

# EDITOR'S PROFILE of this issue

*from a historical perspective ...*

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

December, 1966:

Cover: New Fellows are honored in this cover graphic.

Page 5: A statistics and graphics report shows that California's aerospace employment is dropping, while electronics is rising. Santa Clara County's electronics employment rises sharply from 14,200 in 1957 to 56,400 in 1966.

Page 6: Jack Kaufman is elected as an IEEE Fellow. He was a founder of Heintz and Kaufman, maker of RF radios in the 1920's, one of our Valley's early electronics companies. Bill Eitel, 6UF and Jack McCullough, 6CHE both left Heintz and Kaufman in 1934 to form Eitel McCullough Inc (EIMAC), which made high-power tubes that proved critical in World War II. It was later acquired by Varian.

**Featuring:**  
ELECTRONICS IN  
THE SAN FRANCISCO  
BAY AREA

**IEEE Grid**  
DECEMBER 1966  
SAN FRANCISCO SECTION  
INSTITUTE OF  
ELECTRICAL AND  
ELECTRONICS  
ENGINEERS

**BERNARD C. GARDNER**  
For his contributions to the invention and development of the transistor and his technical leadership of projects in these fields.

**JEFFERSON R. MILKERISON**  
For his many contributions to the techniques of electronic intelligence and electronic warfare.

**GEORGE L. THALLER**  
For leadership in the field of automatic control and contributions to engineering education.

**JACK KAUFMAN**  
For pioneering contributions and leadership in electron tube design, production and operation, particularly in communications.

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For pioneering contributions and leadership in electron tube design, production and operation, particularly in communications.

**PETER J. LACY**  
For numerous contributions to the design of photo and video camera systems and for his leadership in the development of microwave systems and their applications in electronic instruments.

**1967 FELLOWS**  
SAN FRANCISCO SECTION

**meeting reminder**

Antenna & Propagation, Monday, December 5  
Audio & Electroacoustics, Thursday, December 8  
Circuit Theory, Wednesday, December 21  
Engineering Management, I.E.E.A., Thursday, December 8  
Industry & General Applications, I.E.E.A., Thursday, December 8  
Instrumentation & Measurement, Wednesday, January 18  
Nuclear Science, Monday, December 12  
Santa Clara Valley Subsection, Stanford, St. B., Thursday, January 26  
Stanford Student Branch, I.E.E.E.S., Thursday, January 26

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At time of scanning, the bound volumes are held by Paul Wesling. July, 2021 Contact p.wesling@ieee.org

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ELECTRONICS IN  
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**IEEE**  
*Grid*  
DECEMBER 1966

SAN FRANCISCO SECTION  
INSTITUTE OF  
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**BERNARD C. GARDNER**

For his contributions to the television and microwave tube arts, and his technical leadership of projects in these fields.



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For his many contributions to the techniques of electronic intelligence and electronic warfare.



**JACK KAUFMAN**

For pioneering contributions and leadership in electron tube design, production and application, particularly to communications.

**1967  
FELLOWS  
SAN FRANCISCO  
SECTION**



**GEORGE J. THALER**

For leadership in the field of automatic control and contributions to engineering education.

**JACK L. MELCHOR**

For contributions in the field of ferrite microwave devices and for leadership in industry exploitation of such devices.



**PETER D. LACY**

For contributions in electronics measurements by the design of phase and delay distortion instrumentation and by furthering the development of microwave signal sources and their application in electronic instruments.



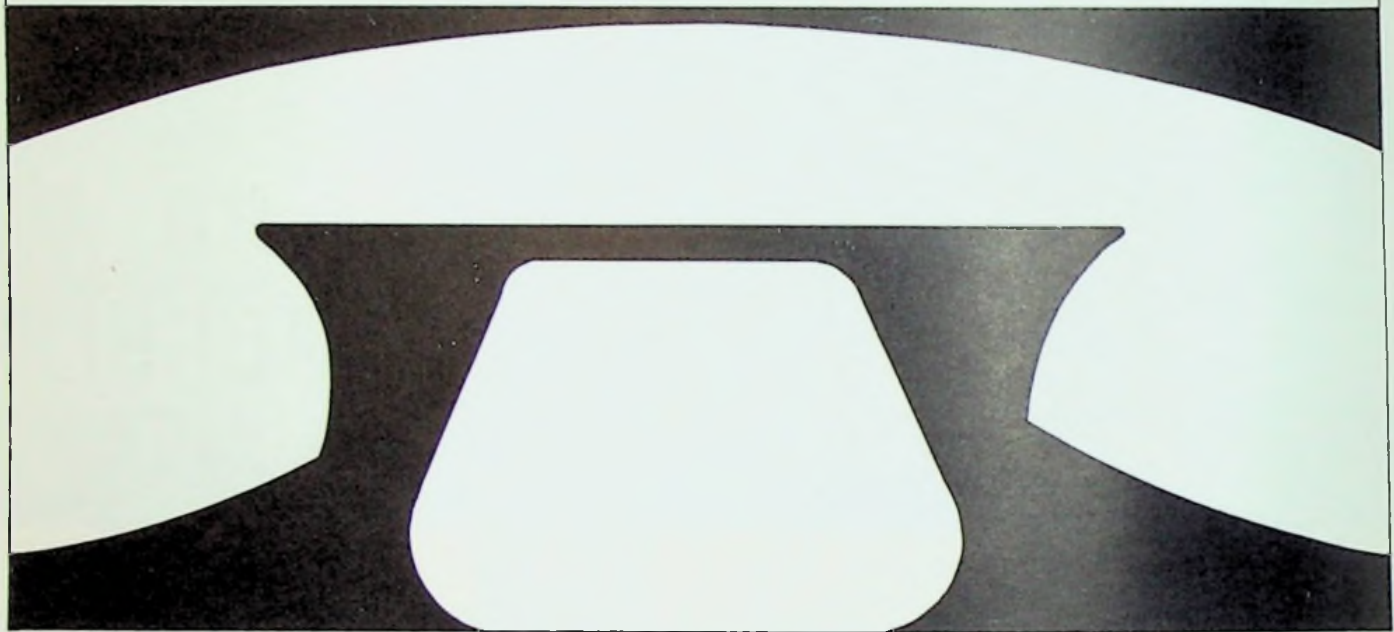
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the section

MEMBERSHIP

Following are the names of individuals who have been elected to current membership:

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R. L. Kahl	R. D. Wersen

ieee news

MAC ADAM TO PRESIDENCY

Walter K. MacAdam, vice president-government communications for the American Telephone and Telegraph Company, has been elected president of the IEEE for 1967.

Mr. MacAdam succeeds Dr. William G. Shepherd, vice president, academic administration, for the University of Minnesota.

The IEEE Board also announced the election of Hendley N. Blackmon, engineering manager of association activities for the Westinghouse Corporation, as a vice president. Two other vice presidents for the 1967 term will be elected at IEEE's annual assembly in January.



MacAdam

Kaisel

region 6 news

KAISEL ELECTED DIRECTOR

Stanley F. Kaisel, past chairman of the San Francisco Section and president of Microwave Electronics, division of Teledyne, Palo Alto, has been elected Region 6 delegate/director for 1967-68, his term to begin on January 1. Dr. Kaisel, who has served the region, section, Electron Devices chapter, and WESCON in many capacities, succeeds Bruce S. Angwin, electronic components division, General Electric, Los Angeles, as regional director. Thirty-one sections make up Region 6, the eleven western states, largest in area within IEEE.

cover

IEEE Grid is indebted to Henry Kappelhof, Iconotype, and Edmund Scientific Co. for the *moire* patterns honoring the new Fellows of the San Francisco Section, for more on whom see page 6.



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FELLOW NOMINATIONS

Larry FitzSimmons, chairman of the section committee on Fellow nominations, invites suggestions from the membership for nominations for the grade of Fellow for 1968.

Suggestions for nominations should be submitted by letter to Mr. FitzSimmons, c/o the section office by February 10, 1967. This letter should include a biography of the candidate and an indication that you would serve as sponsor. A telephone call to Mr. FitzSimmons in San Jose on 291-4005 or at home in Palo Alto on 324-2411 will get more details on what should be covered in this biography.

Nominees must meet the requirements for Senior Member as stated in the by-laws (even though they may hold the present grade of Member) and must have been a member in any grade for a period of seven years preceding nomination, other than in exceptional cases. The principal criterion is the nominee's technical contribution.

TABLE 1 — WAGE AND SALARY WORKERS IN AEROSPACE INDUSTRIES CALIFORNIA, SELECTED YEARS 1949-65, AND JUNE 1966

Industry	1949		1960		1965		June 1966	
	Number	%	Number	%	Number	%	Number	%
Total aerospace employment	111,600	100.0	460,800	100.0	481,300	100.0	530,300	100.0
Electrical equipment (electronics)	22,300	20.0	174,100	37.8	194,900	40.5	214,900	40.5
Aircraft	78,800	70.6	194,000	42.1	166,200	34.5	190,400	35.9
Ordnance (missiles)	400	0.4	68,900	14.9	91,900	19.1	94,900	17.9
Instruments	10,100	9.0	23,800	5.2	28,300	5.9	30,600	5.7

SOURCE: California Department of Industrial Relations

TABLE 2 — WAGE AND SALARY WORKERS IN AEROSPACE INDUSTRIES CALIFORNIA AND METROPOLITAN AREAS 1957, 1965, AND JUNE 1966

Area	1957	1965	June 1966
	Number	Number	Number
California	448,400	481,300	530,800
Metropolitan areas			
Los Angeles-Long Beach	322,200	284,100	317,500
Anaheim Santa Ana-Garden Grove	10,100	54,400	57,400
San Jose	14,200	48,400	56,400
San Diego	57,800	31,600	35,200
San Francisco-Oakland	19,700	19,600	21,200
Sacramento	6,300	14,100	11,700
San Bernardino-Riverside-Ontario	7,900	9,100	11,000
Oxnard Ventura	2,600	7,700	7,500
Santa Barbara	1,000	5,900	6,200
Bakersfield	3,000	1,900	2,000
Fresno	2,100	100	100
Stockton		300	300
Rest of State	1,500	4,100	4,100

SOURCE: California Department of Industrial Relations

Courtesy Western Electronic News

A State of California Assembly subcommittee on economic development recently released the above statistics on the state's aerospace prosperity. Lumping four categories—electrical equipment, aircraft, ordnance (missiles), and instruments—they came up with an employment total of 539,200 as of July, compared to 481,300 a year ago and 460,800 in 1960. Most spectacular growth was in San Jose area and Santa Clara County (56,400 vs. 14,200 in 1957) and Orange County (57,400 vs. 10,000). Los Angeles and San Diego are having slow recoveries to their 1957 totals.

section news

NOMINATIONS COMMITTEE

Composition of the section awards and nominations committee for 1966-67 has been announced by Jack L. Melchor, chairman of the committee, and E. H. Hulse, section chairman.

Chairman of the subcommittee for headquarters standing committee nominations is Peter D. Lacy, 321-7428. Chairman of the subcommittee for Region 6 awards is V. E. Kaste, 654-7117. Chairman of the subcommittee for nomination to headquarters offices is E. Finley Carter, 854-4374. Chairman of the subcommittee for headquarters awards is A. J. Morris, 948-8619.

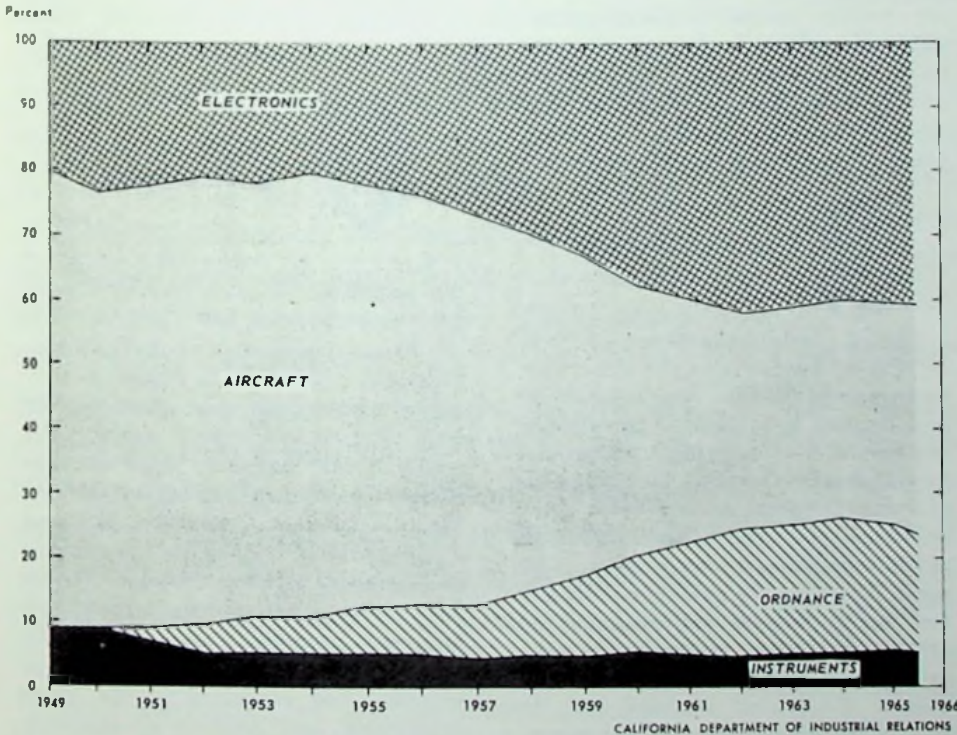
Nomination of section officers, section directors and Region 6 director will be made by the chairman and subcommittee chairmen acting as a body.

section news

AMERICAN PHYSICAL SOCIETY

Current scientific investigations ranging from invisible nuclear particles to the primordial fireball will be discussed by some 800 physicists during the December 28-30 meeting of the American Physical Society on the Stanford University campus.

The program lists 242 scientific papers to be presented by physicists from U.S. universities, industry, and government laboratories, and by scientists from Canada, England, Finland, Poland, Russia, Israel, and Japan.



Electronics' primacy in the so-called aerospace segment of California's work force recently got official recognition through a special study by the state's Division of Labor Statistics & Research. When combined with the "instruments" category set apart in the study, electronics employment at midyear was 249,900, reported division head Maurice Gershenson.

SIX SECTION MEMBERS AMONG 125 ELEVATED TO FELLOW FOR OUTSTANDING CONTRIBUTIONS



**BERNARD C. GARDNER**

*Cited for his contributions to the television and microwave tube arts and his technical leadership of projects in these fields, he is assistant manager of Varian's new light sensing and emitting tube division, the organization of which he coordinated. At Farnsworth Radio and Television Corp., Raytheon, and Varian, his technical contributions have been in the fields of cathode-ray, television camera, photo-multiplier tubes, klystrons, and storage tubes. He holds many patents in the area of tube technology and is the inventor of the recording storage tube, including the display and electrical storage versions, and holds the original patents. He has co-authored a number of IEEE papers and has served on the RMA TV Tube Committee and the Klystron Standards Committee.*



**PETER D. LACY**

*Cited for contributions in electronics measurements by the design of phase and delay distortion instrumentation and by furthering the development of microwave signal sources and their application in electronic instruments, he is executive vice-president of the Wiltron Co., Palo Alto, of which he was a founder in 1960, following ten years with Hewlett-Packard Co. in microwave tube and measurement equipment development and a year as consultant to Varian. He and his firm specialize in automatic r. f. transmission and reflection measurement equipment for advanced communications and radar systems. Dr. Lacy did undergraduate work at the University of Florida and received the PhD in electrical engineering from Stanford. Chairman of the San Francisco Chapter of Microwave Theory & Techniques in 1958-59, he was chairman of the San Francisco Section of IRE in 1962-63, serving on the Executive Committee from 1957 to 1964 in various capacities and being jointly responsible for section consolidation under IEEE, including renewal of WESCON sponsorship. Chairman of the steering committee for the 1966 MTT symposium, he has served on the editorial board of MTT Transactions and as a member of Task Group 7.5 on microwave tube standards and Task Group 22 on microwave phase standards.*



**GEORGE J. THALER**

*Cited for leadership in the field of automatic control and contributions to engineering education, he is professor of electrical engineering at the Naval Postgraduate School in Monterey and consultant to IBM. He received the B.E. and Doctor of Engineering from Johns Hopkins University and served as instructor and research assistant at that institution and as assistant professor at Notre Dame. His publications include four textbooks in the area of linear and nonlinear feedback control theory, and about 30 research papers and reports in this area. His research interests lie in linear feedback controls, with emphasis on multiloop systems and feedback compensators, and nonlinear feedback controls with emphasis on the phase space approach to discontinuous systems. Dr. Thaler received the Harry Diamond Award in 1965.*



**JACK KAUFMAN**

*Cited for pioneering contributions and leadership in electron tube design, production and application, particularly to communications, he is a consultant in electronics to Hughes Aircraft and other firms and was president of Heintz & Kaufman for 20 years, executive vice-president of Globe Wireless, Ltd. for 14 years, and president of Monogram Precision Industries for 5 years. A member of the Defense Communications Board during World War II, he is a consultant to James D. O'Connell, special assistant to President Johnson on telecommunications. He participated in the early technical work that not only made the San Francisco Bay Area one of the outstanding electron tube regions of the world, but also contributed to the general advancement of electronics—particularly communications—to its present high level of esteem. His activities contributed heavily to the rapid advancement of the mutually dependent areas of electron tube production and application. He is a graduate of the University of California in chemical engineering.*



**JACK L. MELCHOR**

*Cited for contributions in the field of ferrite microwave devices and for leadership in industry exploitation of such devices, he is general manager of -hp associates-. Following undergraduate and master's work at the University of North Carolina, he received a PhD in Physics from Notre Dame, was head of the microwave ferrite group at Sylvania Electronic Defense Laboratories, and was co-founder and president of Melabs, Palo Alto, resigning in 1961 to organize -hp associates-, now a division of Hewlett Packard Co. He holds a half dozen patents in the microwave field and is the co-author of 18 papers and articles. An officer of the section since 1962, he was chairman in 1965-66 and is current junior past chairman. In 1965 he received the Science Centennial Award from the University of Notre Dame.*



**JEFFERSON R. WILKERSON**

*Cited for his many contributions to the techniques of electronic intelligence and electronic warfare, he is a senior engineering specialist at Melabs, Inc., Palo Alto, where he is developing techniques and system concepts for active and passive electronic warfare. He invented the start/stop oscillator, pioneered in the application of feedback amplifier design techniques to servo systems, and developed early fire control and bombing radar systems; he directed the development of the earliest high intercept probability electronic intelligence systems, of unattended intercept systems, and pioneered in the digital acquisition and analysis of electronic intelligence data. A graduate of the University of Kansas, Mr. Wilkerson has received more than 25 patents in the areas of servo systems, electronic warfare and data analysis and has presented numerous papers on techniques and concepts for electronic warfare.*

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In addition to having one of the most respected programs in the field of microwave acoustics, MEC has continuing contracts in high, medium, and low power TWT development and production.

In the past six years MEC has become one of the leading suppliers of TWTs and microwave devices, and projections indicate a steady annual growth. We need scientific and technical personnel to help us meet the challenge of increased activities and to develop areas of future technology.

If your capabilities match those described below, we are vitally interested in your future—it's the same as ours.

## • Microwave Tube Engineers

BS or MS in EE or Physics. Hardware oriented engineers, experienced in design and

development of microwave tubes, with preference in the field of TWT's and/or BWO's.

## • Microwave Solid State Engineers

BS or MS in EE or Physics. Development engineers for project responsibility in ferromagnetics or microwave acoustics.

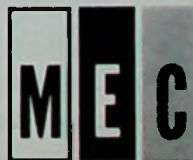
## • Applications Engineers

Microwave systems experience preferred. To coordinate current programs, develop product plans and introduce products to customer systems groups. BS in EE or Physics and familiarity with product management preferred.

## • Technical Support Personnel

Openings at all levels in engineering and manufacturing for assembly, test, packaging, maintenance and calibration technicians in TWT, microwave solid state, and TWT power supply programs.

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## remarks from the chairs

*This is to extend to the membership at large, as well as to our fine 117-man membership committee, including chapter and subsection representatives, congratulations for the excellent membership promotion accomplished this year, resulting in a spectacular 15.3 per cent growth in group chapter memberships and an overall membership total of 7421 in October, making the San Francisco Section the largest within IEEE.*

*You will recall the membership pledge program announced a year ago which has led to these results.*

*A unique membership promotion opportunity presents itself between now and December 31, headquarters having extended to that date the \$18 cost of new memberships for calendar 1967. Now is the time to talk to those colleagues within your organization who are among the several thousand Bay Area engineers who have "never gotten around to it".*

*Because of the dues increase, the real challenge, however, lies in the year ahead, during which we must continue our efforts to bring unaffiliated electrical engineers into IEEE and more of our members at large into Group membership. We must also encourage upgrading of all levels of membership. Recent headquarter studies show that the annual attrition rate for members not affiliated with Groups is 7 per cent; for Group members it is only 1 per cent; for Senior Members it is practically nil.*

*Regarding the dues increase, it should be pointed out that \$25 dues are considerably below those of most major professional societies. Also consider that an increment of \$2 per month salary increase, earned through knowledge gained from institute meetings, publications and educational services, will take care of an engineer's dues for the rest of his professional life.*

*Because of the lack of six active chapters within the section, the interests of some Group members may be being neglected. For this reason the section will, for the first time, actively encourage the formation of more chapters. If you are a member of a Group without a San Francisco chapter and feel that the local technology and membership call for it, please discuss the matter with one of the officers or the section office.*

*Above all, we urge members to miss no opportunity at 1967 subsection and chapter meetings to bring engineers into IEEE and members into Group membership.*



JOHN B. DAMONTE, Chairman  
Membership Committee



E. H. HULSE, Chairman  
San Francisco Section

## TWO NEW CHAPTERS

Formation of San Francisco chapters of the Systems Science & Cybernetics and Education Groups is under way, the former having been approved by the IEEE Executive Committee and petition signatures for the latter being gathered. Respective organizers are James M. Kasson, Santa Rita Technology, Menlo Park, 324-4701, and Thomas Murray, assistant dean, Heald's Engineering College, 673-5500, Ext. 62. Members interested in helping organize the new chapters should contact them.

When organization is complete the San Francisco Section will have a total of 23 active Group Chapters, considerably more than any other section. Chapters of the following Groups may be organized by gathering 12 signatures on petition forms available from the section office:

Broadcast & Television Receivers, Electrical Insulation, Geoscience Electronics, Human Factors in Electronics, Industrial Electronics Control Instrumentation and Sonics & Ultrasonics.

## section news

### MEMBERSHIP DRIVE

International headquarters having announced that new applications received in New York or postmarked not later than December 31 will be honored at the \$18 rate (\$15 dues plus \$3 entrance fees) prior to the dues increase to \$25 effective on January 1, all recent local national and international symposia and conferences had membership booths or tables manned by section members or office staff.

Included were the Switching Symposium at UC on October 26-28; the Fall Joint Computer Conference, San Francisco, November 8-10; the Engineering in Medicine & Biology Conference, San Francisco, November 14-17; the Antennas & Propagation Symposium, Palo Alto, December 5-7; and the Fall URSI-IEEE Meeting, December 7-9.

Manning the Computer Group booth at the Fall Joint Computer Conference, attendance at which exceeded 5000, were 21 section members and office staff. In addition Miss Emily Sirjane and her assistants from headquarters, staffed a membership table in the technical sessions area, resulting in more than 100 new, paid-up, members.

A recent survey indicated that the San Francisco Section is one of the few within IEEE which has experienced a net membership growth during the six months ending July 31. Group chapter

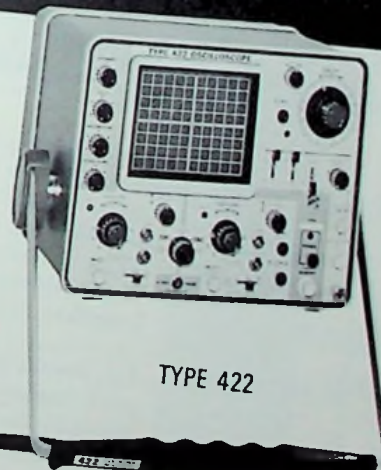
(Continued on page 15)

# 3

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	TYPE 453	TYPE 422	TYPE 321A	
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Deflection Factor	5 mV/div to 10 V/div	10 mV/div to 20 V/div	10 mV/div to 20 V/div	
Channels	Dual	Dual	Single	
Delay Line	Yes	Yes	No	
Sweep Delay	Yes	No	No	
Size	Height	7 $\frac{1}{4}$ "	8 $\frac{1}{4}$ "	
	Width	12 $\frac{1}{2}$ "	10"	5 $\frac{3}{4}$ "
	Depth	20 $\frac{1}{2}$ "	14"	16"
Weight (pounds)	28 $\frac{3}{4}$	22	14	
Power Requirements	AC: 96-137 V or 192-274 V; 45-440 Hz; approx 100 watts.	AC: 115 V or 230 V $\pm$ 10%; 45-440 Hz; approx. 40 watts. DC: 11.5-35 V; approx. 23 watts; accepts Tektronix 24 V battery pack.	AC: 115 V or 230 V $\pm$ 10%; 45-800 Hz; approx. 20 watts. DC: 11.5-35 V; or 10 size D batteries; approx. 700 mA	
Rack Mount Available	Yes (7" Rack Height)	Yes (7" Rack Height)	No	
Probes and Accessories Included	Yes	Yes	Yes	
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december, 1966

**KKHI KROCKERAMA**

The Audio and Electroacoustic chapter's first meeting of the program year is set for December 8 and will be socially oriented—a ladies' night—planned jointly with the Audio Engineering Society. Fred Krock, studio technical supervisor, will discuss the choice and use of equipment and conduct a tour of the studio facilities of Radio Station KKHI.

KKHI is the only full time classical music station on AM and FM in the bay area. Prominent features of its programming are the live broadcast of area musical events and Krock's own lively afternoon feature "Eine Kleine Kommute Musik".

The studio—and meeting place—is on the 14th floor of the St. Francis Hotel, San Francisco. The 14th floor elevator can only be entered through the small lobby off Post Street. Cocktails (6 P.M.) and dinner (6:30) will be served at the Le Trianon Restaurant, 242 O'Farrell. There is convenient parking under Union Square and the Downtown Center Garage, Mason and O'Farrell.

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## DECEMBER 5, MONDAY, 8:00 PM — Antennas & Propagation Wave propagation studies in Antarctica

*University of Washington research staff headed by Dr. D. K. Reynolds*

Place: PH 101, Stanford University

Dinner: 6:30 PM Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto  
Reservations: Wilbert Chang, 591-1414, ext. 223 by noon, Dec. 5

## DECEMBER 8, THURSDAY, 8 PM — Audio & Electroacoustics/ Audio Engineering Society

### Tour of Radio Station KKHI

*Fred Krock, Radio Station KKHI studio technical supervisor*

Place: St. Francis Hotel—Powell and Geary, San Francisco

Dinner: 6:00 PM, Le Trianon Restaurant, 242 O'Farrell, San Francisco  
Reservations: Corinne Westburg 961-5100 by Dec. 6

## DECEMBER 8, THURSDAY, 8:00 PM — Industry & General Applications/Engineering Management

### Time sharing to solve engineering problems

*W. J. O'Donnell, manager, programming services, General Electric Co., Berkeley*

Place: General Electric Information Processing Center, Room 108,  
2118 Milvia, Berkeley

Coffee and doughnuts

Reservations: Phone 654-7120 by 5:00 PM on Dec. 8.

## DECEMBER 12, MONDAY, 8:00 PM — Nuclear Science High altitude particle physics experiment

*L. J. Lloyd, electronics engineer, University of California Lawrence Radiation Lab, Berkeley*

Place: Claremont Hotel, Ashby & Domingo Ave., Berkeley

Dinner: 7 PM, South Porch Room, Buffet \$4.00

Reservations: Mrs. Arlene Lenzi, 837-5311, Ext. 301 by Dec. 8

*(Continued on page 12)*

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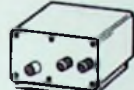
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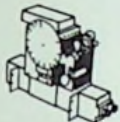
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V<sub>EBO</sub> 60mA  
I<sub>c</sub> 200mW  
P<sub>T</sub> 150°C  
T<sub>J</sub> -65 ~ 150°C  
T<sub>stg</sub>

ELECTRICAL CHARACTERISTICS  
(Ta = 25°C)

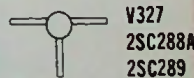
	Typ.	Max.
V <sub>CB</sub> = 10V, I <sub>E</sub> = 0	-	0.5μA
V <sub>CE</sub> = 10V, I <sub>E</sub> = -20mA	3.6	-GHz
V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz	0.5	1.0pF
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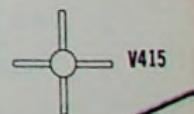
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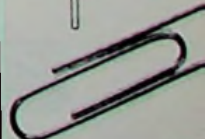
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## meeting ahead

### IGA PROBLEM SOLVING

The Industry and General Applications chapter will offer a demonstration of computer problem-solving to increase the productivity of engineers, at the December 8 meeting. The computer has many remote "terminals" so that they may be located conveniently

to the engineers' normal office area. An easily learned programming language known as BASIC is used to type in the problem. The answer is typed out almost at once, even though other terminals are "time-sharing" the computer's central processor.

Sample problems will be shown, but members are also invited to submit

### DECEMBER 21, WEDNESDAY, 4:15 PM — Circuit Theory

#### Step-up networks for signal recovery

*Prof. W. Levan, UCLA—Dept. of Engineering*

Place: ERL Room 126, Stanford University

Dinner: 6:00 PM, Red Cottage, El Camino, Menlo Park

Reservations: Molly Stanley, 739-7700 by Dec. 20

### JANUARY 18, WEDNESDAY, 8:00 PM — Instrumentation & Measurement

#### Instrumentation computers

*Kay Magleby, head, computer engineering, and William Davidow, computer marketing manager, Hewlett-Packard Dymec Div., Palo Alto*

Place: Hewlett-Packard Co., 1501 Page Mill Road, Palo Alto

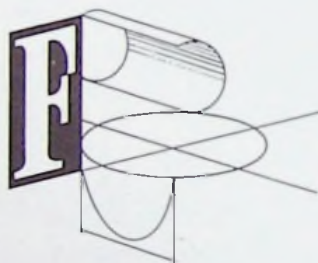
Dinner: 6:30 PM, Rick's Chalet, 4085 El Camino Way, Palo Alto, to meet the speakers

Reservations: Call Corinne at 961-5100 by Jan. 17

### JANUARY 26, THURSDAY, 8:00 PM — Santa Clara Valley Subsection/Stanford Student Branch

#### Opportunities in employment

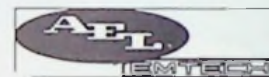
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**HIGH ALTITUDE PARTICLES**

At the December 12 meeting of the Nuclear Science chapter L. J. Lloyd will review the engineering problems involved in development of apparatus to use the primary cosmic rays as a source of very high energy particles in a physics research project. The high altitude particle physics program at Berkeley, under the direction of Prof. Luis W. Alvarez, will fly an instrument package of about 7,000 pounds to 100,000 feet on a large balloon. This package will permit the measurement of momentum and charge of particles in the high energy portion of the primary spectrum (greater than 80 Gev) and permit the use of these very high energy particles in much the same way as particle "beams" are now used in accelerators. The apparatus includes a very large superconducting magnet, Cerenkov radiation and scintillation detection systems, spark chambers, and a large system of nuclear emulsions.

Jack Lloyd, an engineer at the Lawrence Radiation Laboratory at Berkeley, is in charge of engineering for the particle program at the space sciences laboratory at Berkeley. He also has responsibility for development of data analysis systems for the Alvarez bubble chamber group at LRL. He has been at LRL for 7 years and prior to his present assignment directed the spiral reader program at LRL

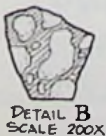
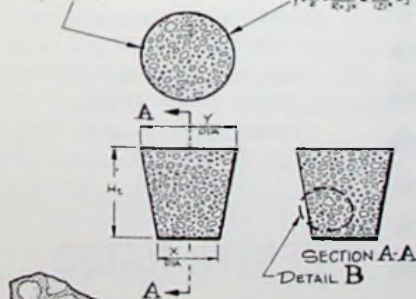
problems for on-the-spot programming.

On hand to demonstrate the technique will be W. J. O'Donnell, manager of programming services, information processing center, General Electric Company.

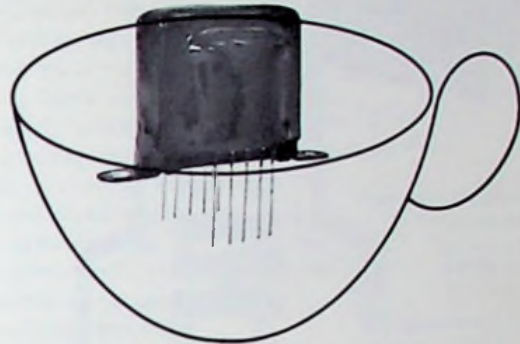
**PATENTS PENDING**

by *ZamZow*  
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Material: Porous substance capable of being compressed.



PROPOSED DEVICE TO ELIMINATE GRID LEAK

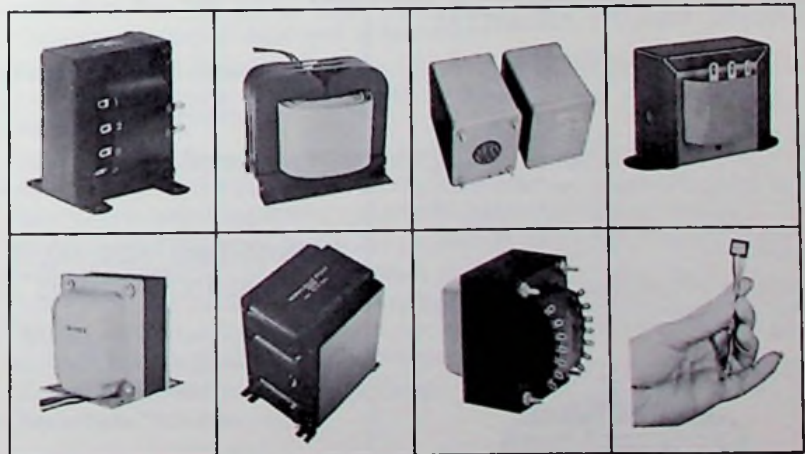


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It's easier said than done. The problem arises because it's easier to make instant promises than to make instant transformers. The trick is to go to someone who is good at making both.

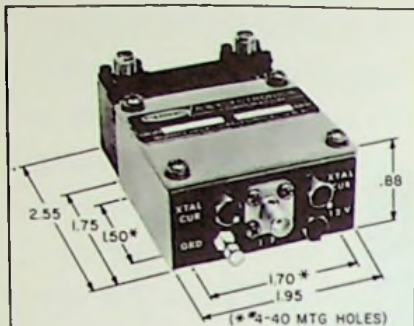
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meeting ahead

## SCVSS JOINT WITH STANFORD

The January meeting of the Stanford Student Branch and the Santa Clara Valley Subsection will be a panel discussion of the engineering opportunities in various industries. Opportunities in both part time and permanent employment will be explored.

As in previous meetings held at San Jose and Santa Clara, this meeting will stress the general utilization of new engineers in the various industries rather than the usual glowing presentation of a particular company prevalent during recruiting periods. With the information presented at this meeting the student should be much better prepared to interpret what each individual company's interviewer is trying to tell him during an employment interview.

Student members of the colleges and universities are especially encouraged to attend as well as practicing engineer members who desire to participate in the question and answer session.

Details on the time, place, and speakers will appear in the next *Grid*.

Papers on human factors in education and training, safety, information processing, command/control systems, man-machine interface, vehicle control

call for papers,  
speakers

## ELECTRIC AUTOMOBILE

The Santa Clara Valley Engineers' Council plans to hold a seminar on the electric automobile at San Jose State College on February 24-25 as the major area observance of Engineers' Week. Hugh C. Ross, 11915 Shadybrook, Saratoga, (408) 253-1572, is chairman of the program. Papers or speakers are needed on energy sources, batteries, fuel cells; drive motors and braking; control systems; mechanical, aesthetic and safety design; components and accessories; public acceptance; needs, attitudes and economics; effects on smog, rapid transit, power companies and life; and military aspects. Deadline for papers is February 10. There will be displays, and demonstrations may be scheduled at specific times or continuously if desired. If enough papers are submitted the event may begin on Thursday, February 23.

and transportation will be presented at the 8th Annual IEEE Symposium on Human Factors in Electronics, Palo Alto Cabana, May 3-5, 1967.

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## NEW RECORDS SET

WESCON/66 set new records in quantity—47,440 total visitors—and quality—31,406 visitors in key job categories—according to a report by Statistical Tabulating Co., confirming exhibitors' reports at the show that more of the people they wanted to attract turned up.

The key categories, ranging from executive/general manager through all engineering areas to technician, totalled 8,000 greater than 1965 and more than 5,000 higher than 1964, according to General Manager Don Larson.

Large increases in other target categories of WESCON audience promotion for two years were also noted: "users of electronics" (i.e., non-electronic businesses) were 17 percent above 1965 and 59 percent over 1964. This year's total in the category was 4,685 persons.

The category "government/military" was nearly double 1964, with 4,320 registrants, while "purchasing and procurement" specialists accounted for 1,396 registrations, compared with 810 in 1964 and 350 in 1965.

Larson also reported:

- Despite the airline strike, the geographical spread of visitors was virtually undisturbed from previous years—except for general across-the-board numerical increases.

- Visitors to Los Angeles from the Bay Area numbered 3,036—17 percent over 1964.

- Redesign of the registration card, pre-training of paid registration personnel, and tighter discipline by volunteer committeemen cut down "blank or illegible" cards to about 3,000, compared with nearly 10,000 in 1965.

Larson said cross-tabulation and totals are still under audit by Business Publications Audits Inc., which will issue its certified report in mid-November.

## MORE MEMBERSHIP

memberships within the section (many of them duplicate per member) have grown from 5309 in October, 1965 to 6120 in October, 1966, for an increase of 811 or 15.3 percent.

Section Chairman Ed Hulse and Membership Chairman John Damonte recently sent congratulatory letters to the 117-man Membership Committee (including chapter and subsection representatives) for their successful membership promotion activity. Also influential in membership growth have been *Grid* features and the new membership poster printed by the section and widely displayed on 900 area bulletin boards, Damonte said.



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1967 EXCOM NAMED

Appointment of an executive committee for 1967 and election of two new directors have been announced by the Western Electronic Show and Convention.

The five-man executive committee, directly responsible for presentation of the 1967 WESCON in San Francisco next August, will be chaired by Phillip L. Gundy, president of Vega Electronics Corp., Santa Clara. Other members will include Meyer Leifer, Energy Systems Inc., Palo Alto, who is also chairman of the WESCON board of directors; John C. Beckett, Hewlett-Packard Co., convention director; Emmet G. Cameron, Varian Associates, show director; and Don Larson, WESCON general manager.

Two new volunteer directors have joined the board, it was announced, taking over for Hugh P. Moore, Computer Equipment Corp., and Ralph Lanin, Bendix Pacific, who have completed their four-year terms of office.

They are Floyd L. Goss, chief electrical engineer and assistant general manager of the Los Angeles Department of Water and Power, and Donald C. Duncan, president of Duncan Electronics Inc., Costa Mesa.



From left: Donald C. Duncan, president of Duncan Electronics, recently selected by WEMA for a four-year term as a Wescon director; Floyd L. Goss, assistant manager, Los Angeles Department of Water & Power, beginning a four-year term as a representative of IEEE; Meyer Leifer, vice president of Energy Systems, newly elected Chairman of the Wescon Executive Committee; and Gundy, who is president of Vega Electronics. Duncan and Gundy are past presidents of WEMA.

Duncan will be serving his second four-year term as a WESCON director, having been a member of the board from 1959 through 1962.

Each year's WESCON is directed by the executive committee, made up of four directors from the "host city" for that year, plus the general manager. WESCON's eight-man board includes four Bay Area and four Los Angeles members. Members are nominated by each of two sponsoring organizations—the Western Electronic Manufacturers Association, and Los Angeles and San Francisco elements of IEEE.

William J. Moreland, Conrac Division, Giannini Controls Corp. and John J. Guarrera, Guide Industries Inc., San Fernando, are the two senior directors from Southern California.

education notes

WELDING SERIES

Santa Clara American Welding Society Educational Series. "Welding, Brazing, and Soldering in the Electronics Industry." February 2, 7, 9, 14 and 16, 1967. 7:30 PM Lockheed Auditorium, Palo Alto. Contact Ron Anderson, Varian, 326-4000.

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IT IS REPORTED

Dr. Harvey J. Crosby has been named manager of operations technology for Lockheed Missiles & Space Co., Sunnyvale, and will be responsible for manufacture research, operations engineering, materials and process control, standard tool and instrument control, and the measurement standards laboratory. He succeeds Karl F. Gumnick, who has transferred to Lockheed Shipbuilding & Construction Co., Seattle.

Charles F. Zumba has been appointed director of systems engineering for Applied Technology, Inc., Palo Alto, formerly serving Airtronics Inc., Washington, D.C., as a technical consultant and technical director of the firm's laboratory.

SCM Corp., data processing systems division, Oakland, has announced the appointment of Claude Alleaume as engineering project manager and Frank Kelly as production control manager.

MELABS, Palo Alto electronics firm, has established a European subsidiary—MELABS, S.A.—with headquarters in Brussels and Ralph P. Gregorian, former director of international marketing, as president.

Union Carbide Electronics, Mountain View, has appointed Avnet Corp. to be franchised distributor for its semiconductor products in the U.S. and Canada.

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### BSEE-Reliability test engineering:

Prepare test procedures for electrical and electronic packages and coordinate procedures with test laboratories, conduct proofing of test procedures and test equipment.

### BSME-Reliability and inspection:

Perform mechanical and structural reliability analyses. Provide for inspection planning and review prints to determine inspection attributes. Experience in metallurgy and NDT helpful.

### Non-destructive testing:

Background in electronics and applied physics plus knowledge of instrumentation related to the use of X-rays, sound waves, electrical fields and optics.

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### MORE SWINGS

RELCOM, Mountain View corporation specializing in radio frequency signal processing devices, has been founded by four engineers formerly with Hewlett-Packard Co. for many years: Victor E. Van Duzer, president, Richard L. Slocum, marketing manager, Hans H. Junker, engineering manager, and Kenneth R. Gray, production manager, respectively, of the new firm. Initial product line will include a family of low-priced broadband mixers, phase detectors, balanced modulators, amplitude and pulse modulators, and current controlled attenuators, all to be manufactured at the plant at 2164 E. Middlefield Road.

C. Fred Schnert has been appointed to the newly-created position of director of marketing for Electro Optics Associates, Palo Alto.

The Philco-WDL, division has been awarded a \$1,215,000 contract for the Oroville-Thermalito control system of the state water project.

Felix G. Hampton has been elected president of Jennings Radio Manufacturing Corp., San Jose, subsidiary of IT&T Corp., succeeding Calvin Townsend, who has retired.

Cameron H. Burley has been named a project engineer for Applied Technology, Inc., Palo Alto, responsible for the design of advanced communication equipment.

ESL, Inc., Palo Alto electronics firm, will become the first tenant in Moffett Park, a 620-acre project under development in Sunnyvale, planning to move its headquarters to a 60,000 sq. ft. building with parking for 255 cars in April.

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## the section

### MEMBERSHIP

The following members have recently been transferred to the grade of Senior Member:

R. A. Howard professor in engineering economic systems, Stanford University	M. H. Yuen senior supervising engineer, Bechtel Corp., San Francisco
---	--

### MORE SWINGS

James S. Mackay has been appointed to the applications engineering staff of Watkins-Johnson Co., Palo Alto, and will handle customer liaison in the solid state division.

Noller Control Systems, Inc., Richmond, has announced appointment of Bill W. Mayer as general sales manager; Wynne E. Stewart as eastern region sales manager; and Robert J. Schiller as western region sales manager.

**Support Grid Advertisers  
— they support the Section,  
Subsections, and Chapters.**

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Write or call: Ernesto A. Montano, IEEE Grid, Suite 2210, 701 Welch Rd., Palo Alto, Telephone (415) 327-6622.

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E. Scott King, formerly a supervisory electronics engineer with the FAA, has joined Farinor Electric, San Carlos, as a sales engineer in microwave and multiplex equipment for point-to-point communications.

Richard Peterson has joined Ampex Corp. as national merchandising manager of the educational products division.

Dickson Electronics Corp., Scottsdale, has commenced construction of a new 120,000 sq. ft. plant to house its executive, business and service depts. and the majority of its production facilities.

# A

## Is for Ampex Where Opportunity Never Stops

### **Ampex looks for independent, creative people. Do you qualify?**

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#### **MECHANICAL ENGINEER**

*BSME with minimum 3 years' experience in packaging small electronic equipment and mechanisms.*

#### **ELECTRONIC ENGINEERS**

*BSEE with 3-5 years' experience in video, pulse, RF and servos.*

#### **MANUFACTURING ENGINEER**

*BSME/IE with heavy practical production line electro-mechanical assembly experience.*

#### **MARKET SUPPORT SPECIALIST**

*BSEE with previous experience in marketing Audio/Video products or allied devices, one position also requires knowledge of EDP. Primary function will be to coordinate all aspects of in-house effort to effect delivery with pricing and profit responsibilities.*

#### **VIDEO ENGINEER**

*BSEE with 5-7 years' experience in CCTV, including design ability in optical, electrical and solid state circuits.*

#### **TAPE EVALUATION ENGINEERS**

*BSEE, experience with magnetic tape or magnetic recording industrial applications; quality control or electronic test equipment design experience desired, not essential. Duties assignment in MTL as an evaluation engineer in tape development projects and to act as engineer liaison with Ampex's magnetic recording equipment department; broadcast television, home video recording, instrumentation and audio.*

#### **RESEARCH ENGINEER**

*Analysis of circuit and network design with heavy computer programming usage. BSEE, Physics or Mathematics.*

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