The IEEE
# Newsletter

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## Electro/83 Set

Electro/83, the East's largest and most extensive high technology electronics convention and exhibition, is expected to break all attendance records again this year. This three day event, scheduled on April 19-21 in the New York Coliseum and the Sheraton Centre, will attract over 48,000 industry professionals.

The theme of this year's show is "Tomorrow's Technology Today," which appropriately reflects the role of Electro as a forum for the introduction of new products into the electronics marketplace. Attending Electro/83 will be key engineering, purchasing and management professionals in the areas of design, testing and manufacturing of electronics. They will exchange ideas and explore new opportunities with over 500 of the nation's top high technology exhibitors manning over 1,000 booths.

A major highlight of Electro/83 will be its highly acclaimed Professional Program, which features 37 separate sessions presented by top minds in business and technology. In addition to the Professional Program, there will also be a Marketing Conference in the Sheraton Centre on Tuesday morning. It will be followed by the Keynote Luncheon at noon featuring guest speaker Joseph Gavin, President of Grumman Aerospace. Also on the agenda for Electro/83 is a Film Theatre which will present a daily program of technical and general interest films to be shown at the New York Coliseum all three days.

Three tutorial seminars will be offered at Electro/83: "Artificial Intelligence;" "Managing the Creative Person;" and "Direct Broadcast Satellites." These special-fee events will be held in the Sheraton Centre on Monday, April 18. Also of interest will be the Special Exhibit on Office Automation where participants will get hands-on experience. The exhibit will include an electronic survey, electronic mail, and an information utility. All of these systems will be linked by a computer network and will be located in various locations throughout the convention in kiosk-type booths.

A regular shuttle bus service will connect the New York Coliseum and the Sheraton Centre. These free buses will operate from 8:30 AM to 5:30 PM daily.

Electro/83 is jointly sponsored by regional chapters of the Institute of Electrical and Electronics Engineers (IEEE) and by the Electronic Representatives Association (ERA). Electro alternates on an annual basis between Boston and New York.

Mini/Micro Northeast-83 will be held in conjunction with, but separate from, Electro/83.

Local Section Members can register free by using the Registration Card bound in last month's issue.

## The Hospitalization Of A Manufacturer

At the April 6th meeting of the Metropolitan Chapter of the Engineering in Medicine and Biology Society, "The Hospitalization of a Manufacturer. -- The account of a manufacturer operating an engineering R&D Facility in a Hospital" will be covered by Peter W. Kotilainen, Manager of Clinical Evaluation Center, E for M/Honeywell.

**Time:** 7:30 PM, Wednesday, April 6, 1983.
**Place:** Rockefeller University, York Ave. at 66th St., NYC., Tower Bldg., Room 301.
**Pre-Meeting Dinner:** Tower Cafeteria, 6:30 PM.
**Further Information:** Rahul Mehra, PhD., (212) 836-6600 , Ext. 318/377.

## I&M Reorganization

A reorganization meeting of the joint New York, North Jersey and Long Island Chapter of the Instrumentation and Measurement Society will be held at Consolidated Edison Co. of New York on Tuesday, April 5, 1983 at 6 PM. The meeting will be held in Room 1425 at Con Ed offices on 4 Irving Place at 14th Street in New York City.

A keynote address will be made by Mr. Bernard Gollomp, President of the Instrumentation and Measurement Society. Mr. Gollomp will discuss the heritage of I&M Society and will give some forecasts of the future for the society.

Members are all welcome to come hear the important address and to participate in the reorganization to reestablish a necessary organization for the extension of progress of Instrumentation and Measurement Society in the Metropolitan New York Area.

**Time:** 6 PM, Tuesday, April 5, 1983.
**Place:** Room 1425, Con Edison, 4 Irving Place, NYC.
**Further Information:** R.A. Olsson, LILCO, 175 East Old Country Road, Hicksville, N.Y. 11801. (516) 420-6274.



## Microwaves In Slow Motion

The April 20 meeting of the North Jersey Chapter of MTT/AP will hear Dr. Harold Seidel of Bell Laboratories discuss "Microwaves In Slow Motion,"

Dr. Seidel, supervisor of the RF Technology Studies Group at Bell Laboratories, is one of the most renowned men in the field and his talk should be of interest to network and systems people as well as microwave people.

**About The Talk**

"Microwaves" derived its name from its short wavelength. However, short wavelength was more than a region of the spectrum; it brought with it intense limitation of circuit realization and the failure of traditional representation. Notwithstanding its origins, microwaves has come to denote less a high frequency practice and more a special view of circuit organization based on a scattering viewpoint.

Within these notions of wavelike character, circuit elements and their use appeared more akin to those of optics and ostensibly unrelated to those used at lower frequencies. Some of the elements and usages are listed as follows:

(1) Reflectionless branching junctions; the class of hybrids and couplers both in-phase and quadrature.

(2) Transit time and its application to phase interferometry; filters, wave couplers, disbributed amplifiers, oscillators, etc.

(3) Recognition of the significance of characteristic impedance and its application to reflectionless, noninteractive, network cascades.

(4) Masers and parametric amplifiers; a strange join of classical nonlinear, and quantum mechanics.

Do these viewpoints have any impact in the lower frequency regimes? The speaker believes they have more than curiosity content. He will discuss and demonstrate a variety of practical structures dealing with interferometers, quadrature couplers and parametric amplifiers at audio frequencies, and attempt to show the profitability of microwave language.

**About The Speaker**

Harold Seidel started his engineering education at the City College of New York in 1939, completing his BEE in 1943. After a stint in the Navy, he took his MEE and DEE at the Polytechnic Institute of Brooklyn in 1947 and 1954, respectively. The dominant portion of his professional career was spent at the Bell Telephone Laboratories.

**Time:** 8 PM, Wednesday, April 20, 1983.
**Place:** Bell Telephone Laboratories, Whippany Rd., Whippany, N.J.
**Pre-Meeting Dinner:** 6 PM, The Afton Restaurant, Columbia Tpke. & Hanover Road, Florham Park, N.J.
**Dinner Reservations:** Dick Snyder (201) 492-1207 or Hy Goldman (201) 284-3739.

## New Section Nominees

Alan H. Stolpen, Chairman of the Nominating Committee of the North Jersey Section has announced the following nominations of Section Officers for 1983-1984:

| | |
|---|---|
| Chairman: | Anne Giedlinski |
| 1st Vice Chairman: | Eugene Niemiec |
| 2nd Vice Chairman: | Ted Higginson<br>Dick Tax |
| Treasurer: | John Van Savage |
| Secretary: | Charles Coulomb |
| *Member-at-Large: | Ralph Hernandez<br>Howard Leach<br>Maitland McLarin<br>Robert Sinusas |

(*Three to be selected by the Voting Members).

Nominations in addition to those made by the Nominating Committee may be made by petition from the membership. Such nominations must be signed by not fewer than 25 voting members of the North Jersey Section, and transmitted to the Section Secretary for submission to the Executive Committee not later than April 7, 1983. The petition must certify that the person(s) nominated have agreed to serve, if elected.



can be hired at wages far below the average should be obvious. Clearly, for the U.S. citizen engineer, the salaries offered will tend to be lower and job opportunities will be reduced... We can expect that the best and brightest of our students will avoid engineering. The results... will have... disastrous consequences in terms of the nation's further economic development,... our balance of trade, and the availability in times of national emergency, of the highly qualified engineering manpower that is essential."

While unequivocally supporting the return home provisions of the legislation, the IEEE/USAB volunteer questioned the bill's proposed exemption until 1989 of students with degrees in natural science, engineering and computer science, or mathematics, having certified job offers in universities or industry. Lewis stressed if any exemptions are allowed, they should apply only to those with a graduate degree, fully qualified in teaching and research and be paid a salary comparable to his or her U.S. citizen colleague. Without these restrictive criteria, we cannot believe that the individual in question really has unique and critical skills. These are MINIMUM requirements for any exemptions; however, as previously stated, we believe exemptions are not necessary and encourage Congress to enact the return home provision of H.R.1510, effective IMMEDIATELY.

## Chairman Responds To "Shortage"

**THE ENGINEERING SHORTAGE —**
**IS IT REAL?**

In your Wednesday, 11/4/82 edition of "The Grand Rapids Press" you reported on a local luncheon address given by President Dale Stein of Michigan Technological University. In that address Dr. Stein correctly pointed out the sorry state this nation's engineering schools are in due to inadequate engineering faculty, salaries lower than new grads receive and obsolete laboratory equipment. However, I must disagree with Dr. Stein's contentions that there presently is an engineering shortage and that the supply is shrinking each year.

A current manpower report being prepared by the Institute of Electrical and Electronics Engineers (IEEE) with over 150,000 members, quotes these statistics: 1) the graduating class of 1980 numbered 58,000, an all-time high and double the 1973 class size; 2) the 1980 fall term undergraduate freshmen engineering enrollment of 110,149 is the largest on record, up 6% over 1979 and 24% over the 1977 enrollment. Dr. Stein's October paper appearing in the *Journal of Metals* itself cites very similar numbers. Hence, one must conclude that the supply of engineers is certainly not shrinking.

Next, many senior working engineers would question that the alleged "shortage" of engineers is proven by the 16 offers and the $23,000 average salary that new graduates are receiving. Rather, we feel that industry is simply trying to hire the cheapest good talent it can and new BS graduates represent the most cost effective way to maximize return-on-investment. The 1981 IEEE U.S. salary survey shows the median EE salary for all degrees employed full time in their area of primary technical competence to be $36,000. However, that level is achieved within the first 15 years of experience past the Baccalaureate and thereafter the income vs. experience curve shows almost no growth, regardless of inflation. Such extreme salary compression is incompatible with a true shortage of engineers.

Sincerely,
*DR. RONALD J. FREDRICKS, P.E.* (NATIONAL PACE CHAIRMAN, 1982)

## Feerst Testifies On Immigration Bill

On March 10, 1983, Irwin Feerst urged the U.S. House of Representatives to include, in its forthcoming Immigration Reform Bill, a provision that would require ALL foreign graduates of American universities to return home after graduation.

Feerst addressed the House Immigration Subcommittee (of the House Judiciary Committee) in his capacity as head of the Committee of Concerned Electrical and Electronics Engineers.

Feerst pointed out that America's 327,000 foreign students (the largest chunk of which are from Iran) do not pay the full cost (as contrasted with the full tuition) of their college education. He stated that this additional cost is $1 BILLION per year, and that it is time to give the American taxpayer some relief from this burden.

Feerst also reminded the Subcommittee that there is a large social cost attached to the education of large numbers of foreign college students: After graduation, when they exchange their student visas for resident visas, they become an "instant middle class". This, according to Feerst, serves to inhibit the normal upwards social mobility of America's native poor.

Feerst also pointed out that foreign graduates from American engineering colleges, in their desire to find a job - any job - so that they can remain in this country, work for about 1/3 less than the salary commanded by their American counterparts. Feerst illustrated his claim with many examples of "HELP WANTED - ENGINEER" advertisements that have appeared in many newspapers and magazines recently. These ads, by offering sub-standard salaries, are actually designed to discourage American applicants. The job openings described are actually "reserved" for foreign engineers.

But Feerst also criticized the 1981 report of the American Electronics Association, which projected a huge shortage of engineers. According to Feerst, "How can there be a shortage when engineering salaries have now fallen below those of truck drivers?" He accused the American Electronics Association of issuing a "false and misleading report, based on duplication of data" to arrive at its widely heralded "conclusion" that there is a severe shortage of engineers. He specificially noted that when McDonnell-Douglas, Boeing, Lockheed, and General Dynamics are each asked about their need for engineers in 1985, each will reply, "3,000". THIS IS BECAUSE EACH COMPANY IS BIDDING ON THE SAME AIR FORCE PLANE, which only one (at most) will receive. A far more reliable method of projecting the need for engineers, according to Feerst, is to use econometric models. Such models have been used by MIT's Center of Policy Alternatives, and these show a huge surplus of engineers.

# PACE NEWS

**Professional Activities Committee for Engineers**

By R. Tax

## ALERT: Immigration Reform Act

The Immigration Reform and Control Act of 1983 is still an important issue with members of IEEE. The new Senate version is S.529 and the House number is H.R.1510.

On January 29, 1983, the IEEE-USAB Manpower Task Force met and agreed with the requirement that all foreign students attending U.S. schools must return home after graduation for a period of two years to adjust their immigration status. This applies to all foreign students without any waivers or exceptions.

Primary concerns of the members are that the foreign students stay here after completing their education and displace American workers by accepting lower salaries and that subsidizing foreign student education is an unnecessary additional burden for the U.S. taxpayer. Other relevant issues were cited in our November, 1982 issue of this Newsletter.

A brief history of this issue follows. The original 1982 Senate committee's bill S.2222 required all foreign students to return home for two years to adjust their immigration status and queue up on immigration lines to seek entry to the United States.

Senator Edward Kennedy opposed this in the Senate committee, being the only opposition in a vote of 18 to 1. However, he later introduced testimony based on what I consider an invalid survey and fabricated reports provided by the American Electronics Association's Blue Ribbon Committee. This resulted in the removal of the "student return home" provision from the Senate bill S.2222 of 1982. The House Bill, H.R.6514, followed with the same "student return home" provision removed.

We, the North Jersey Section and other IEEE Sections, in opposition to AEA's position, responded to Legislative Alerts requesting the provision be reinstated. Members called and wrote letters to their congressman and other officials. This made a significant impact. The replies we received were most favorable. Congressional representatives took a second look at AEA and are seeking further information. Racked with some 300 amendments, the Bill never passed.

This is a new year and the new Bill has been drafted. Our efforts will and must continue. Our March, 1983 "Newsletter" includes a list of 80 newspaper articles showing cut-backs for 1982 in companies that employ engineers. This list is only inclusive of November 9, 1982 and there are probably many more that we did not receive.

There are now 327,000 foreign students attending American colleges and universities with more than 75,000 of these foreign students in engineering. The estimated cost to the U.S. taxpayer is $3,000 per student per year or **One Billion Dollars** each year. Further while we subsidize foreign student education and therefore foreign competition for American jobs we cannot get tax-credits for our own children's education.

Once more, your help is required and requested. Write and call your representatives. Include, with your letter, news articles or the list of manpower cutbacks from our March issue. Seek the support of your family, friends and neighbors. Many people are quite sensitive to this, especially those with children and grandchildren that may be displaced by lower paid foreign students that stay and work at lower wages.

Send your letters to your representatives and to:

Honorable Peter W. Rodino, Judiciary Committee, U.S. House of Representatives, Washington, D.C. 20515.

Honorable Romano Mazzoli, House Judiciary Committee, Subcommittee on Immigration, 2137 Rayburn Bldg., Washington, D.C. 20515.

Honorable Edward Kennedy, U.S. Senate, Washington, D.C. 20510.

## Endorses "Return Home" Provisions

Return home provisions of legislation in the House of Representatives requiring foreign students studying in the U.S. to return to their home country for two years after graduation was endorsed in House testimony presented March 10, 1983 by Dr. David C. Lewis, Chairman of the Career Activities Council of the IEEE's United States Activities Board (USAB). Dr. Lewis represented the Engineering Affairs Council of the American Association of Engineering Societies (AAES), an umbrella organization of 43 engineering societies (including the IEEE) with nearly one million U.S. engineers. He cited "exploitation" of foreign students and foreign engineers, and the brain drain.

According to Lewis, "We should support the return home provisions in H.R.1510, and feel they should be implemented NOW." The IEEE/USAB volunteer's testimony continues: "We have documented cases in which the lack of citizen status has been exploited by employers... providing foreign students and foreign engineers less than competitive wages. We are opposed to the exploitation of alien engineers, just as we are opposed to the exploitation of American engineers... (A) firm return home policy would do much to eliminate this problem."

According to Lewis, "The effect on an American engineer's career of even a modest amount of engineering manpower which



## Talking To Computers

Dr. Marvin R. Sambur, ITT Defense Communication Division, will present an overview on the techniques available to communicate verbally with computers at the April 20th, 1983 meeting of the North Jersey Computer/Communication Chapter.

Currently, technology is being developed that is enabling machines to communicate verbally with their human counterparts. This presentation will discuss the fundamental concepts that are enabling computers to speak, to understand spoken inputs, and to authenticate the identity of the user by an analysis of his/her voice patterns. Also, the activities in speaker recognition at the ITT Defense Communications Division will be presented via video cassette.

Dr. Marvin R. Sambur is Vice President and Director of Engineering of the ITT Defense Communications Division. Previously, he was Technical Director of the Voice-Processing area as well as Director of Systems Engineering within the division. As Technical Director, he was responsible for the government sponsored development of the advanced narrow band digital voice terminal, the multi-rate voice terminal, the civil secure voice terminal, and the modified secure voice terminal.

Before joining ITT, Dr. Sambur was with Bell Labs., Murray Hill, N.J. as a Member of the Technical Staff. There he was involved in fundamental research in digital signal processing, low-bit rate speech encoding, automatic speech and speaker recognition, artificial intelligence, and underwater sound detection. Dr. Sambur holds MSEE and PhD degrees in Electrical Engineering from MIT.

Please plan on attending. Everyone is welcome; bring your friends. There is no charge, and reservations and IEEE membership are not required.

**Time:** 7:30 PM, Wednesday, April 20, 1983.
**Place:** ITT Auditorium (under the tower), 500 Washington Ave., Nutley, N.J.
**Pre-Meeting Dinner:** 6 PM, Ramada Inn, River Road & Route 3, Clifton, N.J.
**Information & Reservations:** Alex Brown (201) 284-2570.

## Medical Imaging

The next meeting of the Systems, Man & Cybernetics Chapter will be held on April 13, 1983. There will be a talk by Dr. Charlie Giardina on "Medical Imaging." The meeting is free of charge and refreshments will be served.

**About The Talk**

Digital image processing has become a most important tool in medical diagnosis. Since 1968, digital image processing techniques have been applied to x-ray imagery. Today, most major hospitals utilize computer based image processing systems to support axial tomography or ultrasound scanning systems. In these systems multiple images are often acquired and subsequently processed to obtain a three-dimensional profile of organs and tissues.

Numerous digital image processing techniques are employed in medical imaging. The purpose of this talk is to provide a global view of current and state-of-the-art techniques in the areas of medical image processing. Starting from the most basic physical principles and with numerous illustrations, the process of image creation in computer tomography (CT) will be discussed. The use of conventional image processing operations such as restoration, enhancement, segmentation and registration will also be examined. The basic principles in Nuclear Magnetic Resonance (NMR) imaging shall also be presented. An introduction to the Bernstein polynomials will be given which is useful for radiograph image reconstruction.

**About The Speaker**

Charlie Giardina is a professor of Electrical Engineering and Computer Science at Stevens Institute of Technology. He holds Masters and PhD degrees in both electrical engineering and mathematics. He is also a consultant to Singer (Kearfott Division).

Dr. Giardina is the author of numerous articles in image processing and pattern recognition. His major areas of research includes artificial intelligence, image processing, pattern recognition and the constructive theory of functions.

**Time:** 7:30 PM, Wednesday, April 13, 1983.
**Place:** ITT Auditorium, 500 Washington Avenue, Nutley, N.J.
**Pre-Meeting Dinner:** 5:30 PM, Jade Fountain Restaurant, Clifton, N.J.
**Information & Directions:** Dr. Ben Ashjari (201) 420-5614, Dr. Allen Gorin (201) 757-1600, Dr. Andrew Meyer (201) 645-5468, Dr. Ed Van Winkle (201) 939-8304.

## EMS Elections

The election of officers to the Engineering Management Society (EMS) New York/North Jersey Chapter will take place during the monthly general meeting scheduled for April 20, 1983 at 7:30 PM at the Willkie Memorial Center, 20 West 40th Street, NYC.

All EMS members of New York/North Jersey Chapter are welcome to attend this meeting and vote.

## Workshop: Lets Make An Invention

The New York/North Jersey Chapters of the Engineering Management Society and the Broadcast Cable and Consumer Electronics Society will hold a joint Meeting/Workshop on April 20, 1983. At the event, Thomas Morrison will lead a workshop on "Let's Make An Invention."

**The Workshop**

This will be a group inventing session. The attempt will be to focus on a product area, and come up with enough new ideas in that area to develop a worthwhile invention. The workshop will include the techniques of "brain-storming" and evaluation. Who knows, with all that brainpower at work, the group may come up with a truly worthwhile invention.

**About The Speaker**

Thomas Morrison is a former engineer who is now a practicing patent attorney. A native of Canada, he took his BS degree in engineering from Johns Hopkins University, and a law degree from the University of Maryland. After working first as an engineer and then as an engineering manager at Westinghouse Defense R&D Center in Baltimore, he entered the practice of patent law. He has law offices in NYC and in Mt. Vernon, N.Y. Mr. Morrison is a senior member of IEEE.

**Time:** 7:30 PM, Wednesday, April 20, 1983.
**Place:** Willkie Memorial Bldg., 20 West 40th Street, NYC.
**Further Information:** John Van Savage (201) 544-2334/2412; Martin Izaak (212) 397-7438; Barry S. Gourary (201) 783-5570; Marvin Kurland (201) 527-6783.

## PACE Sets New '83 Meeting Dates

The North Jersey Section Professional Activities Committee will sponsor its regular monthly meeting the third Wednesday of every month. Meetings will be held from 7:30 PM to 9:30 PM at Singer-Kearfott, Plant 3, 1250 McBride Avenue, Little Falls, N.J.

These meetings are open to all members and interested public professionals with refreshments free of charge.

**Further Information:** M. McLarin (201) 335-6847; H. Waters, (201) 785-6417.

**IEEE**
**ENGINEERING MANAGEMENT SOCIETY**
**New York/New Jersey Chapter**

Your ADCOM plans to structure the meeting program for 1983-1984 around several broad themes. Please rank the following proposed themes, or suggest other possibilities.

In the following, (1) means the highest priority while (5) is the lowest priority.

( ) The Impact of the Information Revolution on Engineering Management

( ) Opportunities for Engineers in Non-Traditional Fields

( ) Countermeasures for Obsolescence in Engineering Management

( ) Marketing for the Engineering Manager

( ) Career Paths for the Engineer in Entrepreneurial Management, Corporate Management, and Public Administration

( ) _____

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*Please cut out the questionnaire and mail to: Al Bottani, AT&T, 195 Broadway, Room C1068, New York, N.Y. 10007. (212) 393-3015.*

## CONGRATULATIONS
## New Senior Members

**Syed V. Ahamed**
**Almon H. Clegg**
**David C. Hamilton**
**Warren L. Koontz**
**Stephen E. Levinson**
**John A. Lombardi**
**A.M. Noll**
**Ira J. Pitel**
**A.E. Rosenberg**

For information on how you can become a Senior Member, contact Don Weinstein, Kulite Semiconductor, 1039 Hoyt Ave., Ridgefield, N.J. 07657, (201) 945-3000.

## Use Of Programmable Controllers In Industry

The Control Systems Society of the North Jersey Chapter of the IEEE will sponsor a meeting on May 25, 1983, to discuss "Programmable Controllers—Their Application to Industrial Systems". Programmable Controllers have added a new dimension to the control and automation of industrial equipment and processes. Programmable controllers were once considered merely substitutes for hardwired relays. However, substantial development in PC technology has caused a major change to take place in the industrial control field.

The discussion will cover the composition, operation, uses, and programming of PCs. Future trends in the field will be presented. The discussion will also include displays of actual equipments and a hands-on demonstration.

The speaker is Mr. Eric Fraistat, a graduate engineer from Cornell University, who is an application engineer with the Square D Company. Mr. Fraistat has an extensive experience of working with the Programmable Controllers and will share his experience with the listeners.

**Time:** 8 PM, Wednesday, May 25, 1983.
**Place:** Jersey Central Power & Light Co., Madison Avenue (Rt.24), Morristown, N.J.
**Pre-Meeting Dinner:** 6:15 PM, AFTON, Hanover Road & Columbia Turnpike, Florham Park, N.J.
**Further Information:** Frank Kuhl (201) 663-1381 (evenings); Kushal Jain (201) 265-2000 (days), (201) 263-9168 (evenings); John F. Van Savage (201) 985-2084 (evenings).



## ELECTRO/83 TUTORIALS
## April 18, 1983 -- Sheraton Centre, NYC

**Tutorial: "ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS"**

"Experts in artificial intelligence are being paid $1000 a day as consultants" so said the president of an association for artificial intelligence (AI). The interest in AI is increasing at an accelerated pace. DOD considers this technology to be of the highest priority. This tutorial will cover the fundamentals of AI with special emphasis in the knowledge based system (KBS) and theorem proving approaches. Automated reasoning, machine learning, and problem solving will be covered more fully.

Applications of AI will be concentrated in the following areas: Automated programming and software development; Management decision-making; design automation of electronics; Automated testing of circuits/systems; Medical systems; Military systems, (command, control, communications, and intelligence) ($C^3I$); Robotics; and Automated Manufacturing. Projection of future AI applications to robotics in military, space, and manufacturing will conclude the tutorial.

**Program Speaker**

Robert Hong, Technical Assistant to Grumman's Director of Systems Engineering will be the Program speaker. Previously, Mr. Hong was Director of Software Systems Analysis and Design and Section Head of Computer Equipment Design. Prior to joining Grumman, he was a Research Section Head to Sperry Univac Systems Management and has more than thirty years of experience in computer and system technology. Mr. Hong received a BAIE degree from Columbia University, a BSEE from the Cooper Union, and has completed his doctoral course requirements in System Science from PINY where he is an adjunct professor. Presently he is Chairman of the Long Island IEEE Computer Society.

**Tutorial: WORKSHOP ON DBS (Direct Broadcast Satellites)**

This session will provide an introduction and overview of all major aspects of this new and challenging broadcast technology. Topics to be covered will range from the business environment, system requirements and satellite hardware to home receiver design, encoding schemes and plans for enhanced video transmission.

The draft program includes the following topics:

1. Introduction (Overview, Definitions, Standards)
2. Business Environment
3. System Considerations (Equipment requirements, Path Loss/ Ant Size/NF/CIR)
4. Satellite Systems and Hardware (Transponder, Control)
5. Uplink/Downlink Hardware
6. Home Receiver System (Antenna, Front End, TV interface Unit)
7. Enhanced Video Techniques
8. Encoding Systems
9. Future Possibilities

**Tutorial: MANAGEMENT AND THE CREATIVE PERSON A WORKSHOP**

This is an interactive workshop designed for managers of technical professionals who direct creative people. Goal of the workshop is to provide an opportunity to become a better manager through: (1) Awareness of the components of creativity and barriers to creativity; (2) Awareness of the variety of ways that people can be creative and valuing these differences; (3) Understanding of the thinking process and its relationship to creativity. Participants will be provided an understanding of the creative process. They will experience creativity and learn about their own views of, and responses to, the creative person.

**Program Leaders**

George R. Craig, Jr. is currently Group Supervisor of career education at Bell Telephone Laboratories. Prior to assuming his present position in March, 1982, he served as an internal educator and consultant to Bell Laboratories. He has been a manager for five years.

Richard Greanier is currently a plant Education and Training Manager for Digital Equipment Corporation. He is responsible for all technical and professional development activity, EEO/Affirmative Action/Awareness program organization, Employee Planning Development and the Tuition Refund Program.

Carol Neadle Schnitzler is a consultant and trainer. Her area of specialty is facilitating attitudinal change. She is presently directing a special project for the New Jersey Department of Education and is doing private consulting in industry to facilitate the employment of people who are handicapped. IBM, the Epilepsy Foundation of America and the New Jersey State Development Disability Council are among the organizations who have made use of her skills.

Paul Schnitzler has been using participative management techniques in engineering research and development with measurable success for the last six years. After completing his PhD in Electrical Engineering at the Polytechnic Institute of Brooklyn, he has taken various courses, workshops, and laboratories relating to human interaction and management techniques. He is particularly interested in the application of creativity to the needs of the organization. He is presently Head, Broadcast Systems Research, for RCA Laboratories.

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**REGISTRATION—ELECTRO/83 TUTORIALS**

☐ **Artificial Intelligence ($165 members, $190 non-members)**

☐ **Direct Broadcast Satellite ($170 members, $195 non-members)**

☐ **Management Of The Creative Person ($180 members, $205 non-members**

**TO:** James Tolbert, H.E.L.P. Inc., 1101 State Rd., Bldg. M, Princeton, N.J. 08540

Name _____ IEEE No. _____

Affiliation _____ Phone _____

Address _____

_____

Please enclose required fee made payable to **"METSAC"**

## Distinguished Lecturer On Microstrip Antennas

Distinguished AP-S Lecturer Keith R. Carver of New Mexico State University will address the May 11 meeting of the North Jersey Chapter of MTT/AP. Dr. Carver will discuss analytical and practical empirical techniques used in the design of microstrip antennas.

**About The Talk**

Microstrip antennas are attractive as a means of satisfying performance criteria for low profile, lightweight, conformable narrow-band radiators for use as individual radiators or as unit elements in either planar or conformable arrays. In the past five years there has been an enormous growth of interest in the microstrip antenna, particularly by the theoretical community which has produced so much literature on the subject that it is difficult to separate those analytical techniques which are currently useful to the designer from those which are of strictly academic interest. In this same period of time, a great deal of practical design experience has been accumulated including a better understanding of the tolerance constraints placed by etching techniques and substrate dielectric constant variability, along with many practical approaches to the design of microstrip patches for specialized applications. Microstrip arrays are now used routinely in aerospace systems applications.

In this presentation by the AP-S Distinguished Lecturer, Keith Carver, a balanced approach toward the design of microstrip antennas is offered, emphasizing those analytical techniques which are truly useful to the designer along with a survey of a variety of practical empirical techniques. The extension of this approach to planar arrays is discussed, with particular emphasis on the problems and ptifalls in the design of monolithic feed systems for microstrip arrays. Several practical microstrip designs and arrays are presented which are currently in use. The intent of the presentation is to provide some design approaches which would be helpful to the antenna engineer.

**About The Speaker**

Keith R. Carver received the BS degree from the University of Kentucky in 1962 and the MS and PhD degrees from The Ohio State University in 1963 and 1967, respectively, with all the degrees in electrical engineering. He was on the faculty of the University of Kentucky from 1967-69 and joined the faculty of New Mexico State University in 1969 where he is Professor of Electrical Engineering. He has recently finished a 16-month assignment at NASA Headquarters, where he was Program Manager for Radar Remote Sensing Systems. He is currently Director of the Engineering Research Center at New Mexico State University.

Dr. Carver is the author of numerous articles on microwave antennas, microwave, remote sensing and wave propagation. He is the co-author of the textbook "Electromagnetics," 2nd ed. with Dr. John Kraus. He is President of the IEEE Geoscience and Remote Sensing Society, is on the National Research Council's Committee for U.S. Army Basic Research, and is a member of URSI Commission F.

**Time:** 8 PM, Wednesday, May 11, 1983.
**Place:** ITT Avionics, 500 Washington Avenue, Nutley, N.J.
**Pre-Meeting Dinner:** 6 PM, The Jade Fountain Restaurant, 321 River Road, Clifton (adjacent to Nutley).
**Dinner Reservations:** Dick Snyder (201) 492-1207 or Hy Goldman (201) 284-3739.

## Trichapter Devices Short Course

"Advances In Compound Semiconductor Technology And Devices" is the subject of a joint IEEE trichapter short course scheduled for May 24, 1983. The course is sponsored by the ED and MTT Group Chapters of Princeton, North Jersey, New Jersey Coast, and the Department of Electrical Engineering at Rutgers University. Additional details will be covered in the May issue.

**Date:** 6:30 to 9:30 PM, Tuesday, May 24, 1983.
**Place:** Rutgers University, Busch Campus Hill Center, Room 114, Piscataway, N.J.
**Instructor:** Lester F. Eastman, 1983/84 ED-S National Lecturer, Cornell University, Ithaca, N.Y.
**Reservations:** Reservations by phone are needed to attend the course. Attendees will be issued a ticket at the door for a complimentary sandwich and beverages served from 5:45 to 6:20 PM. Call Dick Snyder on (201) 492-1207 before Thursday, May 19, 5:00 PM.

## PCB Perspectives

The May meeting of the North Jersey Section IEEE Power Engineering Society will feature a slide presentation entitled "PCB Perspectives."

The speaker, Mr. Bryce I. MacDonald, is Manager, Environmental Issues Resolution, General Electric Corporate Environmental Issues Project. His presentation is designed to update thought leaders so they will be able to respond more effectively to demands made upon them, their businesses or their communities on PCB issues.

PCBs developed a reputation in the early 1970s as being toxic, even cancer causing, materials. By 1976, PCBs had been declared toxic in the Toxic Substances Control Act, and EPA was ordered to ban most uses of these materials. Extensive research since 1976 shows that adverse human health effects were grossly exaggerated and that health fears are not well founded.

The presentation puts PCB issues into perspective by identifying the issues and describing their development. Topics include: PCB manufacture and use; Recent human health studies; Environmental concerns; PCB equipment replacement; Human health concerns; and Regulatory changes.

The presentation should be valuable to engineers and community leaders who are consulted for guidance in addressing PCB problems when they arise in a community. It is based in part on recent scientific and statistical studies done under the sponsorship of the Edison Electric Institute and the National Electrical Manufacturers Association.

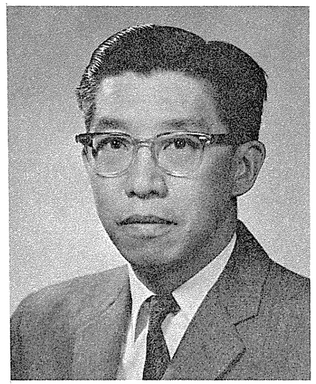
Attendance at the meeting is free and open to all interested parties.

**Time:** 3 PM, Wednesday, May 25, 1983.
**Place:** Jersey Central Power & Light Co., Madison Avenue (Rt. 24) & Punch Bowl Road, Morristown, N.J.
**Further Information:** John A. Baka (201) 455-8534.

## Program Planned

Maitland McLarin, NJ Section Program Chairman, is planning a High Technology Meeting on "Acousto-Optic Bragg Cells Speed Electronic Warfare Signal Processing" by Charles L. Grasse and David Brubaker of Teledyne MEC, Palo Alto, Calif.

# NEW NORTH JERSEY SECTION FELLOWS



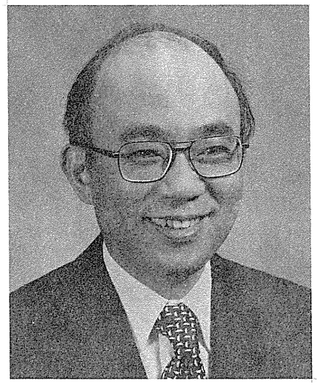
**Kao Chen**

**"For leadership and contributions in the design and development of industrial power distribution systems and energy-saving illumination systems."**

Kao Chen received the BSEE degree from Jiao Tong University, China in 1942. He was chosen as a British Federation of Industries scholar in 1945 and obtained a MSEE degree from Harvard University, Cambridge, Massachusetts. Later he completed advanced graduate studies at the Polytechnic Institute of Brooklyn in power and illuminating engineering.

For several years he worked as a Power Systems Design Engineer and Project Leader for the American Gas and Electric Corporation and Ebasco, Inc. in New York responsible for overseeing and coordinating design work of generating stations, power distribution and illumination systems. Since 1956 he has been with the Westinghouse Electric Corporation, Lamp Divisions, where he is presently a Fellow Engineer responsible for the design of, and providing consulting services for, the power distribution systems and illuminating engineering and studies for a dozen domestic lamp plants and warehouses as well as international plants in Canada and Puerto Rico.

He has been in the vanguard of promoting concepts and good practice in industrial plant electrical systems, and has shared his experience with others through his work in developing codes and standards and through his many published works. He is a contributing chapters author for six IEEE standards "color" books and has published over sixty technical papers and articles and holds patents in the field of luminaire design.



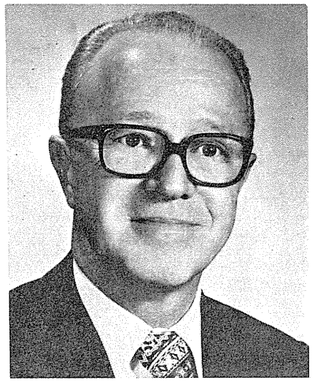
**Hatsuaki Fukui**

**"For contributions to the understanding and design of low noise microwave transistors and transistor amplifiers."**

Dr. Hatsuaki (Huck) Fukui was born and educated in Japan. He received his Dr. of Engineering degree in Electrical Engineering from Osaka University in 1961. During his graduate school years he worked for Sony Corporation, Tokyo, Japan. He joined Bell Laboratories in 1962 and worked first on characterization and applications of microwave semiconductor devices and later on bandwidth saving techniques for video transmission. He became a supervisor in 1969. In 1973 he joined Sony Corporation of America as Vice-President. Returning to Bell Laboratories he carried out pioneering work on high reliability GaAs field effect transistors (GaAs FET). In 1981 he took on his present position as Supervisor of laser liason for Lightwave Transmitters.

During his professional career, Dr. Fukui has published approximately 100 papers and four books. He also received three patents. In 1981 he received a "Best Paper" award from the IEEE Microwave Theory and Techniques Society for his work on GaAs FETS. Dr. Fukui is well known for his work on establishing design criteria for microwave transistors.

Huck Fukui lives in Summit, New Jersey with his wife. Both his daughter and son have been educated in the United States. At present he shares his time between assignments in the United States and Japan.



**Edward E. McILveen**

**"For contributions on electric power cable design and testing."**

Mr. Edward E. McILveen, for the past five years, has been the Secretary-Treasurer of The Insulated Power Cable Engineers Association. He had been active in the work of the Association over a span of more than twenty-five years while he was associated at The Okonite Company.

He is a retired Vice President-Engineering of The Okonite Company, Ramsey, New Jersey where he had responsibilities covering design of insulated wire and cable products, their development, field support, and performance.

Mr. McILveen started his professional career at Western Union where he worked in the Ocean Cable Division. He joined The Okonite Company in 1941 as a Research Engineer. In 1951 he transferred to the Engineering Department as Cable Engineer, and then Assistant Manager of Engineering with the responsibility of handling field problems and coordinated application requirements with research and manufacturing departments. Manager of power and control cable products from 1963 to 1968, he was named Vice President-Engineering in 1968 a position he held until retirement in 1978. He has several patents to his credit.

A cum laude graduate of Polytechnic Institute of Brooklyn, Mr. McILveen is a member of Sigma XI and a Life Member of Electrical and Electronic Engineers. He has been active in the Insulated Conductors Committee and NPEC Subcommittees, and has presented transaction papers at many national IEEE meetings as well as technical papers at other professional meetings. He is also a member of CIGRE.

## Hermann K. Gummel: David Sarnoff Award

**Hermann K. Gummel**

**"For contributions and leadership in device analysis and development of computer-aided design tools for semiconductor devices and circuits."**

Dr. Hermann K. Gummel is the Assistant Director of the Computer Aided Design and Test Laboratory at Bell Labs., in Murray Hill, New Jersey. In addition he manages a department responsible for development of computer aids for integrated circuit design.

Dr. Gummel received Diplom Physiker degree from the University of Marburg, Germany in 1952 and the MS and PhD degrees in physics from Syracuse University, N.Y., in 1952 and 1957, respectively. In 1957, he joined Bell Labs at Murray Hill, where he has worked on a wide range of topics in semiconductor electronics. His early work dealt with the design and performance of solar cells for the Telstar satellite.

After the conclusion of the Telstar project, he became interested in understanding the detailed behavior of bipolar transistors. He pioneered a numerical method for analyzing the behavior of a transistor based on its one-dimensional doping profile. This method has been the cornerstone of much of the device simulation efforts in the last two decades. His understanding of the transistor lead him to a compact analytical model of the transistor based on the charge control concept. This model, now widely known as the Gummel-Poon model and available in many circuit simulation programs, contains an accurate representation of many physical phenomena in a transistor. He also applied the numerical method for analyzing transistors to IMPATT diodes for study of the avalanche region and the large signal behavior.

Having mastered the aids for device analysis, he addressed the aids for designing integrated circuits in the MSI/LSI era. He saw the potential of minicomputers for performing computer-aided-design for IC's and demonstrated their capability in dealing with large circuit layouts. He has since pioneered and supervised development of many new design aids, notable among them are a semi-automatic polycell layout system, a timing simulator, an aid to extract circuit description from layout, and an interactive layout system.

He is a member of the American Physical Society and Sigma Xi. He has coauthored more than 50 technical papers. Dr. Gummel lives in Murray Hill, New Jersey with his wife, Erika.

He enjoys programming as a pastime.