



The IEEE

Newsletter

PUBLICATION OF THE NORTH JERSEY SECTION OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

Vehicular Technology Soc.: **Enhanced GFCA To Improve Traffic Handling**

On April 3, 1995, IEEE North Jersey Vehicular Technology Society will present a talk on "Generalized Fixed Channel Assignment In Microcellular Communication Systems." The speaker will be Tai-Po Chu.

About The Talk

Mr. Chu will discuss how, with overlap in coverage of cellular base stations, users may have access to more than one such station. And with an appropriate control strategy, which he will describe, this enhanced GFC access can be used to improve traffic handling, when handoff is important. He will discuss in particular a performance analysis (model) of a one-dimensional cellular system using GFCA with handoff priority in the presence of shadow fading. He will also show that overall performance characteristics including the effects of signal availability, as well as channel availability, provide decreased blocking and forced termination probabilities as well as increased carried traffic.

About The Speaker

Tei-Po Chu received the BSEE degree from Fu-Jen Catholic University, Taipei, Taiwan, R.O.C. He received the MSEE degree from the State University of N.Y. (Stony Brook) in 1990. He has been teaching and research assistant in the Dept. of Electrical Engineering at Stony Brook since 1991, where he is currently a PhD. candidate. His research interests include mobile cellular communications, personal communication services, and queueing theory.

All Welcome

You need not be a member of the IEEE to attend, and there is no charge for admission. Light refreshments will be served.

Time: 7:30 PM, Monday, April 3, 1995.

Place: Call for location of meeting.

Information: Mel Lewis (914) 968-2500, ext. 2304, or Art Greenberg (201) 492-1207.

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NJ MTT/AP Chapter: Effects Of Phase Noise On System Performance

On April 18, 1995 the IEEE North Jersey Section MTT/AP Chapter will present a talk on "The Effects Of Phase Noise On System Performance." The speaker at this meeting will be Dr. T.G. Hammersley of CTI in Whippany.

About The Talk

The advances in modern receiver designs means that the single side band (SSB) phase noise contributed by the local oscillators and synthesizers is often the limiting factor in system performance. This presentation will introduce the phase noise concept, phase noise measurement and its effects on satellite based digital communication links and pulsed doppler radars and recently introduced SONET network for telecommunications.

High performance signal sources and synthesizers will be displayed for both commercial and military applications.

About The Speaker

Dr. T.G. Hammersley obtained his B.Sc (Hons) and Ph.D. (EE) from The University of Leeds, U.K. in 1982 and 1990, respectively. He worked as an oscillator/synthesizer development engineer for Marconi Electronics Devices Ltd., U.K. from 1982 to 1987. After receiving his Ph.D. he joined CTI where he is currently the Sources Engineering Manager.

All Welcome

You do not need to be an IEEE member to attend. All are welcome. Free refreshments will be provided before the meeting starting at 6:15 PM.

Time: 7:00 PM, Tuesday, April 18, 1995.

Place: Communications Techniques Inc., 9 Whippany Road, Whippany, N.J.

Information: Chandra Gupta (201) 633-4469; Bill Schmidt (201) 492-0371.

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It is not necessary to inform the North Jersey Section when you change your mailing address. "The IEEE Newsletter" and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

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The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7 PM. These meetings are open to all members. Information on meeting agenda is available from Dr. Fred Chichester (201) 744-7340.

NJ Communications Soc: Designing Unipolar Binary Codes For Communications

On April 6, 1995, the IEEE North Jersey Communications Society together with NJIT's Center for Communications and Signal Processing will present a talk on "Design Of Unipolar Binary Codes For Code-Division Multiple-Access Communications With Applications In Optical And Wireless Systems." The speaker will be Zoran Kostic.

About The Talk

The problem of designing spread-spectrum signature sequences for several classes of code-division multiple-access (CDMA) techniques will be addressed as well as applications in optical and wireless communication systems.

There will be a presentation on design and properties of several families of spread-spectrum (QC) optical codes and time-hopping patterns; and synchronous Welch-Costas (WC) optical codes and time-hopping patterns. These codes distinguish themselves in having good correlation properties or pseudo-orthogonality properties; as well as in the fact that the number of code families obtained is larger than is the case for codes previously designed. A particularly useful property of the codes enable the compu-

tation of EXACT probability distribution functions representing interference in CDMA systems.

An application in incoherent on-off CDMA optical communications is shown with the computation of the probability of error in detection. Codes are also proposed to be used in packet-based voice/data wireless communication systems through the concept of packet-slots whose time and length of transmission are controlled by presented time-hopping patterns.

About The Speaker

Zoran I. Kostic received the Dipl. Ing. degree in Electrical Engineering from the University of Novi Sad, Yugoslavia, in 1987, and the MS and PhD degrees in Electrical Engineering from the University of Rochester, in 1988 and 1991, respectively. He has been working at AT&T Bell Laboratories since 1991. His research interests are in the areas of communications and digital signal processing. He is currently working on wireless communications with emphasis on code-division multiple-access techniques, high-resolution channel estimation, and low-complexity signal processing for wireless modems.

Time: Pizza and Pop, 6:45 PM. Talk begins at 7:00 PM, Thurs., April 6, 1995.

Place: NJIT, 202 ECE Center, Newark.

Information: N. Ansari (201) 596-3670.

NY/NJ/LI EMBS:

Hearing Loss And Speech Recognition Technology

On April 5, 1995, the New York Academy of Medicine's Sections on Biomedical Engineering and Otolaryngology together with the IEEE Metropolitan Section of the Engineering in Medicine and Biology Society, and the New York Special Interest Group on Computers and Human Interface of the Association for Computing Machinery, will host a program on "Applications of Speech Recognition Technology For People With Hearing Loss." Speaker at this meeting will be Dr. Harry Levitt.

About The Talk

Significant strides have been made in automatic speech recognition (ASR) technology in the past several years. Relatively inexpensive, functional, and practical personal computer (PC) based systems are now available. Applications of this technology offer considerable promise for persons with hearing loss. A readily realizable application is voice operated teletype (TTY). Speech from a hearing person can be input into an ASR system, where it is encoded, and transmitted over a communications channel (telephone line, computer network, radio

channel, etc.) to a person with hearing loss. The person with hearing loss can receive and respond to the message either orally, or through a typed message using a conventional TTY or PC. Via either method the response from the person with hearing loss can be orally output to the hearing person using the initial ASR system.

About The Speaker

Dr. Harry Levitt is Distinguished Professor of Speech and Hearing Sciences at the City University of New York. He joined the faculty of the City University of New York in 1969, where he played a prominent role in establishing the Center for Research in Speech and Hearing Sciences. Previous to working for CUNY, he worked for AT&T Bell Laboratories, where he conducted research on binaural hearing, adaptive testing in psychoacoustics and digital speech processing.

Time: 7:30 PM, Wed., April 5, 1995. **Pre-meeting subscription reception (cost \$25) at 6:00 PM. Call number below for reservations, prior to April 2nd.**

Place: N.Y. Academy of Medicine, 5th Ave., at 103rd St., NYC. (Limited free parking in NYAM enclosed lot at 2 East 103rd St.)

Further Information/Reservations: Office of Medical Education, N.Y. Academy of Medicine (212) 876-8200, ext. 235. IEEE EMBS, Prof. Joel Levitt (718) 891-6460.

North Jersey Section Activities

April 1995

April 3—"Generalized Fixed Channel Assignment In Microcellular Communication Systems"—North Jersey Section Vehicular Technology Chapter, 7:30 PM. For location call Mel Lewis (914) 968-2500, ext. 2304.

April 3—"Beamforming And Time-Frequency Distributions: Similarities In Design And Algorithms"—NJIT's Center for Communications & Signal Processing with IEEE North Jersey Communications Society, 11:30 AM, NJIT, 202 ECE Center, Newark, N.J. Nirwan Ansari (201) 596-3670.

April 5—"North Jersey Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road Totowa, N.J. Dr. Fred Chichester (201) 744-7340.

April 5—"Hearing Loss And Speech Recognition Technology"—N.Y. Academy of Medicine and Metropolitan EMBS, 7:30 PM, N.Y. Academy of Medicine, 5th Avenue at 103rd St., NYC. NY. Academy of Medicine (212) 876-8200, ext. 235.

April 6—"Designing Unipolar Binary Codes For Communications"—North Jersey Communications Society and NJIT's Center for Communications and Signal Processing, 7:00 PM, NJIT, 202 ECE Center, Newark, N.J. N. Ansari (201) 596-3670.

April 11-May 30—"Seminar: C++ for Windows"—IEEE North Jersey Section, JCP&L, 300 Madison Ave., Morristown, N.J. John Baka (201) 455-8534.

April 12-June 7—"Seminar: Introductory C Programming"—IEEE North Jersey Section, JCP&L, 300 Madison Ave., Morristown, N.J. John Baka (201) 455-8534.

April 13—"Experiment In Career Networking Forum"—North Jersey Section PACE, 7:30 PM, JCP&L Co., 300 Madison Ave. & Punch Bowl Rd., Morristown, N.J. Robert Sinusas (201) 228-3941.

April 18—"Effects Of Phase Noise On System Performance"—IEEE North Jersey Section MTT/AP Chapter, 7:00 PM Communications Techniques Inc., 9 Whippany Road, Whippany, N.J. Chandra Gupta (201) 633-4469.

April 20—"Propagation Prediction"—North Jersey Section Vehicular Technology Chapter, 7:30 PM. (Please note this date is changed from the one shown in the March issue.) For information and location, call Mel Lewis (914) 968-2500, ext. 2304.

April 26—"1995 Optoelectronics Seminar and Industry Show"—IEEE Laser & Electro Optics Chapter with the Center for Microwave and Optics and Computer Society at NJIT, 7:00 PM, NJIT, Infotech Bldg., Third Floor, Room 3730, Newark, N.J. Haim Grebel (201) 596-3533.

April 27—"Design Issues Related To Powering And Grounding Sensitive Electronic Equipment"—North Jersey PES/IAS, 7:00 PM, JCP&L Co., 300 Madison Avenue, Morristown, N.J. Ken Oexle (201) 455-8481 (JCP&L).

April 27—"Appointment Generation For Consultants"—IEEE Consultants' Network of Northern NJ, 7:30 PM, AT&T Bell Labs, 67 Whippany Rd., Whippany, N.J. Robert Walter (201) 736-0771.

April 27—"ATM Congestion And Flow Control"—North Jersey Communications Soc., with NJIT's Center for Communications and Signal Processing, 7:00 PM, NJIT, Room 202 ECE Center, Newark, N.J. Nirwan Ansari (201) 596-3670.

Upcoming Meetings

May 3—"North Jersey Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road Totowa, N.J. Dr. Fred Chichester (201) 744-7340.

May 3—"Global Positioning System Applications"—Joint meeting North Jersey Chapter Systems, Man, and Cybernetics and North Jersey Chapter of the American Inst. of Aeronautics and Astronautics. For information/reservations, contact Abe Bernstein (201) 770-3240.

May 18—"Annual Section IEEE Awards Reception"—Birchwood Manor, Whippany, NJ. See reservation information in this issue.

May 24—"Seminar: Short Circuit Analysis"—No. Jersey Section IAS & PES Chapters, 9:00 AM-3:00 PM, JCP&L Co., 300 Madison Avenue, Morristown, N.J. Vittal Rebbapragada (201) 804-2011.

June 21-23—"Electro '95"—Hynes Convention Center, Boston, MA. For further information contact Kathryn Piersall at Miller Freeman, Inc., (800) 223-7126.

Members and Non-Members Welcome
PLEASE POST

Beamforming And Time-Frequency Distributions

On April 3, 1995, NJIT's Center for Communications and Signal Processing, sponsored in part by IEEE North Jersey Communication Society, will present a talk on "Beamforming And Time-Frequency Distributions: Similarities In Design And Algorithms." The speaker will be Moeness G. Amin.

About The Talk

Adaptive antenna arrays and time-frequency signal representations are two important areas for the applications of signal processing and optimization techniques. This talk draws an analogy between constrained adaptive beamforming and time-frequency distributions based on Cohen's class of bilinear

transformations. The latter has been recently shown to be a powerful tool in non-stationary signal analysis. We argue that linearly and quadratically constrained solutions obtained for the optimum array patterns are directly applicable to time-frequency kernel design and can be used to yield distributions which best represent non-stationary signals with rapidly time-varying characteristics. The meaning and the equivalence of the quiescent pattern, unit gain linear constraint, and robustness quadratic constraint in the time-frequency distribution context will be discussed. The differences in the interpretation of the cost function and constraint system in the two areas will also be detailed.

About The Speaker

Moeness Amin received his PhD in Electrical Engineering from the University

of Colorado, Boulder. He joined Villanova University in 1985, where he is now a Professor. He is the Chairman of the Signal Processing Chapter of the IEEE Philadelphia Section and was the General and Organization chair of the 1994 IEEE International Symposium on Time-Frequency and Time-Scale Analysis. His research area includes adaptive noise canceling, nonstationary signal analysis, beamforming, and spread spectrum communication systems. He is a member of Sigma Xi, Eta Kappa Nu, and a senior member of the IEEE.

Time: 11:30 AM, Monday, April 3, 1995 (refreshments start at 11:15 AM).

Place: NJIT, 202 ECE Center, Newark, N.J.

Further Information: Nirwan Ansari (201) 596-3670.

IEEE AWARDS RECEPTION

North Jersey Section

May 18, 1995

Birchwood Manor, Whippany, N.J.

A time to relax, unwind and enjoy—

A time to pay tribute to our New Fellows —

A time to honor our new Senior Members —

YES it's time for the Annual Section Reception

The Annual Section IEEE Awards Reception will again be held at the Birchwood Manor, 111 North Jefferson Road, Whippany. The affair is scheduled for Thursday, May 18, 1995 from 6:45 to 9:00 PM. Tickets are \$25.00 each and includes a complete prepaid, two-hour open bar, hors d'oeuvres, buffet, and dessert. Spouses and guests are welcome.

Reservations required by May 11, 1995. Complete the reservation form below and return it with your payment. If you would like tickets mailed back to you, please enclose a self-addressed **stamped** envelope. Otherwise, your tickets will be held at the door for you. If any additional information is required concerning the Reception, contact Anne Giedlinski at 455-8556.

Use this form for Reception reservations

ENCLOSE A STAMPED, SELF-ADDRESSED ENVELOPE to receive tickets in advance. Reservations required by May 11, 1995. Mail reservation request to:

Anne Giedlinski
299 Brooklake Road
Florham Park, NJ 07932

Enclosed is _____ Please forward _____ ticket(s) at \$25.00 each (make check payable to **North Jersey Section IEEE**) for:

Name: _____

Address: _____

Zip _____

No. NJ Consultants' Network: Appointment Generation For Consultants

On April 27, 1995, the IEEE Consultants' Network of Northern NJ will present "Appointment Generation For Consultants" presented by Stephen B. Kudesh, former VP of the Computer Power Group, in international consulting group based in Melbourne, Australia.

About The Topic

Before the marketing process can begin, an appointment must be made. Consultants will learn that they must prospect on a regular basis to prevent "gaps" and avoid extended periods of "downtime." In order to generate new business, technical consultants will learn: how to generate sales leads independently; how to capitalize on referral sources; how to secure qualified appointments with decision makers.

About The Speaker

Stephen Kudesh was a co-founder of Cornell Computer Corporation (NJ) in 1979. For Cornell and its successor company, The Computer Power Group, he acted as Director of the New Jersey, New York and Telecom branches, later serving as Vice President of Regional Marketing. Mr. Kudesh's background has included positions in systems analysis, recruiting, marketing and management with Univac, Computer Sciences, Honeywell and Source EDP. He holds an MBA from St. John's University in New York City.

Featured Consultants

Cherif Chibane of ALGAM Labs, Paramus, NJ offers high-speed digital and analog design, and software and firmware development services for RISC/CTSC microprocessor-based systems. His background includes expertise in video and raster image capture, processing and enhancement. Mr. Chibane is an adjunct professor at Fairleigh Dickinson University.

Gary Hoffman of G.R. Hoffman & Associates in Randolph, NJ, specializes in design and development of instrumentation, controllers, communications and consumer products. Prior to becoming a consultant Mr. Hoffman was Vice President of Engineering for RFL Electronics.

About The Consultants' Network

The IEEE Consultants' Network of Northern NJ was founded in April 1992 to encourage and promote the use of independent technical consultants by business and industry. Meetings are held on the last Thursday of each month.

Time: 7:30 PM, Thursday, April 27, 1995.
Place: AT&T Bell Laboratories, 67 Whippany Rd., Whippany, N.J.

Information: For directions or up-to-date meeting status call Robert Walker at (201) 736-0771.

Attendance: Non-Network attendees and member guests must pre-register by 5 PM Wednesday, April 26th. Contact David Greenspan at (201) 992-9562 (answering machine). Leave you name and citizenship information. Calls will not be returned.

North Jersey Section PACE: Experiment In Career Networking Forum

At the April 13, 1995 meeting of the North Jersey Section's Professional Activities Committee for Engineers, speaker Mr. Merrill Rutman will discuss "The Engineers Network Association: An Experiment In A Career-Networking Forum."

About The Talk

Exchanging information with like-minded professionals, or networking, is the most effective way an individual can obtain leads to employment and career-advancement opportunities. The Engineers Network Association (E.N.A.) was a successful experiment that provided a networking forum and professional home base for over two-hundred engineers seeking employment, most of whom had been affected by corporate down-sizing and forced layoffs. Many enduring friendships were forged during E.N.A.'s twenty-two months of operation, during which the Association helped seventy-five members find full-time professional employment.

The speaker will briefly review the Association's founding, its *modus operandi*, and the events leading to its dissolution in December, 1994. He will then open the floor for a discussion of ideas for enhancing career-networking opportunities. Any engineer interested in an organized networking forum for career advancement is urged to attend and participate.

About The Speaker

Merrill Rutman, a former Federal Government project manager and currently a technical-writing consultant, founded and chaired the Engineers Network Association. Merrill is a member of the IEEE North Jersey Section, and is Vice Chairman of the IEEE Consultants' Network of Northern New Jersey.

Time: 7:30 PM, Thursday, April 13, 1995.
Place: JCP&L Co., 300 Madison Avenue and Punch Bowl Road, Morristown, N.J.
Information:
Robert Sinusas (201) 228-3941.

North Jersey PES/IAS: Protecting Sensitive Electronic Equipment

On April 27, 1995, the North Jersey Power Engineering/Industrial Application Society Chapters will present a talk on "Design Issues Related To Powering And Grounding Sensitive Electronic Equipment—IEEE Std. 1100 Perspective." The speaker will be R.V. Rebbapragada of Raytheon E&C.

About The Talk

Supplying power to and grounding of sensitive electronic equipment has been a growing concern for commercial and industrial power system designers. With the proliferation of sensitive electronic loads in industrial and commercial power systems due to rapid changes in the electronics and communication industry, new power quality related issues have evolved. As technology advances, sources for electric power disturbances increase. The presentation will cover power quality, grounding, protection against disturbances (EMI, surges and sags) and shielding (Tempest).

About The Speaker

R.V. Rebbapragada is employed as a Senior Consulting Electrical Engineer in the Raytheon Nuclear, Inc. He is a Professional Engineer and performs extensive consulting work in all aspects of Electrical and Control Systems associated with Electrical Utility, Industrial, Commercial and Aero Space Systems.

All Welcome

Members and non members are all welcome. There will be a free pre-meeting buffet

Time: 7:00 PM, Thursday, April 27, 1995.

Place: Punch Bowl Room Auditorium, Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.

Information/Reservations:

Ken Oexle (JCP&L) (201) 455-8481, or R.V. Rebbapragada (Raytheon) (212) 839-1473.

Vehicular Technology Soc.: Site Specific Propagation Prediction

On April 20, 1995, the IEEE North Jersey Vehicular Technology Society will present a talk on "Site Specific Propagation Prediction For Wireless In-Building Personal Communication System Design." (Please note this meeting date is changed from the one shown in the March issue of the Newsletter.) The speaker will be Dr. Scott Seidel of Bellcore.

Time: 7:30 PM, Thursday, April 20, 1995.
Place: For location information call Mel Lewis (914) 968-2500, ext. 2304.

New Jersey Institute of Technology 1995 Optoelectronics Seminar and Industry Show

sponsored by

IEEE Laser and Electro Optics Chapter
together with the Center for Microwave and Optics
and the Computer Society at NJIT

April 26, 3:00-6:00 PM

NJIT, Infotech Bldg., Third Floor, Room 3730

NJ Communications Soc: ATM Congestion And Flow Control

On April 27, 1995, the IEEE North Jersey Communications Society together with NJIT's Center for Communications and Signal Processing will present a talk on "ATM Congestion And Flow Control." The speaker will be Xiaoqiang Chen.

About The Talk

The most vigorous debate in the ATM Forum for the past two years has been focused on how to regulate the flow of ABR (Available Bit Rate) traffic from a sender to a receiver. The central argument is whether flow control should be rate-based or credit-based. The Forum voted for rate-based control last September, but the issues go beyond one vote. This talk is intended to give an update on the current progress in the Forum, and to address the issues such as (1) What are the technical challenges of congestion control in high-speed networks like ATM? (2) What are the key arguments in favor of rate-based and credit-based flow control? (3) Which scheme offers the better cost, performance, scalability, and fairness? (4) Should flow control be exercised end-to-end or link by link? (5) How does the Forum standard rate-based control work? (6) What are key design and implementation issues? (7) What are future research issues?

About The Speaker

Xiaoqiang Chen received the B.Eng. and M.Eng. degrees in electrical engineering from the Nanjing Institute of Posts & Telecommunications, Nanjing, China, in 1982 and 1985, and the PhD degree in computer science from the University of Cambridge, England, in 1992. He joined AT&T Bell Laboratories in 1992, where he is currently a Member of Technical Staff with Broadband Access Research Department at Homdel, New Jersey. His research interests include congestion and flow control, multicast routing, signaling and network management in ATM networks.

Time: Pizza and Pop, 6:45 PM. Talk begins at 7:00 PM, Thursday, April 27, 1995.

Place: NJIT, Room 202 ECE Center, Newark, N.J.

Information: Nirwan Ansari (201) 596-3670.

Federal Industrial and Academic Alliances in the Optical Marketplace

"The Federated Laboratory Concept"

M. Tompsett, EPSD, Fort Monmouth, N.J.

"Views From The Industrial Participant"

P. Anthony, AT&T Bell Laboratories

OPTOELECTRONICS INDUSTRY SHOW

Location: Info Tech Bldg., Room 3730, NJIT

Information: Drs. Wan-Ling Chen (201) 596-8571 or H. Grebel (201) 596-3533

Directions: Garden State Parkway Exit 145, Route 280 East; Take King Blvd. Exit 14A and turn right at the traffic light. Continue straight and after three traffic lights turn right into Central Ave. Take the first left, Summit St. into the campus and ask the police officer for the reserved parking.

Route 280 West take Exit King Blvd. At the end of the ramp make a left. Proceed one block and make a left into King Blvd. After four traffic lights turn right to Central. Take the first left turn to Summit. Ask the police office to direct you to the reserved parking.

For Information:

Contact Dr. H. Grebel (201) 596-3533

'95 Optoelectronics Seminar - April 26, 1995 "The Federated Laboratory Concept"

*Michael F. Tompsett
EPSD, Fort Monmouth, NJ*

Abstract: This two part talk will discuss contemporary research paradigms including the open laboratory and the new Federated Laboratory concepts, as well as presenting the opto-electronic research currently underway at ARL.

The cast array of technologies and technology options, and the in-depth expertise and vision required to exploit them is leading to new ways of executing R&D. Additionally both corporate and government laboratories have been down-sizing and focusing their missions into narrow applications areas. These factors have led to a shrinking of the basic research base and a lack of critical mass R&D teams within these organizations. Industry is solving this problem by forming consortia both with and without the lubricant of external funding. Government laboratories are engaged in conventional (fire and forget) funding of programs and in extensive collaborative research under open laboratory policies and Cooperative Research and Develop-

ment Agreements (CREAs). ARL has recently established a melding of these concepts by establishing a Federated Laboratory approach in which \$52M of 6.1 basic research funds are being provided to academia and industry annually to fund collaborative research with ARL. Special cooperative agreements, incremental funding, collaborative management, R&D "guest worker" exchange, video work stations, etc. are mandated and will be used to ensure true collaboration and synergy.

Opto-electronic research at ARL will be described including a novel spatial light modulator, infra-red sensors and a birefringent phase shifter for optical control of phase array radar.

Speaker Biography

Dr. Michael F. Tompsett, a Fellow of the IEEE, attended Cambridge University where he received a BA, Physics; Ph.D., EE; and did Post doctoral studies in materials science.

He has worked at EEV Ltd., where his accomplishments included: Research on image intensifiers; Material research on lead oxide thin films that lead to manufacturability of camera tubes used in all TV studios today; Invented pyroelectric vidi-

con uncooled IR camera used by MoD and DoD; Invented pyroelectric uncooled IR sensor still being developed today after 25 years.

Later, at Vac Gen Ltd., he developed and sold RHEED system used by Esaki in first MBE machine at IBM, now routinely used in all MBE machines. At AT&T Bell Laboratories, where he is presently employed, Dr. Tompsett's work has included: Solving life problem in silicon vidicon camera tube; Making the first CCD, first tv resolution CCDs and TV color camera, etc.; Pioneering the use of analog MOS integrated circuits including switched capacitor filters, speech-synthesizer chip, speech recognition chip, smartcard, ISDN subscriber loop chip architecture and the first integrated "single-chip" modem; Developing and managing Data Conversion Devices for communication applications, and developing high speed analog to digital interfaces for cellular telephones and video applications.

The holder of 18 patents, he is currently editing and writing a chapter for book on Uncooled Imaging.

"Views From An Industrial Participant"

*Philip J. Anthony
AT&T Bell Laboratories
Murray Hill, NJ*

Abstract: The growth of "big science" corresponded with the initiation and growth of the field of optoelectronics, a field that is critical for competitiveness in an information society. The solid validity of that connection as a justification for R&D has been used to spawn major investments by industry, academia, and various levels of government. In AT&T, a \$200M facility was constructed for photonics development; other companies have made proportionally sized investments. Several NSF engineering research centers with photonic thrusts have been established at universities and ARPA-sponsored multi-university teams devoted to photonics are in their second phases. Federal competitiveness programs such as TRP and ATP have major optoelectronic programs.

Ideally, all these efforts would be linked and coordinated without hampering the benefits of competition. The fact that they are not is a symptom of a many-body problem: changing and competing interests inherent to government/academic/industrial alliances makes a coherent strategy improbable. A particular alliance on its own can be very successful as long as the convergence of interests is clear and sustainable. Problems arise when conflicting or changing values are ignored originally or surface later, diminishing the chances for mutual benefit.

An overview of the typical advantages and disadvantages of alliances will be given using the Optoelectronics Technology Consortium as a starting point, but extending it to CRADAs and university centers for photonics.

Speaker Biography

Dr. Philip J. Anthony is head of the Passive Optical Components Research Department at AT&T Bell Laboratories in Murray Hill, NJ. The department uses silicon optical bench technology to make optoelectronic packages and passive optical circuits like wavelength routers and power splitters. He began work on semiconductors (CdTe and ZnSe) as an undergraduate at the University of Dayton (BS '74). At the University of Illinois, he worked under A. C. Anderson on understanding the anomalous low-temperature properties of glasses, and was awarded MS ('75) and PhD ('78) degrees in physics. As a Member of Technical Staff at Bell Labs in Murray Hill, he worked on GaAs and InP lasers and managed the design team for the 1.7 Gb/s laser for the FT Series G longhaul fiberoptic transmission product. He started a new department in 1987 to work on exploratory photonic devices at a new AT&T Bell Labs facility, the Solid State Technology Center in Breinigsville, PA. The team developed FET-SEEDs for photonic switching, QWIPs for infrared sensing, and VCSELs for optical interconnection. He is an elected member of the IEEE-LEOS Board of Governors and is the VP of Finance and Administration of the Society. Dr. Anthony is a Senior Member of IEEE, a life member of the APS, and a member of OSA, AAAS, and Sigma Xi.

Spring Into Action Advance To Senior Member

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AT THE SCHOOLS

NJIT Offers New Master Of Science Degree Program

A Master of Science in Computer Engineering degree program will be offered by the Department of Electrical and Computer Engineering at New Jersey Institute of Technology starting Fall 1995. The evening program will be available on a full and part-time basis.

The program is geared towards engineers, scientists, and other professionals seeking an advanced degree that provides in-depth knowledge of computer hardware, software, and hardware-software interactions.

The program offers five areas of concentration: Microprocessor-Based Systems; Parallel Computing Systems; Computer Networking; VLSI System Design; and Machine Vision Systems.

For information call (201) 596-3512.

FDU Creates School Of Engineering & Engineering Tech.

Fairleigh Dickinson University has announced the establishment of the School of Engineering and Engineering Technology within University College on the Teaneck-Hackensack Campus.

Approved by the University's Board of Trustees at their October meeting, the new School houses five accredited undergraduate programs, a graduate degree in electrical engineering, and four certificate programs.

The school offers two accelerated five-year combined degree programs that bring together a bachelor's degree in Civil Engineering Technology or Construction Engineering Technology with a master's degree in systems science that concentrates on pollution studies.

Certificate programs are offered in Optical Technology, Total Quality Management Technology, Construction Management Technology and Manufacturing Management Technology.

According to Dean Dario Cortes, "By joining faculties into a single school we focus our resources. The new School will interact productively with business, physics, mathematics and computer science. Already this year, joint programs have begun in electrical engineering/computer science and in engineering technology/chemistry."

Dr. Howard Silver, professor of electrical engineering, will be the director of the new School. The faculty will be comprised of the current members of the departments of Electrical Engineering and Engineering Technology.

Systems, Man & Cybernetics: Global Positioning System Applications

On Wednesday, May 3, 1995, there will be a joint dinner meeting of the North Jersey Systems, Man & Cybernetics Chapter and North Jersey Chapter of the American Institute of Aeronautics and Astronautics (AIAA). This dinner meeting will cover the timely topic, "Global Positioning System: Changing The Fundamentals Of Aviation." The speaker will be Mr. David Watrous, President of RTCA, Inc. RTCA is widely known throughout the U.S. and international aviation communities for setting performance standards and supplying technical guidance on aviation issues.

Members And Guests Welcome

The likely location for this dinner meeting, will be the "Robin Hood Inn" restaurant in Clifton, N.J. Costs for members and guests (spouses are welcome as well), are expected to be under \$25 which includes a full course dinner.

Plan to join us for what is shaping up to be an enjoyable social as well as a terrific technical meeting.

For information/reservations, contact any of the following people: Abe Bernstein (201) 770-3240; Pete Brodie (201) 284-2453; or Dr. Michael Liechenstein (201) 471-0721. A flyer on this meeting is in preparation and will be sent to those who call.

ELECTRO/95 In Boston June 21-23, 1995

Electro International has announced that it is significantly expanding the scope of its upcoming Electro '95 trade show to include a major emphasis on surface mount technology and contract manufacturing. The show will be held at the Hynes Convention Center in Boston.

Electro '95 is sponsored by Region 1, METSAC and CNEC of the International Electrical and Electronic Engineers (IEEE), and the New York and New England Chapters of the Electronic Representatives Association (ERA).

Electro '95 will feature:

- ° a surface-mount technology and electronic manufacturing services conference track, with sessions covering component standardization, ball grid arrays, and flip chip and chip scale technologies

- ° Electro's first working SMT production line on the show floor, featuring products and equipment from Heller Industries, Mydata Automation, Panasonic, and MPM Inc.

- ° more than 600 exhibitors and introductions of over 100 new products.

For further information about Electro International '95, please contact the show manager, Miller Freeman Inc., at (800) 223-7126.

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**June 21-23, 1995
Hynes Convention Center
Boston, MA**

Electro International is sponsored by IEEE Region 1, METSAC, and CNEC; ERA-New York and New England Chapters

YES!

Join your colleagues and stay ahead of your competitors by attending or exhibiting at ELECTRO International '95.

I'm interested in:

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NJ

IEEE North Jersey Section Seminar

C++ FOR WINDOWS

Tuesdays, April 11 - May 30, 1995
Jersey Central Power & Light Co.
300 Madison Avenue, Morristown, N.J.

The North Jersey Section is offering for the first time an evening course entitled "C++ Programming for Windows." The Windows environment for personal computers is becoming increasingly important and will become even more important when Windows 95 is released this year. This course will cover all the major aspects of creating programs to run under Windows, using the C++ programming language. C++ is a prerequisite for the course. The emphasis is not on programming, however, but on the various components that have to be created for a Windows package: the interactive structure of the program itself, the message handling, the definition of resources, creating icons and cursors, the design of help and make files. The linking of data and programs within the Windows multiprogramming environment (DDE and OLE) will also be covered. This course is based on the Borland C++ development package, including ObjectWindows and the Resource Workshop. Therefore, every student should have access to Borland C/C++ Version 3.x or 4.x, as well as Microsoft Windows 3.1 or later. (Future plans may include another course, based on the Microsoft development package.) There will be eight weekly lectures which will be quite interactive. Homework will be assigned and corrected. The topics listed below will be covered. The instructor is Dr. Edward (Ted) Byrne, owner of a local software consultant business.

TOPICS:

- (1) - Review of Microsoft Windows from a developer perspective. The desktop metaphor. Constituents of a window. The mouse. Characteristics of different kinds of window objects. Use of the File Manager. Use of the Application window.
- (2) - Overview of the Borland C++ package: compilers, linkers, libraries, base classes and resources. Microsoft variable naming conventions.
- (3) - Nature of an interactive Windows program: winMain, event handlers. Files that make up a windows program package. Constraints on a windows program. Standard versus enhanced mode.
- (4) - Short review of C++: classes and objects. Inheritance and virtual functions. Overloading. The C++ switch/case statement and use in handling messages. The Borland C++ Base Classes.
- (5) - Other aspects of a Windows program package: creating icons. Creating Help. Concept of hypertext. Creating new cursor shapes. Saving program state from one execution to the next.
- (6) - Kinds of boxes: the dialog box, menu, accelerator keys, buttons (radio, check boxes, bitmapped buttons). Designing your own control boxes.
- (7) - Creating output in your program's window. Print output, Pixel output. Bitmap files. Choosing, sizing and using fonts.
- (8) - Communication between tasks or applications: passing data, the clipboard. More general communications, Dynamic Data Exchange (DDE). Using parts of one windows program in another: Object Linking and Embedding (OLE).
- (9) - What next?: how to create and install package for your Windows program. Interacting with the Windows Program Manager. Introduction to Windows 95.

Class size will be limited to a maximum of 25 with a minimum registration of 15. Early registration is recommended. Phone reservations will NOT be accepted. Reservations accepted after April 4, 1995 will require an additional late fee of \$25. No reservations will be accepted after April 7, 1995.

Where: Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.
When: Eight sessions, Tuesday evenings starting April 11, 1995, 6:30 - 9:00 PM.
Cost: With Text Book only: IEEE Members \$220; Non-IEEE Members \$300.
Contact: Mr. John A. Baka at (201) 455-8534 (Business)

Registration "C++ FOR WINDOWS"

To: Mr. John Baka, Distribution Engineering, JCP&L Company, 300 Madison Avenue, Morristown, NJ 07962-1911

Name _____ IEEE No. _____

Affiliation _____ Phone No. _____

Address _____

Please enclose required fee payable to **North Jersey Section IEEE**.

Signature _____

IEEE North Jersey Section Seminar "Introductory C Programming"

Wednesday Evenings, April 12 - June 7, 1995, 6:30-9:00 PM
Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.

The North Jersey Section is offering an evening course entitled "Introductory C Programming." C is one of the most widely used computer programming languages because it is powerful, portable and permissive. It is also the basis for C++, the popular object-oriented programming language. This course will be an introduction to C and will cover all the basics of the language as well as emphasizing C's philosophy or world view. The course will cover ANSI C on the PC but, because there are C compilers for most computers, the expertise will be applicable from PC through mainframe. The C techniques learned will be useful on their own, and also will be a preparation for either an advanced C course or a C++ course.

There will be 8 weekly lectures and each will be followed by a short optional work session. Homework will be assigned and corrected. The topics listed below will be covered. The instructor is Dr. Edward (Ted) Byrne, owner of a local software consultant business.

TOPICS:

- (1) - Background of computers, operating systems, compilers and high-level languages.
- (2) - Introduction to C and the parts of a real C program: philosophy of C vs other languages, ANSI vs older C, nature and constituents of a simple C program, C program examples (ongoing).
- (3) - Reserved words, variables, declaration and definition, parameters, permanent, temporary, local and global data.
- (4) - Branching: simple and compound statements, relational operators and expressions and their use in branching, various kinds of branch statements.
- (5) - Loops and Conditions: various ways to enter and exit a loop, auto-incrementing, statement labels, goto.
- (6) - Formatted and character I/O: output to screen, input from keyboard, formatting, file and device input and output.
- (7) - Defensive programming and debugging: debugging levels, asserts, lint, case tools.
- (8) - Functions, subfunctions and arguments: names, arguments, return value, main program arguments, exit, return levels.
- (9) - Text and Libraries: character data type, string data type, characteristics of strings, libraries, and header files, #include statement, common functions, #define.
- (10) - Groups of similar and dissimilar data items: arrays, structures, indexing, items.
- (11) - Introduction to pointers: concept of a pointer, addresses, pointer arithmetic, indirection.
- (12) - Introduction to some advanced topics in C: touch on graphics, unions and enums, casts, typedefs, bit variables and operators, switch statement and case and default, conditional assignment.

Class Size will be limited to a maximum of 25 with a minimum registration of 15. Early registration is recommended. Phone Reservations will **not** be accepted. Reservations accepted after April 5, 1995 will require an additional **late fee** of \$25. No reservations will be accepted after April 10, 1995.

Where: Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.
When: Eight sessions, Wednesday evenings, starting April 12 from 6:30 PM to 9:00 PM.
Cost: With Text Book and Borland Turbo C++ compiler
IEEE Members \$280; Non-IEEE Members \$360.
With Text Book only:
IEEE Members \$ 200; Non-IEEE Members \$280.
Contact: Mr. John A. Baka at (201) 455-8534 (Business)

Registration "Introductory C Programming"

To: Mr. John Baka, Distribution Engineering, JCP&L Company, 300 Madison Avenue, Morristown, NJ 07962-1911

Name _____ IEEE No. _____

Affiliation _____ Phone No. _____

Address _____

Please enclose required fee made payable to **North Jersey Section IEEE**

Check if Borland Turbo C++ Compiler is needed or not Yes [] No []

Signature _____



An IEEE Seminar on SHORT CIRCUIT ANALYSIS

**presented by the IAS and PES Chapters,
North Jersey Section**

**Wednesday, May 24, 1995
9:00AM to 3:00PM
Jersey Central Power and Light HQ
300 Madison Ave., Morristown, NJ 07962**

Topics

- Introduction
 - Seminar overview
 - Reasons for a short circuit study
 - Basic concepts
 - Types and causes of short circuits
 - Per-unit system
 - Equivalent circuits
 - Symmetrical components
 - Network analysis methods
- How to do a short circuit study
 - Single-line diagram
 - Defining study requirements
 - Impedance diagram
 - Determining system impedances
 - Typical impedance data
- Calculations
 - Manual
 - Computer
- Interpreting and applying results
 - Interrupter evaluation
 - Circuit breaker application
 - Fuse application
 - Protection coordination
 - Specifying bus bracing
 - Inputs to other studies
 - Voltage regulation
 - Motor starting
 - Harmonics analysis
- Case studies
- Review of key concepts

Seminar Leaders

Richard H. McFadden, P.E., Fellow, IEEE. Chief Electrical Engineer, Advanced Technology Division, Science Applications International Corp., New York, NY.

R. Vittal Rebbapragada, P.E., Senior Member, IEEE. Senior Consulting Engineer - Electrical Power Systems, Ebasco Services Division, Raytheon Engineers and Constructors, New York, NY.

Cost - including materials, morning refreshments, and luncheon:

IEEE members	\$150.00
Non-members	\$195.00
Students with valid ID	\$50.00

\$50.00 discount on full (non-student) registrations received by May 1

On-site registration opens at 8:30AM

Reserve your place by mailing a check payable to "IEEE North Jersey Section" to R.H. McFadden, SAIC, 7 West 36th St., New York, NY 10018 by **May 15, 1995**.

For information or late registration, call Vittal Rebbapragada, (212) 839-1473, Ken Oexle, (201) 455-8481, or Dick McFadden, (212) 239-8510.

NORTH JERSEY SECTION IEEE

INTRODUCTION

The North Jersey Section of the Institute of Electrical and Electronics Engineers, (IEEE) encompasses the seven northern counties of New Jersey. Internationally, it is the eighth largest section of the IEEE with more than 5500 members from virtually every specialty in electrical and electronics engineering.

Our Section provides our members with opportunities to network and increase the number of their professional friends. We provide our members with continuous opportunities to enhance their technical, educational and professional experience.

EXECUTIVE COMMITTEE

The North Jersey Section's Executive Committee consists of the elected officials, the technical Chapter chairs, and the representatives of the standing committees. It is this committee that sets the tone and activity of IEEE in the North Jersey Section and makes our technical, professional and social events possible.

The Executive Committee meets at 7:00 PM on the first Wednesday of each month (except holidays and December), to conduct Section business and plan future activities.

All IEEE members are encouraged to attend and participate in these meetings.

TECHNICAL ACTIVITIES

The North Jersey Section supports a broad variety of technical presentations and annual seminars. During a typical year the Section sponsors more than 50 local technical meetings addressing many subject areas.

All members of the IEEE are encouraged to attend and participate in any Section meeting.

EDUCATIONAL ACTIVITIES

Our North Jersey Section supports a very active educational program. As a service to our members the Educational Committee provides courses in the latest technology and programming languages at an affordable cost with member discounts. Courses offered in the past have included: Advanced Microwave Components; Communications; Microprocessors; Programming in BASIC; and "C" and Advanced "C".

The Education Committee is always seeking to enhance its activities and to offer our membership a new and diversified selection of courses.

PROFESSIONAL ACTIVITIES

Our North Jersey Section's Professional Activities Committee (PACE) sets us apart from the rest of the nation as leaders in professional activities. Through our Professional Activities Committee our Section received the "Alex Gruenwald, Region I PACE Award, For Outstanding Excellence in the Promotion of Engineering Professionalism."

This committee typically sponsors at least one meeting each month dedicated to professional issues such as: employment (unemployment), underutilization of engineers, pensions, patents, career decisions, starting a new business. It also has sponsored Job Fairs and Employment Workshops.

The Committee seeks new ideas and engineers interested in enhancing our profession. Members and guests are encouraged to attend and participate in the activities.

PUBLICATIONS

The North Jersey Section's Newsletter is considered one of the finest section publications in the IEEE. It is published monthly (except July) and sent to every member to inform them of the subjects, time and place of activities and meetings. The Newsletter's professional news column, "PACE NEWS" has received national recognition and has been republished by other IEEE entities.

CONCLUSION

Membership in the North Jersey Section of the IEEE, one of the most active sections of the world's largest technical engineering society, provides you with many opportunities. With each meeting you attend you will increase the number of your associates in the engineering field. All meetings, with few exceptions, are provided without cost or fees to our members.

We encourage you to join us, attend our meetings, participate in our activities and pass this information on to your colleagues.

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Dr. Hiam Grebel	
Dr. Chandra Gupta	

If you require further information, contact any of the Section Officers listed above.

TOLL FREE INFORMATION

Call our Toll Free membership information line at IEEE's Service Center:
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