 7:00 PM, 1700 Space Park Drive, Santa Clara. No dinner. Reservations required: P.H. Simpson, (408) 291-2114 by Nov. 8th.

SYSTEMS MAN & CYBERNETICS/CONTROL SYSTEMS
NOV. 19

Story on Page 7

JOINT MEETING. SYSTEM ENGINEERING & COMPUTER NETWORKING. Prof. Carson E. Agnew, Stanford University.

NOV. 19, Tuesday, 8:00 PM, SRI, Conference Room B, Bldg. 1, 333 Ravenswood Ave., Menlo Park. Dinner: 6:15 PM, Butterfield's, 1706 El Camino Real, Menlo Park. Reservations: Section office (415) 327-6622.

VEHICULAR TECHNOLOGY
NOV. 18

Story on Page 8

TOUR OF BART AUTOMATED TRAIN CONTROL CENTER.

NOV. 18, Monday, 6:30 PM, BART's Lake Merritt Station, 800 Madison St., Oakland. Dinner at 8:00 PM. Reservations: Linda Ulbrich (415) 349-3111 x 274 by Nov. 15th.

PROFESSIONAL ACTIVITIES COMMITTEE

1. AB 1740: All Assemblymen voted AYE.
2. SB 283: All Assemblymen voted AYE except Carlos Bee (D-Hayward), Dixon Arnett (R-Redwood City), Louis Papan (D-Daly City), and Frank Murphy (R-Santa Cruz). Absent were John Miller (D-Alameda), Richard Hayden (R-Sunnyvale) and Bob Wood, (R-Greenfield). All Senators voted AYE except Clark Bradley (R-San Jose) and Donald Grunsky (R-Watsonville).
3. AB 1575: All bay area Assemblymen and Senators voted AYE.
4. AB 1250: All local Assemblymen voted AYE except Carlos Bee (D-Hayward) and Alister McAlister (D-San Jose). Absent were John Miller (D-Alameda) and Dixon Arnett (R-Redwood City).

PAC, San Francisco Section is seeking female members. Those who would like to join the PAC roster are encouraged to contact the undersigned, telephone: (408) 493-1501 x 2065 or the IEEE Office in Palo Alto.

Willaim W. Raukko, Chairman

MEMBERS - ASSISTANCE NEEDED QUICK REACTION NETWORK

Due to the enthusiastic response received from the appearance of this announcement in the September GRID, it is being reprinted for those members who missed that issue.

PROFESSIONAL ACTIVITIES COMMITTEE IEEE EMPLOYMENT REFERRAL SERVICES

IEEE members seeking a new position may obtain current lists of job openings by sending a self-addressed stamped set of #10 (business size) envelopes to: IEEE Employment Services, 701 Welch Road, Suite 2210, Palo Alto, CA 94304.

The job openings list will be up-dated and mailed bi-weekly. A limit of 4 envelopes is requested. Confidentiality will be maintained. The mailed job listings represent the priority needs of employers.

Unemployed non-member EE's also may obtain job listings by payment of $20 ($40 if employed). This payment will apply toward IEEE membership and include all benefits.

The IEEE Employment Services also has at its office a list of Bay Area employers, resume forms and brochures, with helpful hints for obtaining and conducting job interviews.

IEEE members are urged to bring this service to the attention of their employers and personnel departments. Employers desiring to list openings, please send job description with a check for $35 per job listed, to the above address. A listing will receive four mailings at 2-week intervals.

THE SIGNETICS 2650 MICROPROCESSOR

The Computer Society November meeting will feature a presentation on Signetics 2650 Microprocessor. All interested persons are invited.

The 2650 is a complete general purpose, fixed instruction set, parallel 8 bit binary processor on a single chip. N-Channel, ion-implanted, silicon gate MOS technology is used to realize TTL compatability, a single +5 supply, and static operation.

Bruce Threewitt will describe the development goals and trade-offs which resulted in the final design. Fifteen address lines permit direct memory addressing of 32K bytes. Seven general purpose registers are provided in addition to an eight level Return Address Stack on the chip for maximum flexibility.

Bruce Threewitt, MOS Applications Manager, has been at Signetics since 1971. He previously was with Fairchild and Computer Microtechnology. He holds a BSEE from Oregon State University.

STRATEGIC ARMS LIMITATION TALKS OR FROM SALT I TO SALT II TO SALT III

This month's joint meeting of the Nuclear and Plasma Sciences Society and the French Engineers features Dr. Wolfgang K.H. Panofsky, director of Stanford Linear Accelerator Center, who will discuss the Strategic Arms Limitations agreements made with the Soviet Union.

The Soviet Union and the United States have such a great excess of long-range strategic nuclear weapons relative to other nations that their control can be negotiated in a bilateral forum without initially affecting the role of the super powers to other countries. SALT I resulted in a treaty limiting anti-ballistic missile systems to what are militarily ineffective levels and thereby codified the status of mutual vulnerability of the populations of both countries.

An Interim Agreement was signed at SALT I controlling offensive land-based and sea-based missiles to numbers then existing under construction. Systems in which the U.S. is ahead (bombers and MIRV's) were not constrained, but the numerical restrictions on existing systems gave an apparent numerical advantage to the Soviets. SALT II, in the spring of this year, was essentially a failure in that no new limits on offensive missiles were agreed upon and a treaty on setting a threshold for underground nuclear explosions was negotiated which offers negligible restraint and seems to signal U.S. and U.S.S.R. cynicism to non-nuclear countries with the problem of non-proliferation. SALT III has now resumed and faces an uncertain future.

MICROCOMPUTERS-UC BERKELEY

Forty five engineers recently received a "hands-on" introduction to microcomputers in a three-day course (Aug. 7-9) at UC Berkeley Extension. Participants from several U.S. and Canadian locations were represented. For further information: Prof. Raymond Grassi, Chm. Continuing Education in Engineering, UC Extension, Berkeley, 94720. Phone (415) 642-4151.

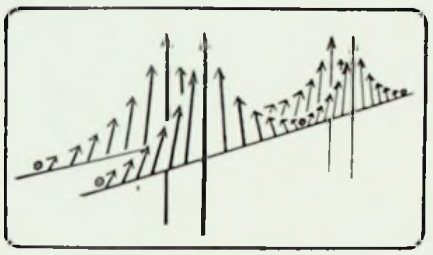
See CALENDAR for Program Arrangements

SCVSS - TOUR OF PACIFIC TELEPHONE'S NEW TOLL SWITCHER

The Santa Clara Valley Subsection will tour Pacific Telephone's new toll switching facility in Santa Clara. The new facility, which includes a 4A Switching Machine, an Electronic Translator System, and a Peripheral Bus Computer, is scheduled to go into service early next year. A Pacific Telephone engineer will discuss the operation of the system and its relationship tothe other switches in the Bay Area. The tour will be limited to 30 adults; reservations are required. Please see calendar. No cameras!

TWENTIETH ANNUAL CONFERENCE ON MAGNETISM AND MAGNETIC MATERIALS - SAN FRANCISCO

Jack Tar Hotel
December 3-6, 1974



MAGNETOCARDIOGRAPHY

John P. Wilkswo, Jr., Department of Physics, Stanford University, will describe a susceptibility cryostat that has been built to measure the bloodflow in the *in situ* human heart. A superconducting magnet is used to generate a constant magnetic field encompassing the heart. Changes in intracardiac blood volume induce small proportional changes in the external magnetic field because the magnetic susceptibility of blood differs from that of the surrounding tissue. In a simple model, 140 m1 of blood moving 5 cm in a 100 gauss field will produce a field changes of 5×10^{-5} gauss. The spatial and temporal dependence of the blood flow signal is being studied in an attempt to develop new non-invasive techniques for evaluating cardiac function.

Mr. Wikswo obtained hs B.A. degree in Physics from the University of Virginia in 1970. He has pursued his graduate study in Physics at Stanford under Dr. W.M. Fairbanks, developing a susceptibility magnetometer for the non-envasive study of blood flow in humans. He has been an NSF postdoctoral fellow during his graduate studies at Stanford.

CIGRE and the Electrical Power Engineer

The Power Engineering Society's November 12 meeting will feature a presentation on the activities of CIGRE. CIGRE is a permanent "international association" founded in the early 1920's to facilitate the interchange of technical knowledge and data between all countries in the general field of electric generation and high voltage transmission. Its field of activities is concerned with:

1. Electrical aspects of generation
2. Substations and associated equipment
3. High voltage electric transmission
4. Interconnected system operation

Mr. W.R. Johnson, Chief Electric Generation and Transmission Engineer for PG and E will talk on the subject "CIGRE and the Electrical Power Engineer". Mr. Johnson represents the United States on the Transmission System group of CIGRE. He will highlight the significance of CIGRE as it affects power engineers and will discuss in detail the activities currently being pursued by its members.

FAULT TREE ANALYSIS USING COMPUTER GRAPHICS

Hans Wynholds will show how fault tree analysis can be used to develop models of system reliability and safety, at the November 20th meeting of the Reliability Group. An operational system will be described which enables a user to construct, modify, and store fault trees by means of an interactive graphic terminal. With this system complex engineering designs can be analyzed, and probability of failure for various possible modes of failure quantitatively predicted.

Hans Wynholds is a system safety engineer with Lockheed Missiles & Space Company. He has a BS in mathematics, MS in system management and operations research, and is completing a PhD in engineering-economic systems at Stanford.

Cocktails and dinner will be held at 6 PM in Stickney's Restaurant, Town & Country Village, El Camino & Embarcadero Roads, Palo Alto. The meeting will be in Physics 101, Stanford University, at 8 PM.

EBSS - Back To School Night

The East Bay Subsection on Wednesday, November 20, will determine the "State-of-the-Art" in electrical engineering education. Featuring a "Back-to-School-Night", they will sponsor a presentation of goals, programs and areas of research, and also tour the laboratory facilities of the Department of Electrical Engineering and Computer sciences at UC Berkeley. The Department of EECS has a present enrollment of about 600 undergraduate and 400 graduate students. They provide programs in many areas of electrical engineering.

The meeting will begin at 7:30 PM in room 421 of Cory Hall at Hearst Ave. and Gayley Road, Berkeley.

POWER EDUCATIONAL COURSE

Motor and Generator Protection

A course on **Motor and Generator Application, Protection, and Control** will be held on Wednesdays, Oct. 19 through Dec. 11, 1974 at 6:00 to 8:00 PM in the P.G.&E. Bldg., 245 Market St., first floor, Conference Room B, San Francisco. Tentative lecture topics are: Induction Motors I, Induction Motors II, Synchronous Motors, Special Motors, Motor Protection I, Motor Protection II, Methods of Motor Control, Generators, and Generator Protection. Lecturers have been invited from G.E., Westinghouse, Bechtel, P.G.&E., etc. Mail applications to Mr. Emery Fabri, Bechtel Corp., 50 Beale St., S.F. 94119, (415) 764-4582 or Mr. Richard Webster, P.G.&E. Co., (415) 781-4211, ext. 3143. Make checks payable to S.F. IEEE Power Group.

APPLICATION

Name _____

Address _____

Phone: Bus _____ Home _____

( ) IEEE $7.50 ( )Non-member $15

COMPUTATIONAL COMPLEXITY AND INFORMATION THEORY

Dr. John Gill

Computational complexity theory is concerned with the efficiency with which computational tasks can be performed (e.g., the amount of time or memory required). Coding theorems of information theory state that data can be compressed to a lower limit determined by the entropy of the information source, but do not deal with how complex the encoding process need be. We shall review how Kolomogorov, Chaitin, and Solomonoff have used the notions of computational complexity to describe the ultimate compression achievable for any information sequence, and consider the computational effort required to achieve this compression.

John Gill is an Assistant Professor of Electrical Engineering at Stanford University.

EDITOR NOT INFALLIBLE

The editor is not infallible. For the second year in a row, in reminding that no GRID would be issued in December, it was stated that the deadline for the November issue was October 31. Don't you believe it, for it should have been September 30. Next year we will be correct.

UC BERKELEY EECS

Prof A.M. Hopkins now Assoc. Dean

Dean of Engineering E.S. Kuh has recently announced the appointment of EECS Professor Arthur M. Hopkins as Associate Dean. As Associate Dean, Professor Hopkins will assist Dean Kuh in administrative matters with particular responsibility in coordinating and expanding the Cooperative Work-Study Program. He will also be in charge of alumni relations and computer science service activities. Professor Hopkins joined the University in 1954; he has served as Vice Chairman of the Department of Electrical Engineering and Computer Sciences for several years including one year as Acting Chairman.

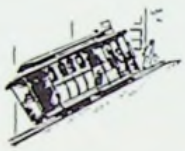
APS - MEANDER LINE POLARIZERS FOR BROADBAND APPLICATIONS

A new and very useful type of circular-polzrizing-grating, or "radome-polarizer" has become available for application in antenna systems-a device called a "Meander Line Array Radome-Polarizer". Theoretical and measured performance of these devices on broad-band antennas will be presented by Mr. James J. Epis of GTE Sylvania.

Epis will first present the solution of the two microwave boundry value problem which is of special theoretical interest because the metals are not assumed to be perfect conductors.

At GTE Sylvania, meander line array polarizers have been employed on four basically different types of antennas. Typical examples of each will be shown, and their measured and calculated axial ratio performance over bandwidths as broad as two octaves will be displayed.

James J. Epis is presently a Senior Engineering Specialist and consultant at GTE Sylvania in Mountain View, Calif. He holds numerous patents on antenna and microwave devices including two pertinent to meander line array polarizer devices.



ELECTRON-BOMBARDED SEMICONDUCTOR MICROWAVE AMPLIFIERS

Dr. Philip S. Carter, Jr. will give a talk on the development of a new type of microwave amplifier at the joint Microwave Theory and Techniques, Electron-Devices meeting on November 21. This microwave amplifier uses an electron beam to activate a semiconductor diode element called an Electron Bombarded Semiconductor or EBS.

This talk will focus on the development of microwave EBS amplifiers, with special attention to the design of the output coupling circuits of these inherently low impedance power devices. Three amplifiers will be described, (1) a single diode, coaxial resonator amplifier with 100 watts peak output at 1.27 Ghz, (2) a radial resonator amplifier having 500 watts peak output at 1.5 Ghz, and (3) a 1-2.5 Ghz amplifier with 12 watts output.

Dr. Carter is an engineering consultant, residing in the Bay Area, specializing in microwave circuit and antenna design problems. He has been active in the development of YIG filters and oscillators and the theory of electronically-scanned antennas, as well as the design of EBS amplifiers.

NOVEMBER — IAS — DECEMBER — GGSS

1975 NATIONAL ELECTRIC CODE

The Industry Applications Society on Tuesday November 26 will have an opportunity to hear Mr. Creighton Schwan discuss the significant revisions in the 1975 National Electric Code.

There are over 500 substantive revisions in the 1975 NEC. Mr. Schwan will discuss the most significant changes, and comment briefly on NEMA field operations, and NFPA procedures for continuing development of NEC.

Mr. Schwan has been active with code formulation and enforcement since 1954, holding membership on NEC committees. In 1965 he joined the Safety Regulations Department of NEMA, where presently he is Senior Field Engineer.

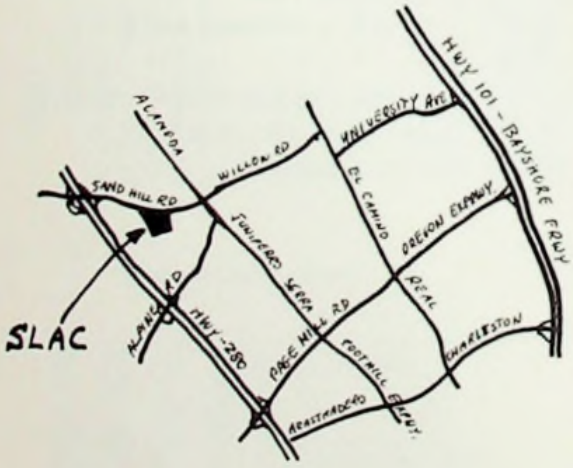
Dinner at 6:00, meeting at 7:00 PM, in the PG&E dining room, 77 Beale Street, San Francisco.

KINETIC ENERGY TROLLY COACH

This December program at the beautiful San Francisco Engineers Club should be of general interest to all electrical engineers and their ladies. Mr. Lawson will describe his company's development of Kinetic Energy (Flywheel) driven trolly coaches for the San Francisco Municipal Railway System.

The ability to quickly charge up the fly wheel when the trolly coach makes a brief stop on its route plus the ability to accelerate and brake the coach while manuevering San Francisco's famous hills in traffic are all problems that are solved electrically using the latest in state-of-the-art solid state electronics. Lockheed has a formal contract to supply two prototype trolly coaches and has been working on the project over one year.

See CALENDAR for Program Arrangements



INTRODUCTION TO TELECOMMUNICATIONS SYSTEM DESIGN

A ONE-DAY SHORT COURSE - DEC. 7, 1974 - AT SLAC - PRESENTED BY THE IEEE MICROWAVE THEORY AND TECHNIQUES GROUP, SAN FRANCISCO CHAPTERS AND IEEE EDUCATIONAL ACTIVITIES BOARD.

December 7, 1974
Saturday
9:00 a.m. - 5:00 p.m.

WHERE (See Map)
Main Auditorium
Stanford Linear Accelerator Center
2575 Sand Hill Road
Palo Alto, California

PURPOSE

To provide a general overview of the practical aspects of telecommunications systems design which will enable the practicing engineer to better assess the interrelationships between subsystem designs and overall transmission performance.

COURSE DESCRIPTION

Many "non-circuit" considerations are involved in optimizing the design of modern telecommunications networks. Therefore, it is important that circuit designers be able to assess the effects of their designs on the overall transmission quality and reliability of a telecommunications system. This course is intended to acquaint those not directly involved in transmission design with the terminology, the function and characteristics of major subsystems, and the performance parameters of typical transmission systems. The course will emphasize the practical aspects of analog and digital transmission systems in current use by the telephone industry and other commercial operating groups. Although switching considerations form a major element of the overall telecommunications network, they are considered to be beyond the scope of this course.

PREREQUISITE (Recommended)
Bachelor's degree in engineering, or equivalent practical experience.

THE **INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.**

TELECOMMUNICATIONS SYSTEM

ENGINEERING DESIGN

December 7, 1974

Main Auditorium

Stanford Linear Accelerator Center

2575 Sand Hill Rd.

Palo Alto, California

COURSE SCHEDULE

MORNING

1. General overview of the telecommunications network -- existing and future.

Coffee

2. Major components of transmission systems -- analog/digital radio, multiplex, etc.

Lunch

AFTERNOON

3. Transmission Performance Analysis -- Major parameters affecting transmission quality and their measurement.

4. Radio Path and Propagation Engineering -- Clearance criteria, path loss and fade margin calculations, effect of various types of fading.

5. Equipment Considerations -- Primary power, antenna/waveguide systems, buildings and towers.

6. Reliability Analysis -- Propagation and equipment reliability considerations, with methods used to increase overall channel availability.

The topics will be presented by representatives of telecommunications operating companies and staff members of Farinon Electric.

FEE

The fee for this course is $15.00 for IEEE regular members, $10.00 for student members and $25.00 for non-members. The fee also includes the lunch at SLAC and the material to be handed out. The registration fee is increased by $5.00 after the date of December 2, 1974

REGISTRATION

The enrollment for this course is limited. Therefore, persons interested in taking this course are urged to enroll early by completing and mailing the registration form below. Companies may enroll for any given number of individuals, supplying names later. Advance registration is required. For additional applications, use separate sheet giving information requested on enrollment form.

INFORMATION

For additional information concerning the program, write to or call the course organizers:

Chris Gillespie
or
Don Williams
Farinon Electric
1691 Bayport Avenue
Phone: (415) 593-8491

REGISTRATION FORM

(Should be received before December 2, 1974)
Late registration: Add $5.00 to fee.

Mail to: Les Besser
c/o IEEE San Francisco Section Office
Suite 2210
701 Welch Road
Palo Alto, California 94304

Enclosed is check (payable to San Francisco GMTT Chapter) in the amount of $ to cover the enrollment fee.

Name .....
(please print full name)

Address .....
(Street)

.....
(City and State) (Zip)

Company Name .....

IEEE Affiliation (Check One)

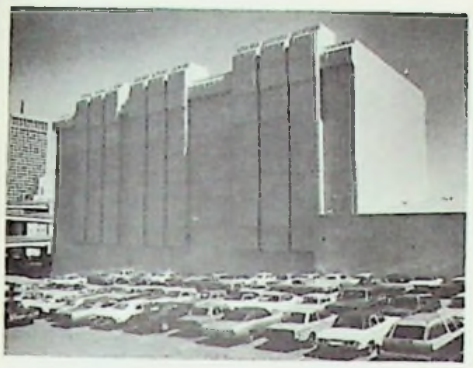
☐ Member
☐ Student Member
☐ Non-Member

- -

IEEE Membership No:- - - - - - - - - - - - - - - - - -

☐ Late Registration (Check if applicable)

GGSS-VISIT PG&E EMBARCADERO SUBSTATION



Visit PG&E's 230/34. 5/12 kv indoor substation located at Folsom and Fremont Streets, San Francisco. The substation is designed for an ultimate capacity of 590 mw.

When ultimately developed it will consist of six 3 phase, 115 mva, 230/34. 5 kv transformers, six 3 phase, 36 mva, 34.5/12 kv transformers, three 230 kv cable terminations and metal-clad switchgear for 26 34. 5 kv and 28 12 kv feeders.

The Nov. 19 meeting, on Tuesday at 6:00 PM, will meet at PG&E's Substation, First Street and Folsom, San Francisco. Reservations: Leon Glahn (415) 764-7757 by noon Monday, November 18. No dinner.

SMC/CS TO DISCUSS SYSTEMS ANALYSIS AND COMPUTER NETWORKING

This is the second in a series of talks on the applications of systems analysis in the telecommunications field. Professor Carson Agnew of Stanford University will describe some aspects of systems and economic analysis as applied to problems in the interconnection of computers. The advent of distributed computer networks has raised many questions which are more economic than technical in content. In some cases, systems and economic insights can be used to improve the network's operating algorithms. This talk will show the systems engineering approach to computer networking has been addressed in current research at Stanford.

Professor Agnew received hs PhD in Engineering Economic Systems at Stanford University, and is now teaching in that department.

The meeting will be held Tuesday, Nov. 19 at 8:00 PM in Conference Room B at Stanford Research Institute, Ravenswood Ave., Menlo Park. A no-host dinner will be held before the meeting at 6:00 PM at Butterworth's Restaruant, Menlo Park. For reservations phone Marty Tannenbaum at SRI, 326-6200 x 4167 before noon, Nov. 18.

AES/EMC/EM JOINT MEETING

"How Can Electrical Engineering Become a Worthwhile Profession?"

William Raukko, chairman of the Professional Activities Committee (PAC) and his members will discuss the problems that face the engineering profession, and some of the action that is underway in IEEE to alleviate them. The subjects of ethical practices, interface with state government, and pensions will receive particular emphasis from members who are active on our behalf in these areas. There will be ample time for questions and commentary from the floor, as the PAC is particularly anxious to maintain a dialogue with the members and to receive their inputs.

EIA NEW STANDARD RS-419

Limits values to be used in semiconductor device specifications and registration formats. Copies of RS-419 may be ordered from the Standards Order Office, EIA, 2001 Eye Street, Washington, D.C. 20006. Free index of all EIA Standards also available.

NEW BOOK AVAILABLE

Handbook of Thick Film Hybrid Micro-Electronics, 670 pages, 6" X 9", 518 illustrations and tables. Price $29.50. Charles A. Harper, Editor-in-Chief. Available through McGraw Hill Book Company, 1221 Avenue of the Americas, New York, N.Y. 10020.

ARRYTHMIA DETECTION OF THE ELECTROCARDIOGRAM

The Engineering in Medicine and Biology Group will hear the third and final discussion on this subject at Stickney's in Palo Alto on November 14, 1974. Note this meeting is on the second Thursday. Dinner at 6:00 PM, meeting at 8:00 PM, both at Stickney's, Town and Country Village, Embarcadero and El Camino in Palo Alto.

The speaker, Mr. William Sanders, is programmer with the Cardiovascular Division at Stanford Hospital. The computerized detection system used at Stanford, and soon to be marketed by Hewlitt/Packard, will be described.

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IECI/IM - NON-CONTACT MEASUREMENT TECHNIQUES

One of the newer tools for non-contact measurement uses a combination of a diode array, optics, and microcomputer controllers for detecting flaws or making measurements to 0.001 inches at speeds as high as 15.5 inches per second. Typical applications include monitoring threads on spark plugs and locating discontinuities in wood.

Howard Pollard, a Development Engineer at Reticon Corporation, has been designing off-the-shelf and custom controllers since 1973. He is a member of the IEEE and graduated Cum Laude from Utah State University in 1971, where he was the Utah Section IEEE Student Paper Contest winner in 1971.

The talk will describe the basics of the photo sensing array followed by a description of the optical camera which works in conjunction with the array. The use of cameras in conjunction with process controllers will be described. The last part of the talk will illustrate existing applications and discuss projected developments in arrays and controllers. A working demonstration unit will be available at the meeting.

COMMUNICATIONS SOCIETY ADDING AUDIO RESPONSE TO AN EXISTING CPU

The design criteria involved in adding audio response to an existing processor will be described at the Communications Society November meeting, by C. Michael Melas, manager of the Audio Systems Group at the Los Gatos IBM Laboratory. Dr. Melas will emphasize the vocabulary entry method and the speech digitization scheme, and will provide an on-line demonstration of the system.

BART AUTOMATIC TRAIN CONTROL CENTER

The Vehicular Technology Group November meeting will be held at 6:30 PM, November 18, 1974, at the Lake Merritt BART station. The automatic train control center is arranged so that the operation of the console can be observed from a viewing room. A prepared program will describe the operation of the control center. A tour of the facility will then be conducted by an electronics maintenance supervisor, who will be able to answer questions concerning the complete BART operation. Arrangements have been made for a family-style Chinese dinner after the BART tour.

Forty technical sessions will include many subjects of interest to communications engineers, as well as others. Program includes several panel sessions on current subjects.

Luncheon Dec. 2 features Dr. Walter Munk, Professor of Geophysics at Scripps Institute of Oceanography, also associated with University of California at La Jolla.

Banquet Dec. 3 keynote speaker, Dr. Simon Ramo.

If you are not a member of the Communications Society, and wish additional information, call Jean Helmke at IEEE Office, Palo Alto, who has a copy of program.

IEEE INTERNATIONAL RADAR CONFERENCE

Stouffer's National Center Inn
Arlington, Va. April 21-23, 1975
Call for Papers-Due November 15, 1974
Information: Dr. Merrill I. Skolnik, Chm. Papers Comm., Code 5305, Naval Research Lab., Washington, D.C. 20375.

1975 ELECTRICAL AND ELECTRONIC MEASUREMENT-TEST INST. CONFERENCE

Ottowa, Ont. Canada May 13-15, 1975
Call for Papers
For information, contact IEEE Instruments and Measurements Group, or Ottowa Section.

1975 IEEE PHOTOVOLTAIC SPEC. CONFERENCE

Scottsdale, Ariz. May 6-8, 1975
Call for Papers - Due Nov. 1, 1974
Information: Mr. R.L. Statler, Tech. Prog. Chm., Naval Research Laboratory. Code 6603F Washington, D.C. 20375.

1975 IEEE INDUSTRIAL APPLICATIONS OF MICROPROCESSORS

Philadelphia, Pa. March 11-12, 1975

Information: Mr. Roger W. Bolz, Gen. Chm. Automation for Industry, Inc. 672 Alpha Dr., Cleveland, OH 44143 *or* Joseph M. Giachino Program Chm. Bailey Meter Co. 29801 Euclid Ave., Wickliffe, OH 44092.

MEMBERS - ASSISTANCE NEEDED - QUICK REACTION NETWORK

Starting this fall there will be established at the S.F. Section IEEE office a communication center for the purpose of providing our organization a quick reaction network in response to legislative activities in Sacramento and the Congress, as an example. In order to do this effectively, we will need a few minutes of your time to receive and disseminate vital information which comes out of our statewide and national organization.

cut here and mail

Following is a self-addressed stamped questionnaire requesting your active support in this effort. Upon receipt of an affirmative answer from you, we will place you on our active mailing list so that you will receive in-depth background briefing of the activities of PAC.

QUESTIONNAIRE - S.F. SECTION PAC

Please check one

____ Yes, I will be available for active participation in the quick reaction network.

____ I am not available at this time but would like to keep in touch.

Comments: _____

_____

Name: _____

Address: _____

City: _____ Zip Code: _____

Telephone: _____ _____

Office Home

See CALENDAR for Program Arrangements